BIRDS OF THE KEWEENAW PENINSULA, MICHIGAN

BY

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Storer, R.W. 2002. The metazoan parasite fauna of loons (Aves: Gaviiformes), its relationship to the birds' evolutionary history and biology, and a comparison with the parasite fauna of grebes. *Misc. Publ. Mus. Zool., Univ. Michigan*, No. 191, pp. i-iv, 1-44, 3 figs., 7 tables.

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Nussbaum, R.A. & C.J. Raxworthy. 2000. Systematic revision of the genus *Paroedura* Günther (Reptilia: Squamata: Gekkonidae), with the description of five new species. *Misc. Publ. Mus. Zool., Univ. Michigan,* No. 189, pp. i-iv, 1-26, 12 figs., 7 tables.

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Ng, H.H. & R.M. Bailey. 2006. *Chiloglanis productus*, a new species of suckermouth catfish (Siluriformes: Mochokidae) from Zambia. *Occ. Pap. Mus. Zool., Univ. Michigan*, No. 738, 13 pp., 5 figs., 1 table.

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Garrison, R.W., N. von Ellenrieder & M.F. O'Brien. 2003. An annotated list of the name-bearing types of species-group names in Odonata preserved in the University of Michigan Museum of Zoology. *Occ. Pap. Mus. Zool., Univ. Michigan,* No. 736, 73 pp.

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Ng, H.H. 2003. *Arius verrucosus*, a new species of freshwater ariid catfish (Teleostei: Ariidae) from the Mekong River. *Occ. Pap. Mus. Zool., Univ. Michigan,* No. 734, 14 pp., 6 figs., 1 table.

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COVER ILLUSTRATION — *Aegolius acadicus*, Northern Saw-whet Owl

MISCELLANEOUS PUBLICATIONS
MUSEUM OF ZOOLOGY, UNIVERSITY OF MICHIGAN, NO. 195

Birds of the Keweenaw Peninsula, Michigan

by

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Ann Arbor, September, 2006

DEDICATION

When I was in grade school in Illinois, I was taught to identify the Great Lakes by shape. Lake Superior was the head of a wolf facing left, the eye was Isle Royale, and the mouth was the Keweenaw Peninsula. I could not have imagined then that someday I would dedicate a book to all who enjoy and value our natural heritage here in the mouth of the wolf.

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Birds of the Keweenaw Peninsula, Michigan

Laurence C. Binford

ABSTRACT

The Keweenaw Peninsula, located in the western part of the Upper Peninsula of Michigan, juts broadly into the south side of Lake Superior. It is comprised of the counties of Baraga, Houghton, and mainland Keweenaw. The distribution of its avifauna of 324 species is treated in this monograph. Introductory sections briefly outline physiography, geology, climate, ornithological history, and sources and acceptance of data. Each species is discussed in a separate account detailing current and former status (*i.e.*, mode of occurrence, seasonality, detectability), range, habitat, timing of migration (by season, including extreme, median, and peak dates; also given in tables for easy comparison), seasonal high counts, specific breeding data, banding recoveries, historical changes, and numerical summaries for Christmas Bird Counts, Breeding Bird Surveys, and North American Migration Counts. All available data are presented for irregular (*i.e.*, occasional, casual, and accidental) species. An extensive methods section that systematizes and clearly defines modes of occurrence (*e.g.*, summer resident, vagrant), detectability (11 categories), seasonality, and regularity, is offered as a model for authors writing similar distributional works. Summary statements in the species accounts are supported by field observations for which date, locality, number of birds, and observers are given; these data were gleaned from the literature and from the largely unpublished field notes of the author and local birders, the latter two representing 86 person-years of observations since 1972. A separate hypothetical list treats 22 species for which data are insufficient for acceptance. Seventeen discussions summarize and interpret Keweenaw data. Among these are *Mode of occurrence*; *Effects of Lake Superior on migration*; *Fall translake migrants*; *Christmas Bird Counts*; and *Conservation*. A unique overview of *Vagrancy* defines kinds, causes, and adaptive benefits using Keweenaw vagrants as examples (321 records of 62 species); abundance is negatively correlated with distance; arrival dates average later than those for regular species. Analysis of *Biogeography* within the Peninsula implicates habitat (including food), not range/rarity, as the major factor controlling the distribution of the 178 breeding species. Censuses of *Waterfowl and other species at sewage ponds* demonstrate that sewage facilities are an important untapped source of habitat for breeding waterfowl; if managed properly, at no expense to the municipalities, the three pond systems censused here could produce nearly 400 ducklings each year. *Migration* compares feeding habits of seven bird groups with the chronology of habitat availability as controlled by annual climatic changes between winter and summer. Spring arrival and fall departure are timed during periods when the climate is least likely to have a deleterious effect on food availability, thus avoiding mortality during a "late" spring or an "early" fall. Exceptional species have the broadest feeding niche of their group and may have become "preadapted" on their wintering grounds by a climate that is similar to early spring and late fall in the Keweenaw. *Waterbird migration on Lake Superior* discusses the fall timing and abundance of 34845 individuals of 28 species moving along the south shore during 209.5 hrs of censusing, 1986-99 (mean 166 birds per hour). *Raptor migration* examines spring timing and abundance of 17 species of diurnal raptors at the Brockway Mt., Keweenaw Co., lookout (a listed Important Bird Area), where 15000 birds occur annually, and suggests regional migration routes. *Shorebird migration at sewage ponds*, which discusses timing and abundance for 25 species during 29 spring and 157 fall counts, 1986-2001, touts the importance of sewage ponds as stop-over sites for migrants, and argues for shorebird and waterfowl management. Analysis of *Effects of climate and bird feeders on the wintering avifauna* implicates food availability as the primary factor affecting winter distribution in the Keweenaw, and shows that some species are dependent on feeders for their winter and summer presence. *Historical changes* in populations suggest that among breeding species, 37 are increasing and 28 declining, with natural habitat succession a primary reason. Some transients and winter residents are also undergoing change.

Keywords: bird feeders, Christmas Bird Counts, climatic adaptations, colonization, distribution, Keweenaw Peninsula, Michigan, migration, population changes, raptor migration, sewage ponds, shorebird migration, waterbird migration, vagrancy.

INTRODUCTION

The Keweenaw Peninsula is a broad point jutting into Lake Superior in the northwestern Upper Peninsula of Michigan. Although it is truly a physiographic feature, for the purposes of describing bird distribution, I define it as consisting of the entireties of Baraga, Houghton, and mainland Keweenaw Counties; Isle Royale, politically part of Keweenaw Co., is excluded. Here I refer to it as "the Keweenaw," "the Peninsula," or the "Keweenaw Peninsula"; the county of the same name I term "Keweenaw Co." or "K."

Perhaps no region of Michigan has held such a mystic among ornithologists and birders alike as the Keweenaw Peninsula. Even Isle Royale lost much of its aura nearly a century ago as the result of a major museum expedition in 1902 (Peet, 1909). Much of this mystic is the result of the presumption that the Keweenaw's northernmost position in the state would boost its boreal affinities, and its northeast-projecting peninsular shape would form a geographical "trap" for southern and western vagrants.

In actuality, most of the peninsula is composed of a low mountain range supporting largely northern hardwoods—maple, birch, aspen, and oak. Mesic mixed forest and mesic and wet coniferous (boreal) forests are confined mostly to the narrow coastal strip in the northern third of the Peninsula and to scattered pockets in the southern third, with much of the central part covered with hardwood forest and farmland. As a result, boreal birds, although present, are rare, perhaps more so than in the eastern third of the Upper Peninsula. As a vagrant trap, the Peninsula is simply too large and heavily wooded to concentrate forest rarities enough to allow easy discovery.

On the other hand, all the boreal species of Michigan have been recorded in the Keweenaw, some of the rarest have bred (*e.g.*, American Three-toed Woodpecker, White-winged Crossbill), and the potential for others is great. Some forest vagrants have been found and others doubtless will in the future. Also, open country vagrants are funneled northeastward into the broad tip of Keweenaw Co., where they encounter extensive forests broken only by the towns of Eagle River, Eagle Harbor, and Copper Harbor, which serve as traps by affording a comparatively attractive open environment, albeit mostly lawns, weedy lots, and street shoulders. Some vagrant waterbirds, especially southern overshoots in spring, have also been detected, particularly at the head of Keweenaw Bay. Thus, as an Upper Peninsula vagrant trap, I would rate the Keweenaw Peninsula second only to Whitefish Point in Chippewa Co.

And surprising discoveries have been made. Brockway Mt., Keweenaw Co., proves to be one of the best spring raptor lookouts in the Midwest, with over 15000 individuals of 17 species during April and May. Also, the shores of Lake Superior off Agate Harbor and Dan's Point, Keweenaw Co., are a major flyway for fall waterbirds. From 1986 through 1999, during 209.5 morning hours of sporadic censusing, I recorded 7366 geese, 20524 ducks, 147 unidentified waterfowl, 696 loons, 5629 grebes, and 483 cormorants, a total of 34845 individuals, or 166.3 per hour (Table 10).

Despite the paucity of observers over the years, the Peninsula boasts an avifauna of 324 species, a total quite comparable to single counties in southern Michigan where birders are much more numerous. And the list grows. Even without additional observers, greater effort and awareness of vagrants have raised the total 53 species during the 20-year period 1986-2005, a rate of 2.6 per year. Of the 324 species, 279 have been recorded in Baraga Co., 299 in Houghton Co., and 273 in Keweenaw Co. Although breeding biology has received less attention, 178 species are believed to have nested (166 confirmed, 11 probable, 1 possible), which is 76.4% of the state total of 233 listed by Brewer *et al.* (1991).

Thus, although no longer shrouded in mystery, the Keweenaw Peninsula has fulfilled most of the early expectations and produced some unexpected discoveries. In this publication I analyze the avifauna to the extent allowable by the available data.

PHYSIOGRAPHY AND GEOLOGY

The backbone of the Keweenaw Peninsula is a range of low mountains, one (Mt. Horace Greeley) reaching 1534 ft above sea level and over 900 ft above Lake Superior, extending from the tip of Keweenaw Point southwestward to form the Porcupine Mountains in Ontonagon Co. The north side of this range drops rather abruptly into Lake Superior, leaving a narrow, level coastal belt. In Keweenaw Co. the mountains form five ridges, with intervening stream valleys, paralleling Lake Superior, the northernmost (Copper Harbor Conglomerate ridge) and the next to the south (Middle Conglomerate ridge) providing updrafts for spring migrating raptors, which concentrate at the West Bluff of Brockway Mt. just west of Copper Harbor. This east-west configuration confuses tourists expecting a north-south orientation and sometimes results in lost hikers, including this ornithologist. Strong winds have produced "bald" tops on Mt. Lookout and Brockway Mt., where the vegetation has been reduced to grasses, herbs, and stunted trees and shrubs; these clearings, in an otherwise heavily forested environment, provide habitat for open country, vagrant birds. See Wells & Thompson (1974) for a more detailed account of the physiography and geology of Keweenaw Co.

The south side of the Peninsula, bordering

Keweenaw Bay, consists of a broad, low coastal plain, here termed the Keweenaw Bay Border Plain, composed of Jacobsville Sandstone (Cambrian in age), but even much of this is gently hilly due to dissecting streams. Southwest of Baraga are the broad, flat, dry, sandy, upland Baraga Plains (see Gazetteer). The Marquette highlands encroach into the east portion of Baraga Co. The southern quarters of Baraga and Houghton Counties support hilly uplands. All four regions have scattered low areas suitable for wet coniferous forest.

This varied topography strongly affects local climate, and the two together in large part account for the great variety and distribution of plants and their communities (Maylock, 1961; Brewer *et al.*, 1991). Wells & Thompson (1974) recorded 943 species of plants for Keweenaw Co. alone. The well drained mountain slopes support several types of deciduous forest. Scattered but numerous low-lying pockets and the coastal plains hold mesic mixed forest, coniferous forest, and open spruce bogs. Gently hilly areas are ideally suited for beaver ponds. Extensive, flat sandy regions give rise to arid pine forests. See Habitats.

The Keweenaw mountains are part of the Canadian Shield, composed of Precambrian rock so hard that glaciation left only shallow deposits. The northern shore of Keweenaw Co. has outcrops of softer conglomerate rock containing locally popular Lake Superior agates; the nearly vertical angle of these layers produces tiny islands just offshore that are loafing places for Bald Eagles and occasional shorebirds and nest sites for Red-breasted Mergansers and Herring Gulls. Shorelines in the Keweenaw are composed of sand and gravel beaches or clay and rock ledges. Large sand dunes, some 100 ft high, derived in part from glacial lake beaches, border Great Sand Bay in Keweenaw Co. Extensive piles of stamp sand, produced from mining operations and often on shorelines, are uninhabited by plants or invertebrate animals and are therefore largely birdless. Around Torch Lake in Houghton Co., these sands were covered with earth and planted to grass in 1999-2001. Along the southern, and to a lesser extent the northern, sides of the Peninsula, old beach lines are evident in the form of low sandy (south) or gravelly (north) ridges, some of the southern ones (*e.g.*, Rabbit Bay and Gay, Keweenaw Co.) supporting small patches of mesic coniferous (boreal) forest.

In the mid 1800s, subterranean pockets and veins of pure copper were discovered stretching from near Copper Harbor southwest into Ontonagon Co. Hence the name often given to the Keweenaw—"Copper Country." Virtually all human development—cities, roads, and farmland—owe their existence to this industry. Today, all mines are closed and the primary industries are logging, tourism, and Michigan Technological University. All virgin timber was logged in the late 1800s and early 1900s, in part to construct the buildings and mines related to copper mining. Over a billion board feet of lumber were used in mine construction; logging has remained a principal industry up to today, and poor logging practices have decimated much of the forest; only one small patch of old growth remains (Estivant Pines near Copper Harbor; see Wells & Thompson, 1974).

Aquatic habitats are numerous and varied. The whole region is dotted with beaver ponds and shallow lakes; Keweenaw Co. alone has nearly 100 named lakes. L'Anse Bay is a mecca for feeding and resting waterbirds. Off the north coast of Keweenaw Co., Lake Superior drops to depths of over 500 feet a few hundred feet offshore, so that bottom feeding birds are restricted to harbors and inshore waters. Much of Keweenaw Bay above L'Anse Bay, although shallower, seems relatively unattractive to waterbirds. The only major river system in the Keweenaw is that of the Sturgeon River in Houghton and Baraga Counties, and along it are the only extensive marshes (Sturgeon River Sloughs, Arnheim), now largely impounded and controlled by the Michigan Department of Natural Resources (MDNR).

The shoreline between Eagle Harbor and Copper Harbor runs almost due east-west and contains the northernmost points in mainland Michigan. It forms a target and leading line for thousands of waterbirds migrating mostly west to east in fall (see Introduction and Discussions), and irregularly and locally concentrates transient passerines. The only major islands aside from the coastal rocks of Keweenaw Co. are Manitou Island at the tip of Keweenaw Point, Traverse Island in Keweenaw Bay off northern Houghton Co., both heavily forested, and two small stamp sand islands in Torch Lake. The first supports a few breeding Herring Gulls, the second important colonies of Double-crested Cormorant and Great Blue Heron, and the last the only colony of Ring-billed Gulls on the Peninsula.

CLIMATE

The climate of the Keweenaw Peninsula may be termed cold in winter and cool in summer, with moderate precipitation throughout the year and highly variable weather. The old joke, "If you don't like the weather, wait an hour," must have been coined in the Keweenaw! I have watched the temperature drop 40°F in a few hours. The southern half of the three-county area experiences rather different climate than does the Peninsula proper (defined physiographically), especially Keweenaw Co. For the effects of winter climate on birds, see Effects of Climate and Bird Feeders on the Wintering Avifauna.

Because of the northern latitude of the Keweenaw, frosts have been recorded in every month of the year. At

Eagle Harbor, Keweenaw Co., the average date for the last spring frost is 20 May and the first fall frost 14 Oct (Wells & Thompson, 1974). Off Agate Harbor, Keweenaw Co., I once witnessed an exceedingly calm Lake Superior glaze over with ice on Memorial Day! Winters in central and southern Baraga and Houghton Cos., located farther from the warming effects of Lake Superior, are colder, receiving about 25-35 days of <0°F compared to about 15-25 days on the Peninsula proper, especially the coastal belt. Summers are cool over the entire region, averaging only 1-5 days exceeding 90°F (more in the last few years). In summer, the Peninsula proper, especially the coast, is cooler than the interior because of its proximity to the cold waters of Lake Superior. At Eagle Harbor, high temperatures average 16.8°F in January and 61.7°F in July, with extremes of 100 and -26°F. Despite its cool nature, the Keweenaw enjoys a long growing season (the average frost-free period), and by extension, insect period, averaging about 60-120 days in the south and 120-160 on the Peninsula proper (average 147 at Eagle Harbor, Isaacs and Hennigar 1980); the latter range, again reflecting lake effect, is surprisingly similar to that in the southern Lower Peninsula. Winter temperatures on the Peninsula are quite low; at Houghton the average minimum January temperature is 7.6°F.

Precipitation ranges from about 28 to 36 in (average 29.1) annually at Eagle Harbor, with monthly averages about 3 in from Jun-Sep and 1.5-2.5 in Oct-May (most of which is in the form of snow). Except on the Peninsula proper, most falls as summer rain, some convectional, especially southward, but most frontal. The low Keweenaw mountains induce some precipitation from westerly or northerly fronts, particularly in winter; I have noted no rain shadow effect. Although occasional summers, especially in May and June, are exceptionally dry, rain always seems to arrive before the herbs wilt completely or fires occur. Of great importance to plants, moisture is ample relative to potential evaporation. Snowfall is great, especially in Keweenaw and northern Houghton Cos.; winter fronts rush unabated over the warmer waters of Lake Superior, picking up moisture and dumping huge quantities on the hapless Peninsula ("lake-effect snow"). Before the advent of motorized plows and snow blowers, many Keweenaw houses sported outside doors 8-10 feet above the ground. The maximum recorded snowfall for one winter (1978-79) was 390.4 in (32.5 ft), and an average of 200 inches is expected. The melting snows help maintain a high water table. In fact, during winters with exceptionally high snowfall, underground runoff into the Calumet (Houghton Co.) sewage ponds may continue into October.

Fog is frequent during summer, especially in June and August. It is important in maintaining the moist luxuriousness of mesic and wet forests. In June, coastal fog is more frequent than highland fog and is in part responsible for the coastal abundance of the lichen *Usnea*, important as a nest site for the Northern Parula.

ORNITHOLOGICAL HISTORY

The Keweenaw Peninsula has received very little attention until recently. The earliest publication was Kneeland (1857), who lived "at Portage Lake," Houghton Co., from August 1856 to June 1857. His paper lists 147 species from Portage Lake and South Portage Entry west into Ontonagon Co., south to L'Anse Bay, Baraga Co., and north into Keweenaw Co. Unfortunately, Kneeland's list includes several obvious misidentifications and many unsubstantiated statements, so that it must be used with great caution (Barrows, 1912; see also Hypothetical List herein).

A. R. Cahn (1918) visited Kenton, Houghton Co., and adjacent Iron Co. for three weeks in August 1914, recording 106 species in the two counties and about 69 in Houghton Co. The next major expedition to Copper Country was not until 1931, when N. A. Wood (1931, 1933, 1951) recorded 121 species, many collected (UMMZ), from 22 April to 18 June in the vicinity of Copper Harbor, Keweenaw Co. G. J. Wallace (1949) saw 85 species in Keweenaw Co. from 28 June to 6 July 1949, including six days at Gratiot Lake.

Over the years, the major population center—the twin cities of Houghton and Hancock and environs—have been home to a number of birders, largely because of the presence of Michigan Technological University (MTU), where some worked or studied. Other observations and specimens have come from the ranks of the MDNR. Some published papers on the birds of the area include E. Robinson (1942), E. M. Harger (1949), C. J. & R. C. Messner (1950, 1953), and E. A. Bourdo & G. H. Hesterberg (1951). F. B. Isaacs kept detailed notes, used herein, while a student at MTU. N. F. Sloan, who died about 1986, was a long-time professor in the MTU School of Forestry. He banded birds and wrote several notes (1967, 1973, 1974, 1975, 1976). Despite a diligent search at MTU and discussions with his widow, I have been unable to find his field notes, if indeed he kept any. His banding data (permit number 9279) are in the USDI Bird Banding Laboratory (K. Klimkiewicz, in litt.). Isaacs and Hennigar (1980; Isaacs orig. notes) and Peacock (1992; orig. notes) studied raptors and other migrants at Brockway Mt., Keweenaw Co., in 75-78 and 82-95, respectively (see Raptor Migration in Discussions).

In 1972 Arthur S. Weaver, then on the faculty of MTU, began keeping records (dates, localities, and some numbers) of his sightings, primarily in the northern half of Houghton Co. but also in Keweenaw Co. and northern Baraga Co. These data formed the basis for the

first authoritative and extensive work on the birds of the Peninsula (Weaver, 1990, revised 1991, 1995, and 2000; see also Weaver & Weaver, 1979), a list (2000) containing 250 species plus a compendium of 21 others of varying validity for which he could not personally vouch. Although in his own words "this is first and foremost a personal account and not a research paper" and he "made no attempt to collect and correlate the large mass of records from other observers as would be necessary for a 'real' scientific opus," yet it nearly amounts to such because of the volume of his personal data and the accuracy with which it is presented.

Dorothy R. Weaver, living in the same Liminga district, Houghton Co., as brother Art, kept spring arrival dates on her farm from 1985 until her death in 1998. Joseph Youngman began recording data, primarily in Baraga Co., in 1982 and in more detail in 1996, when spouse Lynn Murphy also began keeping notes. He, with Murphy's help, conducted a thorough survey of the birds of the MDNR's Sturgeon River Sloughs Wildlife Area in Houghton and Baraga Cos. from 1996 through 1998 (Youngman & Murphy, 1999) and began a study of Manitou Is., Keweenaw Co., in 2002 (Youngman, 2002).

I first visited the Keweenaw Peninsula in 1956 (16 June-24 July) and kept miscellaneous records for one to three weeks in August of most years from then until 1985 (Binford, 1965). Two short visits were made during the winters of 1962 and 1963 (Binford, 1963, 1964). Beginning in 1986, I lived at Agate Harbor, Keweenaw Co., and birded the whole peninsula, as follows (Binford, 1996, 1997): 1 Jun-22 Oct 1986; 11 Jun-18 Oct 1987; 15 May-16 Oct 1988; 1 Jun-14 Oct 1989; 14 May-15 Oct 1990; 16 May-13 Oct 1991; 19 May-15 Oct 1992; 30 May-16 Oct 1993; 22 May-23 Oct 1994; 19 May-22 Oct 1995; 8 May-20 Oct 1996; 3 May-26 Oct 1997, 24 Apr-25 Oct 1998, 2 May-22 Oct 1999, 25 Apr-24 Oct 2000, 26 Apr-22 Oct 2001, 24 Apr-18 Oct 2002, and 24 Apr-21 Oct 2003, 27 Apr-22 Oct 2004, 1 May-21 Oct 2005. During the summer of 1986 I volunteered for the Michigan Breeding Bird Atlas project, and in 1987 and 1988 was hired to cover priority blocks; in all, I recorded some data in 60 blocks, embracing all three counties (Binford, 1991). I conducted censuses of fall waterbird migration on Lake Superior off Agate Harbor from 1986 to 1999 and shorebird and waterfowl migration in northern Houghton Co. sewage ponds from 1986 to 2004 (ongoing). My notes and those of D. and A. S. Weaver and J. Youngman provided the primary sources of data for the first complete annotated checklist of the birds of the Keweenaw Peninsula (Binford *et al.*, 1996, 294 species; revised 1999a, 309 species) and its continuation (Binford, 2004, 321 species) based on this book, as well as for a lengthy paper on timing of migration (Binford *et al.*, 1999b).

SOURCES OF DATA

Most data used to write this book are mentioned under Ornithological History, the primary ones, providing perhaps 90% of the data, being the largely unpublished field notes of L. Murphy (data 1996-2003), J. M. Musser (1999-2002), A. S. Weaver (1972-99), J. Youngman (1980-2005), and myself (1986-2005), for a total of 86 person years spread over the last 34 years. I also used the original notes of F. B. Isaacs (Brockway Mt. migrants and general records), J. Peacock (Brockway Mt. raptors and other migrants), R. Hanson (winter field notes and many other records given to me by pers. comm.), and J. Kaplan (miscellaneous notes and many important photos). Records cited in text by only the observer's name or initials were obtained from their original notes in my possession or by pers. comm. In addition, I thoroughly searched the following major Michigan publications: Barrows (1912), Wood (1951), Zimmerman & Van Tyne (1959), Payne (1983, 1986), Brewer *et al.* (1991), and McPeek & Adams (1994). I scrutinized all issues of the *Jack-Pine Warbler* (JPW) and *Michigan Birds and Natural History* (MBNH; through Vol. 12, No. 3), these two including the Michigan Bird Survey, and the journal variously known as *Bird-Lore*, *Audubon Field Notes*, *American Birds*, *Field Notes*, and *North American Birds* (through Vol. 51), including the Houghton County Christmas Bird Count (through winter 2004-05). I examined all study skins in the bird collection in the School of Forestry, Michigan Technological University (MTU), Houghton (searched on 20 September 1996; no birds have been added subsequently through 1999), and computer printouts of the collections at the Michigan State University Museum (MSU), East Lansing (to 13 January 1998), and the University of Michigan Museum of Zoology (UMMZ), Ann Arbor (to 7 January 1998). I was told that the MTU collection became infested with insects and many skins were destroyed or discarded; this might account for specimens I failed to find (*e.g.*, Townsend's Solitaire). In addition I used the Breeding Bird Surveys at Bootjack, Houghton and Keweenaw Cos. (which I conducted for nine years), and Herman, Baraga Co., as well as the North American Migration Counts for Baraga and Houghton Cos. Banding records were obtained from the USDI Bird Banding Laboratory and nest cards from the Cornell Laboratory of Ornithology (CLO).

Finally, since 1986 I have used selected observations by many other local observers (in litt., pers. comm.), among them S. Andres, N. and T. Auer, Z. Gayk (2003a, 2003b), H. J. Ilnicky, O. Mills (2000, 2002), D. Richter (2000; see also Richter & Andres, 1995, 1997; Richter & Chartier, 2004; Richter *et al.*, 2003), S. Robinson, M. Scheiwe, A. Slagle, M. L. Wersinski (see Hull *et al.*, 1989),

and B. Wolck.

My cutoff date for unpublished data was 1 September 2005, although a few records may exceed that date; see also, Addendum.

ACCEPTANCE OF RECORDS

In most cases (exceptions detailed), I have accepted all specimen and photographic records, as well as those sight records accepted and published by other professional ornithologists or supported by written documentation examined by me. All rarities seen by me in the field are supported by detailed descriptions in my field notes (to be deposited in the University of Michigan Museum of Zoology), and all those on the state Review List have been accepted by the Michigan Bird Records Committee. I have also included some undocumented records from reliable current observers whom I have quizzed unmercifully. Nevertheless, five accidental or extinct species not supported by a specimen, photo, or detailed, extant, written documentation have their names enclosed in brackets, even though I accept them (Great Black-backed Gull, Passenger Pigeon, Tufted Titmouse, Worm-eating Warbler, and Chestnut-collared Longspur). I have followed all judgments of the Michigan Bird Records Committee. Twenty-two species rejected by me are discussed in the Hypothetical List. Pertinent published (but not unpublished) records that I reject are discussed in the Species Accounts; these are enclosed in brackets ([]) and the observer's name usually deleted. Other types of errors (*e.g.*, dates) in the literature are mentioned only if considered important.

PLAN OF THE SPECIES ACCOUNTS

General Format. In accounts for regularly occurring species, information is given in separate sections, usually in the following order: (1) English and Latin names of the species; (2) Status and Range; (3) Habitat; (4) Migration Dates; (5) Significant Records; (6) High Counts; (7) Breeding; (8) Breeding Bird Surveys (BBS); (9) North American Migration Counts (NAMC); (10) Houghton County Christmas Bird Count (HCCBC); (11) Banding Recoveries; (12) Historical Changes; and (13) Remarks. Paragraphs are omitted without comment when they do not apply, no information is available, or the data are presented in another section (with minimal cross-referencing).

Certain definitions and approaches have been applied throughout the Species Accounts and are discussed in the sections that follow. A *record* is defined as either a single individual, or any number of birds in a flock acting together, on a specific date; birds seen on subsequent dates are treated as separate records unless the odds favor them being the same bird(s). Months are abbreviated in the usual three letter manner, without punctuation (*e.g.*, Nov). Four digits are used for years in the 19th and 21st centuries and for all citations (*e.g.*, 1857, 2001), whereas two digits (*e.g.*, 95) are employed for records in the 20th century except when potentially confusing. Clock times are given in the 24-hour system using Eastern Daylight Time (EDT), *e.g.*, one o'clock in the afternoon is "1300 EDT." Abbreviations are used for frequently cited observers, breeding status, museum names, migration date periods, and some sources of published data; for these, see the Key. Counties are abbreviated B (Baraga), H (Houghton), and K (Keweenaw), except the county is omitted for frequently cited or well known localities (see Key).

Nomenclature. Each Species Account begins with the English and Latin names, according to the nomenclature and sequence of the American Ornithologists' Union Check-list of North American birds (1998) and Supplements 42 (2000), 43 (2002), 44 (2003), 45 (2004), and 46 (2005).

Status and Range. This section is a summary of status and Peninsular range; except for extreme rarities, most supporting data are presented under the headings Significant Records, Migration Dates, and Breeding. The Peninsular history of a species and related environmental issues are discussed under Historical Changes.

Status includes detectability, seasonality, and mode of occurrence. In addition, in parentheses immediately after the subtitle Status and Range, I give the county abbreviation (B, H, K) for each county in which the species has been reliably recorded; complete, individual county lists are presented for quick comparisons in Table 1. Variations in detectability, seasonality, and range within and between counties are discussed here.

Detectability. "Detectability" is a measure of the number or mean number of individual birds recorded by sight or sound during one or a series of field censuses—the birds *detected*. It may be thought of as "observed abundance," as opposed to true or statistically manipulated abundance. *Theoretically*, which term (*e.g.*, "common") to apply may be determined by (1) comparing census values (birds per hour, day, census *etc.*) to a predetermined numerical scale; (2) ordering the species according to the data obtained on censuses but dividing them into groups subjectively; or (3) without numerical census data, simply ordering them subjectively relative to one another and separating them into groups subjectively. Relative conspicuousness of species is part of the definition of detectability, and therefore can be ignored in all three methods; conspicuous species are automatically more detectable than inconspicuous ones. The term "abundance," on the other hand, often implies *true* abundance, which, however, can never be

determined. Neither does it in any way take into account conspicuousness, and therefore cannot be estimated closely. Any abundance system that attempts to factor in conspicuousness is itself subjective, because a scale of conspicuousness can only be determined subjectively.

I use method (1) above. Detectabilities for most birds are based on the average number of individuals recorded per hour during numerous field trips (see Sources of Data). However, for shorebirds and pond ducks at northern Houghton Co. sewage ponds, detectabilities are based on the number of individuals per daily count, because the number is finite. Detectabilities for spring diurnal raptors at Brockway Mt. and fall waterbirds at Agate Harbor are based on the number per hour times 4, which approximates the average count length and the prime period of daily occurrence. For raptors at Brockway Mt., only birds flying eastward were used, because those migrating westward were assumed to be mostly returnees; also, for each species I deleted 5% of the birds per hour from each end of the season in order to minimize the effect of abnormally early or late individuals. These averages were then converted to the number per day, week, month, or season and compared to a predetermined, rounded, logarithmic scale, log 2, base 3.16. I use a log scale because it fits my intuitive view of detectability and has the advantage of providing increasingly finer classifications for increasingly rarer species. The same bird or flock seen on different days or in different localities constitute one "record." For summer and winter residents, transient detectability usually is mentioned only if greater than in summer or winter. Because summer resident individuals arrive with transients in spring and some are still present when transients arrive in fall, the transient detectabilities given reflect a composite of the two. The resultant categories were then divided into two groups, regularly (annually) and irregularly (non-annually) occurring species, defined as follows:

Regular: in a given season, expected, although not necessarily recorded, annually. Defined as the average number of different individual birds recorded per birding day, week, month, or season expected by an expert observer when birding eight hours *every day* (starting at dawn) during the species' normal period of season and in all available habitats in proportion to the number of species expected in each habitat. This method is like that employed on a well-planned Big Day, on which the primary goal is to maximize the number of species. For example, the observer would spend much more time in mesic mixed forest than in cattail marsh, because of the greater number of species expected in the former. Also, a disproportionate amount of time would be spent in a scarce but unusually productive habitat (*e.g.*, sewage ponds, Lake Superior in fall, Brockway Mt. in spring) compared to the amount of habitat available. All individuals in a flock are counted; hence, flocking species would be expected to be seen less often than non-flocking species, to the extent that a "very common" species could be missed entirely for several days (*e.g.*, Redhead migrating past Agate Harbor in fall). At any given locality, even within a habitat, a species may be much more, or much less common. The terms and their definitions I employ are as follows:

Abundant: 30+ per day.
Very common: 10-30/day.
Common: 3-10/day.
Fairly common: 1-3/day.
Uncommon: 2/week-1/day.
Very uncommon: 3/month-2/week.
Rare: 1-3/month.
Very rare: 1-3/season.

Irregular: within a given season, apparently absent some years. Defined *within each season* as an average of one record by *all* observers in the stated number of years during the period 1972-2005 or from the year of first occurrence of the species to 2005, as follows:

Occasional: 1-3 years.
Casual: 3-11 years.
Accidental: 11+ years.

Words or phrases such as more abundant, commoner, rarely, and occasionally are not necessarily meant to equate to the above terms, but most do.

Seasonality. No system of seasons fits all species. For example, warblers breed in June and July (their summer) at the same time that the first transient shorebirds are arriving from the north (their fall). "Spring" raptors migrate into early July. Some "fall" ducks begin arriving in mid July, and others remain into "early winter" (but their late fall). In applying seasonal terms, therefore, I take into account the activities of the particular species, so that, for instance, late June shorebirds are termed fall transients, and early June raptors are considered spring migrants. Species-specific seasons are detailed under Migration Dates and sometimes Status and Range. Despite these variations, many birds fit a scale based on major migration periods coupled with the average environmental conditions, including vegetation, climate, and food availability. To the usual four temperate seasons, I add "early winter" to account for species that often linger into late November and December but do not over-winter; this usage may result in the use of "late winter." Note that spring migration normally includes the first week of June. The scale employed is as follows:

Permanent: present all year and regular in all seasons, even though a percentage of summering individuals may leave and in some cases be replaced by winter residents from the north (few data are available on this subject). All breed in the Keweenaw. Under Status and Range, this term is boldfaced, like individual seasons.

Spring: 26 March - 7 June.
Summer: 8 June - 14 August.
Fall: 15 August - 7 November.
Early winter: 8 November-31 December.
Late winter: 1 January - 25 March.

Mode of Occurrence. Six primary terms describe modes of occurrence of species, as follows:

Resident: a species or individual present throughout all or most of the stated season. Usually, but not necessarily, regular (*e.g.*, some ducks, even breeders like Gadwall, are irregular summer residents). Always and only combined with the seasonal terms summer, winter, or permanent. All permanent and most summer resident *species*, but not necessarily individuals, breed or have bred (note that three vagrants have also bred). "Non-breeding summer residents" (*e.g.*, Lesser Scaup) are so termed.

Transient: a species or individual that migrates through during its species-specific spring and/or fall period and is within its normal migration pathway between its established summer and winter homes. Usually, but not necessarily, regular; for some irregular transients (*e.g.*, Red Phalarope and Pomarine Jaeger), the distinction from vagrant is blurred because of insufficient information on migration pathways (see Vagrancy in Discussions).

Migrant: I have used "transient" instead of "migrant," because summer residents, winter residents, visitants, and vagrants also migrate in and out of the Keweenaw. I use the terms "migrant," "migrating," and "migratory" as *general* terms for birds that are clearly on the move but whose exact status is uncertain or is known but not transient, *e.g.*, some visitants, some vagrants, possible transients in early or late summer (especially useful when mentioning spring latest departure dates and fall earliest arrival dates for summer resident species), mid summer adults moving in search of mates, local post-breeding dispersants, and non-breeding summer birds on the move (*e.g.*, raptors); birds in the last three categories I sometimes term "*wanderers.*"

Vagrant: a species or individual outside its entire normal (*i.e.*, established) range. May be discovered in any season but occurs originally only during spring or fall migration periods, at which time it is a "migrant" in the broad sense defined above, but is not a transient, because it is not moving between its normal breeding and wintering grounds. Although usually remaining for only a short time, may linger into or through winter or summer; if it breeds or winters, still called a vagrant until a viable breeding population or regular wintering population, respectively, is established. Not necessarily irregular, but in the Keweenaw all probably are (possible exceptions are Northern Mockingbird and Yellow-headed Blackbird in spring). See Transient above and Vagrancy in Discussions.

Visitant: an *individual* that occurs during summer or winter (thus not at that time a transient) and is within at least the marginal portions of its normal *overall* range (hence not a vagrant; see Vagrant above and Vagrancy in Discussions), but is outside its normal season (*e.g.*, a summer resident found in winter) and, seemingly at least, present only temporarily during the stated season (thus not a resident); some might actually be resident, but the data do not allow assessment. Also refers to a few *species* that occur only in winter but not (as far as known) as winter residents (*e.g.*, Boreal Owl). Almost always irregular. Always employed in conjunction with the seasonal terms summer or winter. See Lingerers below.

Lingerer (*lingering, linger*): a special type of visitant with a similar definition. Refers to an *individual* summer resident, winter resident, or transient (never a whole species) that remains a short time beyond its normal, species-specific, seasonal period into the subsequent season. A bird that is discovered in the middle or end of the subsequent season is called a visitant if it disappears or a resident if it is known to remain all or much of the season.

Other Terms Used to Modify Detectability or Range:

Irregularly: refers to annual variations in numbers of individuals present during a stated season and is always followed by a detectability term (*e.g.*, "rare, irregularly uncommon"). These species occur annually and are not considered irruptive. This term should not be confused with an "irregular species," which does not occur annually (*i.e.*, occasional, casual, and accidental species).

Irruptive (*irruption*): a species that arrives in exceptionally large flights, apparently in search of food, during some years but not others. May be irregular, *i.e.*, present only some years (*e.g.*, White-winged Crossbill) or regular, occurring in

much greater abundance during irruption years (*e.g.*, Pine Grosbeak, Red-breasted Nuthatch). See Irruptions in Discussions.

Local (*locally*): applied to commoner breeding species that are absent from *large* geographical areas where suitable habitat appears to be available. Not stated as local are species that occur widely in the Keweenaw but are so rare that they occupy little of the available habitat (*e.g.*, Connecticut Warbler) and, usually, species whose habitat is local (*e.g.*, Rock Pigeon, Virginia Rail); in the former case, a low detectability rating (*e.g.*, rare) implies localness. In my opinion, no species in the Keweenaw saturates its habitat. "Locally" may also be used for a species that is unusually numerous at a few specific sites (*e.g.*, sewage ponds).

Nomad (*nomadic*): a species that within the stated season wanders in search of food, with little or no consistent geographical or temporal pattern.

Throughout: refers to a species that occurs over much of the Peninsula within its habitat. Small patches of suitable habitat may lack the species (a circumstance I believe pertains to all Keweenaw breeding birds).

Habitat. Climate, and to a lesser extent, soil and physiography, combine to produce a variety of habitats, mostly vegetative, which control bird distribution through selective adaptation. In this section, I give the preferred major habitats used by the pertinent species. Allocations to habitat are based on observations, mostly my own, on the Keweenaw Peninsula alone, and are not generalizations from elsewhere; as such, they are as yet incomplete. For breeding birds, I give only summer habitats, unless habitats at other times of year differ consistently or are of special interest. As often as possible, I mention both primary and secondary breeding habitats. Most bird species nest and feed in the same major habitat (although not necessarily the same microhabitat, with which I do not deal). For those that do not (*e.g.*, aerial feeders, some raptors, many waterbirds), I mention both. I give nest sites, for the few that are known, under Habitat or Breeding. Habitats during migration are given for some birds; these are generally much broader than in summer, although birds will usually adhere to broad classifications, such a open, shrub, forested, or aquatic situations, and will sometimes seek out habitats similar to those used on the breeding grounds (*e.g.*, Cape May Warbler in fir and spruce). The effects of man's alteration of habitat usually are discussed under Historical Changes.

In the present work, I employ a modified version of the habitat system developed by R. Brewer and D. Evers for the MBBA (Brewer *et al.*, 1991). Terrestrial habitats are named according to the dominant vegetation (or lack thereof), whether climax, subclimax, seral, or man-made. I use letters for subcategories to indicate there might be others elsewhere in the state or even in the Keweenaw, but these do not equate to the letters in the MBBA..

An outline of the habitats employed herein is presented below. The terms are essentially self-explanatory. For further details, see the MBBA (1991: 23-30, 65-66). The English and Latin names of the plants mentioned in this book are mostly from Barnes & Wagner (1981), and Brewer *et al.* (1991), and are given at the end of this section.

Dry deciduous forest. Grows on well-drained upland sites. Needle-leaved trees, if present, are <25% of the canopy. Takes over on drier sites where mesic deciduous and mesic mixed forests are heavily disturbed. Occurs in small patches, but abundant in the Keweenaw.

a. Quaking aspen or white birch forest, often including pin cherry.
b. Oak forest (red oak); includes small stands on well drained hilltops within mesic deciduous and mesic mixed forests.

Mesic deciduous forest. Grows on soils of medium moisture content where neither water-logged soils nor drought are regular limitations to plant growth. Needle-leaved trees, if present, are <25% of the canopy. The most extensive habitat in the Keweenaw.

a. Northern hardwoods (primarily sugar maple-yellow birch). Balsam fir is common in the understory.
b. Nearly pure sugar maple, a result of over-logging.

Wet deciduous forest. Grows on lowland sites (water table near surface). Needle-leaved trees, if present, are <25% of the canopy. Small and scarce on the Peninsula.

a. Swamp forest (lowland sites with American elm, red ash, red maple).
b. Deciduous bog forest (forest rooted in peat; black ash, red maple, yellow birch).

Dry mixed forest. Grows on well-drained upland sites. Broad-leaved and needle-leaved trees each provide at least 25% of the plant composition. Rare; found mostly on Baraga Plains, where much has been clearcut.

a. Pine-oak forest (red oak plus either jack pine or red pine).

Mesic/wet mixed forest. Grows on soils of medium to wet (but not flooded) moisture content where neither water-logged soils nor drought are serious limitations to plant growth. Broad-leaved and needle-leaved trees each provide at least 25% of the

plant composition. I combine the wet mixed and mesic mixed forests of the MBBA (1991), because in the Keweenaw I cannot separate the two. Second most abundant habitat; primarily on coastal plains.

a. Northern hardwoods with eastern hemlock (local on drier sites and when present usually the only canopy conifer), eastern white pine (widespread), balsam fir (abundant), white spruce (patchy) and northern white-cedar (especially common in, but not restricted to, wetter situations), and scattered red oaks.

Dry coniferous forest. Grows on well drained upland sites. Broad-leaved trees, if present, are <25% of the canopy. Most common on Baraga Plains, where pure stands of jack pine are abundant.

a. Pine (red or jack) forest.
b. Pine (red or jack) plantation.

Mesic coniferous forest. Grows on soils of medium moisture content where neither water-logged soils nor drought are regular limitations to plant growth. Broad-leaved trees, if present, are <25% of the canopy. Rare, mostly coastal, on sand ridges formed by old beaches.

a. Balsam fir-white spruce.

Wet coniferous forest. Grows on lowland sites (water table near or covering surface). Broad-leaved trees, if present, are <25% of the canopy. Tamarack and black spruce bogs with scattered trees are successional stages between open bog and wet coniferous forest.

a. Northern white-cedar swamp.
b. Black spruce bog.
c. Tamarack bog.
d. Mixed black spruce-tamarack bog.

Forest edge. Edge here refers to the low, dense, scrubby ecotone between a forest and a natural or man-made opening. The forest type is usually appended (*e.g.*, "edge of mesic deciduous forest"). Similar to shrub upland but shaded by forest canopy and narrow. A few birds prefer or are restricted to this belt (*e.g.*, White-throated Sparrow).

Shrub upland. Dense, woody growth up to 20 ft high growing on well-drained upland sites; canopy coverage >80%. Includes most old clearcuts and some areas of dense, woody invasion in old field situations.

a. Needle-leaved shrublands, especially jack pine. Occurs primarily on the Baraga Plains, where fairly common on older clearcuts.
b. Broad-leaved shrublands. Now decreasing as old fields and shrub uplands mature into forests. Some clear-cutting temporarily produces this habitat.
c. Mixed shrublands. One type is mixed young jack pine and stump red oak, found on the Baraga Plains.

Old field. Herbaceous vegetation is dominant; shrubs or trees, if present, generally widely spaced, with canopy coverage <80%, usually much less. Abandoned croplands fit here or in shrub upland, depending on the amount of shrub and tree coverage. Unused portions of gravel pits sometimes fit here. Once abundant, but now the original clearings (1850s to 1930s) are either farmed for hay or have matured into shrub upland or forest.

a. Grass-herb coverage sparse; few shrubs above 2 ft.
b. Grass-herb coverage dense; few shrubs above 2 ft.
c. Shrubs up to 6 ft.
d. Small trees up to 20 ft (if taller, goes in a forest category).

Grassland. Dry or mesic areas dominated by native or introduced herbaceous vegetation, primarily grasses. Woody plants, if present, generally widely spaced (coverage projected on ground <20%). Except for dune grass, there probably never has been any natural grassland on the Peninsula.

a. Dune grass (native). Very rare; confined largely to Great Sand Bay and Bete Grise, Keweenaw Co.
b. Goose grassland. Large fields of grass, wild flowers, and (in low situations) sedges created and heavily managed by the MDNR for grazing by geese; plants are both native and introduced. Baraga Plains only.
c. Grassy and weedy dikes around sewage ponds and some managed wetlands; some of these are similar to hayfields in that they are cut periodically, but all are narrow.

Pasture. Predominantly herbaceous; if overgrazing has led to heavy woody invasion, placed in old field category. Very little on the Peninsula, where today there are only a few horses and milk cows.

Hayfield. Herbaceous vegetation annually cut. Widespread in Baraga and Houghton Cos; only a few such fields in extreme western Keweenaw Co. The only extensive crop in the Keweenaw.

Row crop. Areas with herbaceous cover, planted in rows, which are intensively managed, including at least an annual modification of the area through cutting or other types of harvest methods. Vegetation may be annual or persistent, and areas are barren or sparsely vegetated during spring. In the Keweenaw today, restricted to a few, scattered, very small farms of little importance to birds. Excludes hayfields, the modern version of which, however, comes distressingly close to the definition of row crop (see Historical Changes in Discussions).

Shrub wetland. Dense, woody growth up to 20 ft in height growing on lowland sites (water table above or near surface). Trees or snags over 20 ft may exist if their canopy coverage is <50%. Very common around edges of open wetlands and most shallow open waters.

a. Speckled alder.
b. Sandbar willow/red-osier dogwood.

Open wetland. Herbaceous vegetation dominant on lowland sites (water table near surface). Areas may be seasonally, semi-permanently, or permanently flooded. Less than 50% trees or shrubs, usually much less in a and c. Wetlands are characteristically mosaic.

a. Sedge-grass marsh. Many abandoned beaver ponds fit here.
b. Open bog (may include shrubs such as blueberry, leatherleaf, and Labrador tea; see wet coniferous forest). Common but usually small. One extensive bog is at Pt. Isabelle, Keweenaw Co.
c. Cattail marsh. Scarce, mostly small; often clogged with vegetation, due at least in part to man's interruption of natural drainage, and hence much less attractive to birds.

Open water. Permanent bodies of water including lakes, rivers, and floodings. Nonpersistent or submergent vegetation may be present.

a. Stream (<6 ft wide).
b. River (>6 ft wide).
c. Bay. Small extensions off Lake Superior that may look like lakes but have open mouths, colder waters, and different ecology.
d. Lake. Includes reservoirs, some of which, however, are too young to have developed lake ecology. Beaches, which are extensive only on Lake Superior, are vegetationless due to wave action.
e. Natural pond. Terrestrial vegetation continuous from edge. Areas with only emergent aquatic plants, like cattails, are placed in open wetlands.
f. Beaver pond with multiple snags. Old beaver ponds that have given way to marsh (usually sedge-grass) are placed with open wetlands.
g. Sewage pond. Shallow, open-water, diked pits with fluctuating water level (full to dry) due to evaporation and seepage; high in nutrients (see shoreland). Managed for sewage and storm runoff, not birds. At least eight such systems are found on the Peninsula, some temporarily excellent, others always poor, for birds. See Discussions: Shorebird Migration at Sewage Ponds.

Shoreland. Barren or sparsely vegetated areas next to bodies of water.

a. Stamp sands. Small to very large piles of coarse gray sand produced by copper mining operations; sterile and essentially birdless. Mostly coastal. Those around Torch Lake, Houghton Co., were covered with earth and planted with grass in 1999-2001, some probably (it's a secret!) in preparation for development.
b. Bedrock shore and nearshore islets (Keweenaw Co. only); largely birdless except for resting birds and, on islets, nests of Red-breasted Merganser and Herring Gull.
c. Pebble beach. Birdless except for an occasional resting shorebird.
d. Natural sand beach. Lake Superior beaches are too clean (!) to provide adequate food for foraging shorebirds.
e. Mud flats (at sewage ponds), bars (at river mouths; some sandy), and edges (narrow shores of some lakes, ponds, and rivers).

Poor-rock piles. Piles of small pieces of subterranean rock removed from now abandoned copper mines. Small and now disappearing slowly as used for construction.

Orchard. Patches or rows of fruit trees; now mostly abandoned and degenerating, but apples used by some birds (and Black Bears).

Rural settings. Country buildings and yards (farm houses, hunting and summer cabins, widespread homes, and abandoned buildings such as sheds and mine lifts), country roadsides, bridges, fencerows, and hedgerows. Areas moderately disturbed by human activities and very mosaic. Vegetation occupies >90% of area.

Residential settings. Tracts of residential homes, with many streets, small to large trees, and tended lawns, gardens, and hedges. Vegetation occupies 10 to 90% of area, often about 75%. The "residential" habitat of the MBBA (1991) is a combination of my rural and residential settings.

Urban settings. Core city. Dominated by buildings, streets, and sidewalks, with vegetation occupying <10% of area. There are no urban parks of consequence in the Keweenaw.

Plants mentioned in this book.

alder, speckled (*Alnus rugosa*)
apple, common (*Malus pumila*)
ash, black (*Fraxinus nigra*)
ash, red (*Fraxinus pennsylvanica*)
aspen, bigtooth (*Populus grandidentata*)
aspen, quaking (*Populus tremuloides*)

birch, white (*Betula papyrifera*)
birch, Yellow (*Betula alleghaniensis*)
blueberry (*Vaccinium* sp.)
cattail (*Typha* sp.)
cherry, black (*Prunus serotina*)
cherry, choke (*Prunus virginiana*)
cherry, pin (*Prunus pensylvanica*)
dogwood, red osier (*Cornus stolonifera*)
duckweed (*Lemna* sp.)
elm, American (*Ulmus americana*)
fern, bracken (*Pteridium aquilinum*)
fir, balsam (*Abies balsamea*)
grass, dune (*Calamovilfa longifolia*)
hemlock, eastern (*Tsuga canadensis*)
juniper, ground (*Juniperus communis* var. *depressa*)
leatherleaf (*Chamaedaphne calyculata*)
lichen, usnea (*Usnea* sp.)
lilac, common (*Syringa vulgaris*)
linden (*Tilia americana*)
maple, red (*Acer rubrum*)
maple, sugar (*Acer saccharum*)
marigold, marsh (*Caltha palustris*)
moss, reindeer (*Caldina* sp.)
moss, sphagnum (*Sphagnum* sp.)
mountain-ash, American (*Sorbus americana*)
oak, red (*Quercus rubra*)
pine, eastern white (*Pinus strobus*)
pine, jack (*Pinus banksiana*)
pine, red (*Pinus resinosa*)
sedge (*Carex* sp.)
serviceberry (*Amelanchier* sp.)
spruce, black (*Picea mariana*)
spruce, Colorado blue (*Picea pungens*)
spruce, white (*Picea glauca*)
tamarack (*Larix laricina*)
tea, Labrador (*Ledum groenlandicum*)
thimbleberry (*Rubus parviflorus*)
white-cedar, northern (*Thuja occidentalis*)
willow (*Salix* sp.)
willow, sandbar (*Salix interior*)
yew, Canada (*Taxus canadensis*)

Migration Dates. *Selection and Presentation of Dates*. Four kinds of dates are used to describe arrival and departure in spring and fall: *extrememost*, *subextreme*, *normal extreme*, and *median annual extreme*. These were chosen from a data base of about 6700 arrival and departure dates compiled by Binford *et al.* (1999b), plus a considerable number of more recent records (through 1 June 2005). Definitions and other information regarding these terms are given in subsequent paragraphs entitled Extreme Dates and Median Dates.

Extrememost dates, each followed immediately by relevant subextremes and the normal extreme, if necessary (see below), are listed for each applicable date period, chronologically for arrivals and in reverse chronology for departures, using the following order and abbreviations: Spring Earliest Arrival Date (SEAD), Spring Latest Departure Date (SLDD), Fall Earliest Arrival Date (FEAD), and Fall Latest Departure Date (FLDD).

In addition to extreme dates, peak dates are given when the data allow. These are calculations or estimates of the date or date span during which a species is most detectable during a stated season; they are abbreviated SP for spring peak and FP for fall peak.

Finally, the median dates for each applicable date period are given under their respective abbreviations, as follows: Spring Median Arrival Date (SMAD), Spring Median Departure Date (SMDD), Fall Median Arrival Date (FMAD), and Fall Median Departure Date (FMDD). For easy interspecific comparisons and to anticipate migration events, median dates are also presented taxonomically and (separately) chronologically in Tables 3, 5, 6, 7, and 9.

Extreme, median, and peak dates are intermixed chronologically (SEAD, SMAD, SP, SMDD, SLDD, FEAD, FMAD, FP, FMDD, and FLDD) except for winter residents, for which fall dates precede spring dates (FEAD, FMAD, SMDD, SLDD).

For any particular date period, I may omit extreme, median, or peak dates, usually without comment, if the period is inappropriate (*e.g.*, fall departure for a winter resident), dates are lacking or impossible to separate from those of a different season (*e.g.*, fall versus winter), or data are insufficient for calculation (peaks). Median dates may be further excluded if the extreme dates used for calculation are too few, temporally scattered, or inseparable from the other part of the same season (*e.g.*, spring arrival versus spring departure).

For most summer residents and transients, December dates (such as on the Houghton County Christmas Bird Count) may represent either late migrants or birds attempting to over-winter, some of which might be successful, others not, the difference varying from year to year depending on the severity of environmental conditions, food availability, and adaptations of the particular species; most leave in January or February or fail to survive winter. Some species possibly move back and forth with shifts in the snow line (Snow Bunting?) or ice line (Common Goldeneye?). I consider most December records of summer residents or transients to represent attempted wintering and therefore often present all early winter dates, under Migration Dates or Significant Records, when the species is not known from January or February or when status differs (as it usually does) between the two half-seasons. Species for which early and late winter records form a continuum are treated as permanent or winter residents or are

discussed.

Many summer, winter, and even permanent resident species also have transient populations, which most regional works ignore, because distinguishing between the two is often impossible. For some of the rarer summer residents (*e.g.*, Ruby-crowned Kinglet), however, data were collected at localities and in habitats where they do not breed, so that arrival and departure dates for both spring and fall could be determined. Also, for more common summer residents, I often give spring late departure or fall early arrival dates using my personal records believed *conclusively* (by me) to represent transients, because all were seen outside their local breeding range and habitat, or (ducks) did not summer at or near the localities of observation during the years when data were used; none was singing or apparently on territory; most were in moving, usually mixed, flocks; most were gone the next day; and some were actively migrating overhead. Such data are extremely valuable for determining the exact status of a species, and other authors are encouraged to gather and publish such records. All one needs is a locality isolated from relevant breeding habitats, such as a city park or, as in my case, a rather barren town (Copper Harbor) or a small area where the breeding birds are exceptionally well known (*e.g.*, Agate Harbor, Keweenaw Co.).

Extreme Dates. All-time extrememost dates are useful for delimiting seasonal occurrence for species but often are aberrant, being widely separated from the next recorded date (*e.g.*, see FLDD for the Yellow Warbler). Therefore I often follow it with one to several *subextreme* dates, the *last* of which is a third kind of important date—the *normal extreme* date. This last is the more usual time when a species would be expected to *begin* arriving or *end* departing; it should not be confused with the median, which is an approximation of the *average* date of annual *extreme* occurrence (including unusual dates).

Ideally, the normal extreme date is the one after which there are no gaps, *i.e.*, at least one annual extreme date has been recorded for every calendar day. Unfortunately, determination of the exact normal extreme would require far more data than available for the Keweenaw. However, it can be approximated by increasing the permissible gap length above zero days. A 10-day gap best conforms to the present data. In many cases the extrememost date is nine or fewer days removed from the next available subextreme date and therefore *is* the normal extreme date; no subextremes need be given. Additional subextremes are presented until the next available date is nine or fewer days removed. The last date, whether the extrememost or a subextreme, begins a loose continuum of dates nine or fewer days apart and thus may be considered the normal extreme date. Within such a series, ***no date of record has been omitted.*** In a few instances, I give subextremes even when less than 10 days apart, considering all but the last aberrant. When two or more records fall on the same date in different years, I give all.

Each extreme date is followed in parentheses by the number of individual birds (sometimes), museum abbreviation and catalog number if a specimen, exact locality, county abbreviation (B, H, or K), initials (see Key) or name of the primary observer or collector, and sometimes citations or a short note. I usually do not give citations for records of frequently cited observers (*e.g.*, A. S. Weaver, J. Youngman, or myself) published in the Michigan Bird Survey, as they were taken directly from the observer's original notes.

Median Dates. Each median presented is a measure of the "average" date of all annual earliest arrivals or latest departures. Medians are the most useful dates for comparisons with other Keweenaw species and with similar studies elsewhere. I chose medians over arithmetic averages because medians de-emphasize the effects of aberrant dates and are better suited to dispersed data. Medians should not be confused with "peak dates," which are a measure of the time of maximum detectability. Normally, I calculated medians from all available annual extreme dates. Occasionally, however, all dates happened to be from one county or I purposely selected dates from a single county, locality, observer, or particular period of years because they were more representative or significantly more clumped; each such case is noted. For fall median departure dates, I include early winter lingerers for species considered still capable of migration (*e.g.*, waterfowl) but not others (*e.g.*, insectivorous passerines). When the total number of annual extreme dates was an even number, the median fell between two dates, in which case I used the earlier for arrivals and the later for departures. Sample size (n) is given in parentheses for each median. The reader may use this as a rough measure of the validity of the date—the larger the sample, the more accurate the median; in general, I consider n=15 as a good measure, but this varies according to the degree of clumping of the dates. Low sample size was not considered a deterrent if the dates used for calculation were well clumped. The average sample size per median is 16.6 (n=368; range 4-30).

Significant Records. Records that are important in supporting the summary statements under Status and Range, but do not fit easily there or into other appropriate sections (*e.g.*, Migration Dates) are placed under Significant Records.

For casual and accidental (and some occasional) species, all records are listed either here or under Status and Range. For some commoner species, I give records of special interest, particularly those that are unusual

for a particular region or season. Records are listed chronologically by month and day, regardless of year, starting with spring, except for those demonstrating historical changes, which are given in order of year, month, and day. Data are listed usually in the following order: (1) date; (2) number of individuals (in parentheses) if known (the reader should *not* assume the number is one if not given) followed, when known and appropriate, by age, sex, museum abbreviation (see Key), and catalog number of specimens (which are all study skins unless otherwise noted); (3) locality; (4) county abbreviation (except for well known or often cited localities, see Key); (5) name or initials of the primary observer (see Key) or collector, who usually is the documentor and not necessarily the finder (who sometimes is mentioned if known, excluding myself); (6) sources of the data (citations; most records are unpublished and from the original field notes of the given observer; usually I do not cite "orig. notes"); and (7) comments. For the records of frequently mentioned observers (*e.g.*, A. S. Weaver, Joseph Youngman, and myself) published in the Michigan Bird Survey, citations are given only for some rarities or to correct errors; for other citations therein, I give "JPW" (Jack-Pine Warbler) or "MBNH" (Michigan Birds and Natural History), volume, and page, without author (*i.e.*, compiler). Published (but not unpublished) records I do not accept are usually listed in brackets ([]) and discussed; the observer's name usually is deleted. Errors in the literature are mentioned here or under the appropriate section and only if important.

High Counts. To provide information on the maximum number of individuals that might be found in one day, I present the highest one-day, single-party total of five or more birds (not including attended young unless so noted) for each season (see Seasonality) of occurrence for the species, including those obtained during Breeding Bird Surveys. For species that exhibit seasonal movements, high counts help identify periods of peak movements. For permanent, summer, and winter residents, counts give some indication of their detectability. Multi-party counts are given only when they exceed all single-party totals, or when none of the latter exceeds four individuals. All multi-party counts are from the North American Migration Count (NAMC) in early May or the Houghton County Christmas Bird Count (HCCBC) in December; these two censuses may provide totals from single parties as well, when I have been given the data. I could have combined the Houghton and Baraga County Migration Counts to give one multi-party total, because these are taken on the same day each year, but I have chosen not to. Multi-party counts are always so designated, whereas single-party totals are not. Only the highest multi-party count is given, even though others might exceed the highest one-party count. Seasons lacking any count over four are simply ignored. More than one high count per season may be given to demonstrate a range of numbers, dates, behaviors, or localities, but in no case do I have counts that exceed the ones given. Within a season, I usually give only one high for any given year. For selected rarities, I may give highs of less than five. Note that many spring high counts, when in the species' breeding habitat, almost certainly include a mixture of summer residents and transients.

Although I use seasonal terms, the maxima are really intended to reflect highs for spring migrants (**spring**), breeding birds (**summer**), fall migrants (**fall**) and winter residents (**winter**), according to the particular seasonality of each species. Thus a high for a transient shorebird in July would be listed as fall. **Early winter** is substituted for **winter** when the species does not occur in January or February, or is given in addition to **late winter** when detectability definitely or possibly differs between the two periods.

The maxima given here were obtained mostly during normal birding trips in a variety of habitats and therefore depend on how much suitable habitat for the species was covered during the day, the number of hours afield, and the skill of the observers, especially in voice identification. In fact, much higher totals could almost certainly be obtained for virtually every species if a party dedicated an entire day to finding only that species. For raptors at Brockway Mt., Keweenaw Co., high counts are based on birds migrating west to east; birds moving westward are here treated as repeats, although some might not have been.

Breeding. Little attention has been paid to recording breeding data for the Keweenaw Peninsula. The maps published in the Michigan Breeding Bird Atlas (MBBA; Brewer *et al.*, 1991) provide the primary source for the Peninsula as a whole and for each county. Although the MBBA adequately, if incompletely, portrays range, it provides too few data to define the breeding period, annual number of broods, or clutch size, all of which vary geographically within species. Fortunately, I myself undertook the primary field work in 46 of the 71 priority blocks in the Keweenaw, as well as in 14 non-priority blocks. Although I was usually "block-busting" at the request of the Atlas authors and had little time to search for nests, I recorded into my personal notes some confirmed and probable breeding records and use them here. These are supplemented by my other notes and those of L. Murphy, J. Youngman, A. S. Weaver, and others, the literature, and the nest card files of the Cornell Laboratory of Ornithology (CLO).

Immediately after the heading Breeding, I give, in parentheses, for each county (abbreviated B, H, and K) the number of confirmed (abbreviated "co"), probable ("pr"), and possible ("po") breeding records shown on

the MBBA map (1991) plus those that I have accumulated and present in detail. A county may be omitted when not even "possible" evidence is known to me. I have made no attempt to include in this summary the many "possible" records in my possession, and I have included "probable" records only for rarities or sometimes in the absence of confirmed records; totals for these two categories, therefore, are based almost completely on the MBBA maps. This procedure, then, provides as many confirmed records as possible, including the pre-Atlas and post-Atlas periods. For definitions of the these three breeding terms, see the MBBA (Brewer *et al.*, 1991).

Below the Breeding heading I list, usually in chronological order by month and day, all "confirmed" and some "probable" records in my possession, sometimes followed or in a few cases even replaced by a "summary." For some species, records are listed by year and month for historical appraisal. For each record, data are listed in much the same order as for Significant Records (which see). Published records (including MBBA map spots, 1991) that I consider erroneous or highly doubtful are listed in brackets ([]). An asterisk (*) marks records shown as spots on the MBBA map (1991); in many cases, however, more than one breeding record may be represented by a single map spot, in which case I give all; for instance, for Common Merganser, the MBBA map shows one confirmed spot in the township that includes Agate Harbor, whereas I list 11 records for that location. For many of the map spots, detailed data were never recorded or are unavailable from the Kalamazoo Nature Center (R. J. Adams, pers. comm.) and thus cannot be listed herein. One term I coined (Binford, 1989), "prejuvenile," may be unfamiliar to the reader; see definition in the Key. General (non-Keweenaw) statements concerning a species (*e.g.*, number of broods) are from the MBBA (1991) or Baicich & Harrison (1997) and are always so identified.

Summaries for warterfowl and a few other precocial species give the range and average size of observed broods, which, because of nest and post-nest mortality, are of little value in determining clutch size; however, these do give a meassure of productivity, and when combined with known (literature) clutch size, provide a rough estimate of survival rate.

There are 83 geographic townships on the Peninsula; however, 6 received no coverage during MBBA years (1983-88). In the Species Accounts, I sometimes give the number of townships in which a species was recorded by Atlas participants (*i.e.*, not including non-Atlas records); such a number is out of the 77 censused townships. Also, four townships are split by the north-south, Baraga-Houghton county line; my allocation to county is based on priority blocks, two of which are in each county.

Breeding Bird Surveys (BBS). The US Geological Society, through the USGS Patuxent Wildlife Research Center (Laurel, MD), together with the Canadian Wildlife Service, coordinate a program known as the North American Breeding Bird Survey (BBS). Two BBS routes are run entirely within the three counties treated herein in: Bootjack (route no. 49004) in Houghton and Keweenaw Cos., conducted 11-23 Jun in 1967-73, 1986, and 1992-2005, and Herman (route no. 49006) in Baraga Co., run 1-7 Jul in 1983-85, 1990-91, 1993, and 1997. Several other routes, not used here, embrace portions of the Keweenaw but also parts of Iron or Ontonagon Cos.

In each pertinent Species Account, for 21 of the 22 counts at Bootjack (through 2005, excluding 1986) and all 7 at Herman, I give the total, mean, and range of number of individuals and percent of counts on which the species was seen. The Bootjack data are divided into earlier (1967-73) and later (1992-2005) periods, which are 28.5 years apart (comparing median dates) and are therefore useful in demonstrating recent historical changes.

I have used the Bootjack and Herman counts also to determine single-party high counts and, in conjunction with other data, summer detectabilities. The Herman count should be used with caution, because it has been taken in early Jul, when singing is much reduced and some species (*e.g.*, Killdeer, swallows) are beginning to flock. BBS data are available on Internet (www-pwre.usgs.gov/bbs/).

North American Migration Counts (NAMC). This count (NAMC) is conducted one day each year in the second week of May, and therefore is often referred to as the "Spring Count." It is run like a Christmas Bird Count except that the area censused is an entire county. A number of participants record all birds seen and heard and note hours, miles, etc. On the Keweenaw Peninsula, Baraga and Houghton Cos. have been covered starting in 1994. However, because of possible inacuracies in the number of party hours in earlier censuses, I have used only 1997 (37.75 party hours), 1998 (49.5), 1999 (54.5), 2000 (48.5), 2001 (46.25), and 2002 (20.75) for Baraga Co. and 1996 (38.75), 1997 (31.5), 1998 (37), 1999 (35), 2000 (29.5), 2001 (65.25), and 2002 (41.6) for Houghton Co. I have used these counts as one of several sources to determine spring detectability, arrival and departure dates, and multi-party (and single-party, when available) high counts.

In each pertinent Species Account, I give the total, mean, and range of number of individuals, number and percent of counts on which the species was seen, and the number of individual birds per party hour (ind/PH). The last statistic allows rough comparisons between the two counts and with counts elsewhere; the reader may multiply this by 4 or 8 hours to obtain a very rough estimate of how many individual birds a single party might see in a half or whole day. However, care must

be used in interpreting these data, because the counts in the Keweenaw are taken before most individuals of insectivorous species arrive and hence are poor indicators of their spring abundance.

Christmas Bird Counts. Each year the National Audubon Society (NAS) conducts bird censuses in the last half of December or early January. Each count area is a 15-mile diameter circle in which observers, in as many parties as possible, attempt to record all species and individual birds. The results of the Houghton County and Eagle Harbor counts are detailed under Christmas Bird Counts in the Discussions, and composite lists are presented in Tables 15 and 16.

Houghton County Christmas Bird Count (HCCBC). One Christmas count has been conducted on the Keweenaw Peninsula every December since 1976—the Houghton County Christmas Bird Count (HCCBC), centered in the middle of Portage Lake at 47°04'N, 88°30'W and including Hancock, Houghton, South Range, Chassell, Jacobsville, and Rabbit Bay.

In each applicable Species Account, I give the total, mean, and range in number of individuals seen on the combined 26 counts used here (1976-2001), the number and percentage of counts on which the species was recorded, and the number of individuals per party hour (total party hours 1179.5, not including owling or feeder hours), given as "ind/PH." Data were taken or calculated from figures published annually by the NAS and may differ slightly from other sources (Jack-Pine Warbler annual compilations ; Weaver, 2000).

For species recorded only a few times, all data may be given, usually under Significant Records. Data were used to determine multi-party high counts and, combined with other information, early winter detectabilities. Trends indicated by HCCBC data are discussed in the individual Species Accounts under Historical Changes and in the Discussions under Christmas Bird Counts, Effects of Climate and Bird Feeders on the Wintering Avifauna, and Historical Changes.

Eagle Harbor Christmas Bird Count. Another count, entitled "Eagle Harbor," was initiated by my parents, W. H. Binford and Irene E. Binford, and me on 24 December 1962 and run again on 29 December 1963 (Binford, 1963, 1964). It is centered in the middle of Sec. 5, T58N, R29W, to include Agate Harbor, Bete Grise, Copper Harbor, Delaware, Eagle Harbor, Lac La Belle, and adjacent Lake Superior, all in Keweenaw Co. In December 1999 this count was resurrected by J. M. Musser. It is not given a specific heading in the Species Accounts, as too few have been taken to demonstrate trends, but the data are given in Table 16 and evaluated under Christmas Bird Counts in the Discussions.

Other Christmas Counts. Prior to the HCCBC, a "Christmas count" was conducted by B. and D. Wolck each December from 1964 through 1973 and published in the Jack-Pine Warbler but not by the NAS. Because it was a one-party count and did not encompass exactly the same region, and therefore is not strictly comparable with today's count, I do not give these data; however, supported by information from the B. Wolck (in litt.), I have included selected records in the Species Accounts.

Banding Recoveries. The origins and destinations of Keweenaw birds are of interest. Banding recoveries discussed here demonstrate breeding and wintering grounds and migration routes and show, for instance, that some species move on an east-west rather than north-south axis, and one (Canada Goose) has different races with their own agendas.

I obtained from the USGS Bird Banding Laboratory (Laurel, MD) a computer printout of all band recoveries for birds banded in the Keweenaw Peninsula and recovered elsewhere, banded outside but found in the Keweenaw, or both banded and recovered on the Peninsula. Unfortunately, the computerized localities available today are accurate only to the inclusive 10-minute block, an area of about 95 square miles, so that local bird movements cannot be assessed. Also, because blocks often overlap counties adjacent to the Keweenaw, many records had to be ignored. Consequently, for records given herein, I usually restrict intra-Peninsula localities only to the county or multi-county level, and extra-Peninsula records to state, province or (Latin America) country. Birds banded and recovered in the same block, even during different years, are largely ignored, because this phenomenon is well known, and the localities are not detailed enough to produce useful results. All birds mentioned were banded in free-flying stages unless noted as non-flyers or "prejuveniles," which herein, *for banding data only,* include nestlings.

I include my interpretations of the geographic and temporal patterns shown by banding data alone. In general, January, February, and early March are considered winter, and June and July as the breeding season, with most other periods treated as migration or uncertain. Longevity is mentioned only in extreme cases. In a few instances I include bandings or recoveries in counties adjacent to the Keweenaw (Dickinson, Iron, Ontonagon, and Marquette) to give some idea of the source or destinations of Keweenaw birds.

Historical Changes. In this section, I discuss known or suspected changes in status *as demonstrated by Keweenaw data.* Although Kneeland (1857) was the first to address the birds of the Peninsula and is often cited in the MBBA (Brewer *et al.*, 1991), I use it only hesitantly, as the number of rarities and lack of certain common species listed suggests that this publication is not very reliable. The only other early publications are Cahn (1918) for 1914, Wood (1931, 1933, 1951) for 1931, Wing

(1939) for 1931-32, and Wallace (1949). The major works on the state rarely mention the Keweenaw Peninsula but, especially the MBBA (1991), are very useful for interpreting Keweenaw changes in light of the broader state or continental picture.

The populations of many species on the Peninsula appear to me to be in a state of flux. Possibly these are only temporary trends, but I discuss them anyway. Particularly useful in this regard are data from the Bootjack BBS taken first in 1967-73 and then about 25 years later in 1992-99; some comparisons between the two are startling. The HCCBC also reveals some trends, as do unpublished notes in my possession. The effects of man's alteration of habitats usually are discussed here rather than under Habitat. See also Historical Changes under Discussions, where the details in the Species Accounts are summarized.

Remarks. Miscellaneous comments that do not fit in other sections are presented here.

GAZETTEER

Most localities in the Keweenaw are readily identifiable on county maps. Those that are not are defined below. Counties are abbreviated as follows: B=Baraga, H=Houghton, and K=Keweenaw.

Agate Harbor, K. A bay off Lake Superior centered about 5.5 mi east of Eagle Harbor and including two narrow peninsulas projecting westward parallel to the mainland that enclose two smaller bays. Virtually all data are mine and are from T59N, R29W, Secs. 30 and 3l. Today, "Agate Harbor" is used by local inhabitants to denote the group of houses adjacent to these three bays. I spend summers here.

Arnheim, B and H. Local name for the MDNR's Sturgeon River Sloughs Wildlife Area, Units 2-8 (and environs), which extends for about 3 mi northwest of Arnheim, an unincorporated settlement in T52N, R33W, Sec. 10, about 9.5 mi north of Baraga. The Baraga-Houghton Co. line bisects the Wildlife Area between Units 6 (Houghton) and 7 (Baraga); for some records, the county was unrecorded and is given herein as "B or H," meaning "Baraga Co. or Houghton Co."

Atlantic Mine, H. A village about 3 miles west-southwest of Houghton in T54N, R34W, Secs. 4 and 9. Shown incorrectly on some maps as "Atlantic."

Baraga Plains, B. A sandy-soiled, flat, upland covered primarily with heavily logged jackpine forest interspersed with ponds, black spruce bogs, red pine stands, goose grassland, and scattered red oaks, located southwest of Baraga and bounded roughly by US Forest Service Road 191 on the west, the middle section lines of T50N, R34W on the north, the Ogemaw River on the east, and the Sturgeon River on the south. Most data were gathered in the vicinities of the Big Burn Field, Big Lake, Big Lake Field, Honker's Pond, Little Lake, upper Menge Creek Road, Plains Road and Prison Camp Road.

Baraga sewage ponds, B. A group of eight sewage treatment ponds serving the town of Baraga, located in T50N, R33W, Sec. 1 on Dump Road about 1.5 mi southwest of Baraga and about .5 mi west of Baraga State Park.

Brockway Mt., K. An east-west mountain ridge, the first inland from Lake Superior, the high point of which, called West Bluff, is located in T59N, R29W, Sec. 34, 4 mi west of Copper Harbor and supports a gift shop and county maintained overlook. West Bluff, shown incorrectly on some maps as "Mt. Brockway," has been designated, at my request, a national Important Bird Area by the American Bird Conservancy, because of the annual spring migration of over 15000 raptors. See further description under Raptor Migration in Discussions.

Cole's Creek mouth, H. Confluence of Cole's (or Coles) creek and Portage Lake, located in T55N, R34W, Sec. 28 about 3 mi west of Houghton.

Dan's Point, K. A small, nearly indistinguishable point, the northernmost place in mainland Michigan, jutting into Lake Superior in T59N, R29W, Sec. 27, about 4 mi west of Copper Harbor.

Hebard Park, K. A tiny roadside park located in T59N, R29W, Sec. 26 on Lake Superior along highway M 26 about 2.5 mi west of Copper Harbor.

Houghton County Christmas Bird Count (HCCBC), H. A 15-mile diameter circle centered in Portage Lake 4.75 mi south-southeast of Houghton. Not to be confused with the "Houghton Christmas Bird Count" conducted by B. and D. Wolck in Decembers 1964-73 and published only in the Jack-Pine Warbler. See section entitled Christmas Bird Counts under Plan of the Species Accounts.

Lake Medora gap, K. North of Lake Medora, this is a low point (gap) between two in-line mountain ridges, one called Rocky Ridge (east side) and the other containing Mt. Lookout (west side). This is a shortcut in spring between Keweenaw Bay and Lake Superior proper for large numbers of Common Loons, Double-crested Cormorants, and Canada Geese, which can be seen from the West Bluff of Brockway Mt.

Lake Superior. In the Species Accounts I use this name to refer only to the Lake off the northern and western shores of H and K. Waters on the south and southeast sides are referred to as Keweenaw Bay, the head of which is L'Anse Bay.

L'Anse Bay, B. The southernmost portion of Keweenaw Bay, located south of a line from Indian Cemetery Road just north of L'Anse west to include Sand Point just north of Baraga.

Liminga, H. A district that at one time had a post office,

located along Liminga Road west of Schmidt Corner and about 6 mi west-northwest of Houghton. Records so designated were obtained on or near farms formerly owned by D. R. Weaver (T55N, R35W, southeast quarter of Sec. 13) and A. S. Weaver (T55N, R34W, northwest quarter of Sec. 19).

North Portage Entry, H. My name for the location where the Portage Ship Canal meets Lake Superior in T56N, R34W, Sec. 28 about 7 mi north of Hancock. Not named on maps I have seen.

Obenhoff, H. A former settlement in T54N, R35W, Sec. 1 on Obenhoff Road 3 mi west of Atlantic Mine.

Portage Lake system, H. My name for the combination of Portage Lake proper, Portage Ship Canal north of Oskar, Pike Bay (Chassell), Torch Bay, Torch Lake, and the Portage River from the lake to South Portage Entry.

Sands, H. An extensive area of mining stamp sand and the former site of Houghton Sands Airport, located in T55N, KR33W, Secs. 31 and 32, and T54N, R33W, Secs. 4 and 5. Forms part of the Portage Lake shoreline from eastern Houghton to the Pilgrim River mouth just east of the city limits; now mostly developed. "Sands" is used for older records when the area was undeveloped, more extensive, and much better for birds; recent records appear under the name Pilgrim River mouth, which is all that is left.

South Portage Entry, H. My name for the mouth and adjacent portions of the Portage River in T53N, R33W, Sec. 24, 1 mi west of Jacobsville. Shown on maps as "Portage Entry."

Sturgeon River Road, H. A road starting at highway US 41 about .5 mi south-southeast of Chassell and extending about 4 mi south along the Sturgeon River.

Sturgeon River Sloughs, H. Includes T53N, R33W, Secs. 3, 4, 5, 8, 9, and 10; T54N, R33W, Sec. 33. The northern section of the MDNR's Sturgeon River Sloughs Wildlife Area, located about 2 mi southeast of Chassell and including Unit 1, with its deVriendt Nature Trail. I usually include the Sturgeon River from its mouth to a short distance west of highway US 41 and the marshes and ponds between the river and Unit 1, but sometimes restrict records to the mouth.

Whitefish Point, Chippewa Co. Always refers to data from the Whitefish Point Bird Observatory, a field station of the Michigan Audubon Society (see Granlund & Byrne, 1996).

Youngman's property, B. An approximately 40-acre area including J. Youngman's property and adjacent lands, located in T51N, R32W, northwest quarter of Sec. 22, about 6 mi northeast of L'Anse.

KEY

Breeding (see definitions in the Michigan Breeding Bird Atlas, Brewer *et al.*, 1991)

co = confirmed

pr = probable

po = possible

* = denotes a particular record (not just the same locality) that formed the basis for a spot on the MBBA map (1991).

prejuvenile = a young bird of a nidicolous or nidifugous species that has left the nest but has not yet attained full growth of its first set of adult-sized juvenile remiges or rectrices (see Binford, 1989: 66). For records that are not mine, I use whatever term was applied by the observer (*e.g.*, fledgling, chick, downy, young), unless I know prejuvenile was meant.

Counties

B = Baraga Co. (not given for city of Baraga, Baraga Plains, Baraga sewage ponds, L'Anse, or L'Anse Bay).

H = Houghton Co. (not given for Calumet, Calumet Lake, Calumet sewage ponds, Hancock, city of Houghton, Lake Linden, Liminga, Portage Lake, Portage Lake system, Sturgeon River mouth, or Sturgeon River Sloughs (Unit 1).

K = Keweenaw Co. (not given for Agate Harbor, Brockway Mt., Copper Harbor, or Manitou Is.).

Migration dates

FEAD = Fall earliest arrival date.

FLDD = Fall latest departure date.

FMAD = Fall median arrival date.

FMDD = Fall median departure date.

FP = Fall peak.

SEAD = Spring earliest arrival date.

SLDD = Spring latest departure date.

SMAD = Spring median arrival date.

SMDD = Spring median departure date.

SP = Spring peak.

Museums

CLO = Cornell Laboratory of Ornithology, Ithaca, NY.

MSU = Michigan State University Museum, East Lansing.

MTU = Michigan Technological University, Houghton.

UMMZ = University of Michigan Museum of Zoology, Ann Arbor.

Observers often cited

TA = Tom Auer.

LB = Laurence C. Binford.

RH = Russ Hanson.

JK = Joe Kaplan.

JM = Jake Musser

LM = Lynn Murphy.

AW = Arthur S. Weaver.

JY = Joseph Youngman.

Published data sources

AB = American Birds, National Audubon Society (formerly Audubon Field Notes).

AFN = Audubon Field Notes, National Audubon Society.

BBS = North American Breeding Bird Survey.

FN = Field Notes, National Audubon Society (formerly American Birds).

HCCBC = Houghton County Christmas Bird Count.

JPW = Jack-Pine Warbler.

MBBA = Michigan Breeding Bird Atlas (Brewer *et al.*, 1991).

MBNH = Michigan Birds and Natural History.

MBRC = Michigan Bird Records Committee (reports in JPW or MBNH).

MBS = Michigan Bird Survey, published in JPW or MBNH.

NAMC = North American Migration Count.

NAB = North American Birds, American Birding Association (formerly Field Notes).

Other abbreviations

DBH = diameter of trees at breast height.

ind = individual birds.

MDNR = Michigan Department of Natural Resources.

PH = party hours.

[ ] = brackets enclose data I do not accept, except in the case of bird name headings of some Species Accounts (see Acceptance of Records).

SPECIES ACCOUNTS

Greater White-fronted Goose *Anser albifrons*

Status and Range (B, H, K). Casual **spring** transient; 7 records, 4 Mar-14 May. Here not considered a vagrant, because it seems to be spreading its migration route eastward (J. Granlund in McPeek & Adams, 1994).

Habitat. Seen grazing in grassy fields, on dikes of a sewage pond, and at a creek mouth in a coastal village.

Significant Records (all).

4 Mar 2000 (1) Eagle Harbor, K, TA (photos seen by LB), M. Scheiwe.

25, 26, 28, 31 Mar 95 (5) Myllyla's farm field, Arnheim (not Pelkie as in MBNH 2:211) B, S. Andres, LM, JY.

19 (RH, JK) to 20 (JM) Apr 2002 (1) Myllyla's farm field, Arnheim, B.

19 [not 26 as in MBNH 8:201] Apr-14 May 2001 (1) Chassell sewage ponds, H, LB, R. Brigham, RH, JK, JM, LM, JY (finder), NAMC.

Early May 81 (1) Arnheim area, B, B. Sandberg (Weaver, 2000); see 7 May below.

7 May 81 (1) Liminga, .25 mi W Schmidt Corner, AW, D. Weaver; injured but flying (AB 35:826; JPW 59:106; Weaver, 2000); possibly same bird as above, but widely separated localities make me treat them as different.

Spring 96 (several) Myllyla's farm field, Arnheim, B, JY (Youngman & Murphy, 1999).

[10 Oct 52 (flying flock) Pt. Abbaye, B, F. V. Hebard (Dodge, 1961). This and the following record lack documentation; not listed by subsequent authors]

[16 Oct 51 (flying flock) Pt. Abbaye, B, F. V. Hebard (Dodge, 1961)].

[1856-57. Listed for the Keweenaw Peninsula (including Ontonagon Co.) without comment by Kneeland (1857)].

NAMC. Houghton Co.: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Snow Goose *Chen caerulescens*

Status and Range (B, H, K). **Spring**: occasional transient; 11 records, 13 Mar-13 May. **Summer**: accidental visitant; 2 records. **Fall**: transient, averaging very uncommon, but more numerous some years. Common in detectability but rare in frequency off Agate Harbor, where I recorded 265 flying west or southwest in 105.8 mostly morning hours of observation during the count period 26 Sep-18 Oct, or 2.5 per hour (Table 10); the last figure, however, is misleading, because only four flocks were involved (see High Counts). Among these 265 were 247 that looked more or less like typical blue morphs (but probably included some hybrids), 12 white morphs, and 6 obvious intermediates; "Blue Geese" are also more common among grounded birds. **Early winter**: accidental lingerer (1 record).

Habitat: most often seen flying on migration, but found on ground occasionally. Grazer on grassy fields, dikes of sewage ponds, and lawns of small coastal villages (*e.g.*, Copper Harbor). Can quickly become very tame in towns.

Migration Dates. **SEAD**: 13 Mar 95; 26 Mar 95; 28 Mar 95; 26 Apr 97; see Significant Records for data. **SLDD**: 13 May 49 (7 birds, Delaware, K, G. A. Ammann, JPW 27: 115) and 77 (Sands, H, AW). **FEAD**: 9 Sep 86 (Lake Linden, LB) and 94 (Chassell, H, AW); 20 Sep 89 (Pontiac Road, H, LM). **FMAD**: 26 Sep (n=14). **FP**: roughly 15 Oct. **FMDD**: 18 Oct (n=14; possibly too early). **FLDD**: 16 Dec 90 (H, HCCBC); 10 Nov 2000 (42 blue morphs) head L'Anse Bay, JY.

Significant Records.

Spring (all):

13 Mar 95 (14) Youngman's property, B, JY, flying.

26 Mar 95 (2) South Portage Entry field, H, JY.
28 Mar 95 (3) highway US 41, B, JY.
26 Apr 97 (1) Arnheim, B or H, JY.
26 Apr 2001 (1 blue) Calumet sewage ponds, JK, LM.
28 Apr 31 (2) Copper Harbor, Wood (1933).
28 Apr 76 (2) Sturgeon River Road, H, F. B. Isaacs.
7 May 2004 (1 immature) Baraga marina, LB, J. DeFoe.
8 May 99 (2) Baraga sewage ponds, LB, JM; plus (1) Arnheim, B, LM; NAMC.
9 May 2001 (1) Tamarack City, H, RH.
13 May 77 (2) Sands, H, AW.

Summer (all):
3, 16 Jul, 14 Aug 86 (up to 2) Torch Lake at Lake Linden, LB.
12 Jul 99 (1 adult) Copper Harbor, LB.

Early Winter (all):
16 Dec 90 (1) HCCBC.

High Counts. **Spring**: 13 Mar 95 (**14**) Youngman's property, B, JY, flying. **Fall**: 15 Oct (flock of **110**) and 18 Oct (also a flock of **110**) 86, Agate Harbor, LB, migrating westward over Lake Superior; 10 Oct 76 (flock of about **80**) K, F. B. Isaacs.

NAMC. Baraga Co.: 2 on 1 of 6 counts (16.7%); mean .33; range 0-2; ind/PH .01.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Banding Recoveries. Thirteen (10 blue, 3 white) shot in fall in B, H, and K demonstrate the following: breeding on Southhampton Is., Keewatin, NT (4 adults banded 28 Jul-1 Aug), Baffin Is., Franklin, NT (2 adults, 19 Jul, 12 Aug), near Churchill in northeastern MB (prejuvenile 28 Jul), and near mouth of James Bay in far southern Keewatin (1 adult, 24 Jul); migration through MO (29 Nov; 8 years old when shot); and wintering in LA (12 Dec, 12 Feb) and TX (27 Jan).

Ross's Goose *Chen rossii*

Status and Range (H). Accidental **spring** and **fall** vagrant, but may become an irregular transient if eastern breeding population continues to expand. Two records, both with Canada Geese: 29 May-2 Jun 2002, Atlantic Mine sewage ponds, TA, LB, RH, JK (photos in LB files), JM (finder), accepted by the MBRC (Byrne, 2004); adult, 22 (Z. Gayk) to 26 (LB) Sep 2002, Lake Linden playfield, accepted by the MBRC (MBNH 10: 64).

Brant *Branta bernicla*

Status and Range (K). Accidental **early winter** vagrant. One record of the eastern race *B. b. hrota*: 29 Dec 56 (male shot, UMMZ 15l927) 2 mi from Keweenaw Point, K, W. Holmes, N. Cloyd, G. Lamb, R. Olson (Zimmerman & Van Tyne, 1959; Payne, 1983; UMMZ, in litt.).

Cackling Goose *Branta hutchinsii*

Status and Range (B, H, K). Recently split from the Canada Goose (American Ornithologists' Union, 2004). I have recorded all I have seen since 86. **Spring**: accidental transient; one record, 26 Apr 2003 (1) Hebard Park, K, LB, flying north with 100 Canada Geese. **Summer**: accidental visitant; one record, 22 Jun 90 (1) Copper Harbor, LB. **Fall**: transient, detectability in recent years (see Historical Changes) varying from rare to uncommon, recorded each year 1995-2004 (LB). Most numerous and regular on north coast of K and seemingly least numerous in B and southern H. Often occurs in small pure flocks; when with Canadas, usually stay together in a subflock. Two specimens (22 Oct 49, female, UMMZ 117770, near Big Lake, B, G. A. Hesterberg; 27 Oct 59, male, MSU 2825, head of L'Anse Bay, R. R. Rafferty [1960] and J. H. Pann). **Early winter**: accidental lingerer; 2 records, 1 Dec 2001 (1) Baraga marina, JK; and 19 Dec 2004, L'Anse Bay, S. Haas (MBNH 12: 147).

Habitat. Like Canada Goose.

Migration Dates. **FEAD**: 21 Sep 88 (19, Agate Harbor, LB, flying), 2003 (13, Agate Harbor, LB), and 2004 (19, Calumet sewage ponds, LB). **FMAD**: 27 Sep (n=9). **FMDD**: 20 Oct (n=9); perhaps too early. **FLDD** (see data above): 19 Dec 2004; 1 Dec 2001; 27 Oct 59.

High Counts. **Fall**: 27 Sep 95 (**66**) sewage ponds at Calumet (56) and Lake Linden (10) LB; 8-14 Oct 95 (**40**) Copper Harbor, LB; 12 Oct 2000 (**36**) Calumet sewage ponds, LB.

Banding Recoveries. Birds from TX and OK could be, but probably are not, the race *parvipes*. The Cackling Geese breeding on Baffin Is. migrate through the Keweenaw Peninsula and OK in fall to winter in TX (see Palmer, 1976a). All banding records are given here. (1) Two, male and female adults, banded 14 Aug 95 about 20 mi NE Cape Dominion, Baffin Is., Franklin, NT, F. D. Caswell; neck collars read 27 Sep 95, Calumet sewage ponds, LB. (2) Adult male banded 16 Oct 92, Swan Lake, MO; neck collar read on 8, 13, 14, 18 Oct 95, Copper Harbor, LB. (3) Five, three of them prejuveniles, banded 14 Aug 95 (2), 18 Aug 95, 13 Aug 97, and 16 Aug 97 on Baffin Is.; shot in H on, respectively, 27 Sep 95 (2), 7 Oct 95, 16 Oct 97, and 26 Sep 98. (4) Adult banded 29 Oct 63, TX; shot Oct 70, B. (5) Adult banded 3 Feb 65, OK; shot Oct 70, B.

Historical Changes. I suspect this species is expanding its migration eastward, as I saw only one on the ground 86-94, but many since then at the same localities.

Canada Goose *Branta canadensis*, subspecies *interior* and *maxima*

Status and Range (B, H, K). Many records herein are by sight, and hence subspecies are subject to limited misidentification. **Spring** (*maxima* plus *interior*): abundant transient (*interior* far more common) throughout, but especially flying northward over north shore of K between Eagle Harbor and Manitou Is. Binford *et al.* (1999) documented the occurrence of two distinct flights, the first arriving as early as 7 Mar but normally the third week of Apr and peaking and normally departing in the last week of Apr, with the latest date 7 May; thus the main migration period is short. After a period of 13 days (21 days in most years) without any transient flocks, the second group, which is much less abundant but includes large flocks (see High Counts), appears as early as 21 May and continues to 16 Jun, peaking about 6 Jun. Data obtained by J. Peacock during nearly daily raptor censuses, 6 Apr-31 May 92, at Brockway Mt., exemplify this pattern. He recorded 29782 birds, as follows: 10 on 6 Apr, 29297 from 17-30 Apr, and 23 on 6 May, with 3420 of these on 23 Apr, 9615 on 27 Apr, and 11450 on 28 Apr. For the later group, however, he recorded only 452 from 28 to 31 May, his counts terminating before the major flight. This two-group pattern is evident also at Whitefish Point (bar graph in Granlund & Byrne, 1996). At least some *maxima* arrive with the early group, because they are on territory by early Apr and on nests by late Apr. Also a bird banded as a prejuvenile in B or H (hence *maxima*) was found in a subsequent year in southwestern ON on 17 May, apparently a member of the early flight. According to G. Belyea (fide MBNH 8: 211) the late birds are *maxima* on molt migration to Canada. A flock of 151 birds loafing at Lac La Belle on 10 Jun 2000 (LB, JM) contained one neck-collared bird (white, 11XT) banded as a prejuvenile near Lake Mills, Jefferson Co., WI on 30 Jun 99, where *maxima* is the breeding race (J. Peterson, in litt.; US banding certificate to LB). An occasional very dark-plumaged bird, the size of *interior* or slightly smaller, may be seen in spring or fall; whether these are another race entirely or simply extremely dark individuals is unknown. **Summer** (*maxima*): resident, very common locally on Lake Superior bays of K from Eagle Harbor to Copper Harbor, Arnheim sloughs (B, H), head of L'Anse Bay, Baraga Plains, Baraga sewage ponds, Calumet sewage ponds, Sturgeon River Sloughs (H), and Torch Lake (H); elsewhere uncommon on shallow lakes and ponds having suitable nest sites. Non-breeding flocks occur at many of the above sites and wherever fed by humans (*e.g.*, formerly near Dan's Point., K) or grass for grazing is present near water. **Fall**: most summer resident *maxima* leave before 1 Sep, with 2-3 weeks when the species is scarce before transient *interior* usually arrives (but there is minimal overlap); the latest *maxima* outside Portage Lake and L'Anse Bay (where early winter race unknown) was 2 Oct 99 (2, Copper Harbor, LB). *B. c. interior* (plus probably some *maxima*): abundant transient everywhere overhead and likely on any lake, pond, or grassland. Large ground concentrations noted in Rice Lake area (H), Baraga Plains, and at Arnheim (B, H). At Agate Harbor during the species' main period of occurrence there (20 Aug-18 Oct; no later counts), I recorded 7101 in 190.2 mostly morning hours, or 37.4 per hour (Table 10). All flew east to west far out over Lake Superior or headed inland from north to south or northeast to southwest. These directions would account for the apparent greater abundance here than at Whitefish Point (Granlund & Byrne, 1996). Transients arrive as early as the third week of Aug (see below), but usually not until mid Sep, peak early in migration period in third week of Sep (which befits a species that waits until suddenly frozen out), and continue normally into third week of Oct, rarely as late as 1 Dec; sedentary birds (race uncertain) become increasingly scarce through Dec. Because all Aug flocks of transients have been in recent years, I theorize they may be *maxima* returning from molting grounds in Canada. **Early winter** (*maxima* and/or *interior*): occasional, irregularly locally abundant, lingerer on Portage Lake and L'Anse Bay; one record elsewhere (23 Dec 62, 1 bird, Agate Harbor, LB). These birds leave when shallow waters freeze and grazing habitat becomes snow-covered, usually by 1 Jan. No records beyond 12 Jan.

Habitat. Nests (*maxima*) on islands (and occasionally main shores) of ponds (including Calumet but not Lake Linden or Tamarack City sewage ponds), interior lakes, some Lake Superior bays, and hummocks in marshes, grazing on nearby grassy areas, including lawns, and sometimes dabbling on shallow open ponds. Visits seed feeders close to water.

Migration Dates (see also Status and Range). **SEAD** and **SLDD**, given for an earlier and a later group of migrants: (early group) 7 Mar 2000 (3, Sturgeon River Sloughs, H, LM, winterer?) and 23 Mar 99 (1, H, RH) to 7 May 74 (flock, Liminga, AW); (later group) 21 May 2000 (flock of 33, Copper Harbor, LB) to 16 Jun 96 (Liminga, AW). **SMAD** (early group): 18 Apr (n=25). **SMDD** (early group): 27 Apr (n=18). **FEAD** (possibly *maxima*): 16 Aug 2001 (100) Tamarack City, LB, L. Cornwallis, E. David, JM; 20 Aug 93 (13) and 31 Aug 94 (143; both transient flocks over Lake Superior at Agate Harbor, LB). **FMAD**: 14 Sep (n=26). **FMDD**: 19 Oct (n=24). **FLDD**: 12 Jan 2001 (1, L'Anse Bay, TA, JM); 3 Jan (88, 12 birds, L'Anse Bay, JY). Latest migrating flock was 50 on 1 Dec 96 (Liminga, D. Weaver). *Note*: the SMAD, SMDD, and FMDD were calculated solely from northern H birds.

Significant Records (all early historical records for *B. c. maxima*).

24 Apr 73 (24) released on Baraga Plains and (16) near Sturgeon River Sloughs (MDNR files) and seen at the latter locality on 13 and 14 Jul (AW)

Summer 73, bred in Chassell area (MDNR files).

1973, L'Anse Bay, a flock developed from nearby releases (MDNR files).

16 Aug 74 (1) Lake Fanny Hooe, Copper Harbor, first K record, LB.

23 Apr 74 (20) released on Baraga Plains and (16) at Sturgeon River Sloughs and Arnheim (B or H) (MDNR files).

Summer 75, bred in Chassell area (MDNR files).

26 Apr 76 (24) released at Sturgeon River Sloughs (MDNR files).

12 Jul 76, second record for K, AW.

1976 (26), 1978 (64), 1980 (23) and 1981 (29) released at various unspecified points (MDNR files).

6 Aug 80 (12) first summer record for Agate Harbor, LB; perhaps released elsewhere, but not here.

3 Jun 86 (2) Torch Lake, H, LB.

High Counts. **Spring** (all migrating north overhead unless otherwise noted; *interior* [plus some *maxima*?]). *First group*: 28 Apr 92 (**11450**) Brockway Mt., J. Peacock; 19 Apr 99 (about **6500** in 70 flocks) Mt. Lookout above Lake Bailey, K, JY; 29 Apr 96 (**2635**) B plus H, JY; 21 Apr 2002 (**2044**) 1 mi NE Boston, H (1819 flying in 120 min) and Calumet sewage ponds (225), JK; 18 Apr 2000 (**500** on ground) Arnheim, B, JY. *Second group*: 29 May 2004 (**725**) Copper Harbor area, LB, flooks of 330, 310, 85; 31 May 2001 (**655**) Brockway Mt., LB, flocks of 10, 75, 90, 480 in 10 min span. **Summer** (*maxima*): 22 Aug 98 (**302**) Arnheim, B or H, LM; 14 Jul 98 (**170**) Baraga Plains, B. JY. **Fall** (*interior*; plus some *maxima*): 7 Oct 81 (**25000**) Baraga Plains, MDNR survey; 17 Sep 87 (**1773** in 35 flocks flying west and southwest) Agate Harbor, LB; 27 Sep 86 (**1700** on ground) Rice Lake area, H, LB. **Early winter** (race uncertain): multi-party, 15 Dec 2001 (**141**) HCCBC; 10 Nov 2000 (**99**) Baraga (24) and South Portage Entry, H (75) TA, JM; 16 Dec 90 (**73**) HCCBC, LM only; 20 Dec 97 (**38**) HCCBC, JY only.

Breeding (many confirmed for B, H, K; all *maxima*).

Summary: Many birds on territory 6 Apr 2001 (Arnheim, B, LM). Eleven attended nests (B, H, K) 24 Apr 2001-25 May 96 (this last date the only nest in which eggs were counted, 6 eggs, Arnheim, H, JY). Small prejuveniles seen from 12 May 98 (brood of 7, Arnheim, B, JY) to 9 Jun 88 (brood of 7, Arnheim, B, LM). Of 52 broods noted, the 39 counted were distributed as follows: 2 prejuveniles (in each of 3 broods), 3 (5), 4 (7), 5 (10), 6 (6), 7 (7), and 8 (1), an average of 4.9 (range 2-8), which agrees closely with the average of 5.2 for large Canadas given by Palmer (1976a: 223). Not included here was a group of 17 identically sized, small downies at Agate Harbor on 28 May 2002 (LB), which could be a case of foster parenting or egg dumping. In the Keweenaw, species single-brooded, with no evidence of renesting after failure. See Discussions: Waterfowl and Other Species at Sewage Ponds, including Table 2.

BBS (*maxima*). *Bootjack* 92-2005: 61 on 9 of 14 counts (64.3%); mean 4.36; range 0-19. *Herman*: 123 on 5 of 7 counts (71.4%); mean 17.57; range 0-45.

NAMC. *Baraga Co.*: 347 on 6 of 6 counts (100%); mean 57.83; range 30-132; ind/PH 1.35. *Houghton Co.*: 902 on 7 of 7 counts (100%); mean 128.86; range 50-550; ind/PH 3.24.

HCCBC (race uncertain). 602 on 9 of 26 counts (34.6%), all in the 15 years since 87; mean 23.15; range 0-141; ind/PH .51.

Banding Recoveries. Because of frequent and widespread introductions, relocations, cross-fostering, complicated and highly variable migration routes, and molt migrations in odd directions, only a few statements can be made about the 644 recovered birds.

B. c. maxima. Birds banded as prejuveniles on the Peninsula winter primarily straight south in WI, IL, MO, TN, KY, and AR. Others move east and southeast through Alger, Chippewa, Luce, Oakland, and Lapeer Cos., MI, and southeastern ON to winter in at least St. Clair Co., MI, and OH. A few were found to the west and southwest in central MN. Four were recovered in southwestern ON (just north of Lake Superior) in May, Jun, and Jul of years subsequent to banding, movements apparently representing molt migration and clearly demonstrating spring migration of this race over Lake Superior. Similarly, two adults banded in Sullivan Co., IN, on 1 Jul 99 spent the same summer (at least 8 Jul-15 Aug) in Copper Harbor (LB). Only two records suggest a long range eastward flight to wintering grounds, singles recovered in MD and NY in Feb.

B. c. interior. Many banded as non-flyers in northeastern MB and northwestern ON (both near Hudson Bay) and in far southern Keewatin, NT (Akiminski Island, James Bay) shot in the Keweenaw (B, H, K) during the fall hunting season. Probably, these winter to the south and southwest, but data are lacking, because none has been recorded in the Keweenaw and allowed

(without being shot) to continue its journey.

Historical Changes (Table 17). ***B. c. interior/maxima***: I find no evidence that any aspect of the status of *interior* has changed historically. Kneeland (1857) said the species was "quite common at Portage Lake in the spring" (this is Houghton Co., not Keweenaw Co. as stated by Wood, 1951); in Kneeland's time, birds could have been either *maxima* or *interior*. Wood (1933), who visited the Copper Harbor area 22 Apr-12 Jun 31, failed to record the Canada Goose. Apparently, in that particular year, he was too late to encounter the early migrating population of *interior*, although in some years its period may extend as late as 7 May; in 1931, *maxima* had not yet respread to the Keweenaw either as a breeder or transient. ***B. c. maxima***: this subspecies became extirpated in Michigan and was reintroduced starting in the Lower Peninsula in the 1920s, in the Upper Peninsula in 1936 (Seney NWR, Schoolcraft Co.), and at many localities thereafter (W. C. J. Johnson in Brewer *et al.*, 1991). Wood (1933) found none at Copper Harbor in 1931 (see above). According to MDNR files, Peninsula birds originated from releases in 73-81 (and probably later); for District l (the Peninsula plus Gogebic and Ontonagon Cos.), surveys found no birds in 69, 417 in 77, 455 in 81, and 800 in 90; of the 800, 155 were in B, 150 in H, and 245 in K. The Bootjack BBS recorded none 67-73 but many 92-2005. Baraga Co. records date back to releases on the Baraga Plains in Apr 73, with first known breeding also in 73 (MDNR files). Summer geese reached Copper Harbor by at least 74, but whether or not they were released there I cannot ascertain; breeding *maxima* did not arrive at Agate Harbor until 80, probably from Copper Harbor. By 86 it was widespread on the Peninsula in summer, but I found only two broods at places where it now breeds commonly. In summer today, it is still spreading, has become a nuisance in some towns, and threatens to inhabit every suitable body of water. The first winter record for the species was in 1962 (probably *interior*); the next was in 78. In early winter, the species was not recorded on the HCCBC in the period 76-86 but was seen in 9 of 15 years from 87 to 2001.

Mute Swan *Cygnus olor*

Status and Range (B, H). Introduced. Formerly a very rare **summer** resident, now apparently extirpated; formerly bred only on L'Anse Bay. In harsher **winters**, and sometimes at other times of year, moved to various localities in adjacent H or disappeared altogether (*e.g.*, absent all spring 99, all summer 2000, and until late Jul in 2001). Never increased its range or abundance.

Habitat. Shallow inshore waters of Keweenaw Bay (especially L'Anse Bay) and Portage Lake. No record for sewage ponds.

Significant Records (outside B).

29 May 2000 (1) Sturgeon River mouth, H, JY.

4 Jan 98 (3) South Portage Entry, H.

Late Jan 98, Pequaming, B.

30 Jan 98, Traverse Bay, H.

29 Oct 85 (3) South Portage Entry, H, AW.

16 (JY) to 20 (D. Richter, HCCBC) Dec 97 (3) Portage Lake at Pilgrim River mouth, H.

Note: Dec and Jan records above probably pertain to the same birds.

High Counts. 30 Sep 92 (**6**) L'Anse Bay, AW.

Breeding (**B** 3 co, 1 pr, 2 po; all records and localities concern the same mini-population at the head of L'Anse Bay).

Summer 87 and 88 (young seen) L'Anse Bay, AW.

2 Jun 92 (adult with 2 young) L'Anse Bay, AW.

[*Note*: the possible breeding in northern H on MBBA map (1991) should be deleted.]

NAMC. Baraga Co.: 2 on 1 of 6 counts (16.7%); mean .33; range 0-2; ind/PH .01.

HCCBC. 3 on 1 of 26 counts (3.8%); mean .12; range 0-3; ind/PH .003.

BBS. Herman: 6 on 2 of 7 counts (28.6%); mean .86; range 0-3; probably same 3 birds on L'Anse Bay each date.

Banding Recoveries. An adult cross-fostered as an egg or prejuvenile into another nest in WI 28 Jul 88 found dead in B 21 Mar 94, demonstrating northward, and perhaps abnormal, dispersal of a manipulated bird.

Historical Changes (Table 17). An adult on 27 Nov 59 on L'Anse Bay (Rafferty, 1960) was considered by Dodge (JPW 39: 7) to be the first UP record. At the same locality, next seen 3 Dec 81 (immature, JY), then 31 Mar 1984 (1, AW) and every year thereafter, with 2 starting 21 Sep 85 (AW), 3 on 11 Mar 86, and the maximum all-time count of 6 on 30 Sep 92 (AW). Since then, the population has varied from 1 to 5, bred only a few times, and shown no indication of increasing. In recent years, birds have disappeared for long periods, only to reappear suddenly, with no pattern. The long life span and relatively sedentary nature suggest that only a few individuals have been involved over the years. Whether this mini-population was derived from direct introduction or feral stock elsewhere, or both, I do not know, although I suspect it was introduced by the Lake Superior Band of Chippewa Indians (see Trumpeter Swan).

Trumpeter Swan *Cygnus buccinator*

Status and range (B, H, K). Currently an accidental **spring, fall**, and **early winter** transient from introduced populations elsewhere. During the late 1990s and early 2000s, 35 Trumpeter Swans were introduced in B by the Lake Superior Band of Chippewa Indians; two

were poisoned by lead fishing sinkers, and most others departed. Four adults marked with blue neck collars were released on L'Anse Bay in summer 98 and moved around, together or in part, being recorded at Hancock, the Sturgeon River Sloughs (Unit 1), Cat Harbor (K, all summer 99, collar 60E; same bird seen on L'Anse Bay, 10 Dec 2000, JY), and the Slate River mouth (B). At Baraga, five collared birds were seen on 21 and 28 Jun 2000 and 1-4 birds from 17 Nov to 29 Dec 2002 (TA, JM, L. Taccolini, JY). On 19 Jun 99 JM and I saw two immature Trumpeters at Oskar (H); neither had a neck collar and at least one was not leg-banded, so presumably these were not the birds noted above. In addition, I saw an adult with a solid black neck collar (no characters, apparently having lost the colored and numbered lamination) on 17 Oct 2001 at Bailey Pond, about .5 mi W Lake Bailey (K). A yellow-collared bird was present in L'Anse Bay from 2 Dec 2001 to 7 Jan 2002 (TA, RH, JK). Five adults without neck collars were at Atlantic Mine sewage ponds on 9 Oct 2004 (RH). I would not accept this species for the Keweenaw Peninsula list were it not for the recent decision of the MBRC (fide A. Byrne) to accept most birds in the state. The Trumpeter has never bred in the Keweenaw (see Kneeland, 1857).

Habitat. Frequents the shallow waters of Keweenaw Bay, Portage Lake, and occasionally inland ponds.

NAMC. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Tundra Swan *Cygnus columbianus*

Status and Range (B, H, K). **Spring**: very uncommon transient, but sometimes in small flocks, primarily on L'Anse Bay and Portage Lake system (especially Chassell, H), less often on Sturgeon River Sloughs and Arnheim (B and H). Three records for Huron Bay, B, 2 near the mouth of the Silver River, T51N, R31W, Sec. 18 (11 May 99, 16 birds, JY; 27-29 Apr 2000, 13 birds, LB, JM, JY) and 1 for the mouth of the Slate River (29 Mar 2001, 2 birds, JY). Only one spring record for K (4 May 2002, flock of 12 flying north through Lake Medora gap, D. Stimak). **Summer**: casual visitant (3 records) and accidental non-breeding resident (1 record). **Fall** and **early winter**: occasional transient (14 records) in very small numbers (6 and below) on L'Anse Bay and Portage Lake system, lingering as late as 30 Dec.

Habitat. Feeds in shallow open water along shorelines of lower Keweenaw Bay and Portage Lake system and ponds in open wetlands. No record for sewage ponds.

Migration Dates (see Significant Records for data). **SEAD**: 25 Mar 2000 (2, Chassell, H, JY). **SMAD**: 21 Apr (n=18). **SP**: probably last week of Apr. **SMDD**: 14 May (n=14). **SLDD**: 14 Jun 86 (1, Torch Lake at Lake Linden, LB); 2 Jun 78 (Cole's Creek mouth, H, AW). **FEAD**: 19 Sep 75; 5 Oct 99; 13 Oct 95; Aug records here considered summer visitants. **FMDD**: 16 Nov (n=10). **FLDD**: 30 Dec 99; 15 Dec 79.

Significant Records.

Summer (all).

13 Jul 99-11 Sep 99 (1) Arnheim, Units 4, 5, 6, H, LM, JY.

31 Jul 2002 (1) Sturgeon River mouth, JY.

1 Aug 93 (1 immature) Copper Harbor, LB, rumored to be present for several previous days.

26 Aug 63 (1) Lake Linden (on Torch Lake), LB, possibly a very early fall transient (Binford, 1965).

Fall and early winter (all).

19 Sep 75, Sands, H, AW.

3 Oct 2004 (2) Baraga marina, JY.

5 Oct-30 Dec 99 (1) L'Anse Bay, LB, LM, JM, JY, possibly same bird as listed for summer at Arnheim.

13 Oct 95 (1) L'Anse Bay, JY.

14 Oct 2000 (1) L'Anse Bay, JY.

25 Oct 2002 (1) L'Anse Bay, JY.

30 Oct 98 (6) L'Anse Bay, JY.

30 Oct-4 Nov 91 (1 immature) Cole's Creek mouth, H, AW.

1 Nov 2003 (4) L'Anse Bay, JY.

6-16 Nov 93 (1) L'Anse Bay, AW, JY.

11 Nov 97 (2) on Portage Lake near Portage Lake Golf Course, JY.

25 (1), 26 (5) Nov 2002, L'Anse Bay, JY.

10 Dec 99 (1) Oskar, H, AW.

15 Dec 79 (1) HCCBC.

High Counts. **Spring**: 20 Apr 55 (**110**) Baraga, A. Peters (AFN 9: 332); 1 Apr 98 (**65**) Sand Point, Baraga, JY; 25 Apr 2000 (**51**) Chassell, H, LB; 2 May 2000 (**30**) Pilgrim River mouth, H, JY. **Fall**: 30 Oct 98 (**6**) Baraga, JY.

NAMC. *Baraga Co.*: 19 on 1 of 6 counts (16.7%); mean 3.17; range 0-19; ind/PH .07. *Houghton Co.*: 16 on 2 of 7 counts (28.6%); mean 2.29; range 0-8; ind/PH .06.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Wood Duck *Aix sponsa*

Status and Range (B, H, K). **Spring**: fairly common transient throughout, especially on sewage ponds. **Summer**: uncommon resident throughout, preferring forested regions. Scarcity in B as shown on MBBA map (H. H. Prince in Brewer *et al.*, 1991) probably an artifact of coverage. Adult males disappear early in summer, presumably on molt migration to somewhere outside the Keweenaw. **Fall**: becomes common as summer residents congregate and transients join them. Leaves early, perhaps because food is no longer obtainable with its surface-foraging, rather than dabbling, behavior.

Habitat. Elsewhere, nests in holes in hardwood trees (or nest boxes) usually near or over water. Keweenaw Peninsula sewage ponds are rarely used for brood rearing (1 record for Calumet sewage ponds, Table 2), probably because most are too far from nest trees, but all are favorite sites for staging in fall. Young are reared and adults feed on most natural ponds, especially small forest and beaver ponds with floating and emergent vegetation, flooded trees or bushes, stretches of open water, and logs or hummocks for resting. Forages on water surface rather than dabbling.

Migration Dates. **SEAD**: 24 Mar 2000 (Bella Lake, B, JY). **SMAD**: 18 Apr (n=26). **SP**: first week of May. **FP**: numbers increase suddenly about 10 Aug, when either migrants from elsewhere or breeding birds from Peninsula forests (or both) congregate; peaks normally in first two weeks of Sep. **FMDD**: 30 Sep (n=21). **FLDD**: 6 Nov 97 (Baraga sewage ponds, S. Andres).

High Counts. **Spring**: multi-party, 8 May 99 (**28**) B, NAMC; 8 May 99 (**20**) B, LB. **Summer**: 24 Jun 96 (**11**) Arnheim, B or H, JY. **Fall**: 28 Sep 79 (**128**) H, T. Allan (JPW 58: 91); 30 Aug 95 (**60**) and 13 Sep 95 (**60**) both Calumet sewage ponds, LB.

Breeding (**B** 2 co, 1 pr, 5 po; **H** 8 co, 2 pr, 10 po; **K** 3 co, 1 pr, 6 po).

7 Jun 97 (brood of 10 prejuveniles) Arnheim, Unit 8, B, JY.

*17 Jun 86 (9 small) mouth Little Gratiot River near Lac La Belle, K, LB.

17 Jun 99 (7) Arnheim, Unit 5, H, JY.

23 Jun 98 (7 small) Calumet sewage ponds, LB.

26 Jun 96 (10 very small) Arnheim, Unit 3, H, JY.

27 Jun 95 (8 large but downy) Agate Harbor, LB.

1 Jul 95 (prejuveniles) Arnheim, B or H, JY; not in above totals.

*6 Jul 88 (4) T55N, R31W, NW quarter, H, LB.

6 Jul 2002 (6) Arnheim, Unit 6, H, JY.

14 Jul 96 (7) Sturgeon River Sloughs, JY.

14 Jul 98 (6) Arnheim, Unit 7, B, JY.

Summary: 10 broods noted from 7 Jun to 14 Jul but mostly (8 broods) 17 Jun-6 Jul; 74 prejuveniles in 10 broods of known size, average 7.4, range 4-10. See Discussions: Waterfowl and Other Species at Sewage ponds, including Table 2.

BBS. *Herman*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1.

NAMC. *Baraga Co.*: 64 on 6 of 6 counts (100%); mean 10.67; range 1-28; ind/PH .25. *Houghton Co.*: 45 on 6 of 7 counts (85.7%); mean 6.43; range 0-23; ind/PH .16.

Banding Recoveries. Fall migration begins in July, so birds reach southern areas by Aug. Ten shot in fall in the Keweenaw (B, H, K) banded in previous years in extreme southeastern ON (Oct), WI (Sep), IL (Aug, Sep), IA (Aug), AL (Aug) and LA (Nov). Supplemental data from birds shot in fall in adjacent counties, mostly Marquette, include birds banded in MN (Sep), IA (Aug), OH (Sep), TN (Jul, Aug), and AR (Aug). Thus, while some Keweenaw birds go southeast to ON and OH, others winter directly south as far as LA.

Historical Changes. Although the Wood Duck population in Michigan was decimated by the early 1900s, recovery was long enough ago that recent Keweenaw data fail to demonstrate any change.

Gadwall *Anas strepera*

Status and Range (B, H, K). Vast majority of records are for sewage ponds in northern B and H, but species also occurs at Arnheim (B, H), Sturgeon River Sloughs (H), and occasionally elsewhere. **Spring**: very uncommon transient (*e.g.*, 2 on 6 May 2002, Manitou Is., JK). **Summer**: occasional resident, with breeding noted three times at the Lake Linden sewage ponds, the only confirmed breeding for the Upper Peninsula west of Delta Co. (MBBA map 1991). Most adult males remaining from spring leave on molt migration to parts unknown in Jun. **Fall**: status uncertain. Very uncommon, very early transient, starting as early as 5 Jul 96 (2 molting males, Calumet sewage ponds, LB), when adult males, adult females, and some young of the year, some of the males already molting, begin to pass through enroute to molting grounds elsewhere (see also Migration Dates). Last sewage pond record 20 Aug. No Sep record for Peninsula, but a few continue to migrate through (1 on 4 Oct 97 and 22 on 21 Oct 94 migrating eastward past Agate Harbor, where very uncommon; these the only birds in 209.5 mostly morning hours of observation during the count period 4 Aug-22 Oct, or .1 per hour, LB, Table 10). A very few linger to 15 Nov (see Migration Dates).

Habitat. The only breeding records were on a sewage pond, with a nearby hayfield, where presumably the nests were placed. Forages on the shallow open water of natural and sewage ponds, the former widely edged with open wetland and often with small floating vegetation such as duckweed.

Migration Dates. **SEAD**: 1 Mar 79 (2 birds, Cole's Creek mouth, H, AW, possible winterers); 24 Mar 2000 (Bella Lake, B, JY). **SMAD**: 15 Apr (n=5). **SP**: numbers diminish into late May, with no apparent peak. **FEAD**: 5 Jul 96 (see above); 8 Jul 2004 (1 adult male, Calumet sewage ponds, LB); 18 Jul 84 (Lake Linden sewage ponds, LB). **FMAD**: 29 Jul (n=9); data during 9 years when this species did not summer allow calculation of this date. **FP**: no peak apparent; transients and summer residents usually gone by 11 Aug, with latest sewage pond record 20 Aug (1996, 1 female, Lake Linden sewage ponds, LB). **FLDD**: 15 (2) and 4 (1) Nov 2000 (Sturgeon River mouth, JY); 9 Nov 2000 (6, Baraga sewage ponds, TA, JM); 21 Oct

94 (22) and 4 Oct 97 (1) (both Agate Harbor, LB); 20 Aug (see above).

High Counts. **Spring**: 13 May 2000 (**10**) Baraga sewage ponds, LB, JM. **Fall**: 27 Jul 2000 (**27**) L'Anse Bay, JY; 21 Oct 94 (**22**) Agate Harbor, LB; 25 Jul 89 (**9,** probably an adult female with flying brood) Lake Linden sewage ponds, LB.

Breeding (**H** 3 co).

24 Jul 2005 (female with 9 large, partly feathered, downy-headed prejuveniles) Lake Linden sewage ponds, LB, Z. Gayk.

30 Jul 2002 (female with 7 large but still downy prejuveniles) Lake Linden sewage ponds, LB, JK (finder).

10 Aug 99 (female with 2 prejuveniles three-quarters grown) Lake Linden sewage ponds, LB, JM.

[*Note*: the possible breeding for H on the MBBA map (1991) (17 May 88, pair, Tamarack City sewage ponds, LB) should be deleted, as I now realize it was during the species' migration period.]

BBS. *Herman*: 6 on 3 of 7 counts (42.9%); mean .86; range 0-4; these were non-breeders.

NAMC. *Baraga Co.*: 22 on 5 of 6 counts (83.3%); mean 3.67; range 0-10; ind/PH .09. *Houghton Co.*: 8 on 3 of 7 counts (42.9%); mean 1.14; range 0-3; ind/PH .03.

Banding Recoveries. A hatching year bird banded 8 Jul 84 in B was shot 7 Nov 87 in LA, indicating a probable wintering locality.

Historical Changes (Table 17). This species has never been more than a rare breeder in Michigan, but in recent decades has started to spread southeastward, much like the American Wigeon (see L. C. Binford in Brewer *et al.*, 1991) but more slowly (J. Eastman in Brewer *et al.*, 1991). Keweenaw data provide a typical picture of waterfowl occupation—years of summering and then breeding. Gadwalls have been recorded in summer (second half of Jun and first half of Jul) nearly every year since at least 1986 (23 Jun, pair, Tamarack City sewage ponds, LB), with one older record (8 Jul 74, Sturgeon River, AW), but I can detect no obvious increase in numbers during this period, suggesting that there was no breeding and therefore no young to return and bolster the population. Breeding finally occurred in 99. See Discussions: Waterfowl and Other Species at Sewage Ponds.

Eurasian Wigeon *Anas penelope*.

Status and Range (B, H). Accidental **spring** vagrant. Two records: 21 Apr 2000 (adult male) Huron Bay head, T51N, R31W, Sec 18, B, JM, LM, JY (finder); 14-18 May 2001 (adult male) Chassell sewage ponds, H, TA, LB, RH, C. MacLennan, LM, JM, AW, JY (finder), accepted by the MBRC (Byrne, 2002). No description of the 21 Apr bird was written, because this species was thought not to be on the MBRC review list in 2000. [The report of 2 on the 12 May 2001 NAMC at the Calumet sewage ponds was rejected by the MBRC (Internet).]

American Wigeon *Anas americana*

Status and Range (B, H, K). Occurs primarily in northern H and adjacent B on L'Anse Bay, Portage Lake, sewage ponds and marshes, and in fall only, migrating along the north shore of K and H; casual elsewhere. **Spring**: fairly common transient. No spring records for southern B or H, and only 5 for K (3 May 2003, 4 in water, Manitou Is., JY; 6 May 2002, migrating male, Manitou Is., JY; 22 May 96, male, Ahmeek sewage ponds, LB; and 15 May 2004 and 21 May 2002, single males, Copper Harbor, LB); habitat scarce in all three regions. **Summer**: occasional and local non-breeding resident in northern H (Arnheim, Sturgeon River Sloughs, Calumet sewage ponds) and adjacent B (Arnheim), where it could breed. Occasional breeder on Lake Linden and Tamarack City (H) sewage ponds, which have adjacent hayfields for nests (Table 2). Casual visitant on L'Anse Bay head. Only one summer record for K, where habitat is poor and limited (8 Jul 2000, migrant female, Copper Harbor sewage ponds, LB). **Fall**: transient, a few apparent migrants arriving as early as late Jun. Generally uncommon, with no obvious difference in abundance between summer and fall except on north shore of K (and probably H), where very common. At Agate Harbor 721 seen migrating west-to east during the count period 31 Aug-22 Oct (no later counts) in 188.6 mostly morning hours of observation, or 3.8 per hour (LB, Table 10). Only two fall records for K off Lake Superior proper: 5 Aug 90 (1, in bay at Agate Harbor, LB) and 29 Sep 86 (2, Lake Eliza near Eagle Harbor, LB). **Early winter**: accidental lingerer; only 1 record after 21 Oct (15 Dec 2001, female, Sturgeon River mouth, M. Fogg, JK, JY, HCCBC).

Habitat. Feeds on open ponds, both sewage and natural, usually, but not necessarily, with adjacent herbaceous wetland (cattail, sedge-grass). Broods found only on those sewage ponds with adjacent grassy fields. Late breeding may be a response to the time needed for the grass and weeds to reach a height and density sufficient to hide nests, especially during late springs. The ponds themselves also appear to develop more aquatic plant growth later in summer. The field at Lake Linden was replaced with what looked like lawn in summer 99, but this developed into reasonably dense grass and herbs by 2005.

Migration Dates. **SEAD**: 18 Mar 95 (L'Anse Bay, JY); 31 Mar 98 (Arnheim, H, JY). **SMAD**: 18 Apr (n=20). **SP**: last week of Apr and first week of May, declining into last week of May, when like summer. **FEAD**: migrants noted on 24 Jun 2005 and 1 Jul 2004 (1 each, Calumet

sewage ponds, LB) and 17 Jul 2002 (9, Lake Linden sewage ponds, LB, JM); seen migrating on Lake Superior from 28 Aug to 21 Oct 94 (Agate Harbor, LB). **FP** (using Agate Harbor data only): last week of Sep. **FMDD**: 10 Oct (n=14). **FLDD**: 15 Dec 2001; 21 Oct 94 (Agate Harbor, LB).

High Counts. **Spring**: 17 Apr 64 (**100**) L'Anse Bay, R. R. Rafferty (JPW 43: 28); 24 Apr 2001 (**22**) Arnheim, B or H, JY. **Summer**: 25 Jul 95 (**9**) Lake Linden and Tamarack City sewage ponds, H, LB. **Fall**: 27 Sep 2004 (**235**) Hebard Park, K, LB, same date as 2004 fall peak count at Whitefish Point; 27 Sep 98 (**107**) and 10 Oct 87 (**106**) both Agate Harbor, LB; all migrating eastward along shore of Lake Superior.

Breeding (**B** 1 pr; **H** 10 co, 1 po).

*29 Jun 88 (brood of 11 small prejuveniles) Lake Linden sewage ponds, LB.

30 Jun 92 (8 very small; reduced to 5 by 7 Jul) Tamarack City sewage ponds, H, LB.

3 Jul 2000 (8, about five days old) Tamarack City sewage ponds, H, LB.

20 Jul 99 (9 small, about one week old) Tamarack City sewage ponds, H, LB.

*23 Jul 87 (4 about one-third grown) Lake Linden sewage ponds, LB.

*25 Jul 89 (7 about one-quarter grown) Lake Linden sewage ponds, LB.

27 Jul 93 (5) Lake Linden sewage ponds, LB.

*29 Jul 90 (two adult females with 17 prejuveniles about half grown) Tamarack City sewage ponds, H, LB.

*1 Aug 89 (7 nearly full grown) Tamarack City sewage ponds, H, LB.

Summary: 10 broods composed of 76 young, average 7.6, range 4-11. Breeds irregularly and late. See Habitat above and Waterfowl and Other Species at Sewage Ponds in Discussions, including Table 2.

NAMC. Baraga Co.: 20 on 4 of 6 counts (66.7%); mean 3.33; range 0-10; ind/PH .08. *Houghton Co.*: 29 on 5 of 7 counts (71.4%); mean 4.14; range 0-18; ind/PH .10.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Historical Changes. Binford (in Brewer *et al.*, 1991) summarized the recent spread of this species as a breeder in Michigan. Briefly, Wigeons began expanding southeastward into Michigan in 1939, with the first Keweenaw Peninsula breeding confirmation in 87 (but could have bred earlier). Summering probably preceded breeding, as indicated by a 5 Jul 76 record (Sturgeon River Sloughs, AW). Spread has been very slow and irregular in Michigan and in the Keweenaw; in the latter, breeding has occurred in 8 years, 87-90, 92-93, 99, and 2000. There is little hope of the Keweenaw population expanding, or even surviving, without proper management of the sewage ponds, marshes, and adjacent grassland.

American Black Duck *Anas rubripes*

Status and Range (B, H, K). See Mallard, Remarks. **Spring**: uncommon transient throughout. **Summer**: very uncommon resident throughout, most often seen on sewage ponds with nearby forest. Spends summers, without breeding, at head of L'Anse Bay. **Fall**: uncommon transient except on L'Anse Bay and Baraga sewage ponds, where very common through early winter before waters freeze. Uncommon transient at Agate Harbor, where only 16 seen migrating eastward and 4 westward in 167.2 mostly morning hours of observation during the count period 14 Sep-22 Oct, or .1 per hour (LB, Table 10); this fall scarcity is a function of range, as few breed west of the Peninsula. **Winter**: formerly occasional, some years common, resident in L'Anse at the Warden Power Plant's hot water outflow, which has now ceased. Presently an occasional early winter lingerer and casual winter resident on L'Anse Bay and South Portage Entry (H), the last shallow waters to freeze.

Habitat. Elsewhere, said to nest on ground in forested or shrubby situations near water. Feeds and raises broods in marsh, beaver, and sewage ponds. Absence of broods at Lake Linden and Tamarack City sewage ponds (H) probably due to distance from forest and shrub wetland nest habitat. Also feeds commonly in shallows at head of L'Anse Bay.

Migration Dates. **SEAD**: 22 Mar 2000 (Arnheim, B or H, JY); 8 Apr 2004 (Arnheim, H, LM, JY). **SMAD**: 15 Apr (n=10, see below). **FEAD**: earliest known transient 14 Sep 87 (Agate Harbor, LB, migrating west to east). **FP**: no apparent increase in numbers from summer. **FLDD**: only two representative dates, 17 Dec 78 (Cole's Creek mouth, H, AW) and 29 Nov 74 (Oskar, H, AW). *Note*: sometimes winters on L'Anse Bay, so no dates used from there for extreme dates or the SMAD.

Significant Records (unusual).

21 Oct 98 (12) Lake Bailey, K, LB, all-time high count for K.

12 Jul 99 (3) Lake Medora, K, LB.

High Counts. **Spring**: 8 Apr 2000 (**50**+) Arnheim, H, LM, JY; 18 Apr 97 (**43**) Arnheim, B or H, JY. **Fall**: 30 Nov 99 (**38**) L'Anse Bay, JY. **Early winter**: 22 Dec 97 and 10 Dec 2000 (**34** each) both L'Anse Bay, JY.

Breeding (**B** 2 co, 1 pr, 5 po; **H** 4 co, 2 pr, 2 po; **K** 2 co, 2 po; see Notes).

*7 Jul 86 (brood of 5 about half grown) Agate Harbor, LB.

*8 Jul 84 (5 at nest; banded) Lake George, B, N. J. Ilnicky (CLO).

*10 Jul 86 (5 about one-third grown) Swedetown marsh, H, LB.

*14 Jul 84 (7 banded) Lake George, B, N. J. Ilnicky (CLO).
15 Jul 97 (9 small) Calumet sewage ponds, LB.
16 Jul 96 (8 small) Calumet sewage ponds, LB.
16 Jul 98 (8) Sturgeon River Sloughs, Unit l, LM.
Notes: [the MBBA map (1991) confirmation for T58N, R28W, K, should be disregarded.] On 4 Jun 98, a brood of 3 at the Calumet sewage ponds was attended by a female Mallard and a male Black Duck or hybrid (LB).
Summary: 7 broods totaling 47 prejuveniles, average 6.7, range 5-9; small downies seen as late as 16 Jul. See Discussions: Waterfowl and Other Species at Sewage Ponds, including Table 2.

BBS. Herman: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2.

NAMC. Baraga Co.: 3 on 2 of 3 counts (66.6%); mean 1.00; range 0-2; ind/PH .02.

HCCBC. 9 on 3 of 26 counts (11.5%), all recent (6 birds, 20 Dec 97; 1, 19 Dec 98; 2, 15 Dec 2001); mean .35; range 0-6; ind/PH .01.

Banding Recoveries. Two primary routes are indicated for Peninsula transients, one to the south through WI (Sep) and IL (Nov, 3 birds) (might winter in both states) to winter in IN (Jan), KY (Jan, 3), TN (Nov, transient?), and AR (Jan, 2); the other along a northwest-southeast line from southern MB (Aug), southwestern ON (Aug, Sep, Oct), and northwestern MN (Sep), through the Keweenaw Peninsula in spring or fall, to or through OH (Mar, Dec) to winter in PA (Jan) and MD (Nov). What were presumably birds raised on the Peninsula, banded 8 and 14 Jul 84, recorded in Nov in IL and AR, respectively. One banded in southwestern ON 28 Sep 94 apparently stopped to summer in northern H (8 Jul 97). One banded 30 Oct 28 in northern H shot *the next day* in west-central Ingham Co., MI, a straight line distance of about 350 miles!

Historical Changes (Table 17). This species has been declining throughout its range for decades (W. C. J. Johnson in Brewer *et al.*, 1991), but few data are available for the Keweenaw. Cahn (1918) said it was more common than the Mallard in northern Iron Co. in 1914. Wood (1933), however, considered it a rare summer resident, with only one pair at Copper Harbor. A. S. Weaver's records dating back to 72 show no change in abundance. With the closing of the Warden Power Plant's hot water outflow, most American Black Ducks now leave when waters freeze.

Mallard *Anas platyrhynchos*

Status and Range (B, H, K). **Spring**: abundant transient, but unlike fall, no known migration on Lake Superior. **Summer**: by far our most numerous summer duck. On average, uncommon resident throughout, but very common on sewage ponds and other open ponds; scarce in more forested regions, where most ponds and lakes lack aquatic emergents. Breeding season lengthy, mid Apr through Sep (see Breeding). **Fall**: abundant transient, nearly tripling in numbers from summer. Common transient on Lake Superior off northern K and probably H; at Agate Harbor I recorded 278 in 201 mostly morning hours of observation during the count period 21 Aug-22 Oct (no later counts), or 1.4 per hour (Table 10); 238 flew west to east, 28 east to west, and 12 north to south. Most gone by late Oct. **Early winter**: occasional, irregularly common lingerer into Dec on L'Anse Bay and Portage Lake (H), the last shallow waters to freeze; considerably more common in 97-2001, a series of warm winters. **Late winter**: casual resident, primarily on L'Anse Bay and South Portage Entry (H); formerly irregularly very common at L'Anse before hot water outflow from power plant was terminated.

Habitat. Nests in a variety of situations, but primarily in old fields and hayfields near ponds (especially sewage), in cattail and sedge-grass marshes, and around Lake Superior bays (even in absence of extensive herbaceous growth, as at Agate Harbor). Especially abundant near habitation, particularly in K, where often fed. Non-breeders and females with broods flock and feed in same habitats, especially sewage ponds. Has the widest foraging niche of any Keweenaw waterfowl, feeding on bays, lakes, all kinds of ponds (especially sewage and including forested), marshes, rivers, creeks, shrub wetlands, fields, and lawns.

Migration Dates. **SEAD**: 13 Mar 99 (L'Anse Bay, RH). **SMAD**: 8 Apr (n=27). **SP**: probably in third week of Apr, although many transients remain into last week of May (*e.g.*, 23 May 98, 130, Lake Linden sewage ponds, LB). **FEAD**: transients seen as early as 21 Aug 93 (migrating past Agate Harbor, LB). **FP**: third week of Sep. **FMDD**: most gone by end of Oct.

High Counts. **Spring**: 18 Apr 97 (**517**) Arnheim, B or H, JY; 8 Apr 2000 (**200**) Arnheim, H, LM, JY. **Summer**: 25 Jun 96 (**80**), Calumet sewage ponds, LB. **Fall**: 1 Oct 96 (**180**) Calumet sewage ponds, LB; 30 Nov 99 (**172**) L'Anse Bay plus Baraga sewage ponds, JY. **Early winter**: multi-party, 15 Dec 2001 (**174**) HCCBC; 22 Dec 97 (**24**) L'Anse Bay, JY.

Breeding (numbers approximate): **B** 7 co, 3 pr, 7 po; **H** 96 co, 5 pr, 5 po; **K** 20 co, 1 pr, 1 po).
Summary: total 620 prejuveniles in 92 broods of known size, average 6.7, range 1-12. Only 2 nests found (9 eggs, 20 May 98, Sturgeon River Sloughs, Unit 1, JY; 3 eggs, 27 May 2001, T53N, R33W, Sec. 9, H, JY). Small prejuveniles noted from 18 May 2000 (brood of 4, L'Anse, JY) to 11 Aug 97 (brood of

6, Calumet sewage ponds, LB). Length of breeding season surprising for a bird said to be single-brooded (Baicich & Harrison, 1997). See Discussions: Waterfowl and Other Species at Sewage ponds, including Table 2.

BBS. *Bootjack* 67-73: 11 on 3 of 7 counts (42.6%); mean 1.57; range 0-9. *Bootjack* 92-2005: 71 on 5 of 14 counts (35.7%); mean 5.07; range 0-50 (one flying flock). *Herman*: 32 on 6 of 7 counts (85.7%); mean 4.57; range 0-14.

NAMC. *Baraga Co*: 339 on 6 of 6 counts (100%); mean 56.50; range 33-78; ind/PH 1.32. *Houghton Co.*: 443 on 7 of 7 counts (100%); mean 63.29; range 36-127; ind/PH 1.59.

HCCBC. 457 on 11 of 26 counts (42.3%); mean 17.58; range 0-174; ind/PH .39.

Banding Recoveries. Data indicate a distribution pattern similar to that of the American Black Duck, but Mallards go farther south in winter. Two routes are suggested by birds banded or recovered in the Keweenaw in spring or fall, one directly south through WI (Sep; Oct, 2 birds) and IL (Nov, Dec; wintering?) to winter in TN (Jan, Feb), AL (Nov, 2; Jan), MS (Feb), and LA (Jan), and a second from extreme southern MB (Sep), central MN (Sep; one prejuvenile in Jul), through the Keweenaw Peninsula, Ionia Co., MI (Apr), southeastern ON (Aug, 2; Sep, 4), and NY (Nov, 2, wintering?) to winter in OH (Jan), MD (Nov, Jan), NC (Jan), and SC (Jan). However, some birds possibly spread out randomly or follow numerous routes to the east, southeast, and south, and some from the west may turn south at or near the Peninsula.

Historical Changes. Possibly increasing during early winter (Table 15); recorded on only 2 of the first 11 HCCBC (76-86) but on 9 of the last 15 (87-2001), a pattern similar to that of the Canada Goose; however, many of the latter early winters were relatively warm and ice-free.

Remarks. Hybrids between American Black Duck and Mallard occur occasionally. One on 2 Aug 2001 resembled a pale Black but had narrow white margins on the purple speculum. A male on 4 Jun 2002 was similar to a Black but was paler-bodied and had a wide green stripe above the eye. Both birds were at Calumet sewage ponds, LB (see also American Black Duck, Breeding).

Blue-winged Teal *Anas discors*

Status and Range (B, H, K). **Spring**: common transient, primarily within summer range and habitat. **Summer**: resident, most widespread in northern half of H and immediately adjacent B, especially on sewage ponds and marshes. Common (low values) from second week of May into last week of Jun, when males undergo molt migration to unknown places apparently not in the Keweenaw, leaving only females and young (species then fairly common) until fall migrants begin arriving. Rare in K, where habitat scarce, with no confirmed breeding. **Fall**: transients join summer residents to make the species very common, at times locally abundant. On Lake Superior off Agate Harbor, very common early transient, with 373 recorded in 80.4 mostly morning hours during the count period 24 Aug-25 Sep, or 4.7 per hour, 351 flying eastward and 22 westward (LB, Table 10). Unlike many ducks, does not linger into late fall or early winter, all leaving by 3 Oct, perhaps because its surface food disappears with the first fall storms (see Migration).

Habitat. Nests in grassy situations, such as hayfields, grassy dikes, and sedge-grass meadows, adjacent to open natural and sewage ponds, cattail marsh, sedge-grass marsh, and rarely old beaver ponds with grassy edge. All of these used for feeding and for rearing young. Requires aquatic vegetation in which to hide prejuveniles. Avoids forest-edged ponds, which lack aquatic emergents. Feeds mostly off surface of water rather than dabbling.

Migration Dates. **SEAD**: 28 Mar 98 (Baraga sewage ponds, JY). **SMAD**: 22 Apr (n=26). **SP**: low peak in first week of May, after which transients become indistinguishable from summer residents. **FEAD**: on sewage ponds, first transients noted in last week of Jul, increasing greatly in first week of Aug to peak in last week of Aug and first week of Sep, then decreasing evenly to last week of Sep; seen migrating along Lake Superior shore 13 Aug 2000 (Dan's Point., K, LB) to 25 Sep 96 (Agate Harbor, LB). **FMDD**: 23 Sep (n=8). **FLDD**: 3 Oct 97 (Arnheim, B, JY).

High Counts. **Spring**: multi-party, 11 May 2002 (**48**), H, NAMC; 23 Apr 2000 (**28**) Arnheim, B or H, JY. **Summer**: 24 Jun 97 (**15**) Arnheim, B or H, JY. **Fall**: 27 Aug 99 (**277**) Agate Harbor, 255 flying eastward and 22 westward on migration, LB; 31 Aug 2000 (**160**) Calumet sewage ponds, LB.

Breeding (**B** 4 co, 2 pr; **H** 35 co, 3 pr, 1 po; **K** 1 pr, 2 po).

Summary: two nests, 24 May 97 (2 eggs, Arnheim, B, JY) and 26 May 99 (11 eggs, Arnheim, H, JY). Thirty-six broods of known size totaled 218 young, or 6.1 per brood. Small prejuveniles recorded from 23 Jun 98 to 23 Jul 96 (both broods of 8, Calumet sewage ponds, LB). Thus, spring arrival is about two weeks later and initiation of nesting over a month later than for the Mallard. See Discussions: Waterfowl and Other Species at Sewage Ponds, including Table 2).

Note: the MBBA map (1991) confirmation for K should be reduced to possible.

BBS. *Bootjack* 92-2005: 2 on 1 of 14 counts (7.1%); mean .14; range 0-2. Little habitat on this route.

NAMC. *Baraga Co.*: 109 on 6 of 6 counts (100%); mean 18.17; range 11-24; ind/PH .42. *Houghton Co.*: 173 on 7 of 7 counts (100%); mean 24.71; range 13-48; ind/PH .62.

Banding Recoveries (including some from adjacent counties; listed with banding data first, recovery data second). 17 Aug 69, northeastern AB, Oct 69, H; 21 Aug 78, southern SK, 1 Oct 78, B, Iron, or Marquette Cos.; 23 Aug 50, southwestern MB, 13 Oct 50, B or H; 9 Sep 70, southeastern ON, 6 Oct 72, B or Iron Co.; 12 Oct 69, OH, 9 Oct 71, Marquette Co. *Summary*: transients shot in fall in the Keweenaw and environs breed to the northwest (AB) and west-northwest (SK and MB) and migrate southeast (OH, southeastern ON) and south (MO).

Northern Shoveler *Anas clypeata*

Status and Range (B, H, K). The Northern Shoveler has a temporal pattern similar to that of the Blue-winged Teal, although its nesting period might be slightly longer. One of the rarest breeding ducks in Michigan. Few records for K, where habitat scarce. **Spring**: fairly common (almost uncommon) transient, primarily within summer range and habitat (also seen occasionally at L'Anse Bay head). **Summer**: occasional resident, restricted to northern B (Arnheim and Baraga area) and adjacent northern half of H, in sewage ponds and marshes; absent from large areas of forest, where most ponds and lakes lack marsh and adjacent grassland. No summer record for K (no habitat). In years when present, uncommon in second through last week of Jun, after which some males leave and species becomes very uncommon through fall. **Fall**: very uncommon transient. Arrives as early as 8 Jul (see Migration Dates). During censuses off Agate Harbor, seen only twice, flying west to east, in 209.5 mostly morning hours of observation during the count period 4 Aug-22 Oct, 3 on 27 Aug 99 and 6 on 31 Aug 96, or .04 per hour (LB, Table 10). In addition, a male flew eastward off Hebard Park, K, on 11 Oct 2002 (LB). Does not linger beyond 16 Oct, perhaps because of its surface-foraging behavior (see Migration).

Habitat. Raises broods on shallow open waters of sewage ponds and marshes, presumably nesting in adjacent grassy areas. Usually filter-feeds on water surface rather than dabbling.

Migration Dates. **SEAD**: 28 Mar 2004 (2, Assinins, B, JY). **SMAD**: 22 Apr (n=18). **SLDD**: some transients remain into first week of Jun, overlapping breeders. **FEAD**: may arrive as early as 8 Jul (2004, 3 males, 1 female, Calumet sewage ponds, LB); more likely, but still only occasional, in third week of Jul (*e.g.*, 17 Jul 2002, Lake Linden sewage ponds, 3 females, and Calumet sewage ponds, 1 female, LB, JM). **FP**: slight peak in last week of Aug. **FMDD**: 23 Sep (n=8). **FLDD**: 16 Oct 82 (Baraga, AW) and 95 (Calumet sewage ponds, LB); like Blue-winged Teal but unlike most ducks, does not linger into Nov and Dec.

Significant Records (all K not above).

4 May 99 (male and female) Copper Harbor, LB.
22 Aug 92 (1) Copper Harbor, LB.

High Counts. **Spring**: 23 Apr 2001 (**58**) and 28 Apr 84 (**20**), both L'Anse Bay, JY. **Summer**: 24 Jun 92 (**12**) Tamarack City sewage ponds, LB. **Fall**: 24 Aug 99 (**14**) Calumet sewage ponds LB.

Breeding (**B** 2 co, 1 pr, 2 po; **H** 10 co, 1 pr).

25 May 98 (female with young) Arnheim, Unit 5, H, JY.
5 Jun 2002 (2 males courting 1 female) Baraga sewage ponds, LB, JM.
8 Jun 99 (brood of 3) Baraga sewage ponds, JY; courting noted here 28 May 99, LB.
12 Jun 99 (brood of 9) Arnheim, Unit 7, B, JY.
24 Jun (brood of 9), 21 Jul (previous brood of 9 reduced to 6; two new broods of 7 and 1 small but partly feathered prejuveniles) 2005, all Calumet sewage ponds, LB.
9 Jul 2002 (10 small prejuveniles) Calumet sewage ponds, LB; only 8 young on 17 Jul and 5 on 6 Aug.
18 Jul 2004 (2 large young) Arnheim, Unit 4, H, JY.
25 Jul 89 (9 one-third grown) Lake Linden sewage ponds, LB.
27 Jul 2000 (1 tiny prejuvenile) Calumet sewage ponds, LB.
1 Aug 97 (3 half grown) Lake Linden sewage ponds, LB.
3 Aug 97 (5 young) Arnheim, Unit 4, H, JY.
Summary: normal initial brood size seems to be 9 or 10; small prejuveniles seen as late as 27 Jul.

NAMC. *Baraga Co.*: 50 on 6 of 6 counts (100%); mean 8.33; range 5-12; ind/PH .19. *Houghton Co.*: 18 on 6 of 7 counts (85.7%); mean 2.57; range 0-6; ind/PH .06.

Historical Changes (Table 17). This species probably spread into the Keweenaw from the northwest, like several other ducks. Prebreeding records date back to at least 81 (22 Jun, L'Anse Bay, JY), 86 (2 males, Lake Linden sewage ponds, LB), and 88 (26 Jun, T50N, R34W, Sec. 1, B, 5 males, 1 female, LB; 6 Jul, Tamarack City sewage ponds, H, 1 male, LB). Breeding was first noted in 89, then each year 97-2000, and again in 2002-2005. Continued breeding will depend on how sewage ponds and the Arnheim sloughs are managed (see Discussions: Waterfowl and Other Species at Sewage Ponds, including Table 2).

Northern Pintail *Anas acuta*

Status and Range (B, H, K). **Spring**: locally common transient in *extensive* marshes and on sewage ponds in northern H and adjacent B; casual on L'Anse Bay; no spring record for southern B or H, where good habitat absent; 2 records for K (3 May 2003, 6 flying; 29 Apr 2004, 2 flying; both Manitou Is., JY). **Summer**: locally occasional, mostly non-breeding, resident, with same distribution as in spring. Breeding thus far confined to Swedetown marsh and sewage ponds at Calumet, Lake Linden, and Tamarack City (H), but expected in marshes at Arnheim (B and H) and Sturgeon River Sloughs. See Waterfowl and Other Species at Sewage Ponds, including Table 2. **Fall**: generally rare transient, most regular on Baraga sewage ponds. Uncommon transient on Lake Superior off Agate Harbor, where 63 recorded in 170.4 mostly morning hours during the count period 10 Sep-22 Oct (no later counts), or .4 per hour (LB, Table 10); unlike most other waterfowl at Agate Harbor, 45 flew westward and only18 eastward. **Early winter**: accidental lingerer; 2 records after 9 Nov.

Habitat. Raises broods and forages on sewage ponds with adjacent hayfields or grass-herb areas for nesting and in cattail marsh. Transients feed on sewage ponds and in flooded fields, but more commonly in large cattail and sedge-grass marshes, the scarcity of which accounts for the localness of this species; migrants casually found resting on Lake Superior harbors.

Migration Dates. **SEAD**: 13 Mar 95 (L'Anse Bay, JY). **SMAD**: 23 Apr (n=20). **SP**: first week of May, then decreasing into at least first week of Jun, when casual. **FEAD**: birds migrating over Lake Superior have been seen as early as 10 Sep 93 (Agate Harbor, LB). **FP**: probably in last week of Sep and first week of Oct. **FMDD**: 19 Oct (n=17). **FLDD**: 3 Dec 81 (L'Anse Bay, JY); 28 Nov 87 (L'Anse Bay, AW); 9 Nov 2000 (1, L'Anse Bay, TA, JM).

High Counts. **Spring**: 24 Apr 2003 (**88**) Sturgeon River Road, LB; 19 Apr 2002 (**86**) Arnheim, B, JK, JM. **Fall**: 27 Sep 91 (**29**) Agate Harbor, LB, migrating east to west along shore of Lake Superior; 13 Oct 2000 (**24**) Baraga sewage ponds, LB, JM.

Breeding (**H** 5 co, 1 po).

*5 Jul 88 (brood of 4 large prejuveniles) Swedetown marsh, H, LB.

15 Jul 97 (1 large) Calumet sewage ponds, LB.

18 Jul 94 (3 three-quarters grown) Tamarack City sewage ponds, H, LB.

25 Jul 89 (6 nearly full grown) Swedetown marsh, H, LB.

25 Jul 89 (3 half grown) Lake Linden sewage ponds, LB.

[Summer 87 ("confirmed breeding") K (JPW 65: 76); record should be disregarded.]

NAMC. *Baraga Co.*: 12 on 1 of 6 counts (16.7%); mean 2.00; range 0-12; ind/PH .05. *Houghton Co.*: 5 on 2 of 7 counts (28.6%); mean .17; range 0-4; ind/PH .02.

Historical Changes. This species first bred in 1988. Breeding was preceded by summer records in 76 (3 Jun, Sturgeon River Sloughs, AW), 81 (8 Aug, L'Anse Bay, AW), 83 (8 Aug, Calumet sewage ponds, LB), and 86 (all summer, Lake Linden sewage ponds, LB). See Discussions: Waterfowl and Other Species at Sewage Ponds, including Table 2.

Green-winged Teal *Anas crecca*

Status and Range (B, H, K). **Spring**: common (some days abundant) transient within summer range and habitat. **Summer**: fairly common resident on sewage ponds and marshes, largely confined to northern H and immediately adjacent K (rare) and B; casual nonbreeder elsewhere (*e.g.*, 8 Jul 2000, 1 adult male, Copper Harbor sewage ponds, LB). No confirmed breeding for K. This region is one of the few breeding strongholds for the species in Michigan (P. I. Padding in Brewer *et al.*, 1991). See Waterfowl and Other Species at Sewage Ponds, including Table 2. **Fall**: very common (some days abundant) transient. Common transient on Lake Superior off Agate Harbor (and presumably northern H), where 451 counted in 186.7 mostly morning hours during the count period 4 Aug-13 Oct, or 2.4 per hour (LB, Table 10); of the 451, more (319) were migrating east to west than west to east (132), the reverse of most waterfowl but a characteristic shared with Canada Goose, Snow Goose, and Northern Pintail. These migrants continue southwest along the coast to at least Freda, H (102 counted in 2.5 morning hours on 29 Aug 2004, JY). Does not linger past Nov.

Habitat. Feeds and raises broods on shallow open waters of natural and sewage ponds and cattail and sedge-grass marshes; outside the Keweenaw, places nest in adjacent grass or marsh vegetation, so cutting of any vegetation around sewage ponds would harm this species.

Migration Dates. **SEAD**: 23 Mar 2000 (Arnheim, B, JY); 4 Apr 91 (Lake Upson, K, AW). **SMAD**: 18 Apr (n=20). **SP**: last week of Apr. **SLDD**: transients have been seen as late as 2 Jun 99 (Copper Harbor, LB). **FEAD**: transients have been noted flying along the Lake Superior shore as early as 4 Aug 93 (flock of 6, Agate Harbor, LB). **FP**: last week of Sep and first week of Oct. **FMDD**: 19 Oct (n=16). **FLDD**: 26 Nov 2000 (Arnheim, B or H, JY); 9 Nov 89 (L'Anse Bay, AW).

High Counts. **Spring**: 19 Apr 2002 (**100**) Arnheim, B or H, JK; 27 Apr 97 (**65**) Arnheim, B or H, JY. **Summer**: 24 Jun 97 (**14**) Arnheim, B or H, JY. **Fall**: 7 Oct 99 (**185**) Lake Linden, LB; 28 Sep 2000 (**110**) Sturgeon River mouth, JY; 29 Aug 2004 (**102**) see above; 29 Sep 93 (**67**) Agate Harbor,

LB, actively migrating; 10 Oct 97 (**65**) Calumet sewage ponds, LB; 25 Oct 98 (**65**) Baraga, LB.

Breeding (**B** 1 po; **H** 18 co, 1 pr, 2 po; **K** 1 pr).

2 Jun 98 (brood of 11 small prejuveniles) Arnheim, Unit 5, H, JY.

*5 Jul 88 (9 large) Swedetown marsh, H, LB.

*9 Jul 88 (7 small) .5 mi E Centennial Heights, H, LB.

9 Jul 2002 (9 tiny) Calumet sewage ponds, LB.

10 Jul 97 (2) Calumet sewage ponds, LB.

*14 Jul 88 (3 small) near Swedetown marsh, H, LB.

15 Jul 97 (young) Arnheim, H, JY.

*21 Jul 88 (4 three-quarters grown) .5 mi N Oskar, T55N, R34W, Sec. 8, H, LB.

21 Jul 2002 (4) Arnheim, Unit 6, H, JY.

21 Jul 2005 (broods of 6 large, feathered; 9 half-grown; 2 medium sized downies) Calumet sewage ponds, LB.

23 Jul 2000 (young) Arnheim, Unit 6, H, LM, JY.

23 Jul 2001 (5 small) Arnheim, Unit 4, H, LM.

25 Jul 96 (3) Arnheim, Unit 2, H, JY.

31 Jul 2001 (5 three-quarters grown) Calumet sewage ponds, TA, LB, JM.

8 Aug 97 (6 small) Calumet sewage ponds, LB.

15 Aug 2003 (3 small) Calumet sewage ponds, LB.

Summary: 16 broods of known size averaged 5.5 prejuveniles, range 2-11; small prejuveniles noted from 2 Jun to 15 Aug; no nests found. Said to be single-brooded (Baicich and Harrison, 1997), so Aug records presumably represent late nestings or renestings. See Discussions: Waterfowl and Other Species at Sewage Ponds, including Table 2.

BBS. *Herman*: 3 on 2 of 7 counts (28.6%); mean .43; range 0-2.

NAMC. *Baraga Co.*: 51 on 6 of 6 counts (100%); mean 8.50; range 4-15; ind/PH .20. *Houghton Co.*: 198 on 6 of 7 counts (85.7%); mean 28.29; range 0-55; ind/PH .71.

Banding Recoveries. One banded 26 Feb 72 in NC and shot in Marquette Co., MI, in Oct 74 is our only clue to the wintering grounds of Keweenaw migrants.

Canvasback *Aythya valisineria*

Status and Range (B, H, K). Occurs primarily on Keweenaw Bay, Baraga sewage ponds, and Portage Lake (especially Pike Bay at Chassell), with two older records (10 May 75, 21 Apr 78, AW) from the Sturgeon River Sloughs and only three records for K. **Spring**: transient, formerly very uncommon, but rare since about 1985; only 1 spring record for K, 4 May 31, 3 birds, Copper Harbor (Wood, 1931). **Summer**: accidental visitant; 1 record, 26 Jun 88 (female) L'Anse Bay, LB. **Fall**: transient, generally occasional. Rare migrating west to east along Lake Superior off Agate Harbor, where seen only twice in 139.8 mostly morning hours of observation during the count period 21 Sep-22 Oct, 8 on 10 Oct and 5 on 21 Oct 94, or .1 per hour (LB, Table 10). **Early winter**: casual lingerer to 17 Dec on Portage Lake and L'Anse Bay (see Migration Dates).

Habitat. Feeds on moderately deep, larger bodies of open water, but not Lake Superior proper or upper Keweenaw Bay. Casual on sewage ponds.

Migration Dates. **SEAD**: 28 Mar 2004 (1, Assinins, B, JY); 6 Apr 2000 (Chassell, H, JY). **SMAD**: 20 Apr (n=12). **SLDD**: 13 Jun 2002 (adult male, Calumet sewage ponds, LB); 24 May 95 (Baraga, JY); 13 May 77 (Sands, H, AW). **FEAD**: 21 Sep 97 (Baraga sewage ponds, S. Andres). **FMDD**: 3 Nov (n=8). **FLDD** (all early winter dates): 17 Dec 77 (HCCBC); 18-25 Nov 95 (L'Anse Bay, JY); 9-10 Nov 89 (L'Anse Bay, AW); 6 Nov 97 (L'Anse Bay, LM, JY).

High Counts. **Spring**: 14 Apr 64 (**15**) L'Anse Bay, R. R. Rafferty (JPW 43: 29); 26 Apr 2001 (**13**) Chassell, H, LB; 11 May 79 (**12**) Sands, H, AW. **Fall**: 24 Sep 76 (**20**) Hancock, F. B, Isaacs; 10 Oct 94 (**8**) Agate Harbor, LB, transients flying west to east.

HCCBC. 2 on 1 of 26 counts (3.8%); mean .08; range 0-2; ind/PH .002.

Historical Changes (Table 17). The Canvasback has declined continent-wide, including in the Keweenaw. A. Weaver recorded Canvasbacks in 9 of 11 springs from 75 to 85, but thereafter only twice (1989 and 1992) in the next 14 years. During the same period, in B, JY recorded it in 81 and 83 but then only singles in 95, 96, 97, and 99. Note also that two of three spring High Counts are old—in 64 and 79.

Redhead *Aythya americana*

Status and Range (B, H, K). **Spring**: very uncommon transient on L'Anse Bay, Baraga sewage ponds, and Portage Lake. Casual elsewhere (*e.g.*, 27 Apr 2000, 1 female, Lake Fanny Hooe, K, LB; 3 May 2003, 4 on water, Manitou Is., JY; 30 May 2002, 3 pairs, Ahmeek sewage ponds, K, LB, JM; 3 Jun 2004, male, Calumet sewage ponds, LB). **Summer**: accidental nonbreeding resident (1 record). Casual visitant in July; these appear be very early fall transients (some were males and might have been on molt migration), although a month intervenes between these and the earliest definite migrants in late Aug. I doubt that proper breeding habitat occurs in the Keweenaw, although this species is partially parasitic in its egg laying. **Fall**: transient, irregularly very common on Baraga sewage ponds, regularly very common (some days abundant) over Lake Superior off north shore of H and K (see below), fairly common on L'Anse Bay and H sewage ponds, and rare in Copper Harbor; one record

for head of Huron Bay, B (6 Oct 2000, 4, JY). Off Agate Harbor, 677 counted migrating west to east in 164.6 mostly morning hours during the count period 15 Sep-22 Oct (no later counts), or 4.1 per hour (LB, Table 10). **Early winter**: lingers through 9 Jan, casual on Portage Lake, South Portage Entry, and L'Anse Bay and accidental elsewhere.

Habitat. Highest numbers seen in fall migrating off Agate Harbor. Elsewhere, feeds on moderately large, shallow, open waters of sewage ponds, L'Anse Bay, Portage Lake, and rarely Copper Harbor.

Migration Dates. **SEAD**: 20 Mar 95 (L'Anse Bay, JY); 1 Apr 91 (L'Anse, AW), 89 (Copper Harbor, LB), and 2000 (7, Keweenaw Bay 6 mi SE Chassell, H, JY). **SMAD**: 25 Apr (n=17). **SMDD**: 19 May (n=12). **SLDD**: 3 Jun 2004 (see Spring). **FEAD**: 23 Aug 94 (Tamarack City sewage ponds, H, LB). **FMAD**: 20 Sep (n=11). **FP**: second week of Oct. **FMDD**: 21 Nov (n=10). **FLDD**: see Significant Records.

Significant Records.

Summer (all).

27 May (at least)-2 Sep 2000 (adult male), Copper Harbor sewage ponds and bay, LB, JM.

14 Jul 94 (2) L'Anse Bay, JY.

20 Jul 99 (2 adult males) Tamarack City sewage ponds, H, LB; absent on 22 Jul.

26 Jul 2005 (1) Baraga sewage ponds, Z. Gayk, S. Haas.

27 Jul 2000 (male and female) Calumet sewage ponds, LB; molting male that did not remain.

23 Jul 2002 (female) Tamarack City sewage ponds, LB, JM.

26 Jul 99 (4) Baraga sewage ponds, JY.

Early winter (all).

21 Nov 96, Cole's Creek mouth, H, AW.

25 Nov 95 (2) L'Anse Bay, JY.

1, 3 Dec 62 (1) Chassell, H, J. Weber (JPW 41: 163).

22 Dec 77 (2) Jacobsville, H, AW.

29 Dec 97 (2) Jacobsville, H, RH.

9 Jan 2001 (2) Copper Harbor, RH.

High Counts. **Spring**: multi-party, 11 May 96 (**18**) H, NAMC; 7 May 97 (**16**) B, JY. **Fall**: 27 Sep 92 (**165**), 21 Oct 94 (**75**), 28 Sep 98 (**65**), 8 Oct 88 (**64**), 7 Oct 90 (**43**) all Agate Harbor, LB, transients flying west to east; 8 Oct 95 (**42**) Baraga sewage ponds, JY, highest count on water.

NAMC. *Baraga Co.*: 10 on 4 of 6 counts (66.7%); mean 1.67; range 0-4; ind/PH .04. *Houghton Co.*: 26 on 3 of 7 counts (42.9%); mean 3.71; range 0-18; ind/PH .09.

Banding Recoveries. Six shot in Oct-Nov on the Peninsula banded to east and southeast in NY (Mar), NC (Feb), and VA (Feb) and to west-northwest in extreme southwestern MB (Jul; Aug, 2) suggest a northwest-southeast route from breeding grounds in MB through the Peninsula and NY to wintering grounds in NC and VA. The eastward component mirrors the west to east direction of migration off Agate Harbor in fall.

Ring-necked Duck *Aythya collaris*

Status and Range (B, H, K). **Spring**: common transient on ponds and lakes and on L'Anse Bay; very common on Calumet and Baraga sewage ponds. **Summer**: widespread but very local resident, very uncommon except at Calumet sewage ponds, the only sewage ponds used for breeding, where common to very common 96-2005 (see Habitat below, and Waterfowl and Other Species at Sewage Ponds in Discussions). Recorded in only 7 of 77 censused townships (MBBA map 1991). **Fall**: transient, generally very uncommon, numbers in most places not exceeding summer, but common at Baraga sewage ponds. Very uncommon off Agate Harbor, where only 10 counted (including 7 east to west) in 164.6 mostly morning hours of observation during the count period 15 Sep to 22 Oct, 86-99, or .06 per hour (LB, Table 10), although a few others could have been "hidden" within flocks of other *Aythya* species. Adult males start leaving in mid Jul on molt migration, the latest date being 31 Jul 97 (1, Calumet sewage ponds, LB); the molting grounds are not on the Keweenaw Peninsula, where I have never seen a molting adult male in summer or early fall (but many late fall transients are in molt). At Calumet, all birds leave as soon as the young are able, the latest dates varying annually from mid Sep to 4 Oct 95 (LB). Lingers in the Baraga region through 12 Nov, with 9 Peninsula records thereafter; I consider, rather subjectively, the 17-day birdless gap between 12 Nov and 30 Nov to separate fall and early winter populations, but this might be an artifact of coverage. **Early winter**: casual lingerer from 30 Nov to 7 Jan, with most records on L'Anse Bay.

Habitat. Said to place nest on islands or floating vegetation in the sedge-shrub zone of bogs and sedge marshes (D. Reeves in Brewer *et al.*, 1991), which accounts for its breeding abundance at the Calumet sewage ponds, which are adjacent to a sedge marsh-shrub wetland, a habitat not present near the other sewage ponds. That the Calumet birds do not nest around the periphery of the ponds is demonstrated by the fact that all aquatic vegetation was removed in 1998, but the birds bred in 1999. Elsewhere on the Peninsula, breeds on small lakes and ponds encircled by emergent vegetation and shrub wetland and occasionally in marshes with sufficient open water. Forages in small shallow bodies of open water with emergent vegetation, notably sewage ponds but also small lakes, natural ponds (including beaver), and open waters of marshes.

Migration Dates. **SEAD**: 24 Mar 2000 (Baraga sewage ponds, JY). **SMAD**: 18 Apr (n=23). **SP**: last week of

Apr, with many transients remaining into at least second week of May. **FMDD**: 30 Nov (n=14). **FLDD**: see Significant Records.

Significant Records (all early winter dates after 12 Nov).

30 Nov 96 (1) L'Anse Bay, JY.
30 Nov 99 (1) Baraga sewage ponds, JY.
30 Nov, 6, 8, 13 Dec 97 (2) L'Anse Bay, JY.
11 Dec 2004 (2) L'Anse, JY.
12 Dec 92 (1) L'Anse Bay, AW.
13-15 Dec 2001 (up to 3) Chassell, H, JY; HCCBC on 15 Dec.
16 Dec 2001 (1) Lac La Belle, K, JY, Eagle Harbor Christmas Bird Count. 21 Dec 86 (1) HCCBC.
22 Dec 2001 (1) Torch Lake, H, TA.
30 Dec 80 (1) L'Anse Bay, AW.
27 Dec 2001-7 Jan 2002 (up to 2) L'Anse Bay, JK, JY; 7 Jan bird injured.

High Counts **Spring**: multi-party, 11 May 96 (**234**) H, NAMC; 29 Apr 2000 (**116**) B, H, K, LB, JM; 1 May 97 (**66**) B or H, JY. **Summer:** 27 Jun 97 (**26** adults) Calumet sewage ponds, LB. **Fall**: 6 Oct 96 (one tight flock of **112** migrants on water) Lake Bailey, K, LB, exceptional; 19 Oct 2001 (one feeding flock of **110**) Agate Harbor, North Bay, LB, exceptional. **Early winter**: 19 Dec 2004 (**12**) L'Anse, S. Haas.

Breeding (**B** 2 co, 1 pr; **H** 51 co, 1 pr; **K** 1 co, 1 pr, 1 po) (all except Calumet sewage ponds).

22 Jun 2004 (brood of very small young) Honker's Pond, Baraga Plains, T49N, R34W, Sec. 27, JY.
*5 Jul 88 (brood of 5 large prejuveniles) Swedetown marsh, H, LB.
7 Jul 2002 (6) Arnheim, Unit 6, H, LM, JY.
23 Jul 93 (2 broods, 5 one-quarter grown, 5 three-quarters grown) Calumet Lake, LB.
23 Jul 2000 (young) May Lake, B, LM.
*29 Jul 86 (7 one-quarter grown) Lake Upson, K, LB.

Summary: all breeding records are for the Calumet sewage ponds except the 6 above. Total 416 young in 64 broods of known size, average 6.5, range 1-13. No nests found. Small prejuveniles recorded from 22 Jun 2004 (see above) to 4 Sep 97 (6, Calumet sewage ponds, LB). Considerable variation in timing from year to year, *e.g.*, broods of tiny young in 96 first seen on 16 Jul, then 9 in Aug; in 97, 3 in Jun, 4 in Jul, 1 in Sep. Best years were 2001, with 85 young on 9 Aug, and 2005, with 84 on 21 Jul, both at the Calumet sewage ponds (LB). Survivorship of the young after they reach open water is nearly 100% at Calumet because of the absence of large fish and turtles and the species' avoidence of roosting on shore, where predators might catch them. See Discussions: Waterfowl and Other Species at Sewage Ponds, including Table 2.

BBS. Herman: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

NAMC. Baraga Co.: 137 on 6 of 6 counts (100%); mean 22.83; range 4-54; ind/PH .53. *Houghton Co.*: 322 on 7 of 7 counts (100%); mean 46.00; range 2-234; ind/PH 1.16.

HCCBC. 4 on 2 of 26 counts (7.7%); mean .15; range 0-3; ind/PH .003.

Banding Recoveries. Three shot in H in Oct banded in SC (25 Nov, 22 Dec) and AL (5 Mar), where all could be transients or winter residents.

Historical Changes. As a breeder, this species invaded Michigan from the west in the 1930s and 40s (D. Reeves in Brewer *et al.*, 1991). For the Keweenaw Peninsula, listed without comment (and probably doubtful) by Kneeland (1857), but not by Cahn (1918) for 1914 or Wood (1933) for 1931. When it arrived in the Keweenaw is unknown.

Greater Scaup *Aythya marila*

Status and Range (B, H, K). Occurs on bays along north shore of K, L'Anse Bay, Portage Lake, and rarely northern H sewage ponds. Exact status obscured by confusion with Lesser Scaup. **Spring**: transient, apparently rare, recorded 17 May 90 (3 birds) to 3 Jun 86 (5), both on Lake Linden sewage ponds (LB), but probably occurs much earlier; see NAMC. **Summer**: accidental visitant; 3 records. **Fall**: uncommon transient generally; much less numerous on L'Anse Bay and inland waters than Lesser, except very common (many days abundant), and hence far more numerous than Lesser, migrating west to east along Lake Superior shores of northern K and H, where seen on water only in Copper Harbor (where rare). Abundant off Agate Harbor, where 1712 counted during 164.6 mostly morning hours of observation during the count period 15 Sep-22 Oct (no later counts), or 10.4 per hour (LB, Table 10), which makes it the most numerous duck in the Keweenaw; and if one apportions the recorded 2465 scaup sp. between Greater and Lesser by percentage identified, the figures become more realistic—4029 Greaters, or 24.5 per hour. **Early winter** lingers, probably casually, to 1 Jan on Portage Lake system and L'Anse Bay.

Habitat. Feeds in moderately deep and large open waters, for the most part avoiding smaller inland lakes and ponds, where Lesser Scaup is much more likely.

Migration Dates. **SEAD**: see Spring. **SLDD:** 3 Jun 86 (Lake Linden sewage ponds, LB). **FEAD**: 30 Aug 2005 (female) Copper Harbor sewage ponds, T. Auer, LB; 9 Sep 2001 (male flying east, Dan's Point, K, LB); 15 Sep 93 (Agate Harbor, LB). **FMAD**: 25 Sep (n=10). **FP**: second

week of Oct. **FLDD**: 26 Dec 2001-1 Jan 2002 (2, Baraga marina, RH, JK photos); 29 Dec 2002 (8, head L'Anse Bay, JY); most gone by second week of Nov.

Significant Records.

Summer (all).

3-23 Jun 89 (male) Agate Harbor, LB.

27 Jun 2000 (male) South Portage Entry, H, JY.

29 Jul 90 (1 male) Lake Linden sewage ponds, LB.

Early winter (all not under Migration Dates; identity perhaps questionable).

17 Dec 77 (4) HCCBC.

20 Dec 97 (12) HCCBC.

Note: for scaup sp. on HCCBC, see Table 15.

High Counts. **Summer**: 3 Jun 86 (**5**) Lake Linden sewage ponds, LB. **Fall**: 16 Oct 86 (**344**) and 13 Oct 94 (**306**) both Agate Harbor, LB, transients flying west to east along Lake Superior shore. **Early winter**: 24 Dec 2002 (**12**) L'Anse Bay, TA, JM. See also Lesser Scaup.

NAMC. *Baraga Co.*: 4 on 1 of 6 counts (16.7%); mean .67; range 0-4; ind/PH .02; 12 May 2001. [*Houghton Co.*: 239 reported on 4 of 7 counts (57.1%); mean 34.14; range 0-116; ind/PH .86. All records, 11 May 96 (116), 10 May 97 (80), 12 May 2001 (18), and 11 May 2002 (25) need documentation, as Greaters have not been found in such numbers anywhere else on the Peninsula in spring.]

HCCBC. 16 on 2 of 26 counts (7.7%); mean .62; range 0-12; ind/PH .003. Identification perhaps questionable. Scaup sp. recorded as follows: 38 on 8 of 26 counts (30.8%); mean 1.46; range 0-11; ind/PH .03.

Banding Recoveries. Singles shot in H in fall 61 and in B 19 Oct 73 banded in NY (Jan) and VA (Nov), respectively. Also, one found dead 23 May 70 in Marquette Co. banded in NJ (Jan). These limited data correlate with the heavy eastward migration noted off Agate Harbor in fall and with wintering on the Atlantic coast.

[*Remarks*. Wood (1933) mentions a flock of 20 on Copper Harbor 27 May 31. However, later (1951) he fails to list this record, even under scaup sp., perhaps doubting it himself, as I do.]

Lesser Scaup *Aythya affinis*

Status and Range (B, H, K). **Spring**: very common transient on Portage Lake system, L'Anse Bay, and Baraga sewage ponds; fairly common at Copper Harbor, Arnheim sloughs, and northern H sewage ponds; rare elsewhere. **Summer**: occasional non-breeding resident in about 50% of years in northern H and adjacent B, primarily on L'Anse Bay and sewage ponds, sometimes marsh ponds. When present, numbers have varied from 1 to 7. No indication of breeding, but has bred in Dickinson Co., MI (R. J. Adams in Brewer *et al.*, 1991) and should be sought, especially at unmanicured sewage ponds (see Discussions: Waterfowl and Other Species at Sewage Ponds). **Fall**: common transient in same areas as in spring. Much less numerous than Greater Scaup, probably fairly common, migrating west to east off Agate Harbor, where 110 seen during 195.5 mostly morning hours during the count period 27 Aug-22 Oct (no later counts taken), or .6 per hour (LB, Table 10); however, if one apportions the 2465 scaup sp. between Greater and Lesser by percentage identified, the figures become 258 Lessers or 1.3 per hour (common). **Early winter**: occasional lingerer through 20 Dec on L'Anse Bay, Baraga sewage ponds, South Portage Entry (H), and elsewhere on Portage Lake system.

Habitat. Feeds on moderately deep, open, coastal waters, inland lakes, deep ponds (especially sewage ponds), and occasionally marsh ponds (*e.g.*, Arnheim, H). Much more likely than Greater on ponds and smaller inland lakes.

Migration Dates. **SEAD**: 1 Apr 91 (Baraga, AW). **SMAD**: 18 Apr (n=22). **SP**: about 1 May; remains numerous through second week of May and fairly common in third week. **SLDD**: latest transient noted 10 Jun 97 (Calumet sewage ponds, LB). **FEAD**: 27 Aug 99 (Agate Harbor, LB, migrating west to east); 10 Sep 87 (Lake Linden, LB). **FMAD**: 30 Sep (n=18). **FP**: second week of Oct. **FLDD**: 20 Dec 97 (1, HCCBC).

Significant Records.

Early winter (all; identity of some perhaps questionable).

1 Dec 2001 (8; not 6 as in MBNH 9: 158) Baraga sewage ponds, RH, JK, K. Tischler.

15 Dec 79 (7) HCCBC.

20 Dec 97 (1) HCCBC.

Note: see Greater Scaup (HCCBC) and Table 15 for scaup sp. records.

High Counts. **Spring**: 11 May 2002 (**167**) Pike Bay at Chassell, H, plus Baraga sewage ponds, LB, JM; 29 Apr 2000 (**137**) B and H, LB, JM; also, scaup sp., 27 Apr 85 (**400**) South Portage Entry (H) plus Baraga sewage ponds, AW, and 2 May 2000 (**314**) Sturgeon River mouth, JY. **Summer**: 17 Jun 99 (**7**) Tamarack City sewage ponds, H, LB. **Fall**: 13 Oct 94 (**43**) Agate Harbor, LB, migrating west to east along Lake Superior shore; 9 Oct 98 (**40**) Baraga sewage ponds, LB. **Early winter**: multi-party, 15 Dec 79 (**7**) HCCBC.

BBS. *Herman*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

NAMC. *Baraga Co.*: 305 on 6 of 6 counts (100%); mean 50.83; range 5-167; ind/PH 1.19. *Houghton Co.*: 317 on 6 of 7 counts (85.7%); mean 45.29; range 0-115; ind/PH 1.14.

HCCBC. 8 on 2 of 26 counts (7.7%); mean .31; range 0-7; ind/PH .01. See Greater Scaup.

Banding Recoveries. Four birds banded in NY (28 Feb), VA (13 and 17 Mar), and FL (9 Feb) and shot in fall in B

and H indicate wintering on Atlantic coast. Two banded in eastern interior AK (Jul, Aug) and one at Great Slave Lake, MacKenzie, NT (14 Aug 66; prejuvenile; shot in H 15 Nov 66), demonstrate breeding far to the northwest, the farthest about 2350 mi away in AK.

King Eider *Somateria spectabilis*

Status and Range (H). Accidental late **fall** vagrant. Two specimen records: 12 Nov 50 (female, UMMZ 119877) Pilgrim River mouth, collected by Trambley, E. Bourdo, and G. A. Hesterberg (no. 106) (Zimmerman & Van Tyne, 1959; Weaver, 2000; UMMZ, in litt.), first Upper Peninsula record (Dodge, 1961); 5 Nov 77 (immature male specimen, Lake Superior State University) South Portage Entry, H, T. A. Allan (in litt.), shoots of wild celery (*Valisneria* sp.) in esophagus and proventriculus.

Harlequin Duck *Histrionicus histrionicus*

Status and Range (B, H). Accidental **spring** and **early winter** transient; 4 records, 30 May and 19 Dec-5 Jan. That the winter records were at South Portage Entry (H) and L'Anse Bay probably is no coincidence, as these are the last bodies of water to freeze in early winter, when the Harlequin is most likely to occur on the water. Might prove more regular flying along the north shore of K during at least fall migration, as at Whitefish Point (Granlund & Byrne, 1996), where fall birds migrate eastward and spring birds westward, suggesting they are from the western population, as does the May Keweenaw record (also suggested by A. W. Schorger in Palmer 1976b). In this respect, Phloeger (1968) attributed the lack of subspecific variation in Atlantic *vs.* Pacific populations of the Harlequin Duck to gene stability; if, however, western birds occasionally stray eastward, some might remain to breed, thus facilitating gene flow.

Significant Records (all).

30 May 2003 (1 immature male) L'Anse marina, JY; not found the next day.

19 Dec 98 (1 first-year male) west side of South Portage Entry, T53N, R33W, Sec. 24, HCCBC, LM, JY (description in LB files).

30 Dec 70 (3, including adult male) South Portage Entry about 1 mi N of where Portage Lake joins Keweenaw Bay, B. and D. Wolck on "Houghton Christmas Bird Count" (JPW 71: 16). Complete circumstances and adequate description given to LB by B. Wolck (in litt.).

4-5 Jan 2002 (1 female) Baraga marina, L'Anse Bay, JK, R. Sischo, JY.

[Dec 96 (1) in Copper Harbor, "(via SA)" (MBNH 4: 159; FN 51: 751). "SA"refers to Susan Andres, who did not see the bird (Andres, in litt.). Lack of documentation makes this record unacceptable.]

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Surf Scoter *Melanitta perspicillata*

Status and Range (B, H, K). **Spring**: seemingly accidental, but should be sought migrating westward along the north shore of K; 1 record, 23 (TA)-26 (JY) May 2004 (adult male, 2 females) Baraga marina. **Summer**: accidental visitant; 1 record, 2 females on 19 and 22 Jun, 1 still present on 4 Jul 96, Copper Harbor, LB. **Fall**: common (some days abundant) transient on Lake Superior along north shore of K and northern H. At Agate Harbor, during the count period 15 Sep-22 Oct (no later counts taken), 522 seen in 164.6 mostly morning hours or 3.2 per hour (LB, Table 10); 494 were flying west to east and 28 east to west. Elsewhere, uncommon transient, feeding and resting coastally on L'Anse Bay, Copper Harbor, and South Portage Entry (H), but not Lake Superior proper or upper Keweenaw Bay. No inland record. Only a few adult, alternate plumage males have been recorded. **Early winter**: casual lingerer on L'Anse Bay 12 Nov-22 Dec.

Habitat. Most often seen flying west to east off north shore of K and northern H. Coastally oriented when on water, frequenting moderately deep, large, open bodies of water, but not outer shoreline of K or H.

Migration Dates. **FEAD**: 15 Sep 98 (Agate Harbor, LB). **FMAD**: 24 Sep (n=13), based solely on LB migration study at Agate Harbor. **FP**: about 2 Oct. **FMDD**: 8 Nov (n=8). **FLDD** (all L'Anse Bay): 28 Dec 2002 (1, L. Taccolini, MBNH 10: 111); 22 Dec 97 (l, JY); 21 Nov 99 (AW).

Significant Records (specimens).

31 Oct 66 (immature, MTU), Portage Lake, collected by a student (Sloan, 1967). I could not find this specimen in the MTU collection and suspect it has been discarded.

4 Nov 69 (immature female, MTU), "Houghton," G. Meadows. I interpret "Houghton" to mean the general region of town.

High Counts. **Fall**: 27 Sep 93 (**80** in one flock flying east) Hebard Park, K, LB; 2 Oct 90 (**68**), 10 Oct 94 (**36**), 25 Sep 87 (**35**), all three Agate Harbor, LB, migrating eastward along shore of Lake Superior; 9 Oct 99 (**10**) L'Anse Bay, JY, highest number on water.

White-winged Scoter *Melanitta fusca*

Status and Range (B, H, K). **Spring**: casual transient; recorded four times on Portage Lake, twice on Keweenaw Bay (B, H), and twice in K. Should be sought migrating east to west off north shore of K, especially in May, when it is common at Whitefish Point (Devereaux & Mason, 1985; Granlund & Byrne, 1996). **Fall**: transient;

very common (some days abundant) migrating west to east along north shore of K and northern H, where not seen on water except in Copper Harbor (where rare but frequent). At Agate Harbor, during the count period 25 Aug-22 Oct (no later counts taken), 940 seen in 196.5 mostly morning hours, or 4.8 per hour (LB, Table 10); 922 flew eastward and 18 westward. Elsewhere, uncommon on Pequaming Bay (B), L'Anse Bay, and South Portage Entry (H); unrecorded on inland waters, except once on Portage Lake (2 birds, 4 Nov 2000, Sturgeon River mouth, JY). Adult alternate plumage males seen rarely. **Early winter**: occasional lingerer from second week of Nov through 7 Jan on L'Anse Bay and South Portage Entry (H), the last moderately deep coastal waters to freeze.

Habitat. Most often seen flying in fall west to east off north shore of K and northern H. Coastally distributed when feeding, preferring moderately deep, large, open bodies of water, but not the outer perimeter of K or H.

Migration Dates. **SEAD**: 30 Apr 76 (Sands, H, AW). **SLDD**: 6 Jun 2004 (2, head L'Anse Bay, JY; 22-26 May 2002 (adult male, Copper Harbor, LB, JM, K. Overman). **FEAD**: 25 Aug 87 and 31 Aug 93 (both Agate Harbor, LB); 9 Sep 2001 (20, Dan's Point, K, LB). **FMAD**: 27 Sep (n=12; LB Agate Harbor migration study only). **FP**: about 10 Oct. **FMDD**: 3 Dec (n=11). **FLDD**: 7 Jan 2002 (2, Baraga, JK).

Significant Records.

Spring (all not listed under Migration Dates).

9 May 79 (2) Sands, H, AW.
10 May 81 (1) Houghton, AW.
12 May 2002 (10) Keweenaw Bay 6 mi SE Chassell, H, J. DeFoe, LM, JY.
20 May 82, Sands, H, AW.
24 May 2004 (40 in flock) Big Traverse Bay, K, TA.
Note: [a record for 18 Mar 84 (1) north of Gay, K (Weaver, 1995) seems unlikely on basis of locality and early date.]

Early winter (all Dec-Jan not given under Migration Dates).

1 Dec 74 (1) South Portage Entry, H, AW.
3 Dec 96 (1) Baraga, JY.
8 Dec 79 (7) L'Anse Bay, AW.
15 Dec 79 (4) Jacobsville, H, AW.
19 Dec 92 (1) HCCBC.
24 Dec 2002 (2) L'Anse Bay, TA.
26 Dec 2001 (1) Baraga, JK.
30 Dec 99 (1) Pequaming, JY.
Specimen: 1966 (immature male, MTU 458) Portage Lake, J. Betts.

High Counts. **Spring**: (**40**) see above. **Fall**: 10 Oct 87 (**199** in 8 flocks), 20 Oct 94 (**102**), 12 Oct 87 (**69**) all three Agate Harbor, LB, migrating west to east; 21 Oct 95 (**8**) Baraga, JY, maximum count on water. [Record of 100 at Copper Harbor, 23 Nov 87 (JPW 66: 30) is doubtful.]

HCCBC. 5 on 2 of 26 counts (7.7%); mean .19; range 0-4; ind/PH .004.

Black Scoter *Melanitta nigra*

Status and Range (B, H, K). **Spring**: accidental transient. Two records: 12 May 2002 (male and female adults) Keweenaw Bay,6 mi SE Chassell, H, J. DeFoe, LM, JY; 23 May 65 (3) Baraga, E. M. Harger (JPW 43: 157). Should be sought migrating east to west off north shore of K. **Fall**: transient. Uncommon on Lake Superior off north shore of K (and presumably H), where seen on the water rarely and only in Copper Harbor. At Agate Harbor, during the count period 2-22 Oct (no later counts), 18 seen in 95.4 mostly morning hours, or .21 per hour (LB, Table 10); 17 flew eastward and 1 westward. Elsewhere occasional on L'Anse Bay and South Portage Entry (H), with one inland record (31 Oct 99, 1 bird, Oskar Bay, H, LM, JY), but not Lake Superior proper, upper Keweenaw Bay, or most inland waters. No adult alternate plumage males have been recorded. **Early winter**: casual lingerer from mid Nov through Dec on South Portage Entry (H) and L'Anse Bay. See Migration Dates for all Nov-Dec dates.

Habitat. Most often seen flying west to east along north shore of K. Coastal when feeding, preferring moderately deep, large, open bodies of water; Lake Superior proper is too deep and even along the shore lacks food.

Migration Dates. **FEAD**: 2 Oct 90 (Agate Harbor, LB), but should be sought earlier. **FMAD**: 14 Oct (n=10), based solely on LB migration study at Agate Harbor, but data meagre. **FMDD**: 13 Dec (n=8). **FLDD** (all Nov-Dec dates): only stragglers left after end of Oct: 30 Dec 70 (South Portage Entry, H, B. and D. Wolck; JPW 71: 16); 27 Dec 2001 (1, L'Anse Bay, RH, JK photos); 17 Dec 77 (l, HCCBC); 13 Dec 99 (female, L'Anse Bay, JY, present since at least 15 Nov); 7 Dec 2003 (female, L'Anse Bay, JY); 12 Nov 77 (female, South Portage Entry, H, AW), 98 (1, L'Anse Bay, JY), and 2000 (8, L'Anse Bay, JM, M. Scheiwe).

High Counts. **Fall**: 9 Nov 2000 (**12**) L'Anse (8) and South Portage Entry, H (4) TA, JM, on water; 10 Oct 94 (**8**) Agate Harbor, LB, migrating west to east; 17 Oct 86 (**4**) Copper Harbor, LB, on water.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Remarks. I have not used the following records, although they might be correct: 15, 16 Sep 87, Copper Harbor (JPW 66: 30; seems too early); Dec 1996, Copper Harbor (MBNH 4: 159); 14 Nov 87 (1 female) Baraga sewage ponds (Weaver, 2000).

Long-tailed Duck *Clangula hiemalis*

Status and Range (B, H, K). Recorded primarily around the coastal perimeter; one record for Portage Lake (29 Apr 2001). **Spring**: occasional, perhaps very rare, transient; 15 records, 6 Mar-19 May. **Summer**: accidental visitant; 1 record, 8-11 Jul 2002, immature male, Baraga marina, JY. **Fall** and **early winter**: transient on coastal waters. Locally fairly common in first three weeks of Oct migrating west to east along north shore of K and H; at Agate Harbor, during the count period 29 Sep-22 Oct (no later counts), 63 seen in 103.3 mostly morning hours, or .6 per hour (LB, Table 10). However, data elsewhere in the Keweenaw and from Whitefish Point (Granlund & Byrne, 1996) indicate the major migration period on Lake Superior is the last half of Oct and first half of Nov, when probably at least very common at Agate Harbor. To test this idea, JY observed migrating waterfowl at Dan's Point, K, recording 29 "Oldsquaws" (21 eastbound, 8 westbound), or 19.3 per hour, on 12 Nov 99 and 14 (12 eastbound), or 12.7 per hour, on 3 Dec 2001, giving a detectability of abundant. Not noted feeding on Lake Superior proper (where sometimes resting; waters may be too deep, or lack prey, even for this deep-diving species). Elsewhere, lingers to 7 Jan on last, moderately deep, open waters to freeze; fairly common on L'Anse Bay and rare near Copper Harbor and at South Portage Entry (H). **Late winter**: casual resident or visitant in warm winters; two records, 30 Jan (106) to 6 Feb 2000 (9) near Assinins, B, JY, and 14 Feb 99 (3) at Copper Harbor, LM. Probably would winter regularly if ice allowed.

Habitat. Coastally oriented, foraging and resting in moderately deep, large, open bodies of water (see above).

Migration Dates. **SEAD**: 6 Mar 99 (McLain State Park, H, RH); 11 Mar 86 (L'Anse, B, D. Weaver); 27 Mar 2001 (4, Keweenaw Bay 6 mi SE Chassell, H, JY). **SLDD**: 19 May 99 (Copper Harbor, LB, JM, P. Musser). **FEAD**: 29 Sep 90 (Agate Harbor, LB). **FMAD**: 11 Oct (n=8), based solely on LB migration study at Agate Harbor. **FP**: probably sometime in first half of Nov. **FMDD**: 15 Dec (n=15). **FLDD**: 7 Jan 2002 (L'Anse Bay, JK); 1 Jan 2000 (Eagle Harbor Christmas Bird Count, K, JM, LM, JY); see Late Winter above.

Significant Records.

Spring (all not noted under Migration Dates and High Counts).

8 Apr 77, Redridge, H, AW (Weaver, 2000).

11 Apr 49 (female, MTU 411) Big Traverse Bay, H, G. A. Hesterberg.

28 Apr 2005 (3) on Keweenaw Bay 6 mi SE Chassell, RH, JK, JY.

29 Apr 2001 (1) Pilgrim River mouth, H, RH.

1 May 77 (4) Copper Harbor, AW.

4 May 49 (2) L'Anse, McBeath (JPW 27: 116).

4, 15, 16, 19 May 99 (1) Copper Harbor, LB, RH, JM, P. Musser.

6 May 2002 (3) east end of Manitou Is., JY (Youngman, 2002).

9 May 63, Lake Superior, K, J. Weber (JPW 42: 207).

12 May 2001 (14) L'Anse Bay, LB, JM, NAMC.

High Counts. **Spring**: 1 Apr 2004 (**52**) Keweenaw Bay 6 mi se Chassell, H, JY; 12 May 2001 (**14**) L'Anse Bay, LB, JM, NAMC. **Fall**: 12 Nov 99 (**29**) 3 mi W Copper Harbor, JY, flying; 20 Nov 98 (**23**) Baraga, JY, on water. **Winter**: 30 Jan 2000 (**106**) near Assinins, B, JY; 22 Dec 2002 (**25**) near Hebard Park, K, TA, JM.

NAMC. Baraga Co.: 15 on 2 of 6 counts (33.3%); mean 2.50; range 0-14; ind/PH .06.

HCCBC. 11 on 3 of 26 counts (11.5%); mean .42; range 0-6; ind/PH .01.

Remarks. Formerly named Oldsquaw. Thus falls another colorful and historically interesting bird name, as well as the last avian commemoration of the noble, native American Indian.

Bufflehead *Bucephala albeola*

Status and Range (B, H, K). **Spring**: abundant transient throughout, especially numerous on L'Anse Bay, but also Portage Lake system, inland lakes, larger inland ponds, and Lake Superior harbors, all of which are used for courtship. Not found on Lake Superior proper (which is too deep for feeding and lacks food) except as a resting place, *e.g.*, 3 May 2003, flock of 14 sleeping off Hebard Park, K, LB. Limited data suggest some migration on Lake Superior, as at Whitefish Point (*e.g.*, 6 May 2002, 14 passing west end of Manitou Is., JY); censuses needed on north shore of mainland K. **Summer**: casual visitant, mid Jun-mid Aug, recorded in all three counties. Recent records (see below) may presage breeding, as with other waterfowl. **Fall**: transient. During early fall migration, in second and third weeks of Oct, fairly common along Lake Superior shore of northern K and H. At Agate Harbor during the species' early period of occurrence there, 8-22 Oct (no later counts), 27 seen in 65.3 mostly morning hours of observation, or .5 per hour (LB, Table 10); 23 flew eastward, 4 westward. However, data from Whitefish Point (Granlund & Byrne, 1996) indicate the major migration period on Lake Superior is in the first week of Nov, when "abundant," which is almost certainly the case in the Keweenaw (data needed). Elsewhere, abundant on L'Anse Bay and Baraga sewage ponds, but unlike spring, very rare on other sewage ponds, inland lakes, natural ponds, and coastal harbors, perhaps because these are not needed for courtship in fall. **Early winter**: occasional lingerer to 7 Jan. **Late winter**: accidental visitant; 1 record, during a warm winter, 27 Feb 2000 (1) South Portage Entry, H, JY.

Habitat. Feeds in moderately shallow, open waters of bays, harbors, inland lakes, and some larger ponds, including sewage ponds, but not on Lake Superior proper or upper Keweenaw Bay, which are too deep and probably lack food.

Migration Dates. **SEAD**: 24 Mar 2000 (Baraga, JY). **SMAD**: 15 Apr (n=26). **SP**: second week of May. **SMDD**: 17 May (n=22). **SLDD**: 9 Jun 89 (1 adult male, Agate Harbor, LB). **FEAD**: 9 Sep 99 (Calumet sewage ponds, LB). **FMAD**: 12 Oct (n=20). **FP**: probably first week of Nov, but more data needed. **FMDD**: 13 Dec (n=16). **FLDD**: 7 Jan 2002 (female, L'Anse Bay, JK).

Significant Records (all summer).

16 Jun 2003 (male) Baraga sewage ponds, JY.

23 Jun 2004 (1 adult male) Calumet sewage ponds, LB, not seen again.

25 Jun 99 (1 molting male) Baraga sewage ponds, LB.

29 Jun 2002 (1 immature male) Copper Harbor, LB.

2 Jul 86, see Breeding.

6 Jul 2004 (1 female) Copper Harbor pond, LB.

11 Jul 79 (1 female) Sturgeon River Sloughs, AW.

17 Aug 99 (1 female) Lake Linden sewage ponds, LB; possibly an early fall transient.

High Counts. **Spring**: multi-party, 10 May 97 (**111**) B, NAMC; 15 May 65 (**1000**) Baraga Co., D. Rocheleau (JPW 43: 157) [perhaps exaggerated?]; 29 Apr 2000 (**92**) B, H, and K, LB, JM; 2 May 97 (**77**) B plus H, JY. **Fall**: 26 Oct 97 (**270**) L'Anse Bay, LB. **Early winter**: multi-party, 17 Dec 77 (**34**) HCCBC; 25 Nov 95 (**26**) L'Anse Bay, JY; 6 Dec 97 (**12**) L'Anse Bay, JY.

[*Breeding*. No confirmed record for Michigan. According R. J. Adams (in Brewer *et al.*, 1991), an agitated female was found by well-known birder Roy Smith on 2 Jul 86 on a small lake in Keweenaw Co. located at "T58N, R35W (southwest corner)," but R35W would place it well out into Lake Superior. I suspect this bird was "agitated" only because it was abruptly disturbed and perhaps injured or flightless. According to Payne (1983), a report 5 mi SE Skanee, B, in 1959 (UMMZ files not seen by LB) lacks adequate description and data and may not refer to this species. Courtship can occur during migration (LB), so is no indication of breeding. Nevertheless, Buffleheads breed in Minnesota and Ontario north of Lake Superior and stay late and even summer on the Peninsula and thus might be expected to breed in the future, especially on private unlogged land as forests mature enough to provide nest holes made by the Pileated Woodpecker (*e.g.*, Agate Harbor; see Common Goldeneye).]

NAMC. *Baraga Co.*: 417 on 6 of 6 counts (100%); mean 69.50; range 22-111; ind/PH 1.62. *Houghton Co.*: 222 on 7 of 7 counts (100%); mean 31.71; range 2-81; ind/PH .80.

HCCBC. 71 on 10 of 26 counts (38.5%); mean 2.70; range 0-34; ind/PH .06.

Banding Recoveries. Four shot on the Peninsula 2 Nov 74 (2, H), 20 Oct 74 (B), and 11 Oct 86 (K) banded in western NY on, respectively, 1 Mar 71, 2 Mar 72, 28 Jan 72, and 14 Feb 86. At least the last two suggest an eastern wintering ground for some birds migrating through the Keweenaw Peninsula in fall.

Common Goldeneye *Bucephala clangula*

Status and Range (B, H, K). **Spring**: transient, common on L'Anse Bay, Baraga sewage ponds, Portage Lake system, and Agate Harbor; rare on other sewage ponds and marshy ponds at Arnheim and Sturgeon River Sloughs; and occasional on other inland lakes and ponds. Status migrating east to west along north shore of K uncertain; noted on 30 Apr 2000 (flock of 4 flying west, Hebard Park, K, LB, JM) and 6 and 7 May 2002 (21 flying past east end of Manitou Is., JY). **Summer** (see also Breeding and Historical Changes): very rare, mostly non-breeding resident Jun-Aug (some late Aug birds might be transients), occurring primarily on L'Anse Bay and Agate Harbor, but also occasionally on Torch Lake (H), sewage ponds at Baraga, Chassell (H), Lake Linden, Tamarack City (H), Calumet, Ahmeek (K), and Copper Harbor, and along the north shore of K at Eagle Harbor, Bailey Pond, Grand Marais Harbor, Lake Glazon, Dan's Point, Copper Harbor, and Lake Medora. One summer record for a far inland lake, where breeding might be possible (24 Jul 56, female, Ruth Lake, B, T48N, R31W, Sec. 17, LB). Six breeding records, 5 on north shore of K from Bailey Pond to Copper Harbor and 1 at Chassell (H); should be sought elsewhere, as probably spreading. **Fall**: transient, very common (irregularly locally abundant) on L'Anse Bay and Portage Lake system. Uncommon elsewhere around perimeter of Peninsula and on sewage ponds. Peaks on water in last two weeks of Nov, numbers holding until freeze-up in late Dec or early Jan. During its early fall migration, uncommon transient at Agate Harbor, where 8 seen migrating (5 eastward, 3 westward) in 124.2 mostly morning hours of observation during the count period 25 Sep-22 Oct (no later counts) or .06 per hour (LB, Table 10). However, abundant off Horseshoe Harbor (K) on 4 Nov 2000, when 100+ seen in 2.6 hours, or 38.5 per hour (JY); thus it is likely that the period of my waterfowl migration study was terminated too early (late Oct) to catch the main flight; more late data needed. **Winter**: the commonest duck in winter. Numbers and distribution depend on open waters, which may freeze early or late and may even reopen after a light freeze. Some years birds seem to be available when waters reopen in winter, suggesting they may retreat to ice-edge invisible from land and return at

the first opportunity (although lake depth far offshore would seem too great for foraging). **Early winter**: in most years, very common, irregularly abundant, visitant on L'Anse Bay and Portage Lake (sometimes Pequaming Bay, B), fairly common on other coastal waters, and casual inland during very warm winters. **Late winter** visitant, perhaps resident, in very mild winters; during Jan to mid Mar, casual (marginally occasional) in small numbers, including 3 seen on 6 Mar 2002 inland along Sturgeon River Road, H, JM.

Habitat. Said to nest elsewhere in tree cavities near wooded lakes and ponds, much like Wood Duck. In the Keweenaw, broods found on a small Lake Superior bay (Agate Harbor), sewage ponds, a beaver pond, and a small wooded lake. Forages on open, moderately deep waters of L'Anse Bay, Portage Lake system, some small bays and harbors off Lake Superior, and rarely on large rivers, sewage ponds (although fairly common on Baraga sewage ponds), marsh ponds, and other inland lakes, but not on Lake Superior proper or upper Keweenaw Bay (both too deep and lack food).

Migration Dates. **SEAD**: 11 Mar 86 (L'Anse Bay, AW). **SMAD**: 1 Apr (n=22). **SP**: second and third weeks of Apr (earlier in warm springs), decreasing to fairly common in first week of May and uncommon in third week. **SLDD**: 7 Jun 2001 (adult male, Eagle Harbor, K, LB). **FEAD** and **FLDD**: arrival and departure of fall transients obscured by summer and winter birds; earliest known transient 2 Oct 2001 (Dan's Point, K, LB) migrating eastward, but probable transients seen 18 Sep 2004 (Manitou Is., JY) and 23 Sep 2001 (Copper Harbor, LB, JM). **FP**: on water, last two weeks of Nov, numbers holding until freeze, usually in late Dec or early Jan.

High Counts. **Spring**: 31 Mar 2001 (**100**+) North Portage Entry, H, LM; 24 Apr 96 (**96**) L'Anse Bay, JY. **Summer**: 8 Jul 2000 (flock of **7** females) Grand Marais Harbor, K, LB. **Fall**: 25 Nov 95 (**318**) Portage Lake (262) and L'Anse Bay (56), JY; 18 Nov 80 (**187**) Portage Lake, survey in MDNR files. **Early winter**: multi-party, 15 Dec 2001 (**192**) HCCBC; 30 Dec 2001 (**154**) Baraga, JY, highest for B; 16 Dec 90 (**142**) HCCBC, LM only; 9 Jan 2001 (**30**) Copper Harbor, highest for K, RH. **Late winter**: 28 Jan 2001 (**62**) L'Anse Bay head, JY; 21 Feb 98 (**51**) Sturgeon River mouth, JY; 6 Feb 2000 (**33**) near Assinins, B, JY; 14 Feb 99 (**27**) Copper Harbor, LM.

Breeding (**H** 1 co; **K** 5 co; see also Historical Changes).

4 Jun 2000 (female with brood of 11 tiny prejuveniles) Bailey Pond just east of Lake Bailey, T58N, R30W, Sec. 4, K, LB, JM.

14 Jun 2000 (female with 2 very small prejuveniles) Copper Harbor sewage ponds, LB.

14 Jun 2002 (female with 4 small prejuveniles) Chassell sewage ponds, H, JY.

17 Jun 95 (female with brood of 5 tiny prejuveniles; reduced to 4 on 21 Jun) Agate Harbor, North Bay, LB (Binford, 1996).

Jul 98 (brood of 10) Lake Glazon, K, J. Shea (pers. comm.), none survived, probably because of dense population of large northern pike in the lake.

Jul 99 (brood of 10) Lake Glazon, K, J. Shea (pers. comm.), 1 survived (see Jul 98).

BBS. *Bootjack* 92-99: 1 on 1 of 8 counts (12.5%); mean .12; range 0-1; accidental on this count. *Herman*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1; casual.

NAMC. *Baraga Co.*: 9 on 4 of 6 counts (66.7%); mean 1.50; range 0-4; ind/PH .03. *Houghton Co.*: 81 on 5 of 7 counts (71.4%); mean 11.57; range 0-47; ind/PH .29.

HCCBC. 1622 on 25 of 26 counts (96.2%); mean 62.38; range 0-192; ind/PH 1.38.

Banding Recoveries. A prejuvenile banded in west-central MN 7 Jul 89 and shot in H 30 Oct 93 indicates the provenance of one Peninsula transient.

Historical Changes (Table 17). This species is a common summer resident on Isle Royale (Johnsson *et al.*, 1982), from where Keweenaw birds may have spread. On the Peninsula as a whole, Weaver (orig. notes) recorded no summer birds from 72 to 99. Although my first was in 56, I saw no others until 20 Aug 87 (l, Lake Linden sewage ponds, possible transient). Subsequently, I found 5 separate birds in 89, none in 90, and then at least one every year 91-2002, with maxima of 14 in 96 (LB and JY), 8 in 97, and 7 in one flock in 2000. Since 87, summer goldeneyes have been seen at 15 localities, embracing all three counties. Because other ducks often colonize an area several years before actual breeding, I was alerted by the temporary appearance of several birds at Agate Harbor in early summers of 91, 92 and 93 and summering in 94, and indeed the first breeding record for the Keweenaw, and second for the western mainland Upper Peninsula, was a brood of 5 at Agate Harbor in 95 (Binford, 1996); additional breeding occurred in Jul 98, Jul 99, and Jun 2000 on the north shore of K and in Jun 2002 at Chassell, H.

Hooded Merganser *Lophodytes cucullatus*

Status and Range (B, H, K). **Spring**: fairly common transient throughout, except absent from Lake Superior and upper Keweenaw Bay. **Summer**: rare resident, except fairly common at Calumet sewage ponds (even though it has not breed there). **Fall**: fairly common transient except on Lake Superior and upper Keweenaw Bay. Only 6, perhaps local birds, seen off Agate Harbor during fall migration (LB), so not a normal migrant along Lake Superior shores. **Early winter**: remains fairly common until about 15 Nov. Occasional lingerer to 24 Dec, recorded on L'Anse Bay, Baraga sewage ponds,

Portage Lake, Sturgeon River Sloughs, Copper Harbor, and Bete Grise. **Late winter**: casual visitant; 4 records, all of which might be very early spring arrivals: 11 Feb 2002 (female, Baraga marina, JY; no ice), 20 Feb-14 Mar 82 (female, L'Anse Bay, AW), 27 Feb 2000 (pair, South Portage Entry, H, JY), and 6 Mar 2000 (1, L'Anse Bay, JY). Probably would winter regularly if waters did not freeze (data collected during the next 100 years, after serious global warming, should verify this prediction; please let me know).

Habitat. Nests elsewhere in tree cavities and nest boxes. In the Keweenaw, raises young on natural forest-edged lakes and ponds (beaver and marsh ponds in mesic mixed forest) and rarely slow moving rivers. Forages in shallow to moderately deep open waters of the preceding habitats as well as sewage ponds, harbors, L'Anse Bay head, Portage Lake system, and large inland lakes.

Migration Dates. **SEAD**: 22 Mar 95 (Sturgeon River Sloughs, JY) and 2000 (Arnheim, B or H, JY); see Significant Records (Feb). **SMAD**: 13 Apr (n=24). **SP**: last week of Apr. **FEAD**: first major influx in last week of Aug. **FP**: uncertain, but possibly last two weeks of Oct. **FMDD**: about 15 Nov. **FLDD**: 28 Dec 2002 (2) L'Anse Bay, L. Taccolini (MBNH 10: 112).

High Counts. **Spring**: 14 Apr 91 (**50**) Gratiot Lake, K, LM (JPW 68 [6]: 26); 29 Apr 96 (**25**) B or H, JY. **Summer**: 28 Jun 97 (**6**) Arnheim, B or H, JY. **Fall**: 15 Nov 2000 (**43**) Sturgeon River mouth, JY; 27 Aug 96 (**21**) Calumet sewage ponds plus Ahmeek sewage ponds, LB; 13 Oct 86 (**15**) Lake Bailey, K, LB; 22 Oct 2000 (**18**) Honker's Pond, near Big Lake, B, LM. **Early winter**: multi-party, 15 Dec 2001 (**44**) HCCBC; 3 Dec 2001 (**23**) Chassell, H, JY.

Breeding (**B** 5 co, 1 po; **H** 2 co, 3 pr, 2 po; **K** 6 co, 3 po).

29 May 99 (young seen) near Silver River mouth, T51N, R31W, Sec. 18, B, LM, JY.

4 Jun 99 (brood of 5 prejuveniles about 4 days old) Copper Harbor, LB.

4 Jun 2000 (1 very small prejuvenile found dead) Copper Harbor, LB.

4 Jun 2000 (3 small prejuveniles) Bailey Pond, T58N, R30W, Sec. 4, K, LB, JM.

20 Jun 99 (7) Arnheim, Unit 7, B, JY.

21 Jun 2003 (2 eight-inch-long prejuveniles) T53N, R33W, Sec. 33, H, JY.

23 Jun 2003 (7 very small) Pike River, T53N, R33W, Sec. 5, H, JY.

24 Jun 83 (6 or 7) Youngman's property, B, JY.

*25 Jun 86 (2 adult females, one of which flew away, leaving other with 11 prejuveniles about 4 days old) 2 mi W Eagle Harbor, K, LB.

4 Jul 2001 (female with 1 large young) Little Lake, B, LM.

6 Jul 98 (4 half-grown) west end Lake Fanny Hooe, Copper Harbor, LB.

BBS. *Bootjack* 92-2005: 1 flying on 1 of 14 counts (7.1%); mean .07; range 0-1. *Herman*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

NAMC. *Baraga Co.*: 48 on 6 of 6 counts (100%); mean 8.00; range 5-11; ind/PH .19. *Houghton Co.*: 41 on 3 of 7 counts (42.9%); mean 5.86; range 0-25; ind/PH .15.

HCCBC. 47 on 3 of 26 counts (15.4%); mean 1.81; range 0-44; ind/PH .04.

Common Merganser *Mergus merganser*

Status and Range (B, H, K). **Spring**: transient; common on L'Anse Bay, lower Keweenaw Bay (including Pequaming Bay), Portage Lake system, and Lake Superior harbors, bays, and shoreline. Uncommon elsewhere, including inland lakes and large rivers. **Summer** resident. Fairly common on L'Anse Bay and Lake Superior-Keweenaw Bay harbors, bays, and adjacent shorelines, including Manitou Is. (JY). Uncommon on Torch Lake (H), Sturgeon River mouth, and inland lakes and rivers, where recorded in K on Gratiot Lake (breeding), in H on Otter Lake, Rice Lake, and Oskar Bay, and in B on Huron Bay (Silver River mouth, breeding), Huron River mouth, upper Sturgeon River, Slate River, and Prickett Dam Backwater. Seemingly absent from Lake Superior shore of H and much of Portage Lake system, but more data needed. **Fall**: only fairly common in places where common in spring. No obvious increase in detectability from summer; in fact, a decrease, especially inland, probably because summer birds leave inland habitats after breeding. Surprisingly, only 20 identified migrating west to east and 2 east to west past Agate Harbor in 142.8 mostly morning hours of observation during the count period 20 Sep-22 Oct (no later counts), or .11 per hour (LB, Table 10). However, if one allocates the 1096 unidentified mergansers between Common and Red-breasted according to percentages identified, the Common Merganser would be common—168 in 167.2 hours in the period 14 Sep-22 Oct, or 1.00 per hour. Possibly, the major migration occurs after 22 Oct, but such is not indicated by numbers elsewhere in the Keweenaw nor at Whitefish Point (Granlund & Byrne, 1996). **Early winter**: occasional lingerer, recorded on 21 of 26 (80.8%) HCCBCs. Range and detectability dependent on ice conditions. Most years, waters freeze and birds leave by 1 Jan. When present, however, locally common, irregularly abundant, as birds are concentrated in the few remaining patches of open water, primarily at South Portage Entry (H) and L'Anse Bay; when waters are open, uncommon elsewhere around perimeter of Peninsula on Lake Superior, Keweenaw Bay, and Pike Bay (Chassell, H). **Late winter**: casual visitant, perhaps

resident; 7 records after 1 Jan. I believe birds would remain all winter every year if ice allowed.

Habitat. The only Keweenaw nest was in a tree cavity; elsewhere also uses ground holes and depressions among rocks. Feeds and raises young on waters along shores of Lake Superior bays (including L'Anse Bay) and harbors, Manitou Is., large inland lakes and reservoirs, and mouths and wide interior portions of larger rivers. Only one record for sewage ponds (a migrant), most of which lack fish and have murky waters.

Migration Dates. **SEAD**: 12 Mar 83 (L'Anse Bay, AW). **SMAD**: 9 Apr (n=23). **SP**: probably last week of Apr, but data needed. **SLDD**: obscured by breeders; remains common through second week of May, decreasing into last week. **FLDD**: normally last week of Dec.

Significant Records (all post-Dec).

14 Jan 97 (12) Keweenaw Bay off Assinins, B, JY.
16 Jan 99 (6) on Keweenaw Bay .5 mi N Carp River mouth, T51N, R33W, Sec. 3, B, JY.
6 Feb 99 (23) Keweenaw Bay off Assinins, B, JY; date of 7 Feb (MBNH 6: 164) is incorrect.
21 Feb 81 (1) L'Anse Bay, AW.
21 Feb 98 (4) Sturgeon River mouth, H, JY.
2 Mar 2001 (5), Keweenaw Bay 6 mi SE Chassell, H, JY, warm winter.

High Counts. **Spring**: multi-party, 11 May 96 (**211**) H, NAMC; 19 Apr 94 (**40**) L'Anse Bay, JY. **Summer**: 21 Aug 82 (**30**) K, AW. **Fall**: 13 Oct 86 (**25**) Lake Bailey, K, LB. **Early winter**: multi-party, 15 Dec 2001 (**267**) HCCBC; 3 Dec 2001 (**110**) Chassell, H, JY. **Late winter**: 2 Feb 2002 (**30**) L'Anse Bay, RH.

Breeding (**B** 12 co, 2 po; **H** 3 co, 1 pr, 3 po; **K** 21 co, 3 po).

18 May 2000 (12 small prejuveniles) L'Anse Bay, JY.
24 May 2005 (nest with eggs and incubating female) 3 mi N Oskar, H, LB, P. Muller, nest 2 ft off ground in hollow of old apple tree.
1 Jun 98 (young) Ojibwa Beach just north of Baraga, JY.
2 Jun 99 (young) L'Anse Bay, JY.
3 Jun 2000 (10 very small) L'Anse Bay, LB.
*14 Jun 88 (9 downy prejuveniles) Baraga, LB.
14 Jun 2001 (fledglings) Gratiot Lake, T57N, R30W, NW quarter, K, K. Flynn, D. Raven.
18 Jun 2002 (8 tiny prejuveniles all on female's back) Agate Harbor, LB.
18 Jun 2002 (8 young) Manitou Is., Sec. 21, JY.
19 Jun 2002 (9 young) Manitou Is., Sec. 17, JY.
22 Jun 2003 (6 very small) T51N, R34W, NW quarter, B, JY.
*23 Jun 89 (brood of 12, very small, all fitting nicely on female's back) Agate Harbor, LB.
*23 Jun 88 (12) T51N, R31W, NW quarter, B, LB.
*26 Jun 88 (9 small) head L'Anse Bay, LB.
26 Jun 94 (small young, some riding on female) Agate Harbor, LB.
26 Jun 2000 (6 small) L'Anse Bay, LB.
29-30 Jun 2003 (5 small) Manitou Is., B. Johnson, JY.
1 Jul 2001 (fledglings) Gratiot Lake, T57N, R30W, NW quarter, K. Flynn, Z. Gayk, JM.
*1 Jul 87 (5 one-third grown) Agate Harbor, LB.
*2 Jul 86 (6) Agate Harbor, LB.
6 Jul 96 (7 small) Agate Harbor, LB.
*7 Jul 86 (one female with 18 one-quarter grown prejuveniles; two sizes, so at least two broods) Gratiot Lake, K, LB.
9 Jul 2001 (13 tiny) Agate Harbor, A. and D. Slagle.
*16 Jul 88 (13; previously had 15) Agate Harbor, LB.
19 Jul 96 (3 small) Copper Harbor, LB.
20 Jul 52 (12 small) Esrey Park on Agate Harbor, LB.
22 Jul 93 (one female with 20; presumably two broods) Torch Lake at Tamarack City, H, LB.
6 Aug 2000 (15 three-quarters grown) Agate Harbor, LB; presumed single brood based on equal size of young.
*10 Aug 83 (9 large) Agate Harbor, LB.
15 Aug 82 (25 large; presumably at least two broods) Silver River, B, JY.

Summary: one nest with eggs 24 May. Total 191 prejuveniles in 21 single broods of known number, average 9.1, range 3-15; usual clutch size, presumed from prejuveniles, 12-13; also 3 presumed composite broods of 18, 20, and 25. Small young noted 18 May-20 Jul. See Red-breasted Merganser.

NAMC. *Baraga Co.*: 121 on 6 of 6 counts (100%); mean 20.17; range 12-31; ind/PH .47. *Houghton Co.*: 331 on 7 of 7 counts (100%); mean 47.29; range 3-211; ind/PH 1.19.

HCCBC. 813 on 21 of 26 counts (80.8%); mean 31.27; range 0-267; ind/PH .69.

Red-breasted Merganser *Mergus serrator*

Status and *Range* (B, H, K). A "perimeter species"; no inland records except transients on Portage Lake. **Spring**: transient. Very common (some days abundant) on L'Anse Bay and Portage Lake. Fairly common on Lake Superior shorelines, bays, and harbors and on Keweenaw Bay. Very common migrating past both ends of Manitou Is., 6-7 May 2002 (Youngman, 2002); censuses needed on north shore of mainland K. **Summer**: resident; usually common in K on Lake Superior shoreline, bays, and harbors, fairly

common in B on L'Anse Bay, and uncommon on coast of H. Breeds late. Seems to vary in numbers from year to year. Absent from Portage Lake system and elsewhere inland, where the Common Merganser is the breeding species. [A flock of 17 seen in Aug 1914 on a river at Kenton (southern H) (Cahn, 1918), and broods reported on Gratiot Lake, K (Wallace, 1949; see Breeding) almost certainly were misidentified Common Mergansers.] **Fall**: transient. On water, fairly common in same places as spring, with no obvious increase in detectability from summer, transients seemingly replacing summer birds. However, abundant off north shore of K (and probably H), where at Agate Harbor I identified 128 flying west to east and 16 east to west in 167.2 mostly morning hours during the count period 14 Sep-22 Oct (no later counts), or .9 per hour (LB, Table 10); dividing the 1096 unidentified mergansers between Common and Red-breasted according to the percentages of each identified duriing this period, results in 1094 Red-breasted in 167.2 hours, or 6.54 per hour. Also, on 4 Nov 2000 JM counted 177 Red-breasted migrating eastward off Horseshoe Harbor (K), so the peak migration apparently occurs after my count period, *i.e.*, in late Oct and early Nov., as at Whitefish Point (Granlund & Byrne, 1996). **Early winter**: occasional lingerer through 7 Jan at perimeter localities where ice allows, including Lac La Belle mouth (JY) and notably South Portage Entry (H) and L'Anse Bay. **Late winter**: casual visitant 6 Feb-2 Mar (5 records); possible in ice-free patches anywhere along coast.

Habitat. Feeds in moderately deep, open waters of outer shore, bays, and harbors around perimeter of Peninsula and (transients only) on Portage Lake. Nests found on larger offshore rocks along northwestern shore of K; young raised on bays and harbors of Lake Superior and Keweenaw Bay. Does not breed inland.

Migration Dates. **SEAD**: 18 Mar 2002 (2, Keweenaw Bay 6 mi SE Chassell, H, JY); 30 Mar 98 (L'Anse Bay, JY). **SMAD**: 19 Apr (n=23). **SP**: last week of Apr and first two weeks of May. **SLDD**: transients seen 28 May 82 (Sands, H, AW). **FMDD**: 28 Nov (n=9). **FLDD** (see also Significant Records): 14 Jan 2001 (13) L'Anse Bay, JY, ice-free early winter; 7 Jan 2002 (9, L'Anse Bay, JK); 1 Jan 2000 (1 male, Eagle Harbor Christmas Bird Count, K, LM, JM, JY).

Significant Records (all late winter).

6 Feb 90 (1 female) Cole's Creek mouth, H, AW.
11 Feb 2005 (4 females) on Kewenaw Bay 6 mi SE Chassell, H, JY.
19 Feb 83 (6) Baraga, AW.
1 Mar 79 (1 female) Cole's Creek mouth, H, AW.
2 Mar 2001 (34) Keweenaw Bay 6 mi SE Chassell, H, JY, ice-free winter.

High Counts. **Spring**: multi-party, 8 May 99 (**213**) B, NAMC; 9 May 79 (**hundreds**) Sands, H, AW; 23 Apr 76 (**100**) Houghton, AW; 10 May 97 (**91**) L'Anse Bay, LB. **Summer**: 30 Jun 96 (**30**) L'Anse Bay, LB. **Fall**: 4 Nov 2000 (**177**) migrating off Horseshoe Harbor, K, JM; 15 Oct 2000 (**165** in seven flocks migrating eastward) Hebard Park, K, LB, JM, LM, JY; 14 Oct 2002 (**83** migrating eastward) Hebard Park, K, LB; fall numbers would be much higher if all migrating mergansers could be identified (see above). **Early winter**: 30 Dec 99 (**16**) L'Anse Bay and Pequaming, B, JY. **Late winter**: see above.

Breeding (**B** 7 co, 2 pr, 2 po; **H** 1 co, 1 pr, 4 po; **K** 16 co, 1 pr, 4 po).

26 Jun 99 (brood of 7 small prejuveniles) L'Anse Bay, LB.
29 Jun 95 (10) Keweenaw Bay, D. McWhirter (MBNH 3: 24).
29 Jun 99 (young less than one week old) L'Anse Bay, JY.
8 Jul 2000 (6 small) Grand Marais Harbor, K, LB.
*9 Jul 86 (9) in Eagle Harbor, K, LB.
16 Jul 56 (12 small) Agate Harbor, LB.
16 Jul 2002 (nest with 9 eggs) Manitou Is., Sec. 15, JY.
17 Jul 95 (6 moderately large but downy) Agate Harbor, LB.
19 Jul 96 (4 small) Copper Harbor, LB.
28 Jul 96 (14) L'Anse Bay, JY.
31 Jul 2004 (11 half-grown) on Keweenaw Bay, T52N, R33W, Sec. 2, B, JY.
12 Aug 63 (8 three-quarters grown) Agate Harbor, LB.
14 Aug 63 (7 half grown) Agate Harbor, LB.
23 Aug 2003 (6 large, all-downy) Dan's Point, K, LB.
2 Sep 81 (8) Agate Harbor, LB.
4 Sep 84 (two broods) Agate Harbor, LB.
12 Sep 2003 (5 young three-quarters grown) Pequaming, B, JY.
Summer 82 (nests found) on larger rocky islands off northwestern shore of K by J. P. Ludwig (in Brewer *et al.*, 1991).
[Late Jun-early Jul 49 (broods of 2, 5, 6, 30) Gratiot Lake, K, "The hen with the large brood and most, if not all, of the others were Red-breasted Mergansers" (Wallace, 1949). I think these were misidentified Common Mergansers, which I have seen with broods on this lake.]
["Probable" inland breeding in T56N, R33W, NW quarter, H, based on an agitated bird (MBBA 1991) is questionable.]
Summary: only nest, 16 Jul, had 9 eggs. Total 113 prejuveniles in 14 broods of known number, mean 8.1 per brood, range 4-14. Small

young noted 26 Jun-19 Jul. First broods of small downies noted five weeks later than the Common Merganser's, in part, at least, reflecting the former's later spring arrival but also, perhaps, its colder coastal environment.

BBS. *Herman*: 15 on 4 of 7 counts (57.1%); mean 2.14; range 0-6.

NAMC. *Baraga Co*: 412 on 6 of 6 counts (100%); mean 68.67; range 9-213; ind/PH 1.60. *Houghton Co*: 238 on 5 of 7 counts (71.4%); mean 34.00; range 0-213; ind/PH .85.

HCCBC. 9 on 2 of 26 counts (7.7%); mean .35; range 0-7; ind/PH .01.

Ruddy Duck *Oxyura jamaicensis*

Status and Range (B, H, K). The best place to see this species is the Baraga sewage ponds. Sex ratio, 13 males to 14 females. **Spring**: occasional transient (13 records, 24 Apr-7 Jun). **Summer**: casual visitant (4 records, 1 Jul, 26 Jul, 26-28 Jul, 3 Aug) and accidental non-breeding resident (1 record, 10 Jun-7 Aug). I doubt that the Keweenaw has proper breeding habitat for this species. **Fall**: casual transient (4 records, 6-24 Oct); why there are no records between 3 Aug and 4 Oct is puzzling. **Early winter**: accidental lingerer; 2 records, 24 Nov, 19 Dec.

Habitat. Shallow open waters of ponds (especially sewage ponds—18 of 21 records of certain locality) and Portage Lake (Oskar Bay and Pilgrim River mouth).

Migration Dates (see Significant Records for data). **SEAD**: 24 Apr 75. **SLDD**: 7 Jun 78. **FEAD**: 4 Oct 2003. **FLDD**: 19 Dec 98; 24 Nov 76; 24 Oct 2002.

Significant Records (all; all singles unless otherwise noted).

24 Apr 75 (male) Oskar Bay, AW.
7 May 2000 (female) Pilgrim River mouth, H, LB, RH, JM.
8 May 99 (alternate plumage male) Baraga sewage ponds, LB, JM, NAMC.
10 May 97 (female) Lake Linden sewage ponds, S. Andres, NAMC.
12 May 2001 (female) Baraga sewage ponds, LB, JM.
15 May 88 (1) Baraga sewage ponds, AW, D. Weaver.
20 May 2003 (alternate plumage male) Calumet sewage ponds, TA, LB, JM.
23 May 2000 (2 females) Chassell sewage ponds, H, JY.
28 May 99 (female) Baraga sewage ponds, LB, JM.
29-30 May 2002 (male courting female) Calumet sewage ponds, LB, JM.
29 May (female, JM), 4 Jun (2, JK), 8 Jun (2, Alice Weaver) 2002, Atlantic Mine sewage ponds, H.
1, 2, 4, 7 Jun 98 (3 males, 2 females) Baraga sewage ponds, LM, AW, JY.
3 Jun 2000 (female) Baraga sewage ponds, LB, JM.
10, 25 Jun, 25 Jul, 1, 7 Aug 89 (female) Lake Linden sewage ponds, LB.
1 Jul 98 (alternate plumage male) Copper Harbor, Wescoat's pond, LB.
26 Jul 2005 (adult male) Baraga sewage ponds, Z. Gayk, S. Haas.
26, 28 Jul 97 (male) Baraga sewage ponds, JY.
3 Aug 2001 (male) Chassell sewage ponds, H, JY.
4 Oct 2003 (2) Baraga sewage ponds, TA.
6, 24 Oct 2002 (female) Baraga sewage ponds, S. Haas, JY, presumed same bird.
8 Oct 96 (alternate plumage male) Baraga sewage ponds, LB.
10 Oct 2002 (2 males, 1 female) Chassell sewage ponds, H, JY.
15 Oct 2001 (female) Chassell sewage ponds, H, JY.
24 Nov 76 (1) L'Anse Bay area, AW.
19 Dec 98 (1) HCCBC, D. Bach.

High Counts. (**5**) see Significant Records.

NAMC. *Baraga Co.*: 2 on 2 of 6 counts (33.3%); mean .33; range 0-1; ind/PH .01. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Historical Changes (Table 17). Probably a recent increase, if not an artifact of coverage, as 20 of the 24 records are since 96.

Ruffed Grouse *Bonasa umbellus*

Status and Range (B, H, K). Overall an uncommon **permanent** resident based on detectability, which, however, varies by season according to conspicuousness. Were the Ruffed Grouse more conspicuous, it would be termed at least common all year. Occurs throughout. Relative scarcity in northern and extreme southern H and in extreme northern B, as depicted by the MBBA map (1991), is the result of extensive farmland there, but absence in much of central and southern B is due to inadequate coverage during the spring and early summer drumming period; it is also scarce in the pure jack pines of the Baraga Plains. Unrecorded on Manitou Is. (Youngman, 2002; field notes). Common from early **spring** to early **summer**, when rarely seen but often heard drumming. By mid Jun, drumming ceases for the most part and detectability becomes very uncommon. Common in **fall** when sight conspicuousness reaches its

zenith as adults and young venture onto roadsides, and some males temporarily resume drumming. In **winter**, the uncommon detections are left to the few hardy souls willing to snowshoe into the "bush."

Habitat. Occurs primarily in mesic/wet mixed (including black spruce-quaking aspen) and mesic deciduous forests, especially where these have patches of quaking aspen and white birch. Most regions of farmland in the Keweenaw are mosaic enough to afford forests suitable for the Ruffed Grouse. Nest a shallow ground scrape lined with nearby plant material. Casually visits feeders.

High Counts. **Spring**: multi-party, 8 May 99 (**27**) NAMC, B; 12 May 2000 (**9**) B, LB, JM. **Fall**: 8 Sep 97 (**10**) Brockway Mt., LB, A. Slagle. **Winter**: multi-party, 16 Dec 2000 (**31**) HCCBC; 13 Dec 98 (**13**) B, LM, JY; 15 Feb 2001 (**7**) Hancock, RH.

Breeding (**B** 10 co, 4 po; **H** 11 co, 8 po; **K** 7 co, 1 pr, 4 po).

*11 May 88 (nest with 11 eggs) near Nisula, T50N, R36W, Sec. 4, H, L. H. Walkinshaw (CLO).

18 May 99 (nest with 8 eggs) T48N, R32W, Sec. 5, B, JY.

19 May 95 (nest with 12 eggs) Poor Farm Rd., B, JY.

6 Jun 98 (2+ very small prejuveniles) Lake Bailey, K, LB.

8 Jun 97 (3 tiny) Youngman property, B, LM, JY.

13 Jun 98 (12) Arnheim, H, LM, JY.

*21 Jun 86 (1+) near Copper Harbor, T59N, R28W, SE quarter, LB.

*23 Jun 88 (prejuveniles) T51N, R31W, NW quarter, B, LB.

*23 Jun 86 (3+) Copper City, K, LB.

*24 Jun 88 (prejuveniles) T51N, R30W, SW quarter, B, LB.

24 Jun 96 (prejuveniles) Arnheim, B or H, JY, not in above totals.

4 Jul 2003 (large young) Arnheim, west of Unit 3, T53N, R33W, Sec. 32, H, JY.

*7 Jul 86 (4+) Central Lake, K, LB.

10 Jul 2002 (young) near Klingville, T53N, R33W, Sec. 28, H, JY.

*13 Jul 86 (2+ half-grown) Agate Harbor, LB.

*14 Jul 86 (2+ quarter-grown) Agate Harbor, LB.

Summary: 3 nests, 11-19 May, 8-12 eggs each. Prejuveniles noted 6 Jun-14 Jul (but doubtless occur later); their number means little, except to show a high of 12, as entire broods can rarely be discovered in the undergrowth.

BBS. *Bootjack* 67-73: none. *Bootjack* 92-2005: 8 on 7 of 14 counts (50.0%); mean .57; range 0-2. *Herman*: none, due to Jul dates of counts, when most drumming has ceased; such might be the case also for Bootjack 67-73

NAMC. *Baraga Co.*: 84 on 6 of 6 counts (100%); mean 14.00; range 1-27; ind/PH .33. *Houghton Co.*: 56 on 7 of 7 counts (100%); mean 8.00; range 1-15; ind/PH .20.

HCCBC. 175 on 22 of 26 counts (84.6%); mean 6.73; range 0-31; ind/PH .15.

Historical Changes. Although the Ruffed Grouse has had a checkered history in the state as a whole (J. W. Urbain in Brewer *et al*., 1991), I find no evidence that it has ever been less common than today in the Keweenaw. Even Kneeland (1857), during a time when unsuitable, heavy virgin forest abounded, termed the species "very common in the woods at all seasons." Cahn (1918) considered it "abundant" around Kenton (H) in 1914. Wood (1933) stated that in the Copper Harbor region it was "not so common as formerly. Sportsmen told me it had been abundant several years ago and then almost disappeared, but is now slowly increasing." I attribute this variation to the cyclic nature of the species' populations.

Spruce Grouse *Falcipennis canadensis*

Status and Range (B, H). **Permanent** resident, probably decreasing. Locally uncommon on the Baraga Plains, especially in vicinities of Big, Little, and Craig Lakes. Recently found in B in spruce bogs south of Vermilac Lake (27 May 2001, male and female, T48N, R33W, Sec. 30, B, JY); at Little King Lake (see Breeding); west of Tracy Lake (2 Feb 2003, in T47N, R34W, Sec. 13, NW corner, JY); and at NW corner of May Lake (3 Jan 2005, 1 female, in T47N, R34W, Secs. 17 and 18, JY). Formerly occurred locally in H (last record 1977; see Historical Changes). No certain record, even historical, for K. Like the Ruffed Grouse, detectability varies by season, but details are lacking; probably most detectabile in spring (birds calling) and fall (young out of nest).

Habitat. Breeds in denser portions of dry coniferous forest (sandy jack pine plains) interspersed with black spruce-tamarack bog forest and small openings. One lek near Big Lake was on a toe-flattened patch of reindeer moss under pines and black spruce (LB). The only nest was in a stand of 15 ft jack pines. Survives winter on a diet of conifer needles (Payne, 1986)

High Counts. **Spring**: multi-party (**5**) NAMC, and single-party (**4**) LB, both 10 May 97, B. **Summer**: 10 Aug 52 (**12**; two separate family groups, one with adult female and 5 immatures, other with adult female, adult male, and 4 immatures) Little Lake, B, LB. **Winter**: 17 Jan 99 (**6**) Baraga Plains, T49N, R34W, Sec. 28, LM, JY.

Breeding (**B** 11 co, 1 po; **H** 4 pr).

9 Jun 2003 (female on ground nest with 5 eggs) Baraga Plains, NW of Little Lake, T49N, R34W, SW quarter of NW quarter of Sec. 9, 150 yds W of Menge Creek Road, JY (photo

in LB files); 20 Jun, female still on nest.

22 Jun 2004 (female with young) Honker's Pond, near Big Lake, T49N, R34W, Sec. 27, B, JY.

26 Jun 2000 (female with 3 flying downy prejuveniles) Baraga Plains near Little Lake, T49N, R34W, Sec. 15, LB, JY.

30 Jun 2002 (female with 5-in-long chicks) northwest edge of Little King Lake, T48N, R33W, Sec. 25, B, JY.

4 Jul 99 (2 females with total 8-10 prejuveniles) Baraga Plains, T49N, R34W, Sec. 22, JY.

11 Jul 98 (3 small) Craig Lake, B, JY.

21 Jul 2002 (young) Honker's Pond, near Big Lake, B, JY.

4 Aug 57 (3 nearly full grown) Little Lake, B, LB.

24 Aug 45 (3 three-quarters grown), Baraga Plains, N. Crebassa fide McBeath & Ammann (JPW 23: 169).

7 Sep 96 (4 birds, including 1 fledgling) Baraga Plains, S. Andres (MBNH 2: 97).

Notes: [I have been unable to obtain substantiating data for the K confirmed breeding or the H possible breeding records shown on the MBBA map (1991) and do not accept them.] See Historical Changes for four old H records, which form the basis for probable breeding in the above county summary.

NAMC. *Baraga Co.*: 15 on 5 of 6 counts (83.3%); mean 2.50; range 0-5; ind/PH .06.

Historical Changes (Table 17). Kneeland (1857) called the Spruce Grouse "comparatively [to Ruffed Grouse] rare" and said he had never heard of one being seen in his local area on Portage Lake. No other early author mentions this species for the Peninsula. Apparently extirpated from H, where the most recent records in the ornithological literature are as follows: 4 Oct 34, adult in southern H, M. Trautman (Wood, 1951); 12 Apr 63 at Sidnaw, E. M. Harger (JPW 42: 209); 29 Oct 67, 1 in H, B. and D. Wolck (JPW 46: 11); and 29 and 30 Oct 77, 3 in H, N. J. Ilnicky (JPW 56: 15; AB 32: 207-208). Today, with no legal hunting pressure, it is holding its own on the Baraga Plains and a few other localities in B (see above), but seems to have disappeared from many areas (more data needed). It may well have occurred historically in Keweenaw Co., where suitable habitat still exists, but I find no written record. If local Peninsula populations continue to decline, a point may soon be reached when they are too small to be viable, and the species will become extirpated like the Sharp-tailed Grouse.

Sharp-tailed Grouse *Tympanuchus phasianellus*

Status and Range (formerly B, H). Formerly occurred in B and H, but now apparently extirpated. No certain record, even historical, for K; a map in Ammann (1957) shows it present in southern K in 1930 and all over in 40 and 50, but I have found no specific record; see also Significant Records. The last definite records I find for the Peninsula were in 88 (Liminga), 90 (Houghton County Memorial Airport), and 91 (south of Kenton, H), although some might have survived for a few more years, and the MBBA map shows probable breeding in another block in H and one in B (data, if any, unavailable from the Kalamazoo Nature Center, fide R. J. Adams). According to Corace (2000), none was found during a survey of H in 99, although birds had been reported near Covington, B, where habitat still exists. See Historical Changes.

Habitat. Bred in mosaic settings with broad-leaved shrub uplands, hayfields, and old fields dominated by grass, interspersed with frequent patches of forest. Also used grassy dikes at Arnheim. The only known Peninsula nest was a ground scrape under a small spruce in a grassy old field (AW).

Significant Records (all except Breeding and High Counts).

1924 (one shot) 12 mi E L'Anse, L. W. Wing, first specimen for the Upper Peninsula (Wood, 1951; MDNR files).

1926 (very abundant) at Sidnaw, southern H (MDNR files); 9 Jul **32** (juvenile male killed by car, UMMZ 69230) about 3 mi W Sidnaw, N. A. Wood (no. 189) and L. W. Wing (1939); 8 Dec **32** (4 females, UMMZ 70342-70345) south part of Sidnaw, A. Rappi; 9 Jan **33** (male, UMMZ 70346; female, UMMZ 70347) south of Sidnaw, A. Rappi; 1 Oct **34** (male, UMMZ 71780) Sidnaw, D. Ruhl, Michigan Department of Conservation no. 502; 1 Oct **34** (female, UMMZ 84235) Sidnaw, M. B. Trautman; 1 Oct **34** (male, UMMZ 71781) 5 mi S Sidnaw, A. Rappi; Apr **61**, Sidnaw airport (MDNR files).

Aug **31** (immature female, killed by car, UMMZ 68048) near Nestoria, B, L. W. Wing (no. 477); I am assuming this specimen is the bird referred to by Wing (1939).

1932, spread into northern H (MDNR files).

After **32** (plentiful) Aura peninsula, B, C. Smith (MDNR files); through at least **69**, Ford Farm Road, T51N, R32W, Secs. 17, 22, 24, 25, 35, B (MDNR files).

21 Apr **34** (2 male skeletons, UMMZ 73776 and 73777) L'Anse, B, G. B. Saunders.

18 Nov **38** (female, UMMZ 99052) Covington Twp., B, M. B. Trautman (no. 438).

1949 ("still present") Keweenaw Peninsula (MDNR files).

1953 (dancing ground) near Chassell, H (Ammann, 1957), probable breeding.

5 May **67** (12; last seen) Kunzie Lake, T47N, R35W, Sec. 30, H (MDNR files).

9 Oct **67** (12) H, B. and D. Wolck (JPW 46: 1).

5 Mar **68** (3) "Houghton" [probably County], B. and D. Wolck (JPW 46: 70).

Mid Apr **70** (18) to Apr **83** (4 males) John Bishop property near Liminga, T55N, R35W, Sec. 14, H (MDNR files).

72-88, regular breeder at AW farm near Liminga; first recorded 23 May **72** (when AW first arrived at Liminga); fewer seen **87-88**; none after **88**. Other specific AW dates at Liminga: fall **73** (4 birds; JPW 52: 37); spring **74** (3-6, JPW 52: 133); 18 Sep **75** (2; JPW 54: 10); 25 Nov **80** (1; JPW 59: 9); fall **85** (4; JPW 64: 27); 1 Oct **87** (JPW 66: 31); and 18 May **88** (AW orig. notes).

1 Aug **77** (5) north of Little Lake, T49N, R34W, Sec. 4, B (MDNR files).

11 Apr **78** (9) Kenton, T47N, R37W, Sec. 13, H, J. Christenson (MDNR files); Spring **91** (5 birds) S of Kenton, H (MDNR files).

Jul **79** (brood) near Big Lake, T49N, R34W, Sec. 32, B (MDNR files).

Summer **81** to winter **82** (20 birds) and 21-26 Apr **83** (7 on dancing ground) Arnheim, Unit 4, H (MDNR files).

Fall **81** (6-8 birds) Baraga Plains, E. M. Harger (MDNR files).

Spring **82** (reported) B and H (JPW 60: 126) [H report probably AW at Liminga].

15 Apr **83** (1 male) Houghton Co. Memorial Airport, T55N, R33W, Sec. 16 (MDNR files); 28 Jan **90** (1; "Charley") near Houghton County Memorial Airport, LM.

11 May **84** (3) B, L. H. Walkinshaw *et al*. (JPW 62: 81).

[4 Aug **84** (1) "in Keweenaw Co.," Don Runck (JPW 63: 64-65); I consider this record doubtful in absence of documentation, other K records, and suitable habitat.]

21 May **85** (4) B, L. H. Walkinshaw (JPW 63: 139).

Spring **88** (reported) B (JPW 66: 166); could this be H instead of B?

High Counts. **Spring**: 5 May 84 (**9**), 4 males, 5 females, Liminga, AW (JPW 62: 81). **Fall**: 7 Oct 67 (**12**) H, B. and D. Wolck (JPW 46: 1); 3 Oct 82 (**8**) Liminga, AW. **Early winter**: Dec 84 (**6**) Liminga, D. Weaver (JPW 63: 70).

Breeding (formerly: **B** 1 pr; **H** 1+ co, 5 pr).

23 Apr 87 (remains of adult female and nest) Liminga, AW.

Several summers between 72 and 86 (young seen) Liminga, AW.

Historical Changes (Table 17; see Significant Records for data). Historically, this species did not occur in Michigan. It was first found in the state in 1904 on Isle Royale, then in the western mainland Upper Peninsula (Baraga Co.) in 24 (Wood, 1951; MDNR files) after the virgin forests had been replaced by farmland. At Sidnaw (H) it was termed "very abundant" in 26 and "common" in 32, and a number of specimens were taken in 31 and 32. By 32 it had spread into northern H and was "plentiful" in the Aura area (Ford Farm Road, B); in the winter of 37-38 it was so common at the latter location that the Michigan Department of Conservation trapped 51 for release in Chippewa Co. (Wood, 1951). However, in 49 it was termed only "still present" on the Peninsula. Decline in other Michigan populations began in the 1950s and has continued to today (R. E. Reilly in Brewer *et al*., 1991). The last records I find for leks (or their remains) were at the Sidnaw airport (H) in Apr 61; at Kunzie Lake (H) in 67; on the Baraga Plains in fall 81; at Arnheim on 26 Apr 83; in B on 21 May 85; and at Liminga on 18 May 88. The last certain records for the Keweenaw Peninsula were 28 Jan 90 at the Houghton County Memorial Airport (LM), where a lone lekless (and luckless) male, named Charley by airport personnel, courted a yellow maintenance truck for several years (Hanson, 1997); and spring 91, 5 birds south of Kenton (H). The overall decline probably is the result of accidental hunter kills and of formerly open lands maturing into dense shrubland and forest, although some seemingly good habitat still exists. The statement (G. A. McPeek in McPeek & Adams, 1994) that during the MBBA period, 83-88, "small populations in northern Houghton Co. have been reported as doing fairly well" may have seemed true then, but in retrospect obviously was not; that "flocks are common in parts of Houghton" Co. is false. A 1999 survey of H revealed no birds (Corace, 2000).

Greater Prairie-Chicken *Tympanuchus cupido*

Status and Range (formerly H). Extirpated from Michigan, including the Keweenaw Peninsula. Definite records only for H; last recorded in 1948 (see Historical Changes). No records, even historical, for B or K, but I imagine it occurred in B. According to A. Rappi (Wood, 1951), this species did not remain at Sidnaw (H) through the winter.

Habitat. Bred in farming districts, presumably occupying hayfields and other grassy areas.

Significant Records (all).

1926 (first reported) H, DesTrampe (MDNR files).

10 Jun 31 (seen) Sidnaw, H, L. W. Wing (1939).

24 Apr 33 (male, UMMZ 71072) Calumet, J. Werschay.
1 Oct 34 (male, UMMZ 84234) Sidnaw, H, M. B. Trautman no. 423.
1944 (small flock) H, McBeath (MDNR files).
1948, last seen at Chassell, H (Ammann, 1957).

Breeding (**H** 6 pr).

No specific breeding record, but I interpret the presence of this largely sedentary species in at least three localities in six different years to represent at least six "probable" breeding records.

Historical Changes (Table 17). In Michigan the Greater Prairie-Chicken probably was originally restricted to the prairies and savannas of the southwestern Lower Peninsula, but with the arrival of settlers and subsequent clearing of forests, it spread throughout the state (G. A. McPeek in Brewer *et al.*, 1991). For the Keweenaw, neither Kneeland (1857) nor Cahn (1918) mentioned it. Spreading northward from Wisconsin, rather than from the Lower Peninsula, it was first reported in 26 in H, and by 30 occupied all UP counties except K; it occurred from 31 to 34 at Sidnaw, in 33 at Calumet, and until 48 near Chassell; its disappearance from the last locality was considered at least in part due to competition with the Sharp-tailed Grouse, which arrived there in 49 (Ammann, 1957). In the Upper Peninsula as a whole, it declined in the 30s, became largely confined to the eastern part by 41, and disappeared in 82 (MDNR files).

Wild Turkey *Meleagris gallopavo*

Status and Range (B, H). Currently, a rare **permanent** resident at Covington (B), on the nearby Baraga Plains, near Nestoria (B), and in extreme southeastern H, having invaded the first locality in 1998, presumably from Iron Co. The wildness of birds seen farther north is questionable (*e.g.*, 15 May 2004, 3, near Tapiola, T52N, R35W, Sec. 12, H, C. MacLennan, P. Musser).

Habitat. At least sandy jack pine plains with patches of red oaks. Other habitats would have had to been occupied, including mesic forests and openings, to have allowed expansion from Iron Co. to Baraga Co. Has been fed by man in winter.

Significant Records (all except Breeding; listed chronologically by year).

October 98 (1 female) Murphy Road SE of Covington, B, R. Ajo (MDNR; in litt).
Winter 98-99 (2 males and 4 females fed through the winter) Covington, B, local residents fide R. Aho.
Beginning of winter 99-2000 (42 counted) Covington, B, local residents fide R.Aho.
April 2000 (flock) Big Burn Field near Little Lake, Baraga Plains, reported to R. Ajo (MDNR; in litt.).
12 Oct 2002 (2) Big Lake Campground road, Baraga Plains, LM.
10 May 2003 (1 gobbling, then seen) Big Lake, B, LB, Z. Gayk).
15 Apr 2005 (1) on Nestoria Road about 1 mi S Nestoria, T48N, R32W, Sec. 14, B, JY.

Breeding (**B** 1 co, 1 pr, 2 po; **H** 1 pr, 1 po).

26 Jun 2000 (1 female) Baraga Plains, crossed Prison Camp Rd. 1 mi E Little Lake, T49N, R34W, Sec. 15, LB, JY, possible breeding.
11 May 2002 (1) near Hauger Lake, H, TA, NAMC, possible breeding.
12 May 2001 (1) Baraga Plains, Plains Road just north of Sturgeon River, JM, NAMC, possible breeding.
30 May (adult male courting female, JM), 5 Jun (adult male, LB, JM) 2002, Baraga Plains, near Big Lake, T49N, R34W, Sec. 32, probable breeding.
24 Jun 2002 (male displaying to female) T47N, R35W, Sec. 32, H, JY, probable breeding.
4 Aug 2003 (2 females with 4-5 young) Baraga Plains, T49N, R34W, center of Sec. 15, JY photos in LB files).
[*Note*: residents of Covington, B, reported to R. Aho (MDNR; in litt.) that reproduction occurred there in 98 and 99, but I find no specific data.]

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Historical Changes (Table 17). Abundant pre-Columbian populations of the Wild Turkey occupied the southern half of the Lower Peninsula of Michigan but disappeared by 1900 (J. W. Urbain in Brewer *et al.*, 1991). All birds present in the state today are derived from introductions in MI and WI. The MBBA map (1991) indicates confirmed breeding as close to the Keweenaw as Dickinson Co., with probables in central Iron Co., from which Peninsula birds presumably originated in (or slightly prior to?) 98; birds near Amassa, Iron Co. (R. Aho), need to have spread only about 23 miles in about 11 years to reach the Covington area. A flock was fed by residents of Covington, B, in winters of 98-99 and 99-2000. The first records for H were in 2002. Further northward spread may be hampered, if not deterred, by the deep snows, cold temperatures, and scarcity of oak mast as food; indeed, the Covington birds might not have survived without being fed by man. Rather than support a Keweenaw population through human intervention (*e.g.*, winter feeding), I recommend that nature be allowed to take its course. If the species cannot survive on its own, it should not be forced upon an

ecosystem not evolved to support it. Turkey hunting on the Baraga Plains would increase pressure on the already fragile population of Spruce Grouse.

Red-throated Loon *Gavia stellata*

Status and Range (B, H, K). **Spring**: casual transient; 6 records (28 Apr-27 May). Seen migrating north-northwest past west end of Manitou Is. but never westward off north shore of mainland K, despite its regularity at Whitefish Point (Granlund & Byrne, 1996); also occurs on Keweenaw Bay. **Fall**: eastbound transient, fairly common in abundance, but very rare in frequency, over Lake Superior between at least McLain State Park (H) and Manitou Is. (K). Off Agate Harbor, 86-99, I counted 63 birds migrating eastward and 1 westward during 164.6 mostly morning hours of observation during the period 15 Sep-22 Oct (but probably occurs over a longer span; no later counts), or .41 per hour (Table 10). Casual transient on L'Anse Bay.

Habitat. Forages in open, moderately deep waters of L'Anse Bay; possible in shallow coastal waters of Lake Superior, where, however, I have never seen one swimming.

Migration Dates. **SEAD**: 28 Apr. **FEAD**: 20 Aug; 13 Sep. **FP**: probably last half of Sep. **FLDD**: 6 Nov 97 (L'Anse Bay, JY); 21 Oct 94 (Agate Harbor, LB).

Significant Records (all except Agate Harbor).

28 Apr 2005 (2) Keweenaw Bay 6 mi SE Chassell, H, RH, JK, JY.

28, 29 Apr 2002 (10) L'Anse Bay, Baraga, JK.

1 May 2001 (1 in basic plumage) Keweenaw Bay 6 mi SE Chassell, H, JY.

5 May (16 in flock migrating NNW past west end) and 6 May (4, past east end) 2002, Manitou Is., JY.

27 May 2005 (1) Manitou Is., L. Dombroski, Z. Gayk, JK.

20 Aug 2005 (1) Manitou Is., L. Dombroski.

13 Sep (1), 15 Sep (1), 20 Sep (exact count of 20), 28 Sep (5), and 14 Oct (9) 2002, migrating eastward off Hebard Park, K, LB.

22 Sep 2004 (8 migrants in 120 min count) Hebard Park, K, LB; same day as peak fall count at Whitefish Point (MBNH 12: 73).

6 Oct (2) and 7 Oct (2) 2003, Hebard Park, K, LB, flying east.

9 Oct 99 (1) Dan's Point, K, LB.

10 Oct 92 (3) McLain State Park, H, B. Johnson, C. Petersen (JPW 70: 21).

1-6 Nov 97 (1) L'Anse Bay, JY.

High Counts. **Spring**: 5 May 2002 (**16**); 29 Apr 2002 (**10**). **Fall**: 20 Sep 2002 (**20**); 15 Sep 93 (**14**) Agate Harbor, migrating eastward, LB.

Remarks. Statement in JPW 68 (2): 18 that "22 from 5 Sept.-2 Oct. with peak of 9 on 5 Sept. at Agate Harbor (LB)..." should have read "13 from 16 Sep-2 Oct with a peak of 7 on 20 Sep at Agate Harbor (LB)." A similar error was made in AB 45: 105.

Pacific Loon *Gavia pacifica*

Status and Range (B, H, K). Casual **fall** transient. Three acceptable records; recorded on upper Keweenaw Bay (17-18 Nov) and twice on L'Anse Bay (8 Dec; 26 Dec-7 Jan). An additional record of an Arctic/Pacific Loon was on the northern K coast (6-8 Oct).

Significant Records (all).

6, 7, and 8 Oct 86 (l) Agate Harbor, LB, alternate plumage (McPeek & Adams, 1994). Accepted by the MBRC (Chu, 1991) as either Pacific Loon or Arctic Loon (*G. arctica*).

17, 18 Nov 2000 (1) Big Traverse Bay just south of Traverse Bay village, H, LM, J M , AW, JY (finder, photos by). Accepted by the MBRC (Byrne, 2002).

8 Dec 2004 (1) L'Anse Bay, JY, description in LB files.

26, 27 Dec 2001 (2) and 1, 7 Jan 2002 (1) L'Anse Bay, JK (description in LB files). Accepted by the MBRC (Byrne, 2004).

[16, 20, 21, 30 Nov 99 (1) L'Anse Bay, basic plumage. Seen at great distance and rejected by the MBRC (Byrne, 2001a).]

[1-2 Nov 2003 (1) head L'Anse Bay. Rejected by the MBRC (Internet).]

[Kneeland (1857) lists "Black-throated Diver, *Colymbus arcticus*, Linn." from the Keweenaw Peninsula, presumably referring to the Pacific Loon. He also mentions Common and Red-throated Loons. I agree with Barrows (1912) that this "record" lacks sufficient detail to be acceptable.]

Common Loon *Gavia immer*

Status and Range (B, H, K). **Spring**: common transient, often seen migrating northwestward overland in pairs and small groups. Many transients use Portage Lake and the Lake Medora gap (K, LB, F. B. Isaacs, JK, LM), and Manitou Is. (JY) as flight lines from southeast (or east?) to northwest toward Isle Royale; abundant on some days at the latter two locations. On 2 May 2000, LB and JK saw 2 migrating north or northwest past the south side of Mt. Houghton (K), a path that would take them through the Lake Medora gap (K). Detectability along the north shore of mainland K is uncertain; so far, there is no indication that Manitou or Whitefish Point (where common; Ewert, 1982) birds pass here. **Summer**: resident, fairly common overall. Recorded in 28 of 77 censused townships (MBBA map 1991), but many birds

are nonbreeders. Common non-breeding resident along Lake Superior shore of H and K and in Keweenaw Bay (B, H, K), including Bete Grise (K) and Manitou Is. Uncommon in the interior, where most often seen flying. Very uncommon and local on inland lakes in northern K (non-breeding) and southern halves of B and H (probably breeding, *e.g.*, Bob, Drummond, Emily, King, and Little King Lakes, Prickett Dam Backwater). Virtually absent from inland waters of northern H, which is covered by farmland and towns and has few undisturbed lakes. **Fall**: fairly common transient throughout, including large inland lakes (*e.g.*, Gratiot Lake, K). Very common transient on Lake Superior off north shore of K and northern H, some birds on water but most actively migrating west to east and about 33% from northwest (direction of Isle Royale) to southeast (some coming more directly to shore, thence east). At Agate Harbor, in 209.5 mostly morning hours of observation during the count period 4 Aug-22 Oct (no counts earlier or later), I counted 632 birds (including 8 east to west) or 3.04 per hour (Table 10). More birds are seen at Whitefish Point (Granlund & Byrne, 1996) than at Agate Harbor in fall, probably because many birds originate to the northwest and bypass the Keweenaw Peninsula (LB), some perhaps along the north shore of Lake Superior; however, note similarity of fall 2004 counts (see High Counts). A few birds fly over Brockway Mt. or Copper Harbor, heading not through the Medora gap but east-southeast toward a visible section of Keweenaw Bay (LB). Off High Rock Bay at the tip of Keweenaw Point, some birds fly east and southeast through the pass between the Point and Manitou Is. (JY); others pass the east end of the Island moving east-southeast, a heading that would take them to Whitefish Point. Keweenaw Bay supports no such flying migration, but the species is fairly common on the water; these birds might go south to Lake Michigan. **Early winter**: occasional lingerer to 1 Jan, especially on L'Anse Bay.

Habitat. Breeds on larger, undisturbed, inland lakes having islands (rarely shorelines) low enough for nests. Feeds on these lakes and others not suitable for nesting, as well as in near-shore shallow waters and harbors of Lake Superior proper and Keweenaw Bay, especially along north shore of K and in L'Anse Bay.

Migration Dates. **SEAD**: 1 Apr 2000 (Keweenaw Bay 6 mi SE Chassell, H, JY). **SMAD**: 26 Apr (n=27). **SP**: second week of May, as at Whitefish Point (Ewert, 1982). **SLDD**: still migrating in early Jun (*e.g.*, 7 Jun 2002, 14, west end of Manitou Is. JY). **FEAD**: migration begins in last week of Jul (*e.g.*, 24 Jul 2000, 3 flying east, Copper Harbor, JY). **FP**: abrupt increase about 1 Sep to peak in third week Sep and subsequent decrease to mid Nov. **FMDD**: 15 Nov (n=23). **FLDD**: 1 Jan 2002 (L'Anse Bay, JK).

Significant Records.

Spring migration (actively migrating; all birds at Brockway Mt. were passing SE- NW through Lake Medora gap; see also High Counts and Migration Dates):

18 Apr-30 May (452) seen by J. Peacock on all but 4 days; maximum 91 birds on 12 May 92.

21 Apr 2002 (109) 1 mi NE Boston, H, JK, flying north and northwest in 92 min.

22 Apr 2001 (14) Arnheim, B or H, flying NW except 1 to N, JY.

26 Apr 2001 (numbers) moving west at Hancock, JK.

27 Apr 95 (2) Portage Lake, flying northwest, LM.

28 Apr 98 (8) Brockway Mt., LB.

29 Apr 2001 (10) Brockway Mt., LB, flocks of 1, 1, 2, 2, 4.

30 Apr 2000 (92) Mt. Lookout, K, JY, flying northwest.

2 (16) and 3 (11) May 2003, migrating northwest and north-northwest past east end of Manitou Is., JY.

3 May 95 (10) near Watton, B, JY, flying northwest.

3 May 99 (7) Pt. Abbaye, B, JY, flying east to west close to tip; birds from this locality might continue over Portage Lake.

4 May 98 (39) Brockway Mt., LB, 14 singles and groups of 2, 2, 2, 2, 3, 4, 4, and 6.

4 May 75 (30-40) Houghton, F. B. Isaacs, loose flocks of 3-15 flying west along Portage Lake shore.

5 May 97 (2) Calumet sewage ponds, LB, flying very high toward north.

5-7 May 2002 (73) migrating northwest past west end of Manitou Is., JY.

7 May 97 (28) Brockway Mt., migrating NW through Lake Medora gap, LB.

9 May 2002 (48) flying along Portage Lake, Hancock, JK.

10 May 97 (13) Big Lake, B, LB, flying southeast to northwest.

11 May 96 (21) near Watton, B, LB, flying southeast to northwest high over farm fields in flocks of 1, 6, 7, 7.

12 May 92 (91) Brockway Mt., J. Peacock.

29 May 2005 (5) flying NW past Manitou Is., JY. 3 Apr-15 May 76 (63) Brockway Mt., Isaacs & Hennigar (1980; F. B. Isaacs, in litt.).

26 Mar-15 May 77 (88) Brockway Mt., Isaacs & Hennigar (1980), 162 hours of observation (.54 birds per hr).

Early winter (all Dec-Jan records):
5 Dec 81, L'Anse Bay, JY.
7 Dec 2003 (2) L'Anse Bay, JY.
7 Dec (AW), 13 Dec (3, JY), and 30 Dec 99 (1, JY), all L'Anse Bay.
13 Dec 97, L'Anse Bay (3) JY.
Dec 84, HCCBC, count week.
15 Dec 2001 (2) HCCBC.
17 Dec 89 (2) HCCBC, published as "Loon sp." but I assume Common.
19 Dec 2004 (4) L'Anse, S. Haas.
20 Dec 97 (1) HCCBC.
[19 Dec 87 (16) HCCBC; I reject this record because of the large number; probably mergansers]
22 Dec 62 (1) Baraga, LB (Binford, 1965).
24 Dec 2002 (3) L'Anse Bay, TA, JM.
31 Dec 2001 (2, JY) to 1 Jan 2002 (1, JK) L'Anse Bay.

High Counts (see also Significant Records). **Spring**: 28 Apr 2002 (**200**) L'Anse Bay, JK, exceptional; 9 May 2002 (**84**) Portage Lake, B. Briggs; 29Apr 2005 (**32**) Keweenaw Bay 6 mi SE Chassell, H, JY. **Summer**: 6 Aug 2000 (**12**) Pt. Abbaye, B, JM, JY; 15 Jun 97 (**9**), H and K, Bootjack BBS, LB, most flying; 20 Jul 97 (**8**) L'Anse Bay head, LM. **Fall**: 23 Sep 2004 (**141**) Hebard Park, K, LB, eastbound transients in 60 min count (same date as 2004 fall high count at Whitefish Point; MBNH 12: 74); 20 Sep 98 (**100**, exact count) Hebard Park, K, LB, JY; 15 Sep 94 (**56**) Agate Harbor, LB, eastbound transients; 5 Sep 99 (**33**), L'Anse Bay, JY, on water. **Early winter**: see Significant Records.

Breeding (**B** 5 co, 1 pr, 4 po; **H** 3 co, 1 pr, 4 po; **K** 1 co, 9 po, see Note).
*14 Jul 86 (adult with 1 prejuvenile) Summit Lake, B, JY.
*5 Aug 85 (2 adults, 1 feeding 1 prejuvenile about 10 in long) Lake Manganese, K, LB.
Note: for K, I question all confirmations and probables on the MBBA map (1991) other than the Lake Manganese record, reducing them to possible in the above summary; today (2005) all of the loons that summer in K seem to be non-breeders (LB).

BBS. Bootjack 67-73: none. *Bootjack* 92-2005: 22 on 8 of 14 counts (57.1%) all flying; mean 1.57; range 0-9. *Herman*: 23 on 7 of 7 counts (100%); mean 3.29; range 1-7; on L'Anse Bay.

NAMC. Baraga Co.: 75 on 6 of 6 counts (100%); mean 12.50; range 6-19; ind/PH .29. *Houghton Co.*: 92 on 6 of 7 counts (85.7%); mean 13.14; range 0-55; ind/PH .33.

HCCBC. 5 on 3 of 26 counts (11.5%); mean .19; range 0-2; ind/PH .003; here I include loon sp.

Historical Changes (Table 17). Referring to southern H (Kenton area) and northern Iron Co. in 1914, Cahn (1918) classed the Common Loon as "an abundant summer resident on nearly all of the lakes having shores affording possible nesting sites." His one actual breeding record was in Iron Co. Wood (1933) termed it a "common migrant and summer resident" on "Keweenaw Point" in spring 1931, specifically mentioning Lake Manganese. Data from the Bootjack BBS reflect an increase from the period 1967-73 to 1992-2005, but most birds in the latter period might have been non-breeders or even very late transients, as all were flying (LB); possibly, flying birds were not recorded in 67-73. I know of only one breeding record for K. Clearly the species does not breed commonly today, although it is sometimes difficult to distinguish non-breeding summer residents from nesters. Reasons for this decline are discussed by W. L. Robinson (in Brewer *et al.*, 1991). I believe summering birds would breed, but the less disturbed lakes lack suitable islands, and the many mammalian predators pose a formidable threat to nests on the mainland shore. In spring 2000, the Copper Country Audubon Club deployed two loon nesting platforms on Gratiot Lake (K), which has no natural islands; one was redesigned and reemployed in spring 2001; by the end of summer 2005, no nesting had ensued.

Pied-billed Grebe *Podilymbus podiceps*

Status and Range (B, H, K). **Spring**: fairly common transient inland, casual on coast and coastal bays (see Significant Records). **Summer**: rare resident, widely but very sparsely distributed due to scarcity of nesting habitat. Locally fairly common at Arnheim (B and H). **Fall**: transient, uncommon inland and casual on coastal bays. Birds that probably were transients, because they occurred during the migration period at localities where the species does not breed, have been recorded 22 Jul-8 Oct, and once on 24 Nov; all in stripe-headed, partial juvenile plumage.

Habitat. Breeds on ponds (including old beaver ponds) and small lakes with shallow open water for feeding and dense emergent vegetation, especially cattails, for nest placement; this habitat is scarce on the Peninsula, where most lakes have forested shores. Does not breed on sewage ponds, but might if emergent aquatic plants were not removed by man. Found in same habitats during migration, but also on sewage ponds, twice on Lake Superior proper, and once on Keweenaw Bay (see below), adding to the data that show that migrant waterbirds may alight on any waters when necessary.

Migration Dates. **SEAD**: 14 Mar 95 (L'Anse Bay, JY). **SMAD**: 16 Apr (n=27). **SP**: protracted migration period, with peak in last week of Apr. **SLDD**: the latest date for a migrating individual is 29 May 2003. **FEAD**: earliest dates for migrating individuals are 22 Jul 98 and 15 Aug

95. **FP**: protracted migration, increasing in mid Aug and peaking in last two weeks of Sep. **FMDD**: 2 Oct (n=18). **FLDD** (almost all gone by third week of Oct): 24 Nov 2000 (Chassell, H, LM, JY); 8 Nov 96 (B, JY); 29 Oct 2001 (Arnheim, B or H, JY).

Significant Records.

Spring transients (not in breeding habitat or localities):

13 Apr 2002 (1) Keweenaw Bay 6 mi SE Chassell, H, JY.
27 Apr 2000 (1) on Lake Superior at Hebard Park, K, LB.
27 Apr 2002 (1) Portage Lake in Hancock, JK.
4 May 75 (3) Bailey Pond, 2 mi E Eagle Harbor, K, F. B. Isaacs.
11 May 96 (3) Baraga sewage ponds, LB.
15, 27 May 96 (1, or different birds?) Agate Harbor, LB.
18 May 96 (1) Copper Harbor, LB.
25, 26 May 2002 (1) Copper Harbor pond, LB, K. Overman.
28 May 2003 (1) Calumet sewage ponds, LB.

Fall transients (not in breeding habitat or localities; all but two LB):

22 Jul 98 (1 juvenile) Calumet sewage ponds.
15 Aug 95 (1) Calumet sewage ponds.
17 Aug 52 (5) Sands, H.
27 Aug 96 (1 juvenile) Ahmeek sewage ponds, K.
31 Aug 67 (1) Eagle Harbor (in harbor), K.
2 Sep 87 (2) Tamarack City sewage ponds.
20 Sep 2004 (1) in Lake Superior off east end of Manitou Is., JY
20, 30 Sep 99 (1) Calumet sewage ponds.
22 Sep 98 (1 juvenile) Calumet sewage ponds.
23 Sep 94 (1) Lake Glazon, K.
29 Sep 2000 (flock of 3) Lake Fanny Hooe, Copper Harbor.
7 Oct 2001 (1) Agate Harbor, North Bay.
8 Oct 96 (2) Baraga sewage ponds.
24 Nov 2000 (1) Chassell, H, LM, JY.

High Counts. **Spring**: multi-party, 11 May 96 (**14**) B, NAMC; 3 May 96 (**11**) B plus H, JY. **Fall**: 19 Sep 97 (**9**) B plus H, LM, JY.

Breeding (**B** 7 co, 2 pr; **H** 8 co, 1 pr, 2 po; **K** 4 po, see Note).

28 May 98 (2 prejuveniles) 1 mi S Oskar, H, AW.
18 Jun 2002 (1 calling) Agate Harbor beaver pond, LB; possible breeding.
20 Jun (prejuveniles), 10 Jul 99 (3 young) Arnheim, Unit 5, H, JY.
25 Jun 99 (1 full-sized juvenile) Arnheim, H, LB, LM, JY; probable breeding.
27 Jun 98 (4 young) Arnheim, B, LM.
2 Jul 2003 (4 very small prejuveniles) Arnheim, Unit 5, H, JY.
*5 Jul 88 (1 half-grown) Swedetown marsh, H, LB.
9 Jul 89 (2 prejuveniles) Boston Pond, H, LM.
20 Jul 2002 (2 juveniles) Arnheim, Unit 8, B, LM.
22 Jul 2002 (6 small young) Arnheim, Unit 7, B, JY.
28 Jul 97 (young) near Big Lake, B, JY.
2 Aug 98 (2 young) Arnheim, Unit 7, B, LM, JY.
4 Aug 2003 (young seen) pond south of Big Lake Field, Baraga Plains, T49N, R34W, Sec. 28, JY.
10 Aug 97 (3 begging from adult) Arnheim, B, JY.
12 Aug 80 (4 half-grown prejuveniles) Calumet Lake, LB.

Note: confirmation for K on MBBA map (1991) should be deleted.]

Summary: 11 broods of known size totaled 31 young, mean 2.82, range 1-6.

BBS. *Bootjack* 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1.

NAMC: *Baraga Co.*: 9 on 4 of 6 counts (66.7%); mean 1.50; range 0-3; ind/PH .03. *Houghton Co.*: 21 on 6 of 7 counts (85.7%); mean 3.00; range 0-7; ind/PH .08.

Horned Grebe *Podiceps auritus*

Status and Range (B, H, K). **Spring**: transient; common, occasionally abundant, on Lake Superior and Keweenaw Bay (especially L'Anse Bay), fairly common on Portage Lake, and casual on inland lakes. **Summer**: casual visitant (2 records). **Fall**: transient, very common (infrequently some days abundant) on Lake Superior along north shore of K and northern H, where seems to arrive first, most of these actively migrating west to east, with lesser numbers on water (including harbors). At Agate Harbor, during 209.5 mostly morning hours in the count period 4 Aug-22 Oct (no later counts), 1147 seen (including 9 east to west), or 5.44 per hour (LB, Table 10), but if flight of 586 birds in 2.2 hrs on 11 Oct 92 (an exceptional fall migration) is disregarded, the passing rate decreases to a more realistic 2.71. Common on L'Anse Bay, but seemingly very rare on rest of Keweenaw Bay (more data needed). Occasional on Portage Lake system and casual on other inland lakes and sewage ponds. **Early winter**: casual lingerer; 5 records for Dec (see Migration Dates); no records for Lake Superior proper or upper Keweenaw Bay.

Habitat. Feeds at moderate depths in near-shore waters of Lake Superior and Keweenaw Bay and occasionally on larger inland lakes; 2 records for sewage ponds.

Migration Dates: **SEAD**: 5 Apr 2000 and 13 Apr

2001 (both Keweenaw Bay 6 mi SE Chassell, H, JY). **SMAD**: 29 Apr (n=20). **SP**: narrow migration window for most of population; escalates abruptly in last week of Apr to peak in first week of May and decreases quickly in second week. **SMDD**: 11 May (n=13). **SLDD**: 9 Jun 31 (1, Copper Harbor; Wood, 1933); 30 May 2005 (1, Keweenaw Bay 6 mi SE Chassell, H, JY); 22 May 99 (1, Copper Harbor, LB); I consider these late migrants, not summer visitants. **FEAD**: 23 Jul 97 (Dan's Point, K, LB); 4 Aug 93 (Agate Harbor, LB). **FMAD**: 23 Aug (n=9, K only, where seems to arrive earliest). **FP**: abundance sharply increases about 15 Sep to peak about 1 Oct and gradually decreases into early Nov. **FMDD**: 8 Nov (n=21). **FLDD**: 30 Dec 2001 (2, Baraga, JY); 16 Dec 99 (South Portage Entry, H, JY); 8 Dec 97 (L'Anse Bay, JY); 3 Dec 2001 (2 birds, Keweenaw Bay 6 mi SE Chassell, H, JY); 2 Dec 99 (Portage Lake, 1 mi S Oskar, H, AW).

Significant Records.

Summer (all):

28 Jun 98 (2) L'Anse Bay, JY, alternate plumage.

2 Jul 2000 (1) Cole's Creek mouth, H, TA (MBNH 8: 22).

Fall (unusual records) and *inland* (all except Portage Lake):

27 Apr 94 (1) Parent Lake, B, JY.

18 May 91 (1) Lake Eliza, K, LB.

25 Sep 97 (1) Ahmeek sewage ponds, K, LB.

4 Oct 54 (3) Parent Lake, B, A. Peters (AFN 9: 27).

7 Oct 99 (1) Torch Lake, H, LB.

16 Oct 99 (1) Lac La Belle, K, LB, LM, JM, JY.

High Counts. **Spring**: 28 Apr 2002 (**300**) L'Anse Bay, JK, exceptional; 1 May 2001 (**66**) Keweenaw Bay 6 mi SE Chassell, H, JY; 3 May 96 (**30**) Keweenaw Bay, H, JY; 22 Apr 49 (**25**) L'Anse, McBeath (JPW 27: 114). **Fall**: 11 Oct 92 (**586**) Agate Harbor, LB, 125 flocks (4.7 per flock) migrating eastward in 130 min of observation (4.51 per min or 270.5 per hour); 10 Oct 92 (**174**) McLain State Park, H, B. Johnson and C. Petersen (JPW 70 [2]: 21); 2 Oct 92 (**32**) Agate Harbor, LB, migrating eastward. Note that all fall highs were in 92, an unusual year for this species.

NAMC. *Baraga Co.*: 15 on 3 of 6 counts (50.0%); mean 2.50; range 0-9; ind/PH .06. *Houghton Co.*: 2 on 1 of 7 counts (14.8%); mean .29; range 0-2; ind/PH .01.

Remarks. On Lake Superior off Agate Harbor, birds can "migrate" eastward while foraging by floating with the slow-moving Keweenaw Current.

Red-necked Grebe *Podiceps grisegena*

Status and Range (B, H, K). **Spring**: transient; very common migrant past east end of Manitou Is. (6 May 2002, 45; 7 May 2002, 26; Youngman, 2002); common (irregularly abundant) on L'Anse Bay and on Keweenaw Bay north into adjacent H; very rare on Portage Lake; and casual on other interior lakes. One record at tip of Pt. Abbaye, B (3 May 99, 3 birds, JY). The north coast of K needs censuses. **Fall**: off north shore of K (including Manitou Is., JY) and northern H (including Freda, 57 migrating northeast on 29 Aug 2004, JY), very abundant west to east transient and fairly common forager close to shore. At Agate Harbor during the count period 4 Aug-22 Oct (no counts before or after), 4482 seen (including 5 moving east to west) in 209.5 mostly morning hours, or 21.42 per hour (LB, Table 10); however, if the exceptional 1093 seen in 4.5 hrs on 31 Aug 93 are ignored, the passing rate falls to a more realistic 16.53 per hour. Common on L'Anse Bay, rare in harbors and small bays, and very rare on inland lakes and ponds. **Early winter**: on L'Anse Bay, fairly common to 29 Nov, very uncommon to 31 Dec, and casual to 20 Jan; no data beyond Oct for migration on Lake Superior proper or upper Keweenaw Bay (but see Lac La Belle in Significant Records).

Habitat: Feeds commonly in moderately deep waters just off coastal rocks of Lake Superior and in upper Keweenaw Bay and L'Anse Bay, rarely harbors, and casually larger interior lakes and marsh ponds (22 Aug 98).

Migration Dates: **SEAD**: 4 Apr 2000, 6 Apr 2001 (7), 11 Apr 2005 (2), and 14 Apr 2004 (12), all on Keweenaw Bay 6 mi SE Chassell, H, JY. **SMAD**: 22 Apr (n=12), this date probably about 14 days too late. **SP**: narrow migration window of only 17 days for most of population; peak in last week of Apr. **SMDD**: 12 May (n=7). **SLDD**: 13 Jun 96 (L'Anse Bay, JY); 3 Jun 99 (Copper Harbor, LB); 25 May 2002 (2, Keweenaw Bay 6 mi SE Chassell, H, JY). **FEAD**: 18 (not 15 as in MBNH 5: 24) Jul 97 (Agate Harbor, LB); 24 Jul 2000 (4, Copper Harbor, JY, migrating eastward); 4 Aug 93 (Agate Harbor, LB). **FMAD**: 12 Aug (n=5). **FP**: last week of Aug and first week of Sep, averaging about 1 Sep, then decreasing through third week of Oct. **FMDD**: 29 Nov (n=12). **FLDD**: 20 Jan 2002 (4, TA, JM) and 1 Jan 2005 (1, A. Byrne, B. Murphy) both L'Anse Bay. *Note*: in fall, arrives earliest on north shore of K and remains latest on L'Anse Bay, so FMAD and FMDD based solely on records from those two areas, respectively.

Significant Records.

Inland waters and coastal bays (all except Portage Lake and Copper Harbor).

27 Apr 94 (1) Parent Lake, B, JY.

22 Aug 98 (1) Arnheim, Unit 5, H, LM, JY.

21 Oct 98 (1) and 29 Nov 2000 (2) Lac La Belle, K, JY.

Incredible.

Wood (1931) states "an adult...was found...on the road near Copper Harbor, and was captured after a short chase" (I'll bet it was short!). This was on 22 Apr 31; male, UMMZ 67334 (UMMZ, in litt.).

High Counts. **Spring**: 23 Apr 2001 (**405**) L'Anse Bay, JY, highly exceptional; 29 Apr 2002 (**221**) L'Anse Bay, JK, exceptional; 29 Apr 2000 (**80**) L'Anse Bay, LB, JM. **Fall** (all migrating west): 31 Aug 93 (**1093** in 270 min during morning, a passing rate of 4.05 per min or 242.89 per hour; 137 flocks) Agate Harbor, LB, exceptional; 20 Aug 2005 (**779**) Manitou Is., S. Haas, exceptional; 13 Aug 2000 (**378**) Dan's Point, K, LB; 27 Aug 99 (**346**) Agate Harbor, LB; 10 Sep 2002 (**310**) east end of Manitou Is. (Youngman, 2002). **Early winter**: 19 Dec 2001 (**14**) L'Anse Bay, JY.

NAMC. *Baraga Co.*: 38 on 5 of 6 counts (83.3%); mean 6.33; range 0-10; ind/PH .15. *Houghton Co.*: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

Remarks: Palmer (1962) said that Red-necks migrate in loose associations, but the thousands I have seen off Keweenaw Co. flew in tight lines, the birds evenly spread apart like geese.

Eared Grebe *Podiceps nigricollis*

Status and Range (B, H). Casual **spring** vagrant; 5 records, 2 in B, 3 in H. Recorded on shallow open waters of L'Anse Bay and sewage ponds.

Significant Records (all).

11-14 May 2002 (up to 2; 1 in full alternate plumage on 11 May) Baraga sewage ponds, TA, LB, S. Hoover, JM, JY (MBNH 9: 215).

13 (flock of 5, LB, JM, JY) and 17 (2, JY) May 2000, head of L'Anse Bay, alternate plumage.

18 May 2000 (2 in full alternate plumage) Calumet sewage ponds, LB.

29 May 2004 (1) Lake Linden sewage ponds, JK (MBNH 11: 191).

15-17 Jun 2000 (1 in full alternate plumage) Calumet sewage ponds, LB, JM; different from birds on 18 May, as none was seen on intervening dates.

[21 Sep 87 (1) Copper Harbor (JPW 66: 28); lacks documentation. At this time of year, Eared Grebes may be difficult to distinguish from adult Horned Grebes molting into basic plumage, a fact not adequately covered by popular field guides.]

NAMC. *Baraga Co.*: 6 on 2 of 6 counts (33.3%); mean 1.00; range 0-5; ind/PH .02.

Western Grebe *Aechmophorus occidentalis*

Status and Range (B). Accidental late **fall** vagrant. One record identified to species, 27 Oct to 4 Nov 2001 (not 26 Oct-2 Nov as in Byrne, 2004), 1 seen at head of L'Anse Bay off Baraga State Park, TA (finder), JM, LM, JY (description in LB files); accepted by the MBRC (Byrne, 2004). Another bird, 23 Nov 73, at the same place, AW (JPW 52: 35; Weaver, 2000; Payne, 1983) was originally called a Western Grebe, but after splitting of the two species, Weaver (2000) properly considered it a Western/Clark's Grebe (*A. occidentalis/clarkii*); this record lacks documentation. A third bird, reported as a Western/Clark's from the head of L'Anse Bay on 25 Nov 2002, was rejected by the MBRC (Internet).

American White Pelican *Pelecanus erythrorhynchos*

Status and Range (B, H, K). Recorded on L'Anse Bay, the Portage Lake system (including Torch Lake and Pike Bay at Chassell, H, the latter the best place for this species in spring), Lac La Belle (K), Copper Harbor, Agate Harbor, Eagle Harbor (K), and once on Big Lake (B); unrecorded on Lake Superior proper (except flying along shore) and upper Keweenaw Bay. Although formerly considered a vagrant, its breeding expansion in western MN and northern WI brings the Keweenaw into a line between wintering and breeding ranges. Non-birders have reported many more birds than listed below, but I lack these data. **Spring** and **early summer**: transient, formerly occasional, but rare since 99; recorded 32 times, 13 Apr-11 Jul, with no apparent peak. Birds on 28 April and 14 May 92, 30 Apr 2000, and 29 Apr and 8 May 2001 at Brockway Mt. actively migrating eastward (an odd direction, considering its breeding range). **Fall**: casual transient, recorded 5 times 25 Sep-21 Oct, once (mid Oct 59) in flock of 9 or 10.

Habitat. In all seasons, rests on medium-sized bodies of still waters, especially the Portage Lake system, once on a big inland lake. Infrequently noted feeding.

High Counts. **Spring**: **22**, **13**. **Fall**: **9** or **10**, exceptional. See Significant Records.

Significant Records (all).

13 Apr 2002 (2) about 4 mi S Lake Linden, TA.

16 Apr 2001 (1) South Portage Entry, H, TA, JM.

18 Apr 2001 (1) Sturgeon River Sloughs, Unit 1, B. Johnson fide JY.

21 Apr 2000 (4) Lac La Belle, K, local observers, fide LB.

25 Apr 2000 (2) Chassell, H, LB.

25-28 Apr 2001 (up to 12) Chassell, H, A. Byrne, JK, LM, L. Taccolini.

25 Apr (6, JY)-1 May 2003 (10, LB) Chassell, H.

28 Apr 92 (4) circled West Bluff, Brockway Mt., J. Peacock.

29 Apr 2001 (1) Brockway Mt., LB, JM.

30 Apr 2000 (6) Brockway Mt., LB, JM.

1 May 2003 (10) Chassell, H, LB.

4 May 2002 (22) Eagle River, K, L. Marta.

5 May 99 (4) Oskar, H, RH.

5 May 2004 (3) Chassell, H, JY.

7 May 2000 (2) Sturgeon River mouth, JY.

8 May 2001 (3) Brockway Mt., LB.

14 May 92 (10) over Brockway Mt., J. Peacock (AB 46: 425).

15 May 2005 (3) Eagle Harbor, K, LB.
18 May 2004 (13) Chassell, H, JY.
18 May 2005 (12) Chassell, H, JY.
21 May 2005 (2) mouth Sturgeon River, JK.
22 May 2003 (9) swimming on Copper Harbor, J. Rooks *et al.*
31 May 99 (1) Ojibway pond, Baraga, JY.
4 Jun 2003 (2) Sturgeon River mouth, JY.
Spring 1903 (1) killed near Baraga (Barrows, 1912).
12 Jun 94 (1) standing on island in Torch Lake off Hubbell, H, LB, LM, Bootjack BBS.
13 Jun 2005 (6) flying north at Lake Linden, H, M. Drew (fide RH).
17 Jun 92 (1) South Portage Entry, J. and J. VanWestenburg (fide AW).
20 Jun 94 (1) mouth Sturgeon River, photos by K. Nichols (Weaver, 2000, who has the photos).
1 Jul 2003 (1) Manitou Is., flying northeast over Lake Superior, Z. Gayk, B. Johnson, L. Usyk, JY.
11 Jul 92 (1) L'Anse, B, fide N. Ilnicky (JPW 70 [1]: 26).
[22 Jul 77 (1) MTU campus, H, AW, proved to be an escape from N. A. Sloan's research project (Weaver, 2000)].
Summer 89, North Portage Entry, H, S. Fill, LM (Weaver, 2000).
25-26 Sep 83 (1) Copper Harbor, M. Macdonald (AB 38: 205; JPW 62: 28; Weaver, 2000).
5-6 Oct 96 (1), Baraga marina, LM, JY (MBNH 4: 94; not Keweenaw Co. as in FN 51: 57).
14 Oct 59 (1) Big Lake, B, male, MSU 2824, R. Beach. Rafferty (1960) said flock of 9 or 10 seen by hunters on weekend of 10-11 Oct 59, two recovered, including one preserved by Conservation Officer Richard Beach. Note discrepancy between weekend dates and date of collection, 14 Oct being on the specimen and I presume correct.
21 Oct 95 (1) Baraga marina, JY.
Fall (probably Oct) 97 (1 immature) near Baraga, found weak in farmer's field, photographed (in newspaper), rehabilitated, and flown to Seabird Sanctuary, Indian Harbor, Florida, for release (MBNH 5: 72).
About 1856 (1) "seen and shot at on the [Keweenaw] Point a few years since" (Kneeland, 1857); county probably K, but uncertain. Wood (1951) is incorrect in saying "Kneeland...shot 1 on Keweenaw Point in the early 1850's," as Kneeland was not there "a few years since."

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1; a non-breeder.

Historical Changes. Apparently increasing, with 31 of 32 spring and summer records and 3 of 5 fall records since 1989. The number of Peninsula birders has increased only slightly in the 1990s, so the change probably mirrors the eastward spread of breeding in Minnesota and the new (starting 94) nesting colonies in northern Lake Michigan (Cuthbert *et al.*, 2001; MBNH 7: 27, 28).

Double-crested Cormorant *Phalacrocorax auritus*

Status and Range (B, H, K). The cormorant population of the Peninsula is composed of three elements: nesting adults from the Traverse Island, H, colony; widely scattered, non-breeding, summering immatures; and transients to and from north of Lake Superior. **Spring**: transient. Fairly common feeding on Lake Superior around perimeter of Peninsula, including harbors, and on Portage Lake system. Common flying overland northward past Brockway Mt. (through Lake Medora gap) and north shore of K between Eagle Harbor and Copper Harbor, where recorded (LB) on 32 dates from 23 Apr to 30 May, with maxima on 28 Apr 98 (flock of 55 at Copper Harbor) and 30 May 96 (flock of 48 at Agate Harbor). From Brockway Mt., J. Peacock counted 238 on 16 of 32 census days, 23 Apr-27 May 92, maximum 69 on 7 May, migrating north through the Lake Medora gap. Also, like Common Loon, uses Portage Lake as a migration flight line (*e.g.*, 30 Apr 2004, 65 migrating north off Pilgrim River mouth, H, LB) and migrates at various points overland (*e.g.*, flock of 10, Big Lake, B, LB, JM). **Summer**: uncommon resident; abundance centered at the only colony, Traverse Is. (H), from which adults formerly foraged at least as far as Agate Harbor, Copper Harbor, the Portage Lake system (Torch Lake, H, LB), and Arnheim (B and H); much reduced since about 97, so that they no longer forage as far as Agate and Copper Harbors or Torch Lake. Immatures also occur around the perimeter of the Peninsula and on the Portage Lake system, as well as inland (at least formerly) at Boston Pond (H) and at Vitton's Pond near Boston (H); the latter was an irregular roost in the late 80s (LB). Three birds at Von Zellen's, near the mouth of Huron Bay (B) 22 Jun 88 (LB) were much closer to the Huron Islands, Marquette Co., colony. **Fall**: like spring in reverse. Transient. Fairly common around perimeter of Peninsula and on Portage Lake system. Very common in total numbers (including many adults), but in infrequently seen flocks, between Eagle Harbor and Copper Harbor, migrating directly north to south off Lake Superior, where noted on 18 days from 13 Aug 2000 (Dan's Point., K, LB, flock of 15) to 7 Oct 90 (Agate Harbor, LB, flock of 10); the few moving eastward and westward close to shore in the 90s were

probably local residents. At Agate Harbor, 483 counted migrating north to south, 29 Aug-7 Oct, in 126.3 mostly morning hours of observation, or 3.8 per hour (LB, Table 10). Very rare on inland ponds. Most gone by 1 Nov. **Early winter**: occasional lingerer since 94; 5 records (see Migration Dates). Records probably will increase if local and transient populations continue to expand (but see Historical Changes).

Habitat. Nests in trees on Traverse Island. Dives for fish in moderately deep, open waters along shores of Lake Superior proper, upper Keweenaw Bay, L'Anse Bay, adjacent small bays, the entire Portage Lake system, and a few large marshy ponds with snags. Unrecorded on sewage ponds, which lack fish and snags.

Migration Dates. **SEAD**: 14 Apr 2000 (Huron Bay, B, JY). **SMAD**: 3 May (n=19). **SP**: between 27 Apr and 12 May. **SLDD**: transients seen as late as 30 May 96 (flock of 48, Agate Harbor, LB); see High Counts. **FEAD**: transients recorded from 13 Aug 2000 (flock of 15, all but one adults, Dan's Point., K, LB) to 7 Oct 90 (flock of 10, Agate Harbor, LB). **FMDD**: 13 Oct (n=14). **FLDD** (including all Early Winter): 31 Dec 94 (.5 mi S Oskar, H, AW); 19 Dec 98 (Chassell Bay, H, LM, JY, HCCBC); 19 Dec 2004 (1, L'Anse, S. Haas); 9-11 Dec 2004 (1, L'Anse Bay, JY); 17 Nov 2002 (1, Baraga marina, RH); 6 Nov 97 (L'Anse Bay, JY); see 7 Oct 90 above.

Significant Records (historical).

1940 and 1943, see Banding Recoveries.

19 Jun 56 (1) Baraga, LB.

Spring 1963, Portage Lake, J. Weber (JPW 42: 204).

27 Apr 74 (1) Sturgeon River Sloughs, AW (Weaver, 2000).

17 Jul 78, Torch Lake off Lake Linden, F. B. Isaacs.

9 May 79 (5) Sands, H, AW (JPW 57: 150; Weaver, 2000).

High Counts. **Spring**: multi-party, 8 May 99 (**84**) H, NAMC; 28 Apr 90 (**75**) Chassell, H, AW; 7 May 92 (**69**) Brockway Mt., J. Peacock. **Summer**: 12 Jun 92 (**30**) H, LB, Bootjack BBS, one flying flock (late transients?). **Fall** (flocks migrating south off Lake Superior): 29 Aug 94 (**207** in flocks of 130 and 77) Agate Harbor, LB; 17 Sep 2000 (**95** in 1 flock) Dan's Point, K, LB; 29 Sep 99 (**75** in 1 flock) Copper Harbor, LB.

Breeding (**H** 1 co, see Note).

*Only one colony, on Traverse Island in Keweenaw Bay off Rabbit Bay, H (see Historical Changes).

Note: the two possible breeding records (LB) for H on the MBBA map (1991) proved not to be breeding localities and should be reduced to "observed."

BBS. *Bootjack* 92-2005: 33 on 2 of 14 counts (14.3%); mean 2.36; range 0-30 (one flying flock, 92). *Herman*: 24 on 2 of 7 counts (28.6); mean 3.34; range 0-23.

NAMC. *Baraga Co.*: 89 on 6 of 6 counts (100%); mean 14.83; range 5-36; ind/PH .29. *Houghton Co.*: 259 on 7 of 7 counts (100%); mean 37.00; range 3-84; ind/PH .93.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Banding Recoveries. Two banded as juveniles (hatching year) in southeastern ON 5 Jul 39 and 4 Jul 40 recovered in B in Jul 43 and 31 Aug 40, respectively, the former suggesting breeding expansion and the latter demonstrating northwestward dispersal of young in the same fall.

Historical Changes (Table 17). By the 1930s, cormorants were well established breeders in Michigan, although none of the early authors (Kneeland, 1857; Cahn, 1918; Wing, 1939; Wood, 1933, 1951) reported it from the Keweenaw Peninsula. In the late 1950s, the species abruptly disappeared from the state, due largely to pesticide contamination, with the last confirmed nest on the Huron Islands, Marquette Co. (J. P. Ludwig in Brewer *et al.*, 1991). In 79, pioneers appeared on Gravelly Island, Delta Co., and the entire population expanded thereafter. The earliest records I find for the Keweenaw were banding recoveries (which see) in 40 and 43, which suggest the species was expanding into the Keweenaw prior to extirpation in the 50s. The next records were single sightings in 56 and 63, perhaps leftovers from the Huron Islands colony. Years passed before Weaver (1995) recorded singles in H in 74 and 79, no more until 82, and annually thereafter, and F. B. Isaacs saw it on Torch Lake, H, in 78. My first record after 56 was 22 Aug 85 at Agate Harbor, and although the species became fairly common on Torch Lake (H) in 86 (LB), it was not a regular visitant to Copper Harbor until 88 (LB). Youngman first noted cormorants in B (at Baraga) on 13 May 82 and again 12 May 83, paralleling AW's findings. During intensive field work on the MBBA in 86-88, I recorded none in K, 4 in B and 12 in H (nearest the Traverse Island colony). The absence of birds on the Bootjack BBS 1967-73 but presence in the 92-2005 period, as well as data from the Herman BBS, where none were seen in 83, 84, 85, or 90, but some in 91 and 93, further support this timing. No colony was present in 76 (Scharf, 1979). Breeding was first noted in 84 on Traverse Island (10 nests; Ludwig, 1984), and this colony expanded rapidly to 130 nests in 89 (Scharf & Shugart, 1998). However, the Keweenaw population may have reached its zenith, because a 9 Jul 97 survey (Cuthbert *et al.*, 2001) recorded only 30 nests on Traverse Is., and I have noted very few on the north coast of K and on Torch Lake during the period 97-2005 (*e.g.*, only 2 each at Copper Harbor and Torch Lake in summer 2001). Future research is needed to determine the caused for this change and whether it is temporary

or permanent. Also, the MDNR is investigating ways to control cormorant populations to appease the fishing industry, and I think it likely that the recent decrease is the result of illegal killing on Traverse Island.

American Bittern *Botaurus lentiginosus*

Status and Range (B, H, K). **Summer**: resident, local distribution correlated with scarcity of habitat. Fairly common in extreme northeastern B (Arnheim) and adjacent H (Sturgeon River Sloughs). Rare in K. Very uncommon elsewhere. I find no evidence of greater abundance or peaks during migration periods.

Habitat. Prefers cattail marsh with stretches of open water suitable for edge foraging; nests less commonly in open bogs, dense sedge marsh and meadow, and wet (sedge or cattail) potholes in hayfields.

Migration Dates. **SEAD**: 15 Apr 99 (Arnheim, H, JY). **SMAD**: 1 May (n=15, based on records from 1984-99). **SLDD**: obvious transients seen in Copper Harbor on 14 May 2003 and 28 May 2002 (LB). **FEAD**: the only records for the Calumet sewage ponds (LB), 24 Aug 99 (1) and 25 Jul-2 Aug 2001 (1), provide the only clues to timing of fall arrival; the latter bird, however, was clearly a poorly flying juvenile that probably was raised nearby. **FLDD**: 27 Oct 2002 (1, Arnheim, H, JY); 11 Oct 2001 (2, Arnheim, Unit 7, B, JY).

High Counts. **Spring**: multi-party, 13 May 2000 (**11**) B, NAMC; 6 May 97 (**8**) Arnheim, B or H, JY. **Summer**: 30 May 98 (**10**), Arnheim, B or H, JY, possibly includes some spring transients; 25 Jun 99 (**5**) Arnheim, H, LB. **Fall**: 2 Sep 97 (**6**) Arnheim, B or H, JY.

Breeding (**B** 2 co, 1 pr, 6 po; **H** 3 co, 2 pr, 10 po; **K** 4 po).

4 Jun (nest), 15 Jun 91 (nest empty and damaged) 1 mi E Pelkie, B, S. Acciacca (CLO).

4 Aug 92 (two large prejuveniles) Calumet Lake, H, LB.

BBS. *Bootjack* 67-73: 2 on 2 of 7 counts (28.6%); mean .29; range 0-2. *Bootjack* 92-2005: 3 on 3 of 14 counts (21.4%); mean .21; range 0-1.

NAMC. *Baraga Co.*: 33 on 6 of 6 counts (100%); mean 5.50; range 1-11; ind/PH .13. *Houghton Co.*: 7 on 5 of 7 counts (71.4%); mean 1.00; range 0-2; ind/PH .03.

Historical Changes (Table 17). Cahn (1918), referring to the Kenton area (H) and adjacent Iron Co. in Aug 14, considered this species "very common in suitable swampy places...practically every body of water... with open swamp. Not confined to cat-tail marshes, which are few" here. Possibly its abundance at that time pushed birds into marginal habitats. If Cahn was not exaggerating, the American Bittern is no longer as common today, although its population seems stable.

Least Bittern *Ixobrychus exilis*

Status and Range (H). **Spring**: accidental transient outside presumed breeding localities. **Summer**: casual resident, now apparently confined to the only extensive, channeled cattail marshes, those in northern H (Arnheim and Sturgeon River Sloughs), where, however, there is no summer record since 99. No confirmed breeding for the Peninsula.

Habitat. Prefers cattail marsh with open water for edge foraging. Also noted in flooded willows at Arnheim (H, JY), where perhaps only feeding, not nesting.

Migration Dates. **SEAD**: 23 May 84. **FLDD**: 8 Aug 76 (probably occurs later).

Significant Records (all).

Spring migrants (see Summer below).

23 May 84 (1 seen) H, W. H. Riipi, apparent migrant (JPW 62: 80; AW field notes).

28 May 96 (1 heard) Sturgeon River Sloughs, Unit 1, H, E. Czerwinski (Youngman & Murphy, 1999); not heard here 22 Jun 96, so a presumed transient; also absent on formal censuses in 97 and 98 (JY).

Summer (because this species is a late migrant in the Midwest, some early Jun birds might have been transients).

1-24 Jun 96, Arnheim, south of Unit 3, H, JY; permanent territory, with two calling in habitat over three-week period; probable breeding.

6 Jun 76 and 8 Jun 75 (1 heard each day) Sturgeon River mouth, AW.

12 Jun 99 (1) Arnheim, Unit 4, H, JY.

19 Jun 98 (4) Arnheim, H, LM.

5 Jul 88 and for about 10 days (1) Swedetown marsh, H, LB *et al.*; recorded as probable breeding in MBBA (1991), but here reduced to possible, because the bird was not heard, seemed unmated, and did not remain.

8 Aug 76 (1) Bear Lake, H, F. B. Isaacs, possible breeding; however, this species is a very early migrant.

Summer 97 or 98 (1 heard) Sturgeon River Road, 1 mi W Unit 1, Sturgeon River Sloughs, H, JY.

[Aug 1914, record by Cahn (1918) "in the Houghton and Iron counties area" (Wood, 1951) pertains to Iron Co.]

Breeding (**H** 1 pr, 6 po); see Significant Records.

Great Blue Heron *Ardea herodias*

Status and Range (B, H, K). **Spring**: flock of 3 flying east-northeast from east end of Manitou Is., 3 May 2003, JY, seemed to be crossing Lake Superior (see fall). **Summer**: fairly common resident throughout B

and H, where I know of only two rookeries active today, on Traverse Is. (H) and near L'Anse (Skanee Road, B); however, there are almost certainly more, because adults are seen widely, and most colonies mentioned below under Breeding have not been checked in many years. The idea that Great Blues usually breed solitarily in the Upper Peninsula (Shiras, in Wood, 1951) is not supported by Keweenaw data, but needs research; several years at Agate Harbor I have seen a group of two or three obvious juveniles suddenly appear in mid summer; I suspect they came from an unknown local rookery or single nest, but none is known for K; whence came 1 on 19 Jun and 2 on 20 Jun 2002 on Manitou Is. (JY) is also puzzling. **Fall**: a trans-Lake Superior transient, crossing at least from 1 Sep to 8 Oct. Nevertheless, the fall population does not seem larger than in summer.

Habitat. Nests in trees on islands or in swamp forests. Feeds along shallow, usually unforested shorelines of all small bodies of open water, including those associated with open wetlands.

Migration Dates. **SEAD**: 24 Mar 2000 (Skanee Road rookery, T51N, R32W, Sec. 20, B, JY). **SMAD**: 11 Apr (n=28). **FMDD**: 7 Oct (n=20). **FLDD**: 8 Dec 86 (Liminga, D. Weaver).

Significant Records (all singles seen by LB at Agate Harbor flying due north to south off Lake Superior, thence inland, some from about 2 mi out).

1 Sep 93, arriving 0745 EDT.
3 Sep 93, 0739 and another 0913.
6 Sep 89, 1050.
21 Sep 88, 1101.
8 Oct 86, sometime between 0900 and 1130.
8 Oct 88, 0944.

High Counts. **Spring**: 12 May 2001, multi-party (**64**) B, NAMC, including 52 at Skanee nesting colony (JY); 26 Apr 92 (**10**) Liminga, AW. **Summer**: 13 Jun 96 (**23**) B and H, JY; 25 Jun 2000 (**14**) Arnheim, B or H, LM, JY.

Breeding (**B** 10 co, 20 po; **H** 7 co, 16 po; **K** 8 po).

Note: above numbers for confirmed breeding based on number of colonies, not nests; only the Traverse Is. and Skanee Road rookeries are known to be active today, but all others need to be checked.

Alberta, B. Colony located north of Alberta, .4 mi W old highway US 41, in T49N, R33W, Sec. 6, 30-40 nests in 74, R. Rafferty (MDNR files).

Baraga Co., extreme southeastern. Colony located in T47N, R31W, Sec. 13, 12 nests, date unknown (MDNR files).

*Baraga Co., southern. The MBBA map (1991) shows a confirmation in southern B for which data are unavailable.

Burn's Lake, B. Colony located at Burn's Lake in T49N, R33W, Sec. 7, 30-40 nests in 74, S. Postupalsky (MDNR files).

Covington, B. "Christofferson...noted a colony of 100 nests at Covington, Baraga Co., in 1926" (Wood, 1951).

L'Anse, B. Colony located northeast of town in T51N, R32W, Sec. 20, south side of Skanee Rd., east of Dave Whitman's land (JY). From JY notes: 1 May 95, 3 nests attended by pairs, one being built; 2 May 95, at least a dozen nests; 30 Jul 95, 3 or 4 older young present; Oct 95, 31 empty nests; 17 Feb 97, 36 nests with no birds (too early); 12 Apr 97, many birds; 28 Mar 99, at least 2 birds present; 24 Mar 2000, 4 birds present; 29 Mar 2005, 5 birds present; see High Counts.

L'Anse Bay, B. Colony located in swamp trees near highway US 41 and Keweenaw Bay between L'Anse and Baraga, at least 8 pairs, with other possibly occupied nests (Robinson, 1942).

Parent Lake, B. Colony located at Parent Lake in T48N, R33W, Sec. 16, 14 nests in 81, S. Postupalsky (MDNR files).

Wagner Lake, B. Colony on island in lake east of Herman, 12+ birds, date unknown, R. Reini (MDNR files).

Bob Lake, H. Colony located 3.5 mi from Bob Lake, south of USFS road 194, in T49N, R36W, Sec. 5, active in 76, R. Rafferty (MDNR files).

Kenton, H. Colony located NW of town, 1.5 mi S USFS road 204, 1 mi E USFS road 207, in T48N, R37W, Sec. 28, 30 nests, date uncertain (MDNR files).

New Tradition Creek, H. Colony located in T49N, R36W, Sec. 22, 18-23 nests in 78, R. Rafferty (MDNR files).

Rock Forty Hunting Club, H. Colony located northeast of Club, 4.5 mi W Thomas Lake and .5 mi S USFS road 138 in T47N, R36W, Sec. 19, active in 74 (MDNR files).

Sante River, H. Colony in T53N, R35W, Sec. 25, active in 81 (MDNR files).

Silver Creek, H. Colony located on Silver Creek 2.5 mi W Prickett Dam Backwater in T50N, R35W, Sec. 18, active in 74, R. Rafferty (MDNR files).

*Traverse Island, H. Scharf (1979; MDNR files) found 62 nests and 124 individuals in summer 1976. In 1987 (Scharf, 1989) there were 89 nests, but "cormorants had taken over the SW point, the herons moving NE

and splitting into 3 sub-colonies." These survived, as 83 nests were found in 1991 (Scharf, 1998) and 86 on 28 May 99 (Cuthbert *et al.*, 2001).

[The "confirmed" breeding for K on MBBA map (1991) should be disregarded.]

BBS. *Bootjack* 67-73: 4 on 3 of 7 counts (42.6%); mean .57; range 0-2. *Bootjack* 92-2005: 19 on 10 of 14 counts (71.4%); mean 1.36; range 0-4. *Herman*: 3 on 3 or 7 counts (42.9); mean .43; range 0-1. *Note*: the seeming increase on the Bootjack BBS between the two periods may be real, but perhaps indicates a shift in location of breeding colonies. This route has little heron feeding habitat, and all birds in the 92-2005 period were flying.

NAMC. *Baraga Co.*: 251 on 6 of 6 counts (100%); mean 41.83; range 28-64; ind/PH .96. *Houghton Co.*: 69 on 7 of 7 counts (l00%); mean 9.86; range 3-22; ind/PH .25.

Historical Changes. Cuthbert *et al.* (2001) showed that Great Lakes populations have declined by almost 20% since 1991, but this does not seem to be true in the Keweenaw, judging from the number of birds seen away from colonies and at the Traverse Is. rookery. However, serious reduction would be indicated if many of the old rookeries in the above list are no longer active today; census needed.

Great Egret *Ardea alba*

Status and Range (B, H). Accidental vagrant in **spring** (2 records, 21 Apr-2 May) and **fall** (2 records, 8-20 Sep), presumably as a spring overshoot and fall postbreeding overshoot.

Significant Records (all; all single birds).

21-24 Apr 2001, Arnheim, Units 7-8, B, JY.

2 May 99, in pond at head of L'Anse Bay, LM, JY.

8 Sep 99, Baraga Co., M. Houle (MBNH 7: 101).

18, 19, 20 Sep 99, Calumet Golf Course, seen by LB on 20 Sep but no one on 21 Sep despite search.

Snowy Egret *Egretta thula*

Status and Range (B, H, K). Casual **spring** vagrant (4 records, 14 May-1 Jun). Probably an overshoot from the south, but vagrancy from the west cannot be ruled out; the springs of 96, 2000, and 2005 were fairly good for western vagrants (LB).

Significant Records (all).

14 May 84 (1) H, N. F. Sloan, "died that night" (JPW 62: 80; AB 38: 913).

28 May 2000 (1) head L'Anse Bay, O. Mills, JM.

29 May 2005 (1) flying past east end of Manitou Is., L. Dombrowski, Z. Gayk, JK (description).

1 Jun 96 (1 adult, alternate plumage) perched on dock in Copper Harbor, LB and later J. and L. Rooks.

Little Blue Heron *Egretta caerulea*

Status and Range (B). Accidental **fall** vagrant. One record: 17 Nov 2003, immature male (UMMZ 238680) found dead in forest along Sturgeon Road west of town of Keweenaw Bay in T52N, R33W, NE quarter Sec. 31, B. Found by P. R. Des Rochers, Sr., while deer hunting; given to R. Aho, MDNR, who sent it to the MDNR Disease Laboratory, which concluded the emaciated bird died from dehydration and malnutrition (Brockway Lookout 11 [1]: 5; Des Rochers, pers. comm.). First record for the Upper Peninsula and latest fall record for the state (Richter & Chartier, 2004). Locality data erroneously published by Richter & Chartier (2004) as "south of Sturgeon River Road," in "Sec. 51," "near the Arnheim Sloughs," and in "Keweenaw Bay."

Cattle Egret *Bubulcus ibis*

Status and Range (B, H). Vagrant in B and H, accidental in **spring** (2 records, 30 Apr-10 May) and casual in **fall** (4 records, 26 Oct-12 Nov). Could occur in any open area, especially farmland, but probably prefers associating with cows.

Significant Records (all; all single birds).

30 Apr-5 May 75, flooded pasture along Sturgeon River, H, N. A. Sloan (1976).

9, 10 May 2001, Baraga sewage ponds, B. Johnson, JM (MBNH 8: 201).

26-30 Oct 96, Liminga (not Atlantic Mine as in MBNH 4: 94 nor "at Houghton" as in FN 51: 57) RH, AW (photos by), (not LB as in MBNH 4: 94).

2 Nov 79, NW corner of B, R. Krumm (JPW 58: 91).

5 Nov 78, l mi S Oskar on shore of Portage Lake, AW, D. Boutilier, seen at 100 ft (Weaver, 2000).

12 (not 11 as in MBNH 8: 86) Nov 2000, pond at Chassell, H, JY.

Historical Changes. First recorded in Michigan in Monroe Co. in spring 1961 and in the Upper Peninsula in Schoolcraft Co. in Nov 70 (J. Reinoehl in McPeek & Adams, 1994), this species was not long in reaching the Keweenaw Peninsula in 1975. However, it remains a vagrant, showing no signs of increasing or breeding; there are almost no livestock on the Peninsula, and the summer climate may be unsuitable for nesting.

Green Heron *Butorides virescens*

Status and Range (B, H, K). **Summer** resident, very rare in B and H, occasional in K; most widespread in northern H (MBBA map 1991); scarcity in southern H,

southeastern three-quarters of B, and most of K probably due to extensive forests and incomplete coverage. No confirmed breeding for K, where habitat scarce. Accidental **spring** and **fall** migrant outside breeding localities (see Migration Dates).

Habitat. Breeds and feeds primarily in dense shrub wetland composed of speckled alders or sandbar willows at edges of marshes and natural ponds (including beaver ponds). An unusual nest site (91) was 15 ft up on a white spruce limb in an eastern white pine-red pine plantation.

Migration Dates. **SEAD**: 16 Apr 85 (Youngman's property, B, JY); 28 Apr 2001 (Arnheim, Unit 7, B, JY). **SMAD**: 21 May (n=14). **SLDD**: 2-4 Jun 99 (1 adult migrant, Copper Harbor, LB). **FP**: none apparent; a definite migrant seen 11 Sep 99 (1 immature) in Copper Harbor, LB, JM. **FLDD**: 13 Sep 90 (Calumet Lake, LB).

Breeding (**B** 1 co, 5 pr, 4 po; **H** 1 co, 4 pr, 5 po; **K** 4 po); see Note.

23 May 99, Silver River mouth (T51N, R31W, Sec. 18) B, JY; possible breeding.

25 May (nest half completed), 30 May (nest mostly completed), 1 Jul (adult sitting), 15 Jul (nest with young), 28 Jul 91 (nest empty) 1.5 mi E Pelkie, B, S. Acciacca (CLO).

13 Jun 95, along Skanee Road in T51N, R32W, Sec. 20, B, JY; possible breeding.

15 Jun 2002 (1 seen) pond near Sedar Bay, T57N, R33W, Sec. 34, K, LB; possible breeding.

Summer 90, nest seen, .5 mi N Oskar, T55N, R34W, Sec. 8, H, RH; this locality shown as probable on MBBA map (1991) based on presence of 3 adults on 21 Jul 88, LB.

All summer, 77, 88, 90, (resident pairs), Liminga, AW; probable breeding.

All summer, 81-85, (resident pairs), Youngman's property, B, JY; probable breeding.

Note: probable breeding in K shown on MBBA map (1991) should be reduced to possible.

Historical Changes (Table 17). According to P. C. Chu (in Brewer *et al.*, 1991), the Green Heron was virtually unknown in the UP in the time of Barrows (1912) and Wood (1951), was very rare (3 records) in the 60s, then increased during the early 70s. It was listed for the Peninsula by Kneeland (1857) but not by Cahn (1918) for 1914, Wood (1933) for 1931, or Wing (1939) for 1932. The first modern record I find was in 74 (22 May, Liminga, AW); since then it has occurred very rarely but regularly. That at this longitude it reaches its northernmost geographical limits in the Keweenaw suggests that it is expanding from the southeastern US.

Black-crowned Night-Heron *Nycticorax nycticorax*

Status and Range (B, H, K). Accidental **spring**, **summer**, and **fall** vagrant; 3 records: 22 May 98 (1, first summer plumage) Agate Harbor, North Bay, LB; 20 Jul 89 (1 adult) .5 mi N Oskar, T55N, R34W, Sec. 8, H, S. Fill, RH, LM; 17 Aug 2003 (1 immature) Arnheim, Unit 5, H, and adjacent B, JM, LM, JY (finder; MBNH 11: 96). The Aug bird is here considered a northward postbreeding vagrant; the Jul bird most likely arrived in spring.

White Ibis *Eudocimus albus*

Status and Range (H). Accidental **spring** vagrant. One record: 26 Apr-1 May 2001 (adult) 1 mi SE Bootjack, T55N, R32W, Secs. 21 and 23; dates of 22 Apr-5 May 2001 (MBNH 8: 201; Byrne, 2002) might be correct but are based on hearsay after the fact. Found by JK; seen on various dates by LB, G. Belyea, R. Brigham, A. Byrne, P. Chu, L. Dombroski, RH, LM, JM, T. Wells. Frequented a snow-flattened hayfield, feeding on earthworms in shallow depressions filled with snow-melt. Occasionally flew south over treetops to an unknown roost. First spring record for MI and first Upper Peninsula record. Accepted by the MBRC (Byrne, 2002).

Glossy Ibis *Plegadis falcinellus*

Status and Range (B). Accidental **fall** vagrant. One record: 1, 2, 3 Oct 97 (adult in basic plumage) Arnheim, Unit 7, B, LB, RH, J. Hewitt, LM, AW, JY (finder). First Upper Peninsula record. Accepted by the MBRC (MBNH 5: 72).

Black Vulture *Coragyps atratus*

Status and Range (H, K). Accidental vagrant; 4 records, 1 each for **spring**, **summer**, **fall**, and **winter**,

Significant Records (all).

9 May 91 (1) Brockway Mt. (West Bluff) J. Peacock and one other person; identifiable photo (fide J. Peacock) taken but not seen by LB.

16 Jul 2002 (1) Manitou Is., JM, JY (Youngman, 2002), and 3 Aug 2002, in Copper Harbor, D. Flaspholer. The 16 Jul bird was accepted by the MBRC (Byrne, 2004). The 3 Aug bird, here considered the same individual (description in LB files), has not yet been judged by the MBRC.

4 Sep 99 (2 seen 15 min apart moving WSW along Lake Superior shore) Agate Harbor, G. E. and J. Vogel. Accepted by the MBRC (Byrne, 2001a).

18-22 Jan 2002 (1) north of Dodgeville, H, O. Mills (2002); possibly same individual as Jul record above, but accepted as different by the MBRC (Byrne, 2004).

Turkey Vulture *Cathartes aura*

Status and Range (B, H, K). **Spring**: uncommon

transient throughout, except fairly common at Brockway Mt., where, during its prime period of occurrence there (mid 90% of individuals per hour), 19 Apr-22 May (85-2000), J. Peacock and I recorded 619 vultures migrating west to east in 735 hours, or .84 per hour (Table 12; see also Table 11 and Fig. 11). Because at this longitude the Turkey Vulture reaches the northernmost limits of its range on the Peninsula, where all these birds go is a mystery; perhaps they leave toward the southwest, skirting Lake Superior (see Raptor Migration). Several seen leaving the east end of Manitou Is. toward the east-northeast on 3 May 2003 returned after 5 min (JY). **Summer** resident, fairly common in northern K and very uncommon elsewhere, abundance decreasing gradually from north to south, but increasing, along with range, year to year (see Historical Changes). **Fall**: I can detect no fall transients; flocks noted annually at Copper Harbor in late July (*e.g.*, 27 Jul 97, 25 birds, JY) I treat as breeding birds and their young of the year that are staging at an unknown roost in preparation for migration.

Habitat. Seen hunting over many habitats, but only occasionally alights on highway roadsides. Formerly used Copper Harbor garbage dump, which has been closed. See Breeding for nest sites.

Migration Dates. **SEAD:** 2 Apr 2000 (3, Brockway Mt., JY). **SMAD**: 19 Apr (n=21). **SP**: first week of May, then decreasing gradually to about 27 May (Fig. 11), after which transients cannot be distinguished from summer residents. **FMDD**: 7 Oct (n=8). **FLDD**: 25 Oct 97 (Arnheim, B, JY; injured foot); 17 Oct 96 (Arnheim, B, JY).

Significant Records (listed chronologically by year for historical evaluation).

Aug 44 (1) K, G. A. Ammann, caught in coyote trap and photographed (JPW 24: 158).
11 May 75 (1) Liminga, AW.
2 Aug 82, Youngman's property, B, JY, first B record.
31 Jul 83 (2) Agate Harbor, LB, first summer record for K.
10-25 Aug 84 (perched; 6 on 11 Aug, 5 on 25 Aug) Copper Harbor dump, LB.
10 Apr 85 (1) Zeba, B, JY.
Summer 85 to date, regular in K, LB.
19 Jun 86 (1) Ahmeek, K, LB.
21 Jul 87 and 5 Aug 87, Liminga, AW, first H summer records.
Summer 90 to date, regular in Liminga area, AW.
12 Jun 94 (1) 3 mi E Laurium, H, LB.
11 Jul 95 (2) Gratiot Lake, K, LB.
15 Jul 99 (1) Calumet sewage ponds, LB.
7 Jul 2002 (12) Arnheim, H, LM, JY.

High Counts. **Spring**: 10 May 92 (**40**) Brockway Mt., J. Peacock, migrating west to east. **Summer**: 27 Jul 97 (**25**) near Copper Harbor, JY; 7 Jul 2002 (**12**) Arnheim, H, LM, JY.

Breeding (**B** 1 co, 1 pr, 2 po; **H** 2 po; **K** 1 pr, 6 po, see Note).

23 Jul 98 (nest with 2 young that fledged on 19 or 20 Aug; under roots of white pine uprooted by man on low ridge in open marsh) Arnheim, Unit 7, B, JY.
25 Apr 98 (pair courting over rocky cliff); 30 Apr 98 (two birds landed on same cliff ledge at mouth of cave and grunted loudly) near Phoenix, K, LB; probable breeding.
Note: probable breeding shown on MBBA map (1991) in two blocks at tip of Peninsula, K, should be reduced to possible.

BBS. *Bootjack* 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1.

NAMC. *Baraga Co.*: 13 on 6 of 6 counts (100%); mean 2.17; range 1-4; ind/PH .05. *Houghton Co.*: 26 on 7 of 7 counts (100%); mean 3.71; range 1-9; ind/PH .09.

Historical Changes (Table 17). The Turkey Vulture was not recorded in the Keweenaw by Kneeland (1857) in 1856-57 or Cahn (1918) in 1914. According to J. Eastman (in Brewer *et al.*, 1991), it began a northward spread within Michigan in the 1890s and did not reach the Upper Peninsula until sometime after the 1950s. Palmer (1988) noted a general northward spread in North America between the 20s and 50s, but his map shows no breeding in the Upper Peninsula or even the northern halves of Wisconsin and the Lower Peninsula. Michigan BBS data indicate acceleration (but not necessarily first arrival) in the 80s, and similar timing was noted at Rochester, NY, where spring migrants tripled during the period 77-85 (Palmer, 1988).

From this point on in this discussion, it is necessary to distinguish between transients and summer residents. **Transients**: Wood (1933) saw "thousands" of raptors in the Copper Harbor area in spring 1931, during what is now the vulture's peak migration period, but saw *none*; clearly it was not present then, even as a transient. Six references concerning spring and fall raptor migration in the Keweenaw listed by Isaacs & Hennigar (1980) for 61-65 fail to mention the Turkey Vulture. Since at least 75, however, this species has been a regular spring transient (Weaver, 2000; orig. notes). Isaacs & Hennigar (1980), at Brockway Mt. during the period 10 Apr-15 May in 76 and 77, reported 39 migrating eastward in 281 hours of observation, a passing rate of .14 per hour. That this species is still increasing as a transient even today is shown by censuses taken by J. Peacock and me at Brockway Mt. during the same period in 92-2000: 296 birds seen in 347 hours, or .85 per hour, an increase of 507%. **Summer residency** is more recent. F. B. Isaacs obtained the first known summer record on 12 Aug 78 at Brockway Mt. I failed to find it during 13 late summer

visits to K, 57-82, so when I saw my first, 31 Jul 83, I was compelled to write a complete description, even to the bare red head! Starting in 83, I saw it regularly in K in August (the only month I was present), often perched at the Copper Harbor garbage dump. In northern H, Weaver (2000; orig. notes) considered it a transient 75-86, with his first summer record on 21 Jul 87 and regular summer occurrence starting in 90. The first record for the Bootjack BBS was in 94. During many hours working on the MBBA, 86-88, I saw it only once in H and never in B. J. Youngman recorded it in B only twice (2 Aug 82 and 10 Apr 85, the latter presumably a transient) prior to 92, when it became regular; a flock of 12 circled over Arnheim, H, on 7 Jul 2002 (JM, JY). The first actual breeding confirmations were not until 98, but I suspect that breeding occurred earlier.

Thus I conclude that the Turkey Vulture was absent even as a transient in 1931, began slow pioneering as a transient in the mid 40s to become common by 75, but has continued to increase through 2005. Summering on the Peninsula began first in K about 78 and became regular in 83. Subsequently, the summer population *spread southward* to H in 87, becoming regular in 90, and to B in 82, regular by 92.

Osprey *Pandion haliaetus*

Status and Range (B, H, K). **Spring**: transient. Very uncommon except at Brockway Mt.; seen most often near large bodies of water. Locally fairly common at Brockway Mt., where, during its primary period of occurrence, 24 Apr-21 May (this based on 90% of ind/hr, 2 Apr-31 May), J. Peacock and I recorded 400 migrating west to east in 697 hrs, or .57 per hour (Table 12; see also Table 11 and Fig. 11). **Summer**: rare resident on inland lakes, most numerous in southern two tiers of townships in B and H (S. Postupalsky in Brewer *et al.*, 1991); now only an occasional summer visitant in K, where last known nest, at Mud Lake near Copper Harbor, blew down in the late 1980s. **Fall**: rare transient; compared to summer, only a slight increase in numbers but more widespread. A translake migrant; at Agate Harbor, single birds seen (LB) migrating north to south off Lake Superior, thence inland, on 29 Aug 94 (arrival on shore at 1123 EDT), 17 Sep 87 (0950), and 13 Oct 89 (0924). **Winter**: one questionable report; see HCCBC.

Habitat. Usually places nest on top of dead or flat-topped tree near water; elsewhere will use man-made platforms; occasionally nests rather far from water (R. Aho, pers. comm.) Forages for fish on large, clear, inland lakes; Peninsula rivers probably are too small and muddy. Formerly foraged over the Lake Superior bays and harbors of K in summer (LB).

Migration Dates. **SEAD**: 9 Apr 2005 (1, Copper Harbor, RH, P. Hurley, JK, K. Tischler). **SMAD**: 26 Apr (n=19). **SP**: 28 Apr-2 May, then decreasing throughout May (Fig. 11). **SLDD**: 11 Jun 2000 (1, Agate Harbor, LB). **FEAD**: probable transients seen as early as 16 Jul 95 (Torch Lake near Tamarack City sewage ponds, H, LB), 19 Jul 95 (Agate Harbor, LB), and 10 Aug 2002 (Eagle Harbor, K, LB; known transient, 29 Aug 94 (see above). **FMDD**: 30 Sep (n=10). **FLDD**: 16 Oct 97 (Copper Harbor, LB); see HCCBC.

High Counts. **Spring**: 29 Apr 92 (**19** migrating eastward) Brockway Mt., J. Peacock.

Breeding (**B** 9 co, 2 po; **H** 3 co, 2 po; **K** 1 co, 1 pr, 3 po) (all available nest data only).

24 Apr (adult on nest), 3 Jun 93 (1+ small nestling) Parent Lake, B, JY.

14 May 94 (adult carrying stick to nest) Parent Lake, B, JY.

1962 (active nest) Houghton Co. (JPW 41: 76).

1980s (active nest) Mud Lake, near Copper Harbor, J. Rooks. Adult seen at lake on 5 Jul 87, LB.

NAMC. Baraga Co.: 4 on 3 of 6 counts (50.0%); mean .67; range 0-2; ind/PH .02.

[*HCCBC.* One reported on 1 of 26 counts, a single bird on 16 Dec 84, annotated "no details—ed." (AB 39: 621). The winter rarity of this species in the entire Midwest makes me reject this undocumented record.]

Historical Changes (Table 17). The decline of the Osprey in MI (and elsewhere) due to pesticide contamination and its subsequent partial recovery have been well documented (see S. Postupalsky in Brewer *et al.*, 1991). Counts of transients at Brockway Mt. support this resurgence. Isaacs & Hennigar (1980; Isaacs orig. notes), in 1976-77, during the early years of recovery, recorded only 33 birds in 230 hrs of observation, or .143 per hour. In contrast, J. Peacock and I, during the same period, 14 Apr-15 May, in 1992-2000, saw 180 in 329 hrs, or .547 per hour, an increase of 283%. By comparison, the same studies indicate the Bald Eagle has increased 509%, so the Osprey seems to have recovered to a lesser extent as a transient. This appears to be the case in summer as well. In the 1950s and 1960s, the Osprey was a common sight over bays and harbors along the north shore of K (LB), whereas today it is absent. Lows occurred in 64-66. During the early years of recovery, Postupalsky's (1977) map shows only one territory in central H and another in northern H occupied at least once in 63-70, but not 71. By contrast, the MBBA (1991) recorded 9 confirmations, mostly in southern B, but the Osprey still has not reoccupied coastal localities. I suspect this slow recovery is because of fewer fish, not pesticides; all shallow-water fish (*e.g.*, large yellow perch, bass, and brook trout) are much scarcer today (LB), and the Osprey is even more dependent on fish than is the Bald Eagle (which see).

Bald Eagle *Haliaeetus leucocephalus*

Status and Range (B, H, K). **Spring**: transient, generally uncommon (but increasing) around perimeter of Peninsula, on Portage Lake system, and at large breeding lakes; locally fairly common on L'Anse Bay. Very uncommon elsewhere inland, except locally fairly common at Mt. Lookout (K) and Brockway Mt.; at the last locality, during the species' primary period of occurrence there (mid 90% of individuals per hour), 2 Apr-22 May (1985-95), J. Peacock and I recorded 436 migrating west to east in 850 hrs or .51 per hour (Table 12; see also Table 11). These figures are low, however, because other data indicate migration starts by at least 3 Mar (2000, about 22 birds, Mt. Lookout, K, JY), and a peak occurs in the last week of Mar (see High Counts) and first week of Apr, representing mostly adults, which then outnumber immatures 3:1. A second peak occurs in the last week of Apr, consisting mostly of immatures, which then and through May outnumber adults 9:1 (LB). Thus, many birds occur in Mar, but significant numbers (14-31 birds per day) also pass 5 Apr-6 May, with straggling transients, mostly immatures, as late as early Jun. **Summer**: very uncommon, but increasing, resident, widely but sparsely distributed in the three counties (MBBA map 1991), becoming increasingly more numerous from K to H to B; nests more commonly inland than coastally (see Historical Changes), but forages on at least L'Anse Bay and the coast of K. Some immatures also summer, at least along the shores of K. **Fall**: as a transient, like spring, but without a concentration at Brockway Mt. or Mt. Lookout (K). Migration dates and detectabilities obscured by summer and winter birds, but seemingly species most common in Oct. **Early winter**: regular visitant, probably increasing; locally uncommon (irregularly common) on L'Anse Bay and South Portage Entry (H); very uncommon around remainder of perimeter of Peninsula (including K) and on Portage Lake system; very rare on inland lakes (28 Dec 62, 1 bird, Parent Lake, B, K. Brami; JPW 41: 163). Leaves when all coastal waters freeze, usually in early Jan. **Late winter**: occasional resident in warmer winters, such as 99-2000, especially on L'Anse Bay and South Portage Entry, which are the coastal locations most likely to remain open; probably increasing as much as ice conditions allow.

Habitat. Nests in emergent trees, which are almost always eastern white pines, near larger inland lakes and rarely on coast. In summer forages on these lakes and in some cases nearby coastal waters. At other times of year, likely to be seen inland at deer carcasses or around any large, open, moderately shallow, body of still water, including icy shores of Lake Superior and its bays.

Migration Dates. Difficult to determine because of permanent residency; see Status and Range. **SEAD**: 3 Mar 2000 (about 22, Mt. Lookout, K, JY). **SLDD**: 11 Jun 93 (2 apparently migrating, Brockway Mt., LB).

High Counts. **Spring**: 29 Mar 2004 (**148** migrating west), 26 Mar 99 (about **60** transients), 23 Mar 2000 (about **49** transients), all three Mt. Lookout, K, JY; 30 Mar 2000 (about **35** perched) Silver Island, K, J. Rooks, A. Kipfer; 28 Apr 92 (**31**) Brockway Mt., J. Peacock, migrating eastward; 27 Mar 99 (**25** transients, mostly adults) Phoenix, K, RH. **Fall**: 4 Nov 2001 (**14**) Menge Creek Road, Baraga Plains, LM, JY, near deer carcass. **Early winter**: multi-party, 18 Dec 99 (**17**) HCCBC.

Breeding (**B** 11 co, 1 pr, 2 po; **H** 12 co, 2 pr, 2 po; **K** 13 co, 1 pr, 1 po); but see Richter (2000) and Postupalsky (1992, 2000) under Historical Changes; all available nest data only; data for this endangered species are generally not available from governmental agencies.

17 Mar (adult on nest) 9 Jun (nest with 2 young about 18 in tall) 2002, T53N, R33W, Sec. 35, H, JY.

19 and 23 Mar 95 (2 adults at nest) Net River Flooding, 7 mi S Covington, B, JY.

7 Apr 2005 (adult on nest) near Oskar Bay, H, JK, K. Tischler.

12 Apr 95 (adult on nest); 29 and 30 Apr 93 (2 adults on nest) about 1 mi SE mouth Slate River, B, JY.

21 Apr 2004 (adult on nest), 3 May 2003 (young in nest), 17-20 Jun 2002 (nest with 1 large young) Manitou Is., Sec. 21, JY, same nest.

29 and 30 Apr 93 (2 adults on nest, one brought fish) von Zellen's west of Huron River mouth, B, JY.

23 May 2004 (2 young in nest) T52N, R33W, B, JY.

29 May 2004 (large nest under construction by two adults); 22 May 2005 (adults feeding 1 nestling); 28 Jul 2005, 1 full-sized young perched next to nest; Agate Harbor, tip of Middle Point, LB, A. and D. Slagle. Nest not completed early enough to be used for breeding in 2004.

7 Jun 2002 (nest with at least 1 young) Pilgrim River, T54N, R33W, Sec. 5, H, LM.

28 Jun-5 Jul 49 (nest with 1 nestling and 1 immature) Gratiot Lake, K, Wallace (1949).

1 Jul 2001 (nest with young) Gratiot Lake, T57N, R30W, NW quarter, K, JM, D. Raven, M. Scheiwe.

6 Jul 1840 (nest 6 ft in depth, 70 ft up in dry pine) head of Lake Fanny Hooe, Copper Harbor, Bela Hubbard (Peters, 1983).

6 Jul 2003 (nest with 1 large young) Sturgeon River Sloughs, T53N, R33W, Sec. 3, H, JY.

7 and 8 Jul 90 (nest with 2 well-feathered nestlings) Torch Lake "cuts" near Dollar

Bay, Fire Number 330, H, LM.
19 Jul 55 (nest) Parent Lake, B, Gysendorfer and Ross (JPW 33: 128).
12 Sep 98 (1+ nestlings) Otter Lake, H, AW.
14 Sep 97 (2 immatures near nest) Grosse Point, H, LM, JY.
15 Oct 2001 (2 adults at new nest) Pt. Isabelle, 8.8 mi S Lac La Belle, K, LB.
Summer 98 (nest built; brood?), 99, and 2000 (adult on nest) Lake Lily near Copper Harbor, LB, J. Rooks.
Summer 2000 (2 nestlings) Lily Pond, 1 mi S North Portage Entry, H, D. Richter.

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1.

NAMC. Baraga Co.: 32 on 6 of 6 counts (100%); mean 5.33; range 2-13; ind/PH .12. *Houghton Co.*: 50 on 7 of 7 counts (100%); mean 7.14; range 3-13; ind/PH .18.

HCCBC. 45 on 16 of 26 counts (61.5%); mean 1.73; range 0-17; ind/PH .04.

Banding Recoveries. Eight nestlings banded elsewhere recovered on the Peninsula, as follows: banded in MN 12 Jun 85, recovered in K 26 Aug 85; TN 5 Jun 85, H 5 Aug 85; WI (6 birds) Jun 70-89, recorded more than one year later on the Keweenaw Peninsula 20 Jun 94, 23 Jun 81, 3 Oct 88, 15 Oct 93, 17 Oct 77, 22 Nov 85. Thus 7 of 8 birds dispersed northward (one during its fledging year) and 1 southward from their natal sites.

Historical Changes (Table 17). First recorded in 1840 (see above). The decline of this species from the 1950s into the early 1970s due to persistent pesticides and its subsequent recovery have been well chronicled on the state and national levels (*e.g.*, R. Brewer & G. A. McPeek in Brewer *et al.*, 1991). Keweenaw data, although meagre, reflect this picture. (1) At Brockway Mt., from 1976-77, during the species' earlier years of recovery, Isaacs & Hennigar (1980; Isaacs orig. notes) counted only 41 eagles in 377 hrs, or .109 per hour. By contrast, J. Peacock and I, during a similar date period, 28 Mar-15 May, in 1992-2000, saw 270 in 303 hrs, or .670 per hour, an increase of 515%; note also that all High Counts are in recent years. (2) In early winter, the HCCBC recorded single eagles in 76, 77, and 79 but not again until 88, thereafter every year (except 95 when all waters froze) through 99 (a record 17 birds in 99 and 11 in 2001). (3) Macdonald (1984) described behavior of several Bald Eagles at Copper Harbor on 12 Sep 82 and later, signaling a return after the decimating effects of DDT-DDE. (4) Postupalsky (2000) demonstrated initial increases in 81. The timing of this resurgence—in the early 1980s for summer birds—coincides with that of the Merlin (L. C. Binford in Brewer *et al.*, 1991). (5) However, that portion of the eagle's population within 2.5 miles of the shore of the Great Lakes, including the Keweenaw Peninsula, is still suffering (Postupalsky, 1992, 2003). Although this difference on the other Great Lakes might still be attributable to pollution, I doubt it is on Lake Superior, historically the cleanest lake. Rather, I suspect it is the result of the decline of the once abundant fish population, which has suffered greatly from the lamprey, intentional introduction of several species of large carnivorous salmon, over-fishing, especially with the use of gill nets by Native American Indians, and perhaps other causes. Although a few eagles still hunt the perimeter of the Peninsula, they find little food; nevertheless, in the last few years I have noted an increase in immatures at Agate Harbor, and the species bred there in 2005. (6) Nests have increased in recent years. The MBBA map (1991) shows only 10 confirmations (presumably nests), 6 in B, 3 in H, and 1 in K. In 89 Postupalsky (1992) knew of 12 occupied nests, 6 in B, 5 in H, and 1 in K; one each in B and K, occupied in 88, were not used in 89. More recently, Richter (2000) and Postupalsky (2000, 2003) reported a Peninsular increase in occupied nests from 17 in 98 to 26 in 99 and 2003; by county, numbers for these three years were 5-12-12 nests in B, 4-6-6 in K, and no change (8) in H. However, the number of young produced remained low for unknown reasons, 8-4-5 in B, 1-0-3 in K, and 10-11-11 in H. Further increases may depend on the status of Peninsula fish. Gill netting must be abolished.

Northern Harrier *Circus cyaneus*

Status and Range (B, H, K). **Spring**: transient, generally uncommon but widespread in non-forested areas; rare in heavily forested K, except locally fairly common at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 7 Apr-17 May (85-95), J. Peacock and I recorded 386 migrating west to east in 706 hrs, or .55 per hour (Table 12; see also Table 11 and Fig. 11). Some apparently cross Lake Superior from Manitou Is. (see Raptor Migration in Discussions). **Summer**: very uncommon resident in H and B, where sparsely but widely scattered due to fragmentation of habitat; probably occupies, but does not saturate, most prime patches of habitat. No breeding records beyond "possible" for K (MBBA map 1991), where habitat and species very scarce. **Fall**: uncommon transient in same places as spring, but no Brockway Mt. concentration. Most fall transients apparently take a different route south than used in spring; however, two have been seen migrating in (southward) off Lake Superior at Agate Harbor (LB): 16 Sep 90 (onshore arrival 1045 EDT) and 17 Sep 94 (0923).

Habitat. Known to nest in the Keweenaw in sedge-grass marsh and hayfields, but probably also uses its other foraging habitats. Hunts over open wetlands (sedge-grass, cattails, and extensive open bogs), hayfields, old fields dominated by herbaceous growth, and grass-weed

dikes around sewage ponds. See Historical Changes.

Migration Dates. **SEAD**: 6 Mar 2000 (2, Eagle Harbor, K, JY); 25 Mar 95 (Brockway Mt., J. Peacock). **SMAD**: 10 Apr (n=26). **SP**: third week of Apr; declines gradually through third week of May (Fig. 11). **SLDD** and **FEAD**: migrating birds have been seen as late as 2 Jun 90 (Brockway Mt., LB) and as early as 18 Aug 82 (Agate Harbor, LB); wanderers (transients?) appear outside breeding sites as early as 27 Jul 2000 (1 adult male, Calumet sewage ponds, LB). **FP**: sometime in Aug or first week of Sep, thereafter declining slowly through first week of Oct, then more rapidly to 9 Nov. **FMDD**: 14 Oct (n=22, based solely on dates from H). **FLDD**: 9 Nov 2000 (male, Alston, H, JY) and 2002 (Arnheim, B, LM).

High Counts (all Brockway Mt., migrating eastward). **Spring**: 12 May 2004 (**57**) M. Myers, J. Peacock; 28 Apr 92 (**38**) J. Peacock; 17 Apr 76 (**36**) F. B. Isaacs. **Summer**: 4 Aug 98 (**5**) Arnheim, B or H, JY.

Breeding (**B** 7 co, 2 pr, 4 po; **H** 6 co, 2 pr, 6 po; **K** 3 po).

3 Jul 2000 (nest with 4 young 6-8 in long) Sturgeon River Sloughs, T53N, R33W, Sec. 3, H, JY).

7 Jul 32 (downy young collected from nest, UMMZ) Sidnaw, H, L. Wing (Wood, 1951).

15 Apr (carrying nest material), 20 Jun (food exchange between adults), 25 Jul (female with 4 poorly flying prejuveniles) 99, Arnheim, B, LM, JM, JY.

1 Jun 2003 (nest with 5 eggs) Big Lake Field, Baraga Plains, T49N, R34W, Sec. 21, JY.

19 Jun 2000, two records (pair exchanging nest material) Arnheim, B; (pair exchanging food) Arnheim, Unit 3, H; both LM.

29 Jun (observer dive-bombed by female), 15 Jul (male bringing food to female) 2001, Arnheim, field west of Unit 7, B, LM, JY.

4 Jul 2000 (female attacking Bald Eagle) near Big Lake, B, LM, probable breeding.

11 Jul 2000 (female carrying food into hayfield; male hunting nearby) 1 mi N Pelkie, T51N, R34W, Sec. 9, B, LB, LM.

11 Jul 2003 (nest with 5 young 8-10 in tall) Arnheim, SE corner Unit 4, T53N, R33W, Sec. 33, H, JY.

12 Jul 98 (nest with 2 young that fledged when approached) Arnheim, H, LM, JY.

25 Jul 99 (female with 4 poorly flying prejuveniles) Arnheim, B, JY.

Summer 96 (pair copulating) Arnheim, H, JY, probable breeding.

BBS. *Bootjack* 67-73: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1. *Bootjack* 92-2005: 3 on 3 of 14 counts (21.4%); mean .21; range 0-1.

NAMC. *Baraga Co.*: 21 on 5 of 6 counts (83.3%); mean 3.50; range 1-11; ind/PH .08. *Houghton Co.*: 18 on 6 of 7 counts (85.7%); mean 2.57; range 0-6; ind/PH .06.

Banding Recoveries. A prejuvenile banded in WI 6 Jul 63 and caught and released in B on 3 Oct 63 demonstrates northward dispersal in the fledging year.

Historical Changes. Brockway Mt. data from Isaacs and Hennigar (1980; Isaacs orig. notes), 76-77, and Peacock and LB, 92-2000, using the same period, 9 Apr-15 May, suggest an insignificant 29% increase from .41 to .53 birds per hour. This species may benefit from current farming practices on the Peninsula, where some 99% of tillable fields are planted in hay. On the other hand, many old fields left over from mining days have grown into shrub upland, some hayfields are cut early enough to destroy nests, and modern farming techniques may prevent nesting (see Historical Changes in Discussions). Drainage of marshland probably has never been much of a factor in the Keweenaw.

Sharp-shinned Hawk *Accipiter striatus*

Status and Range (B, H, K). **Spring**: transient, generally fairly common throughout wholly and partly forested regions. Irregularly common along north coast of H and K, migrating northeastward. Locally abundant at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 25 Apr-21 May (85-95), J. Peacock and I recorded 13875 sharp-shins migrating west to east in 690 hrs, or 20.11 per hour (Table 12; see also Table 11 and Fig. 11); this species accounted for 29.14% of all raptors seen. In 1931 Wood (1951) saw "hundreds" passing over Copper Harbor going "east to Manitou Island" off the end of Keweenaw Point, "from which they crossed Lake Superior to Canada." Youngman's recent studies (2002; field notes) have verified movement onto Manitou, and he saw many leave the east end of the island and disappear toward the northeast, east-northeast, and east, apparently crossing Lake Superior (see Raptor Migration in Discussions). See Banding Recoveries. Peaks in second week of May (Fig. 11), when small migrant passerines are just becoming numerous. **Summer**: very uncommon resident, widespread but sparsely distributed throughout forested regions and woodlots; however, most birds are non-breeding immatures; adult breeders are very rare. No confirmed breeding for B or K. **Fall**: very uncommon transient throughout, abundance far less than in spring; this scarcity indicates a fall route essentially avoiding the Peninsula, probably to the west (through Duluth) rather than east of Lake Superior (no flight at Whitefish Point; Granlund & Byrne, 1996). Most fall birds, both summer residents and transients, leave before 1 Oct, in consort with most small passerine prey. **Early winter**: casual lingerer through Dec into early Jan.

One record for **late winter**, when probably an accidental visitant but possibly a resident.

Habitat. Spring through fall, birds likely to be seen overhead anywhere, and when hunting, found in a variety of forest habitats. In winter, most likely near feeders. In summer, the few Peninsula records indicate nesting restricted to mesic mixed forest, probably with nests in conifers, within which the agitated adults noted below concentrated their attentions.

Migration Dates. **SEAD**: 23 Mar 2000 (Mt. Lookout, K, JY). **SP**: significant numbers appear in third week of Apr and large numbers in first week of May, with the peak in the second week of May (Fig. 11). **SLDD**: numbers drop precipitously in last two weeks of May, but at Brockway Mt. immatures continue to move well into Jun (LB). **FLDD**: 21 Oct 2001 (Copper Harbor, TA, LB, Z. Gayk, JM); see Early Winter and Significant Records.

Significant Records (all winter):

HCCBC (1 bird each): 16 Dec 90, 19 Dec 81, 19 Dec 92, 21 Dec 86, Dec 84 (count week).

5 Jan 2002 (1) Chassell, H, JY.

15 Jan 2002 (1) 6 mi SE Chassell, H, Murphy (2004).

13 Feb 2002 (1 immature) 6 mi SE Chassell, H, JY; possibly same as 15 Jan 2002.

Note: *Accipiter* sp. was reported on the HCCBC on 15 Dec 79 (1) and 17 Dec 89 (1).

High Counts. **Spring**: 9 May 88 (**825**) and 11 May 86 (**606**) all migrating eastward, Brockway Mt., J. Peacock; 17 Apr 76 (**552** migrating eastward) Brockway Mt., F. B. Isaacs.

Breeding (**B** 1 pr, 8 po; **H** 3 co, 1 pr, 7 po; **K** 3 po, see note).

*20 and 30 Jun 87 (very agitated adult pair) near Wyandotte, T52N, R36W, NW quarter, H, LB, probable breeding.

*24 Jun 88 (one very agitated adult) T51N, R30W, SW quarter, B, LB, probable breeding.

14 Jul 2000 (adult carrying food) Portage Lake golf course, H, LB.

Data (if any) are unavailable for two H confirmations on the MBBA map (1991).

[*Notes*: the two probable breeding records for K (MBBA 1991) should be disregarded. Wood's (1933) statement that "no doubt a few nested in the region, since they were present on Jun 12 [1931] at Copper Harbor" probably was based on transients, which he might not have expected as late as Jun.]

NAMC. Baraga Co.: 8 on 5 of 6 counts (83.3%); mean 1.33; range 0-3; ind/PH .03. *Houghton Co.*: 15 on 5 of 7 counts (71.4%); mean 2.14; range 0-5; ind/PH .05.

HCCBC. 4 on 4 of 26 counts (15.4%); mean .15; range 0-1; ind/PH .003.

Banding Recoveries. Four banded in K in spring 86 (3 May, 30 Apr, 6 May, 7 May**) caught, respectively, in Guatemala (1 Oct 91), WI (20 Sep 86, 19 Sep 90), and MN (Duluth area, 8 May 91**). Four banded in fall (presumed transients) to the west in MN (Duluth area) 1 Sep 85*, 15 Sep 92*, 23 Sep 86*, and 11 Oct 87 found on the Peninsula on, respectively, 28 Apr 86* (K), May 96* (B or H), 5 May 87* (K), and 19 Aug 90 (K). Two banded in WI during fall migration (6 Sep 78, 12 Oct 77) recovered in subsequent springs on, respectively, 10 May 79 (H) and 26 Apr 78 (H). *Summary*: the record marked with two asterisks (**) suggests that some spring transients detected at Brockway Mt. eventually go west to Duluth, skirting Lake Superior, rather than crossing it from K. The three marked with one asterisk (*) suggest either a similar route or spring movement through the Keweenaw over Lake Superior and fall migration through MN. The 19 Aug 90 K record is especially interesting, suggesting some MN birds may retrace their spring route back through the Peninsula; see Merlin and Brown-headed Cowbird. The remaining records demonstrate southward migration between the Peninsula and WI and as far south as Guatemala.

Historical Changes (Table 17). A comparison of Brockway Mt. censuses (west to east birds only; same period, 9 Apr-15 May, compared) in 76-77 (Isaacs & Hennigar, 1980; Isaacs orig. notes) with 92-2000 (LB, J. Peacock), fifteen years later, indicates an increase of 75% from 7.54 (2261 in 300 hrs) to13.21 (4691 in 355 hrs) birds per hour. This relatively small increase, compared to Bald Eagle, for instance, probably reflects this species' mostly northern breeding range, where nesters probably were little affected by pesticides; farther south, however, winterers and migrants ingested enough to moderately affect breeding success.

Cooper's Hawk *Accipiter cooperii*

Status and Range (B, H, K). **Spring**: transient throughout forested regions and overhead. Generally rare because of the Keweenaw's position on the northern periphery of the species' range. Locally uncommon at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 18 Apr-18 May (1985-95), J. Peacock and I recorded 107 Cooper's migrating west to east in 658 hrs, or .17 per hour (Table 12; see also Table 11 and Fig. 11).. Spring 2001 was exceptional at Brockway Mt., where I alone saw 10 birds between 28 Apr and 20 May, including 2 adults (see Historical Changes). Where this "southern" species is going is a puzzle; birds might be vagrant overshoots. **Summer**: accidental resident in H and K and probably B (where no summer record). AW recorded none, even probables, during summers 72-99, JY saw none 82-2000, and I noted only one 86-2000. **Fall**: I find only one definite

record for fall: 2 Sep 2000 (2, Copper Harbor, LB, JM). Thus, like the Sharp-shinned Hawk, spring Cooper's do not seem to return (from where?) through the Keweenaw in fall. **Early winter**: two reports, both of which I treat as probable misidentifications (see HCCBC).

Habitat. The only adult I have seen in summer was in mature (about 45 ft tall) mesic deciduous forest composed primarily of sugar maple, in general aspect resembling the species' more southern habitats (LB).

Migration Dates. **SEAD**: 3 Apr 76 (South Portage Entry, H, AW) and 92 (Brockway Mt., J. Peacock). **SMAD**: probably in last week of Apr. **SP**: probably first week of May (Fig. 11). **SLDD**: 1 Jun 90 and 91 (1 transient each, Brockway Mt., LB).

High Counts. **Spring**: 10 May 92 (**9** migrating eastward) Brockway Mt., J. Peacock.

Breeding (**H** 1 co, 1 pr, 1 po; **K** 1 co, 3 po).

*15 Jul 86 (adult carrying food) 2 mi SE Central, K, LB.

[Dodge (1961) says "Nesting reported in U.P. from...Keweenaw" Co., but offers no supporting data.]

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004.

Houghton Co.: 4 on 3 of 7 counts (42.9%); mean .57; range 0-2; ind/PH .01.

[*HCCBC.* 2 reported on 1 of 23 counts (4.3%); mean .09; range 0-2; ind/PH .002. This record, 17 Dec 89, in my opinion is doubtful, more likely pertaining to Sharp-shinned Hawk or Northern Goshawk. The same is true of one recorded on 24 Dec 65 on the Houghton Christmas Bird Count, B. and D. Wolck (JPW 44: 40).]

Historical Changes. Kneeland (1857) listed it as "doubtful" on the Peninsula, and Cahn (1918) saw only one in Aug 1914 north of Kenton, H, but considered Sharp-shins common (on migration). I suspect Wood (1933, 1951) was in error when he termed Cooper's "common" at Copper Harbor in late Apr and early May 1931, although perhaps larger southern populations then produced more northward dispersants than today. Comparison of data from Brockway Mt. (eastbound migrants only; same period, 9 Apr-15 May) in 1976-77 (Isaacs & Hennigar, 1980; Isaacs orig. notes) with 92-2000 (LB, J. Peacock), shows an insignificant 19.0% decrease from .21 (41 birds in 200 hrs) to .17 (59 in 355 hrs) per hour, despite the species' considerable reduction during the 50s-70s due to pesticide contamination and subsequent recovery (M. R. Betz in Brewer *et al.*, 1991). This lack of increase probably reflects both the species' general rarity in the Keweenaw and the minor effect (in summer) of pesticides at the northern limits of its range.

Northern Goshawk *Accipiter gentilis*

Status and Range (B, H, K). Very rare **permanent** resident, rather evenly, but very sparingly, scattered throughout forested regions. Numbers augmented by spring and fall transients. **Spring**: transient, generally rare, but locally uncommon at Brockway Mt., where, in 85-95 during the period 6 Apr-13 May (this based on 90% of individuals per hour, 2 Apr-31 May), J. Peacock and I recorded 62 birds migrating west to east in 649 hrs, or .10 per hour (Table 12; see also Table 11 and Fig. 11). **Fall**: rare throughout; individual transients (or postbreeding dispersants) simply appear outside known breeding localities anytime Aug-Nov, with no apparent peak or pattern.

Habitat. Nests and forages in mature mesic deciduous and mesic mixed forests.

Migration Dates. **SEAD**: presumed transients seen as early as 28 Mar 76 (Brockway Mt., F. B. Isaacs) but probably occur earlier. **SP**: probably second week of Apr (Fig. 11), but more data needed, especially for Mar. **SLDD**: probable transients seen as late as 20 May 80 (Brockway Mt., AW) and 2001 (adult, Brockway Mt., LB).

High Counts. **Spring**: 9 Apr 76 (**12**) F. B. Isaacs, 6 Apr 92 (**8**) J. Peacock, and 4 May 2003 (**5**, including 4 immatures and 1 subadult) LB, all Brockway Mt., migrating eastward.

Breeding (**B** 1 co, 4 po; **H** 6 co, 1 po; **K** 1 co, 1 po).

3 Mar (adults noted in area), 9 Jun 2000 (adult near nest containing 2 young about 12-14 in tall, no primaries) south side of Mt. Lookout, T59N, R30W, Sec. 10 at edge of Sec. 31, K (not "in Eagle Harbor" as in MBNH 8: 26) JY; nest 25 ft. up in sugar maple 10 in DBH.

21 Mar 2000 (2 adults near nest) T53N, R33W, Sec 35., H, LM, JY.

6 May 83 (nest) upper Silver River, B. JY.

Late May 49 (adult at nest with 3 downy nestlings, 2 of which taken for falconry) Houghton Co. (Harger, 1949).

1 Jun (female on nest), 6 Jun (nest with three young), and 23 Jun 90 (2 fledged young) Maasto Hiihto Trail, Hancock, LM, AW.

27 Jun 95 (nest) Hancock, S. Andres (MBNH 3: 24).

21 Jul 2001 (nest with adult attacking) town of Oskar, H, RH, B. Wertenberger (finder).

Note: because nesting occurs from late Mar through early Jul, overlapping most of spring migration, early presence of adults at a locality does not necessarily indicate breeding. Two to three young is normal.

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1.

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean

.17; range 0-1; ind/PH .004.

HCCBC. 5 on 5 of 26 counts (19.2%); mean .19; range 0-1; ind/PH .004.

Historical Changes. As a transient at Brockway Mt. (using data from the same period, 28 Mar-15 May, eastbound migrants only) Isaacs & Hennigar (1980; Isaacs orig. notes), 76-77, recorded 55 in 381 hrs of observation, and J. Peacock and I, 92-2000, saw 57 in 403 hrs, an identical .14 per hour. This equality reflects the facts that the Northern Goshawk was relatively unaffected by organochlorine pesticides in the 50s-early 70s, probably because of its northern distribution all year and its occupation of a low trophic level that emphasizes herbivorous birds and mammals (S. Postupalsky in Brewer *et al.*, 1991). In summer, this species may have benefited from the maturation of forests after the major logging era in the late 19th and early 20th centuries as suggested by S. Postupalsky (in Brewer *et al.*, 1991), and in the Keweenaw today it does appear to prefer the few larger forest tracts that have escaped recent heavy logging. On the other hand, in the Keweenaw it may always have been as rare as today. Kneeland (1857) listed the Northern Goshawk as "doubtful" on the Peninsula, Cahn (1918) saw none during a brief stay near Kenton (H) in Aug 1914, and Wood (1933), without breeding evidence, considered it a rare summer resident at Copper Harbor in spring 1931 on the basis of a 16 May date, which, however, is within this species' migration period.

Red-shouldered Hawk *Buteo lineatus*

Status and Range (B, H, K). **Spring**: transient (or vagrant?). This species is at the northern extent of its range at this longitude, so its rarity is not surprising. Most birds are immatures and might be vagrants overshooting their normal summer range. Very rare overhead: possible anywherein the Keweenaw, including Manitou Is. (1 bird, 26 May 2005, L. Dombroski, Z. Gayk, JK) Locally very uncommon at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 3 Apr-18 May (85-95), J. Peacock and I recorded 39 migrating west to east in 757 hrs, or .05 per hour (Table 12; see also Table 11 and Fig. 11). Wood's (l933) statement that in spring 1931 "many" were observed from May 1 to 5 and a few May 23 in my opinion represents an exaggeration or misidentification (of Goshawks?), although the Red-shoulderd was commoner in the south then, and more may have strayed northward. **Summer**: very rare, probably only occasional, resident, so far recorded only at three general localities, one in B and two in H, with confirmed breeding only in H. **Fall**: casual transient. Only 3 records: Aug 78 (1) Agate Harbor, LB; 17 Aug 73, Liminga, AW; 24 Sep 96 (1 immature) Calumet sewage ponds, LB. Thus most spring transients apparently do not return via the Keweenaw, if in fact they ever do migrate farther north.

Habitat. Breeds seemingly (pairs seen) in mature, lowland, mesic deciduous forest dominated by sugar maple, a forest type that is similar in conformation to its preferred habitat farther south—mesic deciduous bottomland forest with adjacent water. Otherwise, in the Keweenaw, seen only overhead.

Migration Dates. **SEAD**: 12 Mar 2000 (Brockway Mt., JY); 26 Mar 2000 (2, Brockway Mt., JK). **SP**: perhaps last week of Apr (Fig. 11); a peak in the first week of Apr might represent adults, and one in the second week of May, immatures. **SLDD**: 31 May 2000 (immature, Calumet sewage ponds, LB). **FLDD**: 24 Sep 96 (immature, Calumet sewage ponds, LB).

High Counts. **Spring**: 20 May 2001 (**6**) Brockway Mt., LB, 1 adult, 1 "subadult," 4 immatures.

Breeding (**B** 2 pr; **H** 3 co, 1 pr).

26 Apr 99 (pair) 1 mi W Prickett Dam Backwater, T50N, R35W, west edge Sec. 21, B, JY, probable breeding. Species also seen near this locality 20 Jul 95, JY.

14 May (nest with 2 eggs), 5 Jul 80 (at least 1 young already fledged) near Chassell, H, K. Christopher, fide S. Postupalsky (MDNR files; JPW 58: 160)

*27 Jun 88 (very agitated pair of adults) near Prickett Dam Backwater, T50N, R35W, Sec. 15, B, LB, probable breeding.

Summer 81 (failed nest) H, S. Postupalsky (MDNR files).

*For the period 83-88, the MBBA map (1991) shows probable breeding about 2 mi W Chassell, H, and confirmed breeding in the extreme southeastern corner of H.

Notes: Postupalsky (1980) provided a summary of Upper Peninsula nests through 1979, none of which were in the Keweenaw Peninsula. [Wood (1933) had no good evidence for considering this species an "occasional resident" (see above).]

NAMC. Houghton Co.: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Historical Changes (Table 17). This species is so rare here at the northernmost limits of its breeding range (at this latitude) that, like the Cooper's Hawk, one might expect to find no change over the years despite its decline, due to widespread clearing, in the Lower Peninsula (B. C. Ebbers in Brewer *et al.*, 1991). However, at Brockway Mt., Isaacs & Hennigar (1980; Isaacs orig. notes) saw only 10 migrating eastward in 366 hrs of observation in 76-77, or .027 per hour, whereas J. Peacock and I, in 92-2000, during the same count period, 2 Apr-15 May (eastbound birds only), recorded 25 in 403 hrs, or .062 per hour, an

increase of 130%. This seeming change may be part of the widespread northward expansion of southern birds or the result of spring overshoots searching for suitable habitat no longer available farther south. I prefer the first idea; the scarcity of prime breeding habitat in the Keweenaw forces birds to continue migrating northward, and hence the species is seen much more commonly at Brockway Mt. than elsewhere.

Broad-winged Hawk *Buteo platypterus*

Status and Range (B, H, K). Our commonest raptor in spring and summer. **Spring**: transient, common throughout, except locally very abundant at Brockway Mt. and irregularly very common elsewhere along north shore of H and K. At Brockway Mt., during its primary period of occurrence there (mid 90% of individuals per hour), 2-29 May (1985-95), J. Peacock and I recorded 25633 migrating west to east in 727 hours of observation, or 35.26 per hour (Table 12; see also Table 11 and Fig. 11); this species accounted for 53.8% of all raptors seen. Two black morph adults have been seen at Brockway Mt, 1 each on 12 May 2004 (LB, M. Myers, J. Peacock) and 16 May 2004 (M. Myers). Apparently, does not cross Lake Superior from Manitou Is. (Youngman, 2002; field notes), but breeds on Isle Royale (see Raptor Migration in Discussions). **Summer**: Moving (migrating?) kettles seen into Jul (see High Counts). Fairly common resident throughout heavily forested regions, recorded in nearly every township (MBBA map 1991); however, given this species' propensity to continue moving into Jul, some "possible" records on this map almost certainly were non-breeding immatures. **Fall**: usually no more numerous than in summer, an exception being a westward movement of 254 birds at Brockway Mt. on 21 Aug 63 (Binford, 1965). Additional infrequent observations at this mountain in fall have yielded only a few birds (*e.g.*, 11 Aug 2001, 5 immatures flying east, LB), but more data (even if negative) are needed. True fall transients, *if any*, cannot be distinguished from summer wanderers that may be immatures left over from spring; to prove fall migration, observers should seek kettles of *adult* birds.

Habitat. During the breeding season, prefers large tracts of mesic deciduous forest (nest found) near small openings, but also occurs in mesic mixed forest. During migration, may be seen anywhere overhead, but still retains its foraging preference for edges of openings (*e.g.*, road cuts) in heavy forest.

Migration Dates. **SEAD**: 11 Apr 76 (Brockway Mt., F. B. Isaacs) **SMAD**: 27 Apr (n=24). **SP**: highly variable depending on weather patterns, but generally 9-16 May (Fig. 11). **SLDD**: at Brockway Mt., immatures continue to move in kettles into mid Jun and even mid Jul (see high Counts), but whether these are transients or summer wanderers is uncertain. **FMDD**: 10 Sep (n=13). **FLDD**: 23 Sep 98 (Copper Harbor, LB); 13 Sep 90 (Liminga, AW).

High Counts. **Spring** (both Brockway Mt., migrating eastward): 10 May 91 (**1402**) J. Peacock; 1 May 2001 (**1228**) LB, L. Dombroski, JK. **Summer** (non-breeders; still the Broad-wing's spring?): 29 Jun 2003 (**119**) Manitou Is., B. Johnson, L. Usyk, JY; 11 Jun 79 (**900**) Keweenaw Point, R. Smith (AB 33: 864; JPW 58: 25); 11 Jun 93 (**106** migrating eastward) Brockway Mt., LB; 4 Jul 96 (**82** migrating eastward) Brockway Mt., LB, R. Russell; 14 Jul 2002 (at least **16** in kettle) Manitou Is., JY. **Fall**: 21 Aug 63 (**254** migrating eastward) Brockway Mt., LB (Binford, 1965).

Breeding (**B** 4 co, 4 pr, 16 po; **H** 3 co, 4 pr, 22 po; **K** 4 pr, 7 po).

*17 Jun 87 (nest with one adult sitting, another nearby) T49N, R36W, NE quarter, H, LB.

*23 Jun 88 (adult carrying food) near Slate River Falls, T51N, R31W, NW quarter, B, LB.

*24 Jun 88 (agitated adult) T51N, R30W, SW quarter, B, LB, probable breeding.

27 Jun 88 (agitated adult) Prickett Dam Backwater, T50N, R35W, NE quarter, B, LB, probable breeding.

27 Jun 2002 (carrying food) T55N, R32W, Sec. 12, H, LB, JM.

*29 Jun 87 (agitated adults) T51N, R36W, SE quarter, H, LB, probable breeding.

BBS. Bootjack 92-2005: 12 on 6 of 14 counts (42.9%); mean .86; range 0-3; some were immatures. *Herman*: 9 on 5 of 7 counts (91.4%); mean 1.29; range 0-3.

NAMC. Baraga Co.: 28 on 6 of 6 counts (100%); mean 4.67; range 1-8; ind/PH .11. *Houghton Co.*: 28 on 6 of 7 counts (85.7%); mean 4.00; range 0-10; ind/PH .10.

Historical Changes (Table 17). Nothing I find in the literature indicates a decline in this forest species during the pesticide years of the 50s-early 70s. Nevertheless, B. C. Ebbers (in Brewer *et al.*, 1991) suggests that while its Michigan distribution has changed little since the early 1900s, its abundance may have increased (BBS data). Supporting this hypothesis are Brockway Mt. data for transients. During the period 11 Apr-15 May, 76-77 (eastbound migrants only), Isaacs & Hennigar (1980; Isaacs orig. notes) saw 1728 birds in 261 hrs of observation, or 6.62 per hour, whereas in 92-2000, during the same count period, J. Peacock and I recorded 9150 in 343 hrs, or 26.68 per hour, an increase of 303%. This species was unrecorded on the Bootjack BBS 67-73 but averaged .86 in 92-2005. Perhaps, like the Red-shouldered Hawk (probably) and other southern birds, it is expanding northward (in response to global warming or loss of southern habitat?).

Swainson's Hawk *Buteo swainsoni*

Status and Range (K). **Spring**: occasional vagrant,

recorded only in K (Brockway Mt. and Manitou Island); 22 individuals on 18 dates, 1-29 May (median 10 May), in 10 different years (Tables 11 and 12, Fig. 11). That Isaacs & Hennigar (1980; Isaacs orig. notes) saw none at Brockway Mt. in 513 hrs, 26 Mar-11 Jun, 75-78, probably was poor luck. Daily counts probably would prove it very rare (*i.e.*, regular), as at Whitefish Point (Granlund & Byrne, 1996).

Significant Records (all).

1 May 31 (immature male, UMMZ 67350) Manitou Island, N. A. Wood no. 26 (Wood, 1933, 1951).

3 May 2000 (2 dark morphs) Brockway Mt., LB, L. Dombroski.

4 May 2002 (1 rufous morph) Brockway Mt., LB, D. Stimak, *et al.*

5 May 2002 (1 dark morph) Manitou Is., JK (possibly same bird as 4 May).

12 May 2004 (1 dark morph) Brockway Mt., LB, M. Myers, J. Peacock.

26 May 2005 (3) Manitou Is., L. Dombroski, Z. Gayk, JK. What might have been the same birds were seen by the same observers on 28 May (1) and 29 May (1).

1 May 92 (2); 7 May 92; 9 May 91; 10 May 94; 10 May 2000 (3); 11 May 85; 12 May 91; 12 May 85; 15 May 85; 16 May84; all singles except as noted, Brockway Mt., J. Peacock.

Red-tailed Hawk *Buteo jamaicensis*

Status and Range (B, H, K). **Spring**: transient, generally fairly common throughout, migrating over any habitat and foraging in small to large openings. Locally very common (some days abundant) along north coast of H and K and at Brockway Mt. At this mountain, during the species' primary period of occurrence there (mid 90% of individuals per hour) 18 Apr-21 May (85-95), J. Peacock and I recorded 4407 migrating west to east in 725 hrs of observation, or 6.08 per hour (Table 12; see also Table 11 and Fig. 11); this total was 9.25% of all raptors seen. At this locality, rufous and blackish morphs, belonging to western populations, are regular in small numbers; for instance, on 3 May 99, 183 Red-tails were composed of 46 adult and 118 immature light morphs and 4 adult and 5 immature dark morphs (=5.2% dark), a ratio of 1:18.2, with 10 unassigned (LB). A dark morph "Harlan's Hawk" (*B. j. harlani*) was photographed on 24 Apr 2003 at Brockway Mt. by J. Liguori (accepted by the MBRC, Internet). See Raptor Migration in Discussions. **Summer**: rare resident, widely scattered throughout. Breeding abundance confounded by wanderers, which continue to appear, even in small kettles, at least as late as 6 Jul (see Migration Dates) and reappear as presumed transients (but are they?) as early as 5 Aug. No confirmed breeding for K. **Fall**: uncommon transient, much less numerous in fall than in spring, suggesting that most spring birds do not return through the Keweenaw. **Early winter**: casual lingerer after 11 Sep (2 records), recorded to 19 Dec.

Habitat. Both nests were in dry coniferous forest (jack pine) adjacent to clear-cuts, where foraging occurred. Otherwise feeds in open and mosaic land, such as grass-dominated old fields and hayfields and occasionally in largely forested terrain with scattered clearings.

Migration Dates. **SEAD**: 18 Mar 96 (Bob Lake, H, JY). **SMAD**: 15 Apr (n=26). **SP**: two peaks at Brockway Mt., probably representing adults and immatures, respectively, one in last week of Apr and another in second week of May, then common into Jun (Fig. 11). **SLDD**: birds continue to move (migrate?) into Jul, *e.g.*, 11 Jun 79 (100 with Broad-wings), Brockway Mt., R. Smith (AB 33: 864); 30 Jun 2003 (6) Manitou Is., B. Johnson, JY; 4 Jul 96 (11 with 82 Broad-winged Hawks) Brockway Mt., LB; and 6 Jul 98 (1 adult) Agate Harbor, LB. **FEAD**: migrants or wanderers have been seen as early as 5 Aug 2001, 9 Aug 97 (kettle of 3, Agate Harbor, LB), and 21 Aug 63. **FMDD**: 7 Sep (n=14). **FLDD**: 19 Dec 92 (HCCBC); 5 Dec 2000 (Pelkie, H, JY); 1 Nov 98 (Youngman's property, JY); 29 Sep 99 (Copper Harbor, LB); 11 Sep 83 (Liminga, AW).

High Counts. **Spring**: 16 May 95 (**276**) and 28 Apr 92 (**219**) both Brockway Mt., J. Peacock, migrating west to east. **Summer**: see Migration Dates. **Fall**: 5 Aug 2001 (**78**) Brockway Mt., JY; 21 Aug 63 (**62** migrants or wanderers flying eastward) Brockway Mt., LB (Binford, 1965); otherwise, no more than a few seen on any single day.

Breeding (**B** 2 co, 2 po; **H** 1 co, 1 pr, 4 po; **K** 2 pr, 3 po).

*14 Jun 87 (pair of adults) T57N, R31W, NE quarter, K, LB, probable breeding.

26 Jun 2000 (nest with 1 large well-feathered nestling; previously, and perhaps this day, contained two young) 1 mi NW Big Lake, B, LB, JY.

30 Jun 96 (occupied nest) Baraga Plains near Prison Camp, LB, JY.

Summer 81 (occupied nest which failed) H, S. Postupalsky (MDNR files).

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1; 12 Jun 94, LB. *Herman*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1; 5 Jul 97, 7 Jul 90, S. Patti.

NAMC. Baraga Co.: 9 on 5 of 6 counts (83.3%); mean 1.50; range 0-4; ind/PH .03. *Houghton Co.*: 5 on 3 of 7 counts (42.9%); mean .71; range 0-3; ind/PH .02.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Banding Recoveries. A prejuvenile banded in WI 11 Jun 85 found dead in H in Apr 87, indicating northward dispersal from a natal site.

Historical Changes (Table 17). A comparison of Brockway Mt. counts (eastbound migrants only; same period, 2 Apr-15 May) in 1976-77 (Isaacs & Hennigar, 1980; Isaacs orig. notes) with 1992-2000 (LB, J. Peacock), after 15 years, demonstrates an increase of 106%, from 2.65 birds per hour (1009 birds in 381 hrs) to 5.47 (2202 in 403 hrs).

Rough-legged Hawk *Buteo lagopus*

Status and Range (B, H, K). Occurs widely in non-forested regions. **Spring**: transient, generally uncommon. Locally common (some days abundant) at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 19 Apr-15 May (1985-95), J. Peacock and I recorded 853 migrating west to east in 608 hours, or 1.40 per hour (Table 12; see also Table 11 and Fig. 11). About 15.2% (14 of 92) birds at Brockway Mt. were dark morphs (LB). Youngman (2002; field notes) saw some apparently crossing Lake Superior toward the northeast, east-northeast, or east from the east end of Manitou Is. (see Raptor Migration in Discussions). **Fall**: very uncommon transient; records after 14 Nov considered early winter. **Early winter**: occasional lingerer from mid Nov through Dec in years when snow cover sparse. **Late winter**: accidental visitant and resident during low snow winters; 3 records.

Habitat. Seen mostly migrating overhead. Hunts over hayfields, clearcuts (Baraga Plains, LB), grass-herb dominated old fields, and sedge-grass marsh.

Migration Dates. **SEAD**: 14 Mar 2004 (Pelkie, B, JY). **SMAD**: 13 Apr (n=24). **SP**: third week of Apr; decreases gradually into third week of May (Fig. 11). **SMDD**: 15 May (n=22). **SLDD**: 10 Jun 99 (Sturgeon River Sloughs, JY). **FEAD**: 23 Sep 92 (Sturgeon River Sloughs, AW). **FMAD**: 13 Oct (n=16). **FP**: third week of Oct; declines sharply in fourth week. **FMDD**: 11 Nov (n=18). **FLDD**: 27 Dec 94 (Liminga, AW); almost all gone by 14 Nov; see Significant Records for other winter dates.

Significant Records (all after 14 Nov; all single birds except as noted).

21 Nov (JY)-15 Dec (JK, HCCBC) 2001, Sturgeon River Sloughs.
22 Nov 98, Arnheim, B or H, JY.
30 Nov 96, locality unrecorded, B, JY.
6 Dec 99, Pelkie, B, JY.
12 Dec 92, L'Anse, AW.
18 Dec 76, 18 Dec 99, 19 Dec 92, 19 Dec 94, all HCCBC.
19 Dec 98 (3) HCCBC (1 each at Sturgeon River Sloughs, Klingville Road, and at an unrecorded locality in H) LM, JY; 29 Jan (2) and 30 Jan, 13, 17, 20, 21 Feb, 1 Mar (1 bird each date) 99, Sturgeon River Sloughs, H, LM, JY.
20 Dec 2003, HCCBC.
27 Dec 94, Liminga, AW.
11 Jan 2003, 2 mi N Chassell, H, JY.
20 Jan 2000, Baraga airport, JY.

High Counts. **Spring**: 17 Apr 76 (**226** migrating eastward) F. B. Isaacs, 28 Apr 92 (**118** migrating eastward) J. Peacock, and 22 Apr 78 (**110**) AW, all three Brockway Mt.

NAMC. Baraga Co.: 9 on 2 of 6 counts (33.3%); mean 1.50; range 0-7; ind/PH .05. *Houghton Co.*: 12 on 4 of 7 counts (57.1%); mean 1.71; range 0-7; ind/PH .04.

HCCBC. 7 on 5 of 26 counts (19.2 %); mean .27; range 0-3; ind/PH .01.

Historical Changes. A comparison of Brockway Mt. counts (eastbound migrants only; same period, 2 Apr-15 May, compared) in 1976-77 (Isaacs & Hennigar, 1980; Isaacs orig. notes) with 1992-2000 (LB, J. Peacock), after some 15 years, demonstrates an insignificant 29% decrease from 1.95 (705 birds in 366 hrs) to 1.38 (554 in 403 hrs) birds per hour. This seeming lack of change probably reflects this species' northern breeding range, where it was relatively unaffected by pesticides in the 1950s-early 1970s and has suffered little disruption of its breeding habitat.

Golden Eagle *Aquila chrysaetos*

Status and Range (B, H, K). Status difficult to assess because of scarcity of old records and apparent increase in recent years. Immatures greatly outnumber adults. **Spring**: very uncommon transient at Mt. Lookout (K) and Brockway Mt. At the latter, during the eagle's primary period of occurrence there (mid 90% of individuals per hour), 9 Apr-15 May (1985-95), J. Peacock and I recorded 46 migrating west to east in 676 hours, or .07 per hour (Table 12; see also Fig. 11). Similarly, at the same locality in 1992 alone, during 412 hours of daily censuses, 2 Apr-31 May, Peacock saw a total of 40 birds flying eastward on 18 of 60 days (30.0%), or .67 per day and .10 per hour (16 birds on 11 additional days were flying westward and thus might have been repeats; Table 11). Very rare elsewhere; only 2 spring records for B and 4 for H. Early detectability impossible to assess, because Brockway Mt. is often inaccessible before late Apr, and most birders visit in May; thus a seeming peak in the last week of Apr (Fig. 11) might not be real. Numerous **summer** reports by the general public pertain to immature Bald Eagles. **Fall**: accidental; one acceptable record, 9 Oct 2000. Apparent rarity probably real, as unrecorded in fall at Whitefish Point (Granlund & Byrne, 1996), suggesting that this species takes a different route in fall than spring, avoiding Lake Superior.

Habitat. Seen only while flying on migration.

Migration Dates. **SEAD**: 3 Mar 2000 (1) and 18 Mar 2002 (1) both Mt. Lookout, K, JY. **SLDD**: 28 May 76 (1) Brockway Mt., F. B. Isaacs.

Significant Records (all except Brockway Mt.; all single birds).

3 Mar 2000, Mt. Lookout, K, JY.
18 Mar 2002, Mt. Lookout, K, JY.
27 Mar 99, Copper Harbor marina, AW (JPW 62: 80; Weaver, 2000).
8 Apr 2005, Arnheim, H, JY.
17 Apr 68, H, N. F. Sloan (AFN 22: 529).
17 Apr 99 (immature) Baraga Plains, T49N, R34W, Sec. 21, JY.
19 Apr 85, Liminga, D. Weaver.
22 Apr 2004 (immature) Manitou Is., JY.
25 Apr 95, Chassell, H, AW.
29 Apr 2001 (immature) Cliff Drive near Phoenix, K, JK, JM.
1 May 2001, Cliff Drive near Phoenix, K, JK.
2 May 2003 (immature) Manitou Is, LM.
6 May 2001 (immature) 2 mi E Copper Harbor, LB, JM.
8 May 98, 1 mi S Eagle Harbor, K, LB.
9 May 98 (immature) 1.5 mi NW Covington, B, LB.
26 May 2005, Manitou Is., L. Dombroski, Z. Gayk, JK.
[17-19 Aug 73, North Portage Entry, H (JPW 52: 27; Weaver, 2000); dates seem improbably early.]
9 Oct 2000 (immature) Youngman's property, B, JY.

High Counts. **Spring**: 28 Apr (**10**) and 8 Apr (**4**) 92, Brockway Mt., J. Peacock, migrating eastward.

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004.

Historical Changes. I find no records prior to 1968, but observers were very scarce, and Brockway Mt. was unknown as a spring lookout until 1965 (Isaacs & Hennigar, 1980). The northeastern population (Ontario, Quebec, Labrador) of Golden Eagles, which probably accounts for most Peninsula birds, experienced the same contamination by pesticides as the Bald Eagle *etc.* in the 1950s-early 70s and began to recover in the late 70s. A comparison of Brockway Mt. (eastbound migrants only; same period, 2 Apr-15 May, compared) in 1976-77 (Isaacs & Hennigar, 1980; Isaacs orig. notes) with 1992-2000 (LB, J. Peacock), after 15 years of recovery, documents a 643% increase from .014 (5 birds in 366 hrs) to .104 (42 in 403 hrs) birds per hour. Although this percentage might be excessive, the Golden Eagle clearly is increasing as a spring transient on the Keweenaw Peninsula.

American Kestrel *Falco sparverius*

Status and Range (B, H, K). **Spring**: transient. Fairly common throughout open areas. Common at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 20 Apr-17 May (1985-95), J. Peacock and I recorded 534 migrating west to east in 622 hours, or .86 per hour (Table 12; see also Table 11 and Fig. 11). Apparently crosses Lake Superior from east end of Manitou Is. (Youngman, 2002; field notes); see Raptor Migration in Discussions. **Summer**: resident; uncommon in open habitats of B and H. Rare in K, where there is no acceptable confirmed or probable breeding record, although it might well nest near Ahmeek (LB); also recorded on Manitou Is. (*e.g.*, 1 seen, 27 Jun 2004, B. Johnson). Range as shown by the MBBA map (1991) is nearly identical to the distribution of farmland and other non-forested regions; seeming absence (MBBA map 1991) in west-central H and southeastern half of B due to extensive forests and perhaps incomplete complete. **Fall**: numbers seem only slightly greater than in summer, so most spring transients probably use a different fall route, avoiding the Peninsula (see High Counts). **Winter**: [I doubt one reported 5 Feb 88 in B (JPW 66: 127).] During most winters, snow is too deep to allow hunting of rodents, most small passerines are gone, and insects are unavailable.

Habitat. Nests primarily in tree cavities elsewhere and presumably in the Keweenaw, where it has been noted nesting only in a nest box. Forages in grass-herb old fields, grassland, and hayfields, all three with the scattered trees necessary for perching, in rural settings, and in clearcuts in regions dominated by dry coniferous forest (jack pine); less numerous in sedge-grass and open bog wetlands with snags.

Migration Dates. **SEAD**: 20 Mar 2001 (Hancock, JK). **SMAD**: 13 Apr (n=27). **SP**: second week of May (Fig. 11). **SMDD**: most transients gone by end of third week of May. **SLDD**: 11 Jun 93 (1, Brockway Mt., LB). **FEAD**: a migrant or post-breeding dispersant noted 7 Aug 2001 (Agate Harbor, LB). **FMDD**: 14 Sep (n=23). **FLDD**: 7 Oct 95 (Copper Harbor, AW).

High Counts. **Spring** (all Brockway Mt., migrating eastward): 14 May 88 (**36**), 12 May 2004 (**35**, with M. Myers), and 10 May 91 (**27**) all J. Peacock; 14 Apr 76 (**26**) F. B. Isaacs. **Summer**: 29 Jul 97 (**6**) K, JY. **Fall**: 18 Aug 2001 (**9**) Lake Linden (4) and Tamarack City (5) TA, LB, JM; 25 Aug 96 (**6**) B, JY; although these 15 birds were migrants at these localities, they might not have been transients from outside the Peninsula.

Breeding (**B** 4 co, 3 pr, 4 po; **H** 6 co, 5 pr, 10 po; **K** 8 po).

27 Jun 95 (pair with 4 prejuveniles) Hancock, S. Andres (MBNH 3: 24).
2 Jul 78 (nest box with 2 nearly full grown

young) 3 mi NW Boston, H, F. B. Isaacs; 2 young fledged 8 Jul.

4 Aug 92 (2 prejuveniles on wire) Calumet Lake, LB.

[*Note*: the MBBA map (1991) confirmation and two probables for K should be disregarded.]

BBS. Bootjack 67-73: 10 on 4 of 7 counts (57.1%); mean 1.43; range 0-5. *Bootjack* 92-2005: 14 on 10 of 14 counts (71.4%); mean 1.00; range 0-3. *Herman*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-2.

NAMC. Baraga Co.: 40 on 6 of 6 counts (100%); mean 6.67; range 6-7; ind/PH .16. *Houghton Co.*: 30 on 7 of 7 counts (100%); mean 4.29; range 1-8; ind/PH .11.

Banding Recoveries. One presumed breeding bird (after hatching year) banded in B 28 Jul 73 and caught injured in IL in fall 73 demonstrates that some Keweenaw breeders migrate south at least as far as IL.

Historical Changes. I find no evidence that the status of the "Sparrow Hawk" has changed in the Keweenaw. It was listed by Kneeland (1857), Wood (1933), and Wing (1939). Although Cahn (1918) considered it "abundant" in 1914 at Kenton, H, he based his statement on August birds, in my opinion a concentration of migrants at an especially good food source. A comparison of Brockway Mt. counts (eastward migrants only; same period, 2 Apr-15 May, compared) in 1976-77 (Isaacs & Hennigar, 1980; Isaacs orig. notes) with 1992-2000 (J. Peacock, LB) demonstrates a minuscule 6.1% increase in birds per hour from .65 (238 birds in 366 hrs) to .69 (279 in 403 hrs).

Merlin *Falco columbarius*

Status and Range (B, H, K). Next to Isle Royale, the Keweenaw Peninsula is the primary stronghold for this species in the state. **Spring**: transient; generally very uncommon throughout. Uncommon at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 18 Apr-19 May (1985-95), J. Peacock and I recorded 106 migrating eastward in 688 hrs, or .15 per hour (Table 12; see also Table 11 and Fig. 11). Unlike most raptors (but the Peregrine Falcon probably behaves similarly), some individuals avoid Brockway Mt., instead migrating along the Lake Superior shoreline or flying directly north over the Lake (LB). Transients peak in the second week of May, at the same time as the first major flights of their primary food source—summer resident and transient insectivorous passerines; a lower peak in the third week of Apr might represent adults (Fig. 11). **Summer**: resident; uncommon on coast of K (probably including Manitou Is., 5 May 2002, seen calling, JY) and very uncommon throughout B, H, and interior K. Increasing in abundance and range throughout the Peninsula. See Habitat. **Fall**: numbers do not seem to increase much, if any, compared to summer, but individuals, probably summer residents and their young, begin appearing at non-breeding localities as early as the last week of Jul and throughout Aug, Sep (probable peak), and Oct. Like some other raptors (*e.g.*, Sharp-shinned Hawk), many spring transients may use a route excluding the Peninsula in fall (see Banding Recoveries). **Winter**: the date "28 Nov 80" (JPW59: 9) should have been 28 Sep 80 (AW, pers. comm., orig. notes). Four other reports, 21 Dec 89 (Weaver, 2000), and 28 Nov, 11 Dec, and 3 Jan 2000 (local birders) in my opinion might have been Sharp-shinned Hawks; the similarity of these two species is not fully appreciated by many observers and is poorly treated in field guides; nevertheless, early winter occurrence is not impossible, as Merlins have been recorded in the Lower Peninsula in winter.

Habitat. See Breeding for nest sites. Catches avian and insect prey primarily on the wing (but see Remarks). In summer, primary nest habitat is mesic/wet mixed forest near large openings. Forages along shores around perimeter of Peninsula, where pine nest sites are available; prefers bays and river mouths, but also hunts around and over large lakes, marshes, farmland, and towns. This frequent association with aquatic and other non-forested habitats reflects its need for openings in which to chase and catch small birds on the wing; water *per se* holds no special attraction, but its presence adds aquatic birds to the menu. Territories on the shores of Lake Superior offer a special advantage that might account for the Peninsular and Isle Royale breeding concentrations—an abundance of prey in the form of trans-Lake migrants; fall passerine migration begins in earnest in late August, just when juvenile Merlins become independent and adults are relieved of commitments (see Remarks). This species is by no means shy, often nesting close to summer cabins (*e.g.*, 25 yards, LB) and even at busy intersections in towns (Laurium, Copper Harbor, LB).

Migration Dates. **SEAD**: 23 Mar 2000 (Arnheim, B or H, JY). **SMAD**: 12 Apr (n=15). **SP**: transients peak in second week of May (Fig. 11). **FMDD**: 13 Oct (n=13). **FLDD**: 29 Oct 96 (near North Portage Entry, H, S. Andres); see Fall.

High Counts. **Spring**: 12 May 2004 (**9**, with M. Myers), 10 May 86 (**8**), and 5 May 91 (**6**) all Brockway Mt., J. Peacock.

Breeding (**B** 1 co, 1 pr, 2 po; **H** 3 co, 1 pr, 1 po; **K** 24 co, 4 pr, 2 po).

22 May 82 (2 adults on territory) B, A. J. Ryff, P. A. Young (JPW 60: 126), probable breeding.

24 May (copulation on top of tall white spruce), 18 Jul (nest with nestling), 27 Jul 96 (3 prejuveniles fledged today) Agate Harbor, LB.

27 May 2001 (adult carrying food) between Great Sand Bay and Cat Harbor on highway M 26, K, LB, JM.

*3 Jun 88 (calling adult chasing Great Blue Heron) near mouth Big Betsy River, K, LB, probable breeding.

6 Jun 97 (adult carrying food) Keweenaw Mt. Lodge, near Copper Harbor, LB.

18 Jun 91 (adults at nest) 2.6 mi E Brunette Park, K, LB.

24 Jun 94 (nest; probably incubating) Agate Harbor, LB.

27 Jun 2001 (adult carrying food) Rice Lake, T55N, R31W, Sec. 8, LB, JM.

2 Jul 99 (nest with at least 1, large, all-downy nestling) near Gay, T56N, R31W, Sec. 25, K, LB, A. and N. Craig.

5 Jul 2004 (1 live prejuvenile on ground, too young to have fledged) Big Lake Campground, Baraga Plains, JY, photos.

7 Jul 91 (nest with nestlings) Agate Harbor, LB.

*10 Jul 89 (nest with 2+ nestlings and 1 non-flyer on ground under nest; 4 young fledged 17 Jul) Agate Harbor, LB. The young on the ground could not be found one-half hour later. Was it one of the 4 that fledged? Did it climb back into the high nest? Did an adult carry it? Was it fed on the ground by adults? Or were there 5 nestlings originally (highly unlikely). A mystery!

10 Jul 91 (nest with nestlings) Norland settlement near Copper Harbor, LB.

14 Jul 2003 (3 large young hopping into and out of nest) Agate Harbor, LB.

15 Jul 95 (nest with 1+ nestling) Keweenaw Mt. Lodge, near Copper Harbor, LB.

*16 Jul 88 (nest with 3 nestlings that fledged today) Agate Harbor, LB.

17 Jul 98 (nest with nestlings) Keweenaw Mt. Lodge, near Copper Harbor, LB.

18 Jul 92 (nest with 3 large feathered nestlings) Agate Harbor, LB.

23 Jul 91 (nest with nestlings) Agate Harbor, LB, different from 7 Jul 91 nest, which was only .25 mi away.

24 Jul 98 (nest with at least 2 nestlings three-quarters grown) in Copper Harbor at busy intersection of highway M 26 and Marina Road, LB.

25 Jul 95 (3 or 4 prejuveniles) .5 mi S Oskar, H, AW.

27 Jul 96 (2 prejuveniles flying poorly) Keweenaw Mt. Lodge, near Copper Harbor, LB.

31 Jul 87 (prejuvenile female, barely flying stage, found dead on highway M 26, UMMZ 227115) Agate Harbor, T59N, R29W, Sec. 31, LB.

8 Aug 98 (begging calls of young) Eagle Harbor, K, LB.

10 Aug 99 (prejuvenile practicing flying and giving begging calls) at very busy traffic light in Laurium, H, LB, JM.

12 Aug 89 (about 5 in a family group, young flying) mouth Gratiot River, K, LB, probable breeding.

Early Aug 85 (prejuvenile seen) Agate Harbor, LB.

Summer 80 (nest) Agate Harbor, local observer fide LB.

*Summer 86 (2 nests) Lac La Belle, K, R. Smith, W. Booth (JPW 64: 76).

Summer 90 (confirmed nests with young at Silver Island, K, fide T. Leukering (JPW 68 [1]: 23).

[*Note*: I seriously doubt the "fledgling" age of a bird seen 29 Sep 96 at Houghton (MBNH 4: 97).]

Summary: chooses used American Crow (n=12) or Common Raven (n=1) nests 35-60 ft up (mean 47.0, n=13) and 5-10 ft from top (mean 6.7, n=13) of red (n=9) or eastern white (n=4) pines; nest side of tree needs flight path free from enclosing branches or other trees. Fourteen active nests ranged from 18 Jun-27 Jul, but this is skewed toward later dates, because adults are quite secretive in the early stages of nesting, and later the loud vocalizations of large young make nest-finding easy. Three fledging dates,16, 17, 27 Jul, indicate egg-laying in last two weeks of May. Because males feed incubating females, "carrying food" does not mean young have hatched.

NAMC. Baraga Co.: 14 on 6 of 6 counts (100%); mean 2.33; range 1-4; ind/PH .05. *Houghton Co.*: 8 on 5 of 7 counts (71.4%); mean 1.14; range 0-3; ind/PH .05.

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1.

Banding Recoveries. One banded in K on 5 May 87 and found dead in MN on 19 Aug 88 suggests that some K spring migrants move southward farther west in fall or retrace their spring route. See also, Sharp-shinned Hawk and Brown-headed Cowbird.

Historical Changes (Table 17). The early status of the Merlin on the Keweenaw Peninsula is uncertain. It was listed by Kneeland (1857) but not by Cahn (1918) for 1914 or Wood (1933) for 31. Although it almost certainly occurred as a transient, it may not have bred. During the

period 46-72, it apparently suffered the same fate as the Peregrine Falcon and Bald Eagle—reproductive failure caused by ingestion of organochlorine contaminates (Fox, 1971; Temple, 1972). For this period, when observers were scarce, I find only a few Peninsula records: 28 May 50, Hancock (JPW 50: 40); 5 Aug 57, Agate Harbor, LB; 26 Apr 62, Portage Lake, J. Weber, R. A. Janke, (JPW 41: 29); and 13 Aug 63, Agate Harbor, LB. All four could have been transients. The Merlin reached its nadir in the Keweenaw and state, both as a transient and summer resident, during the late 60s and early 70s (L. C. Binford in Brewer *et al.*, 1991). *Transients*: initial recovery was slow, as shown by data for spring transients at Brockway Mt. During 230 hrs of observation, 76-77, Isaacs & Hennigar (1980; Isaacs orig. notes) recorded only 3 (2 flying south to north, one to east), or .013 per hour. Similarly, in the period 78-81, during 780 hrs, J. Peacock saw only 6, or .008 birds per hour. Significant recovery began about 81 and proceeded rapidly, so that in the period 92-2000, in 329 hours of observation during the same period as the Isaacs-Hennigar study, 14 Apr-15 May, J. Peacock and I saw 42, or .13 per hour, an increase of 900%. *Breeding*: the first definite summer record for the Peninsula was on 7 Jul 76 (female, MTU 1506, Keweenaw Co., J. Barclay). Expansion began in earnest about 80, with the first breeding evidence (nest) in 80 in K, followed by "probable" evidence in 82 in B and by other nests in 85 and 86 in K. In the late 80s I estimated 9 pairs in K (L. C. Binford in Brewer *et al.*, 1991). Thereafter, nesting has been confirmed almost every year through 2005, nearly all in coastal K. Breeding, at least on the coast of K, has been facilitated by an apparent increase in American Crow abundance, the falcon nearly restricted to the use of crow nests. As suggested herein for the Turkey Vulture, perhaps from this K population Merlins began spreading southward into H and, to a lesser extent (so far), B. More and more summer birds are appearing at inland localities (*e.g.*, 23 Jun 2001, Little Lake, B, LM; first Bootjack BBS record in 2005). I predict continued increase in summer abundance and distribution.

Remarks. (1) In fall, Merlins regularly perch on rocks and trees along the northern (Lake Superior) shore of K and sally out over the lake, or sometimes patrol some distance from shore, to catch small landbirds migrating southward in daytime. Presumably, most of these are nocturnal migrants stranded over the lake at sunup; a few arrive obviously tired, but most seem quite fit (LB; see Fall Translake Migrants in Discussions). From 5 Aug to 22 Oct, 1986-2001, at or near Agate Harbor, I noted attacks on 39 birds migrating north to south. Merlins caught 17 (43.6%) and missed 19 (48.7%), with the results of 3 encounters unknown; one Golden-crowned Kinglet escaped when the Merlin, perched on its prey, shifted its feet! In addition, one Merlin chased but missed a flock of 2 small shorebirds. Identified species attacked were Downy Woodpecker (1 missed), Red-breasted Nuthatch (1 missed), Winter Wren (1 missed), Golden-crowned Kinglet (1 caught but escaped), and Dark-eyed Junco (1 caught, 1 missed). (2) A dead nestling Brown-headed Cowbird I found intact under a Merlin nest (10 Jul 89, Agate Harbor) demonstrates that Merlins do not catch food only in the air. A fresh, full-sized juvenile Purple Finch was found under the nest of 14 Jul 2003. (3) On 18 Aug 89, at the Lake Linden sewage ponds, I saw a Merlin catch and eat a Bank Swallow. (4) This species is a translake migrant at least in fall, when at Agate Harbor I have noted single birds migrating south off Lake Superior on three occasions: 15 Sep 98 (arrived 0954 EDT), 17 Sep 94 (0841), and 21 Sep 88 (between 1030 and 1100). These were not just foraging birds, as they were spotted 1-2 miles out, flew low and direct, and disappeared inland.

Gyrfalcon *Falco rusticolus*

Status and Range (H). Accidental visitant in **early winter** (1 record). The influx into Michigan in the last 30 years, with regular occurrence at the eastern end of the Upper Peninsula (R. J. Adams in McPeek & Adams, 1994) has not extended to the Keweenaw.

Significant Records (all).

14 Dec 96 (not 15 Dec as in MBNH 4: 160) Arnheim, Units 5 and 6, H, JY, description in LB files (FN 51: 752).

[29 May 82, H, J. Wolfe (JPW 60: 126); mentioned by R. Adams (in McPeek & Adams, 1994), but I find no documentation for this very late bird.]

[Kneeland (1857) "heard of a white falcon, of large size (measuring about five feet in the spread of its wings) which was shot on the Point; this, I think, must have been the gyr-falcon." Barrows (1912) considered this record hypothetical, and I agree.]

[Payne (1983, 1986) cited an observation of a wintering Gyrfalcon "in Houghton County." Upon my query, he thought this an error, instead probably pertaining to Ontonagon Co.; however, it might refer to the 29 May 82 record above.]

Peregrine Falcon *Falco peregrinus*

Status and Range (B, H, K). **Spring**: very uncommon transient throughout, most often seen near aquatic habitats. Uncommon at Brockway Mt., where, during its primary period of occurrence there (mid 90% of individuals per hour), 29 Apr-20 May (1985-95), J. Peacock and I recorded 100 Peregrines migrating eastward in 678 hours, or .15 per hour (Table 12; see also Table 11 and

Fig. 11); scarcity here probably reflects its more coastal orientation when migrating (LB). Casual migrant as late as mid Jun (see Migration Dates). **Summer**: accidental resident and casual visitant. In Apr 91 a male set up a territory near telephone pole no. 1058 along Cliff Drive near Phoenix, K, and obtained a mate by 21 Apr. On 15 Jun the female was found dead there, the victim, it was supposed, of a Great Horned Owl; she was from a 1989 release at the Bay of Fundy, New Brunswick (MDNR files). No birds have been introduced on the Peninsula. One flying east-northeast high over Ahmeek (K) on 17 Jul 2002 (LB, JM), one immature perched on power line at Agate Harbor on 9 Jul 2005 (LB), and one on Manitou Is. (K) on 14 and 19 Jun 2002 seem to have been non-breeding summer visitants, suggesting that birds might be investigating the Peninsula as a place to breed. See Historical Changes. **Fall**: transient, very uncommon on north shore of K. Elsewhere very rare, frequenting marshes (*e.g.*, Arnheim). A trans-Lake migrant; birds have been seen arriving from due north, as follows (all Agate Harbor, LB): 29 Sep 96 (arrival on shore at 1009 EDT, 2 birds, suggesting a mated pair); 2 Oct 92 (1015, adult); 5 Oct 92 (between 1000-1030, adult); 9 Oct 88 (0958, 1).

Habitat. May be seen anywhere overhead when actively migrating but usually along shorelines of the Peninsula perimeter or at Brockway Mt. When foraging, uses aquatic habitats to hunt its preferred prey, aquatic birds, including Lake Superior bays, L'Anse Bay, extensive marshes, and sewage ponds. See Historical Changes.

Migration Dates. **SEAD**: 17 Apr 76 (Brockway Mt., AW) and 93 (Arnheim, H, JY). **SMAD**: 5 May (n=14); this date should be somewhat earlier. **SP**: second week of May (Fig. 11). **SMDD**: 23 May (n=11). **SLDD**: 29 May 2005 (High Rock Bay, K, JY); 27 May 97 (Copper Harbor, LB). **FEAD**: 26 Aug 2000 (Calumet sewage ponds, RH, JM); 6 Sep 99 (Copper Harbor, LB). **FMAD**: 23 Sep (n=12). **FP**: probably first week of Oct (see Fall above). **FMDD**: 3 Oct (n=16). **FLDD**: 18 Oct 75 (Liminga, AW); see HCCBC.

High Counts. 12 May 2004 (**17**, with LB, M. Myers), 16 May 2002 (**12**), and 10 May 92 (**11**) all migrating eastward at Brockway Mt., J. Peacock, all exceptional.

Breeding (**K** 1 pr, but unsuccessful; see Status and Range).

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004.

[*HCCBC.* One reported during count week, Dec 88, seems improbable.]

Historical Changes (Table 17). The decline of Peregrine Falcon populations in the eastern United States, including Michigan, during the 1950s-early 70s and subsequent recovery have been well documented (*e.g.*, R. E. Hess in Brewer *et al.*, 1991). The picture for transients in the Keweenaw is the same. Weaver, for instance, saw only 4 during the period 1972-82 when the Peregrine was just beginning to recover. Similarly, during spring migration at Brockway Mt., 1978-81, counting eastbound birds only, J. Peacock saw only 4 in 780 hrs, or .005 per hour, while Isaacs & Hennigar (1980; Isaacs orig. notes), 1976-77, recorded only 3 eastbound in 184 hrs, or .016 per hour. In contrast, after some 15 years of additional recovery, J. Peacock and I, in 1992-2000 (same period, 17 Apr-15 May, as Isaacs and Hennigar and as Peacock) saw 44 in 305 hrs, or .144 per hour, an 800% increase over Isaacs and Hennigar and 2,780% over Peacock 78-81. Isaacs (1976) found no reference to historical eyries in the Keweenaw. The three extensive, rocky cliff faces in Keweenaw Co. (Brockway Mt., Mt. Houghton, Phoenix Cliffs) could be used for nest sites, but the only potential food—Herring Gulls and a few ducks—might not be sufficient. A pair might prosper in the twin cities of Houghton and Hancock, nesting on a building or the Houghton lift bridge and feasting on the numerous Rock Pigeons and Ring-billed Gulls. Recent Jun-Jul records (see above) might indicate investigation of Keweenaw breeding sites.

Yellow Rail *Coturnicops noveboracensis*

Status and Range (H, K). Casual transient in **spring** (3 records, 2 May-9 Jun) and **fall** (2 records, 3-6 Oct) in H and K; no record for B. Although the MBBA (1991) considered the 9 Jun date evidence of summering, Wood (1951) noted the absence of breeding data, and I think the date not too late for a transient; nevertheless, the species should be sought as a breeder. A trans-lake migrant in fall.

Habitat. The Sturgeon River Sloughs and B birds were in sedge-grass marsh, and the Kirkish Point rail, apparently overtaken by sunup while over Lake Superior, landed on coastal rocks.

Significant Records (all).

2 May 2001 (1 flushed twice) T53N, R33W, Sec. 9, H, LM, JY.

23 May 96 (1) Sturgeon River Sloughs, JY.

9 Jun 31 (adult male, UMMZ 67338) Copper Harbor, N. A. Wood no. 132, "first record for the Upper Peninsula" (Wood, 1931, 1933, 1951).

3 Oct 99 (1) seen on coastal rocks as it arrived off Lake Superior in the morning, Kirkish Point, 2.5 mi W Copper Harbor, JY.

6 Oct 72 (male, MTU 1487) Eagle Harbor, K, collector Murley; examined by LB.

Virginia Rail *Rallus limicola*

Status and Range (B, H, K). **Spring**: no definite

transients have been seen. **Summer**: very uncommon resident, occurring primarily in northern H and adjacent B, where open cattail marsh most extensive; very rare in K. Recorded in summer at the following localities: Arnheim sloughs (B and H); 3 mi W town of Keweenaw Bay (T52N, R33W, Sec. 31, B); Pequaming marsh (T52N, R32W, Sec 34, B); 3.5 mi S Herman (T49N, R32W, Sec. 30, B); Swedetown marsh (H); 2 mi W Rice Lake (T55N, R32W, Sec 11, H); .5 mi N Oskar (T55N, R34W, Sec. 8, H); in and near the Sturgeon River Sloughs, Unit l; about 3 mi W Chassell (T54N, R34W, Sec. 35, 2 calling on 31 May 2005, JY); Bear Lake (T56N, R34W, SE quarter, H); Ahmeek marsh (T57N, R32W, Sec. 32, K); and Deer Lake (K, 5 Jun 2000, JK, possible migrant). In Aug 1914 Cahn (1918) termed it "common" along the river at Kenton, H. **Fall**: see Migration Dates.

Habitat. Prefers large, channeled cattail marshes, but also found in sedge-grass marsh; marshes clogged with cattails are not inhabited.

Migration Dates. **SEAD**: 26 Apr 2000 (Arnheim, B or H, JY). **SMAD**: 14 May (n=7). **FLDD**: the only post-Jul dates are 27 and 30 Sep 76 (Sands, H, F. B. Isaacs); 7 Aug 89 (LB) and 5 Aug 90 (LM) both at a breeding site (Swedetown marsh, H); and Aug 1914 (Kenton, H, Cahn 1918).

High Counts. **Spring**: 27 May 96 (**6**) Arnheim, H, JY. **Summer**: 10 Jun 98 (**6**) Arnheim, B or H, JY.

Breeding (**B** 1 co, 2 po; **H** 2 co, 3 po; **K** 1 pr, 2 po).

19 Jun 95 (nest with 12-14 eggs; photo) about 3.5 mi S Herman, T49N, R32W, Sec. 30, B, JY.

17 Jun and 6 Jul 98 (1 bird on territory) Ahmeek marsh, K, LB, probable breeding.

*11 Jul 88 (2 tiny black chicks) Swedetown marsh, H, RH, LM, AW, D. Weaver.

Note: At some of the localities mentioned under Status and Range (*e.g.*, Arnheim, Sturgeon River Sloughs), presence constitutes probable breeding; these are not included in the county summary.

NAMC. Baraga Co.: 2 on 2 of 6 counts (33.3%); mean .33; range 0-1; ind/PH .01. *Houghton Co.*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1; ind/PH .01.

Historical Changes. see Conservation under Discussions.

Sora *Porzana carolina*

Status and Range (B, H, K). **Spring**: probable transients recorded out of breeding range and habitat 9-24 May, but number of transients not enough to raise detectability above summer. **Summer**: resident, uncommon in northern H and adjacent B, and very rare in K, this range reflecting the distribution of its habitat. Recorded in summer at the following localities: Arnheim sloughs (B and H); 3.5 mi S Herman (T49N, R32W, Sec. 30, B); Sturgeon River Sloughs, Unit l; Liminga; Bear Lake (T56N, R34W, SE quarter, H); Swedetown marsh (H); 2 mi W Rice Lake (T55N, R32W, Sec. 11, H); .5 mi N Oskar (T55N, R34W, Sec. 8, H); Ahmeek marsh (K); and near Sedar Bay (T57N, R33W, Sec. 34, K, LB). **Fall**: probable transients recorded 22 Aug-9 Oct, but detectability drops as breeding birds become silent and leave.

Habitat. Breeds in cattail and, less commonly, sedge-grass marshes, including edges of beaver ponds. Said to occur elsewhere in Michigan in bullrush, bogs, and dense wet meadows (M. L. Rabe in Brewer *et al.*, 1991).

Migration Dates. **SEAD**: 26 Apr 2000 (Arnheim, H, JY). **SMAD:** 12 May (n=14). **SP**: about 18-26 May. **FMDD**: 23 Sep (n=8, all H). **FLDD**: 2 Nov 64 (unsexed immature, MTU 1491, Jacobsville, H, R. Johnson); 9 Oct 76 (Sands, H, AW).

Significant Records (all probable transients based on dates, non-summer localities, and habitats).

9 May 54, Jacobsville, H, G. Hesterberg (JPW 32: 127).

15 May 88 (2) Youngman's property, B, JY.

18 May 91 (1) Cliff Drive near Phoenix, K, LB.

19 May 59 (1) 7 mi S Baraga, J. H. Pann (1960) and R. R. Rafferty.

21 May 2000 (1) Copper Harbor, LB, JM.

24 May 97 (1) Copper Harbor, LB.

22 Aug 73 (1) Lake Fanny Hooe, near Copper Harbor, LB.

30 Aug 77, Sands, AW.

13 Sep 90 (1) Calumet Lake, LB.

24, 27, 30 Sep, 2, 9 Oct 76, Sands, H, F. B. Isaacs, AW.

High Counts. **Spring**: 24 May 97 and 26 May 99 (**10** each day) both Arnheim, B or H, JY, possibly breeders. **Summer**: 7 Jun 97 and 25 Jun 2000 (**7** each day) Arnheim, B or H, LM, JY.

Breeding (**B** 1 pr, 1 po; **H** 2 co, 8 po; **K** 1 pr).

29 Apr, 12 Jun 95 (heard on territory) 3.5 mi S Herman, T49N, R32W, Sec. 30, B, JY, probable breeding.

17 Jun 99 (young seen) Arnheim, Unit 4, H, JY.

22 Jun 90 (4 chicks) Swedetown marsh, H, LM.

*Summer 86 (on territory) Ahmeek marsh, K, LB, probable breeding.

Note: presence at most of the localities mentioned under Status and Range constitutes probable breeding; these are not given in the county summary.

NAMC. Baraga Co.: 17 on 3 of 6 counts (50.0%); mean 2.83; range 0-9; ind/PH .07. *Houghton Co.*: 5 on 4 of 7 counts (57.1%); mean .71; range 0-2; ind/PH .02.

Common Moorhen *Gallinula chloropus*

Status and Range (H, K). Accidental vagrant in

spring (2 records, 26 May-12 Jun) and **fall** (1 record, 27 Nov). Because the Keweenaw Peninsula is north of the breeding range, our birds presumably are overshoots in spring and misoriented vagrants in fall.

Habitat. Found at Copper Harbor in a small, open, man-made pond edged with grass and a few cattails.

Significant Records (all).

26, 29 May, 2, 4, 5 Jun 99 (1 adult) Copper Harbor (Wescoat's pond), LB, JM (MBNH 7: 34).

12 Jun 77 (1) near Calumet, L. Kallunki, said to be probably the first Upper Peninsula record (JPW 55: 192).

27 Nov 92 (1) near Oskar, H, S. Andres (AB 47: 96; JPW 70 [2]: 22; G. A. McPeek in McPeek & Adams, 1994).

American Coot *Fulica americana*

Status and Range (B, H, K). **Spring**: rare transient in B and H, but irregularly, locally fairly common at Sturgeon River Sloughs (formerly more common), Arnheim sloughs (B and H), and L'Anse Bay shores; this status suggests birds are wind drifted from the near west. Only 3 spring records for K: 6 Jun 99, 1, LB, JM, and 26 May 2004, 1, TA, JM, both Ahmeek marsh; 16 May 2004, 1, Copper Harbor ("Fake Lake"), M. Myers, J. Peacock. **Summer**: accidental resident at Arnheim sloughs, H, where breeding in 99 was preceded by Jun records in 97 (to 14 Jun) and 98 (to 6 Jun). All other Jun records pertain to transients, as none stayed. The only other summer records, both visitants or early transients, were 12 Jul 2004 (1) Calumet sewage ponds,LB, and 14 Aug 73, Sturgeon River Sloughs, AW. No summer record for K (see Breeding). **Fall**: generally rare transient in B and H; locally and irregularly very common at Sturgeon River Sloughs and mouth, L'Anse Bay shores, Arnheim (B and H), and formerly the Sands (H). Only one fall record for K (20 Sep 95, 1, Ahmeek sewage ponds, LB), where habitat scarce.

Habitat. Breeds in cattail marsh with channels and ponds. On migration occurs also in ponds in sedge-grass marsh, shallow edges of open bay (L'Anse Bay), some old, open, vegetated beaver ponds, and occasionally sewage ponds.

Migration Dates. **SEAD**: 29 Mar 86 (L'Anse, B, AW); 14 Apr 83 (L'Anse, B, JY). **SMAD**: 29 Apr (n=13). **SP**: middle two week of May. **SMDD**: 23 May (n=12):. **SLDD**: 14 Jun 86 (Lake Linden, LB). **FEAD**: 11 Sep 98 (Arnheim, B or H, JY); the date of 14 Aug 73 (Sturgeon River Sloughs, AW) is here treated as a summer record. **FMAD**: 25 Sep (n=17). **FP**: last three weeks of Oct. **FMDD**: 23 Oct (n=19). **FLDD**: 22 Nov 98 (Arnheim, B, JY); 11 Nov 78 (L'Anse Bay, AW).

High Counts. **Spring**: 24 Apr 2001 (**22**) Arnheim, B or H, JY; 4 May 75 (**14**) "Bailey Pond," on highway M 26, 2 mi E Eagle Harbor, K, F. B Isaacs; 12 May 97 (**11**) B, JY. **Fall**: 10 Oct 79 (**220**) Portage Lake, MDNR aerial survey; 28 Sep 2000 (**129**) Sturgeon River mouth, JY; 27 Sep 75 (**100**) Sturgeon River Sloughs, AW; 31 Oct 99 (**71**) H, LM, JY; 11 Sep 2000 (**40**) L'Anse Bay, JY.

Breeding (**H** 1 co).

26 May (building nest, JY), 28 May (adult sitting on nest, LM), 20 Jun 99 (adult feeding 2 tiny prejuveniles, JM, JY) Arnheim, Unit 5, H.

[*Note*: MBBA map (1991) confirmed breeding in K should be disregarded.]

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004. *Houghton Co.*: 15 on 2 of 7 counts (28.6%); mean 2.14; range 0-12; ind/PH .05.

Banding Recoveries. One immature banded in southwestern SK 31 Aug 45 and shot in B or K 28 Sep 45 demonstrates a northwestern origin for some Keweenaw transients.

Sandhill Crane *Grus canadensis*

Status and Range (B, H, K). Detectability inflated by the species' conspicuous size, open habitat, and loud frequent vocalizations. **Spring**: common transient, often seen migrating overhead with raptors, especially at Brockway Mt. Definite migrants (mostly at Brockway Mt.) noted on 5 Apr and 17 Apr-16 Jun, so migration continues well into the breeding season. At Brockway Mt., during daily counts 2 Apr-31 May 92, J. Peacock recorded 157 cranes, with 1 on 5 Apr, the rest on 24 of 40 dates from 17 Apr-30 May, maxima of 15 each on 23 Apr and 10 May and no apparent peak; numbers corresponded reasonably well with the larger flights of raptors. As with raptors, whether or not cranes cross Lake Superior from the Peninsula is unknown. A flock of 5 flew over Manitou Is. on 7 May 2002 (JY); and I saw several apparently crossing from Whitefish Point in Apr 2005. **Summer**: resident, currently increasing in range and abundance; fairly common in B and H, very uncommon in heavily forested K. **Fall**: presumed transient, but numbers do not seem to increase over summer except at staging areas, and no definite transients (*i.e.*, flying flocks like in spring) have been reported; perhaps, like some raptors, takes different route, avoiding the Keweenaw in fall. Known staging areas are near Big Lake (Big Burn Field) on the Baraga Plains and at Arnheim (B and H), but small flocks have been seen elsewhere (*e.g.*, Tamarack City, H; Sturgeon River mouth). Flocking of non-breeding residents begins as early as late May (*e.g.*, 24 May 96, 33 birds, B, JY) and escalates from late Jul to early Oct (see High Counts); departure, at least at Arnheim, is triggered by the onset of the waterfowl hunting season.

Habitat. Nests and forages in sedge-grass marsh, open bogs, and lightly wooded, wet coniferous forest (tamarack-black spruce). Forages also in hayfields,

goose grassland, grass-herb-dominated old fields, and once on grassy dikes of a sewage pond (1 Aug 2000, 2 birds, Calumet sewage ponds, LB).

Migration Dates. **SEAD**: 23 Mar 2000 (Arnheim, B or H, JY). **SMAD**: 12 Apr (n=19). **SMDD**: 9 Jun (n=8, K only). **SLDD**: 16 Jun 99 (flock of 7, Copper Harbor, LB). **FMDD**: 21 Sep (n=10). **FLDD**: 11 Oct 98 (2 mi W Chassell, H, LM). See Status and Range.

High Counts (chronological by month). **Spring**: multi-party, 13 May 2000 (**62**) B, NAMC; 24 May 96 (**33** residents) B, JY. **Summer**: 2 Jun 2000 (**39**) Arnheim, B, JY, probably includes some transients; 26 Jun 2000 (**31**) Baraga Plains plus Watton (H) fields, LB, JY. **Fall**: 24 Jul 98 (**85**) Baraga Plains JY; 25 Aug 2000 (**102**) Arnheim, B, LM, JY; 13 Sep 2003 (**227**) Baraga Plains (138) plus Arnheim, B or H (89) LM, JY; 3 Oct 97 (**123**) Arnheim, H, LM.

Breeding (**B** 10 co, 3 po; **H** 13 co, 3 pr, 4 po; **K** 1 co, 2 pr, 1 po); chronological order by year to show historical increase.

Summer, period 71-73, species seen by L. H. Walkinshaw near Bete Grise, K; also, map shows "?" for B but no other records for the far western Upper Peninsula (JPW 52: 102); possible breeding.

20 May 76 (2 one-day-old prejuveniles near nest) Baraga Plains, T49N, R34W, Sec. 21, L. H. Walkinshaw, "first nest for Baraga County" (CLO; JPW 54: 120; Walkinshaw, 1978).

20 Jul 77 (2 adults with 1 young) Big Lake field, T49N, R34W, Sec. 21, B (MDNR files).

13 May 80 (nest with 1 egg) 6.5 mi N Watton, T49N, R34W, Sec. 21, B, L. H. Walkinshaw (CLO; JPW 67: 13).

*8 May (nest with 1 egg), 8 Jun 83 (nest empty) Baraga Plains, north of Big Lake, T49N, R34W, Sec. 21, L. H. Walkinshaw (CLO); this and the preceding 3 records involved the same locality..

17 May 83 (young) Sturgeon River Sloughs, JY.

*21 Jul 88 (1 prejuvenile) Bear Lake, T56N, R34W, SE quarter, H, LB.

*Summers late 80s into 90s (regular inhabitant of bog) near mouth of Lac La Belle, K, LB, probable breeding.

Summer 94 (nested) H (MBNH 2: 47).

24 Jul 95 (1 prejuvenile three-quarters grown) Liminga, AW, D. Weaver.

29 May 96 (nest with 1 egg) Michigan Nature Association's bog, Peterson Rd., T52N, R31W, Sec. 13, B, JY.

31 May 96 (adult on nest) Arnheim, Unit 5, H, JY.

17 Jun 96 (1 prejuvenile about one week old) Sturgeon River Sloughs, Unit l, JY.

15 Jul 97 (1 prejuvenile 2 ft tall) Arnheim, Unit 5, H, JY.

25 May 98 (2 prejuveniles) Arnheim, Unit 3, H, JY.

21 Jun 98 (1 prejuvenile) Sturgeon River Sloughs, Unit 1, JY.

6 Jul 98 (2 prejuveniles) Robilard Lake, B, JY.

2 Jun (2 prejuveniles 12 in tall), 25 Jun 2000 (1 prejuvenile 25 in tall) Arnheim,B, JY.

3 Jun 2000 (2 prejuveniles) mouth Sturgeon River, JY.

11 Jun 2000 (2 downy prejuveniles about 2.5 ft tall) 3 mi N Boston, T56N, R33W, Sec. 29, H, LB.

Summer 2000 (heard frequently from marshy pond) above Agate Harbor, LB, probable breeding.

25 May 2001 (2 prejuveniles) Baraga Plains, T49N, R34W, Sec. 32, JY.

26 Jul 2001 (1 prejuvenile about 1.5 ft tall) east of Deer Lake, T57N, R29W, Sec. 8, K, LB, JM (finder).

29 Jul 2001 (2 adults with 1 almost full-grown young) near Rice Lake, H, LM.

27 May 2002 (2 adults with 2 young) Arnheim, T52N, R33W, Sec. 10, B, LM.

31 May 2003 (2 small prejuveniles) Arnheim, Unit 2, T53N, R33W, Sec. 29, H, JY.

23 May 2004 (2 small prejuveniles) Arnheim, Unit 8, B, JY.

23 May 2005 (2, 8-in-long prejuveniles) Arnheim, Unit 4, H, JY.

Summary: Nests: 3 with 1 egg each, 8-29 May; 2 one-day-old chicks near nest 20 May; adult on nest 31 May. Prejuveniles: 19 broods of 1-2 prejuveniles, 17 May-26 Jul, average 1.58 (but second prejuvenile might have been hidden from view, so this average probably low).

BBS. Bootjack 92-2005: 54 on 11 of 14 counts (78.6%); mean 3.86; range 0-15.

NAMC. Baraga Co.: 204 on 6 of 6 counts (100%); mean 34.00; range 17-62; ind/PH .79. *Houghton Co.*: 71 on 7 of 7 counts (100%); mean 10.14; range 2-18; ind/PH .25.

Historical Changes (Table 17; see Breeding above for data). The history of this species is clouded by the difficulty of separating transients from summer residents, because nesting starts in Apr and migration continues to mid Jun. Here I attempt to separate the two. The Sandhill Crane is thought to have been widespread in the state prior to the mid 1800s, but became nearly extirpated due to overhunting and drainage of wetlands by the early

1900s. Protection since 1918 has allowed expansion from the two, remaining, small, nuclear breeding populations in the eastern Upper Peninsula and southern Lower Peninsula (R. H. Hoffman in Brewer *et al.*, 1991). For the Keweenaw Peninsula, as expected from the above history, Kneeland (1857) listed it without comment, but Cahn (1918) in Aug 1914 (H) and Wood (1933) in May-Jun 1931 (K) failed to find it even as a transient. The first modern record of any kind that I find was on 22 May 64 near Big Lake, Baraga Plains (R. Rafferty; JPW 43: 30), which was at a current breeding locality during the nesting season; however, transients occur as late as 16 Jun, and breeding in this thoroughly explored area (MDNR) was not demonstrated until 76. *Transients*: the first transients recorded after 64 were at Big Burn field, Baraga Plains, in Aug and Sep 67 (MDNR files). Escalation was underway by 75; flocks appeared on the Baraga Plains in Aug 75 (14-16 birds) and 15 Aug 78 (MDNR files). The first birds noted at Myllyla's farm (a fall staging area today), adjacent to Arnheim in northern B, were 2 for most of May 78 (MDNR files). During spring migration at Brockway Mt., Isaacs & Hennigar (1980; Isaacs orig. notes) recorded only 6 in 162 hours of observation in 77 and 7 in 104.5 hours in 78, a combined rate of .05 per hour. In contrast, at the same locality in 92, J. Peacock saw 157 in 412 hrs, or .38 per hour, an increase of 660%. AW saw a few April migrants at Liminga and elsewhere in 80 and 81 and more in 82-89, after which his numbers and dates increased considerably. Further escalation appears to be occurring today. *Breeders*: no cranes were recorded on the Bootjack BBS (H, K) 1967-73 (but see beyond). A state breeding distribution map for 1971-73 (JPW 52: 102) showed only a "?" for B and a summer sight record near Bete Grise, K (where the species breeds today), with no other records west of Marquette Co. At Liminga, H (AW), single summer birds on 10 Jun 72, 13 Jul 73, and 31 Aug 74 did not remain; no others occurred there until 79, when one non-breeding bird spent the period 30 Jun-26 Aug (JPW 57: 203; AW orig. notes). The first definite breeding record was in 76 and the next three in 77, 80, and 83, all near Big Lake, where the 64 sighting occurred and where the species breeds today. Also in 83, young were found for the first time at the Sturgeon River Sloughs, where nesting still occurs. At Liminga, breeding was first detected in 95. Thus it would seem that, like some ducks (*e.g.*, American Wigeon), summering occurred first, from 64-74. Breeding ensued in 76, 77, 80, and 83 near Big Lake, in 83 at the Sturgeon River Sloughs, and by 95 at Liminga. During the final three years of my MBBA research (86-89), I found cranes in only three localities in B, one in H, and one in K. The last was near Lac La Belle (Bete Grise); the sight record there sometime in the 71-73 period suggests that this was one of the original nuclear populations. This locality, the Big Lake area, and the Sturgeon River Sloughs are among the largest wetlands on the Peninsula. Arnheim (B, H) probably was also a nucleus, but was not discovered (or at least published) until breeding was confirmed in 96 (Youngman and Murphy, 1999). Since about 90, the Peninsular population has exploded throughout B and H and to a lesser extent in K. For instance, the Bootjack BBS 92-2005, H part, recorded an average of 3.86 birds per count. According to national BBS data, the species increased 6.4% per year from 66 to 99 (Pardieck & Sauer, 2000). According to National Crane Foundation censuses (in litt.), 100 birds and 29 pairs were present in 1995 and 103 birds and 25 pairs in 1999 in the three county area; however, these data are from predetermined point counts that do not account for territoriality at individual sites (which causes stable local populations) and cannot allow for discovery of birds at new localities. I predict further expansion if wetlands are left alone and the species is not returned to its former status as a game bird.

Remarks. On 16 Apr 99 at Arnheim (H), a Common Raven took an egg from a crane nest (JY).

Black-bellied Plover *Pluvialis squatarola*

Status and Range (B, H, K). **Spring**: rare transient (Table 13), largely limited by habitat to a few localities on the shores of L'Anse Bay, Arnheim fields (B), mouths of the Sturgeon and Pilgrim Rivers (H), and Redridge beach (H); only 3 spring records for sewage ponds, which usually are full of snow meltoff, 8 May 99 (Calumet, LB), 14 May 2000 (Baraga, JY), and 17 May 2004 (Atlantic Mine, H, TA, RH, JM). Only one spring record for K (27 May 2005, flock of 8, Manitou Is., L. Dombroski, Z. Gayk, JK). **Fall**: uncommon transient. Localities limited by habitat as in spring, but also include all H sewage ponds (when dry or nearly so) and rarely coastal settlements, recorded in Eagle Harbor (K), Agate Harbor, Copper Harbor, and Traverse Bay (H). Uncommon, some days common, at northern H sewage ponds, where, 86-2001, during its primary period of occurrence, 23 Jul-21 Oct (no later counts), 83 seen on 23.9% of counts, or .7 per count (LB; Table 14; Fig. 13). Migration period greatly prolonged, from last week of Jul to mid Nov.

Habitat. Primarily beaches and bars composed of mud or natural sand, rarely pebbles or stamp sand (where just resting); sewage ponds when they afford flat (uncultivated) moist or nearly dry conditions (fall); and, rarely, bare, moist inland fields (spring) and coastal village lawns (fall).

Migration Dates. **SEAD**: 2 May 2000 (Sturgeon River mouth, JY). **SMAD**: 17 May (n=10). **SP**: about 25 May. **SMDD**: 2 Jun (n=9). **SLDD**: 9 Jun 77 (Sturgeon River mouth, AW). **FEAD**: 25 Jul 95 (Tamarack City sewage ponds, H, LB); 11 Aug 88 (LB) and 96 (JY), both Lake Linden sewage ponds. **FMAD**: 7 Sep (n=10). **FP**: about

second week of Oct (Fig. 13; Table 14). **FMDD**: 15 Oct (n=16). **FLDD**: 19 Nov 66 (near Houghton, B. and D. Wolck; JPW 45: 20); 10 Nov 70 (two males, MTU 1181, collector Ouillette, and MTU 1182, collector Kilpela, both Dollar Bay, H).

High Counts. **Spring**: 25 May 2002 (**20**) Arnheim, H, JY; 22 May 77 (**12**) Sturgeon River mouth, AW. **Fall**: 29 Sep 95 (**20**) Sands, H, AW; 21 Oct 2000 (**12**) Chassell, H, L. Taccolini (MBNH 8: 92).

American Golden-Plover *Pluvialis dominica*

Status and Range (B, H, K). **Spring**: casual transient, recorded only six times, 14 May-1 or 14 Jun (see Migration Dates). **Fall**: transient. Averages fairly common, some days very common, at northern H sewage ponds, where, 86-2001, during its primary period of occurrence, 8 Aug-21 Oct (no later counts), 187 seen on 35.9% of counts, or 2.0 per count (LB; Table 14; Fig. 13); detectability increases as more mud is exposed, averaging common from third week of Sep through second week of Oct. Very uncommon, mostly coastal, elsewhere. Formerly recorded regularly on Redridge beach (H), which is now private and where it may still occur, and at Sands, which is now reduced to a few bars at the mouth of the Pilgrim River. Most non-sewage pond records are for the shores of northern K (see Habitat), L'Anse Bay, and Portage Lake; also seen at the Houghton County Memorial Airport (which needs more coverage), Hancock ballpark (2 birds, 4 Oct 2000, RH), on an Arnheim field, B (2, 11 Oct 2001, JY), and in a field near Pelkie, B (1 bird, 22 Oct 2004, S. Santner).

Habitat. Mostly, drier sewage ponds (fall only; flooded most springs) and natural sand beaches and bars; rarely plowed fields, mowed grassland (airport), and goose grassland; casually at odd sites such as coastal lawns (Copper Harbor, Big Traverse Bay, H), road shoulder (27 Sep 86, Rice Lake, H, LB), and a gravel pit (15 Sep 93, Agate Harbor, LB).

Migration Dates. **SEAD** and **SLDD**: only six spring dates: 14 May 82 (Liminga, AW); 27 May 76 (Sands, H, AW) and 2002 (3, Arnheim, B, JY); 28 May 2000 (l, Baraga sewage ponds, JY); 1 Jun 98 (2, Chassell, H, AW, D. Weaver); and a bird on 14 Jun 86 (Lake Linden sewage ponds, LB) that seemed to fit the pattern of a late spring transient in an abnormal year for shorebird timing. **FEAD**: 6 Jul 2002 (1 in alternate plumage, Arnheim, Unit 4, H, JY, presumed fall transient rather than summer visitant; 8 Aug 97 (Calumet sewage ponds, LB). **FMAD**: 13 Sep (n=18). **FP**: last week of Sep (Table 14; Fig. 13). **FMDD**: 2 Oct (n=17). **FLDD**: 3 Nov 97 (Baraga, JY; present since 23 Oct).

High Counts. **Fall**: 27 Aug 73 (**43**) Houghton County Memorial Airport, LB; 10 Oct 74 (**40**) Sands, H, AW; 30 Sep 99 (**18**) Calumet sewage ponds (1) and Lake Linden sewage ponds (17) LB.

Semipalmated Plover *Charadrius semipalmatus*

Status and Range (B, H, K). Occurs primarily at northern H sewage ponds, less often at scattered sites on B and H coast, Portage Lake system, large inland marshes, and occasionally on coastal K (especially north side). **Spring**: transient. Fairly common in B and H; occasional in K. At northern H sewage ponds, 1986-2001, during its primary period of occurrence, 5 May-10 Jun, 63 seen on 53.8% of counts, or 2.4 per count (LB; Table 13). **Fall**: transient. Common, irregularly locally abundant, in B and H; occasional in K, including Manitou Is. (*e.g.*, 9 Sep 2002, JY). Common, some days very common or even abundant at northern H sewage ponds, where, 1986-2001, during its primary period of occurrence, 1 Jul-21 Oct (no later counts) 543 seen on 56.5% of counts, or 3.7 per count (LB; Table 14; Fig. 13); however, during its peak period of abundance, 19 Aug-4 Sep, averages 14.2 per count, or just into the very common range of detectability (LB).

Habitat. Occurs primarily on mud and natural sand beaches, flats, and bars, especially at sewage ponds (even if dry; must be uncultivated) and river mouths; less regular on mud flats associated with inland marshes; casually rests on coastal rocks.

Migration Dates. **SEAD**: 5 May 2000 (L'Anse Bay, JY). **SMAD**: 18 May (n=15). **SP**: probably last week of May. **SMDD**: 2 Jun (n=13). **SLDD**: 10 Jun 2000 (L'Anse Bay head, JY). **FEAD**: 1 Jul 89 (Tamarack City sewage ponds, H, LB). **FMAD**: 25 Jul (n=18). **FP**: most numerous in last two weeks of Aug and first week of Sep, with peak about 25 Aug (Table 14; Fig. 13). **FMDD**: 17 Sep (n=17). **FLDD**: 4 Nov 2000 (Sturgeon River mouth, JY); 24 Oct 2001 (Calumet sewage ponds, JK, not "Calumet Waterworks" as in MBNH 9: 103).

High Counts. **Spring**: 17 May 2004 (**40**) Atlantic Mine sewage ponds, H, TA, RH, JM; 23 May 97 (**37**) and 25 May 2002 (**20**) Arnheim, H, JY. **Fall**: 30 Aug 2001 (**46**) sewage ponds at Calumet (8) and Lake Linden (38) LB (not 38 at Calumet as in MBNH 9: 103); 11 Sep 97 (**42**) Lake Linden sewage ponds, LB; 19 Aug 99 (**31**) sewage ponds at Tamarack City (12) and Lake Linden (19) LB.

NAMC. Baraga Co.: 3 on 1 of 6 counts (16.7%); mean .50; range 0-3; ind/PH .01.

Piping Plover *Charadrius melodus*

Status and Range (B, H, K). Transient on coast and (at least formerly) Portage Lake, casual in **spring** (4 records) and accidental in **fall** (2 records). No evidence it ever bred, and Keweenaw sand beaches might not be suitable.

Habitat. Recorded on sand beaches and bars.

Significant Records (all; all single birds).

5 May 79, head of L'Anse Bay, AW (orig. notes); date of 1 May 79 (JPW 57: 153) probably incorrect, as not in AW notes, although same bird possibly seen by someone else.

11 May 77, Sands, Houghton, AW (orig. notes; JPW 55: 147); not at Redridge as in Weaver 1991 (see Weaver, 2000).

13 May 2005, head of L'Anse Bay, LB (finder), J. DeFoe, RH, JK (photos), LM.

10 Jun 2000, head of L'Anse Bay, LM, JY.

20 Aug 2005, east end Manitou Is., K, flying at close range, S. Haas.

7 Oct 73, Redridge beach, H, AW (orig. notes; JPW 52: 37); not 3 Oct 73 as in Weaver (2000).

Historical Changes. Although once a fairly common breeder on Great Lakes sand beaches, this species is now endangered (see J. Granlund in Brewer *et al.*, 1991). It might have been more common as a transient in the Keweenaw when its prairie population was larger. No early author listed it, perhaps because they did not visit its restricted habitat.

Killdeer *Charadrius vociferus*

Status and Range (B, H, K). **Spring**: common transient, most numerous at sewage ponds and at scattered sites on B and H coast and Portage Lake system. At northern H sewage ponds, 86-2001, during the census period 25 Apr-7 Jun, 85 seen on 86.2% of counts, or 2.9 per count (LB; Table 13); many of these were summer residents. **Summer**: fairly common resident, most widespread in H because of its extensive farmland and numerous sewage ponds; one of uncertain status seen on Manitou Is., 20 Jun 2002, JY. **Fall**: very common transient, some days abundant, especially at northern H sewage ponds, where, 1986-2001, during the period 16 Jun-7 Oct, 2001 birds seen on 87.3% of counts, or 15.9 per count (LB; Table 14; Fig. 13). I believe sewage ponds are staging areas for both transients and local residents, the latter forsaking relatively dry breeding sites in favor of more aquatic habitats; certainly, Killdeers become scarce at most breeding localities and more numerous at sewage ponds in July.

Habitat. Nest a ground scrape lined with small pebbles and bits of vegetation. Nests on most any type of open, rather bare ground, often, but not necessarily, near shallow, open aquatic habitats suitable for foraging. Nests and forages along shoulders of dike roads at sewage ponds and marsh impoundments, in open rural situations (little used roads, driveways, poor lawns, farm yards), in gravel pits, on bare portions of old fields, pastures, and upland grassland (Baraga Plains), and on stamp sand piles, poor-rock piles, and pebble beaches (edges). During migration, most common on mud flats of sewage ponds, but also feeds in bare fields and most any flat shoreland (not coastal rocks).

Migration Dates. **SEAD**: 26 Feb 2000 (Calumet sewage ponds, JM); 6 Mar 85 (Ford Farm Road, B, JY); 21 Mar 87 (Baraga, JY). **SMAD**: 2 Apr (n=26). **SP**: first third of May, about 7 May. **SLDD**: some birds in first week of Jun are transients. **FEAD**: considerable variation; some years in last week of Jun (*e.g.*, 24 Jun 97, 9 birds, Calumet sewage ponds, LB) but normally second week of Jul. **FP**: numbers highest in Aug (Table 14; Fig. 13). **FMDD**: 27 Sep (n=10, H sewage ponds only). **FLDD**: 20 Nov 98 (L'Anse Bay, JY); 15 Nov 2000 (5, Sturgeon River mouth, JY); 18 Oct 96 (exact locality unrecorded, B or H, JY); date of 24 Oct 89 (Weaver, 2000) should have been 24 Sep 89 (fide AW).

High Counts. **Spring**: multi-party, 11 May 96 (**28**) H, NAMC; 5 May 97 (**13**) Calumet sewage ponds, LB. **Summer**: 16 Jun 92 (**12**) Lake Linden sewage ponds, LB. **Fall**: 8 Aug 95 (**57**) and 8 Aug 97 (**50**) both Calumet sewage ponds, LB; 13 Aug 98 (**49**) sewage ponds at Lake Linden (28) and Calumet (21) LB.

Breeding (**B** 10 co, 3 pr, 5 po; **H** 15 co, 6 pr, 5 po; **K** 8 co, 1 pr, 1 po).

Spring 31 (two pairs nested) Copper Harbor, N. A. Wood (1933).

*15 May 88 (nest with 4 eggs) Twin Lakes, T52N, R36W, Sec. 22, H, L. H. Walkinshaw (CLO).

26, 27 May 2000 (nest with 4 eggs) Copper Harbor, LB.

3 Jun 2000 (nest with 4 eggs) near Baraga, T51N, R33W, Sec. 27, LB, JM.

3 Jun 2000 (3+ small prejuveniles) near Boston, T55N, R34W, Sec. 12, H, LB, JM.

*7 Jun 83 (4 prejuveniles near nest on sand) Baraga Plains, T49N, R34W, Sec. 21, L. H. Walkinshaw (CLO).

*14 Jun 86 (nest with 3 eggs) on poor-rock road at Ahmeek marsh, K, LB.

15 Jun 98 (nest with eggs) Arnheim, Unit 8, B, LM, JY.

*23 Jun 88 (prejuveniles) T51N, R31W, NW quarter, B, LB.

*25 Jun 86 (nest with 3 eggs) 2 mi W Eagle Harbor on stamp sands, K, LB.

1 Jul 89 (3 prejuveniles) Tamarack City sewage ponds, H, LB.

4 Jul 75 (nest with 2 eggs) Liminga, AW.

*10 Jul 87 (prejuveniles) T54N, R34W, SW quarter, H, LB.

18 Jul 2001 (1 prejuvenile three-quarters grown, but others not sought) Mohawk, K, LB, JM.

25 Jul 95 (4 prejuveniles) Lake Linden sewage ponds, LB.

Aug 1914 (young seen) near Kenton, H, Cahn

(1918).

Summary: 7 egg dates, 15 May-4 Jul; 6 clutches (2, 3, 3, 4, 4, 4) averaged 3.3 (but some not complete, as 4 is normal). Prejuveniles noted 2 Jun-Aug; 4 broods (3, 3, 4, 4) averaged 3.5. Ranges of dates for both eggs and prejuveniles suggest double-broodedness, which is "sometimes" the case elsewhere (Baicich and Harrison, 1997).

BBS. Bootjack 67-73: 44 on 7 of 7 counts (100%); mean 6.29; range 3-11. *Bootjack* 92-2005: 13 on 10 of 14 counts (71.4%); mean .93; range 0-4. *Herman* (early Jul dates, so might have included some transients): 51 on 7 of 7 counts (100%); mean 7.29; range 2-13.

NAMC. Baraga Co.: 82 on 6 of 6 counts (100%); mean 13.67; range 8-24; ind/PH .32. *Houghton Co.*: 125 on 7 of 7 counts (100%); mean 17.86; range 6-28; ind/PH .45.

Banding Recoveries. An adult banded in B on 24 Jun 66 was found dead in Benzie Co., MI on 12 Jun 68, but it is not known how long the bird had been dead before discovery.

Historical Changes (Table 17). The Killdeer must have benefited greatly from forest clearing starting in the mid 1800s; it was not mentioned by Kneeland (1857) but was by Cahn (1918). Statewide data from the BBS indicate that Killdeers increased by almost 50% in the years 66-85 (see P. C. Chu in Brewer *et al.*, 1991). This contrasts with Bootjack BBS data, which show an 85% decrease in mean birds per count between the 67-73 and 92-2005 periods. I believe this local decrease is real and reflects the general Keweenaw decline in farmland and grazing land, which have been reverting to scrub and second-growth forest for many years since the demise of the copper mining industry. Wisconsin experienced a slight decline 83-96 (Temple *et al.*, 1997).

American Avocet *Recurvirostra americana*

Status and Range (B, H). Accidental vagrant in **spring** (3 records) and **fall** (3 records), recorded on Portage Lake system and B and H coast.

Habitat. Shallow open waters along shores of coastal and interior bays. No sewage pond record.

Significant Records (all).

30 Apr 90 (1) South Portage Entry, H, J. VanWestenburg, AW (Weaver, 1991, 2000).

2, 5 May 90 (1) head L'Anse Bay, D. Beckmann, LM, A. Weaver (1991, 2000; photos by), S. Weaver; possibly same bird as 30 Apr, but here treated as different because it should have been moving north or west, and L'Anse Bay is south of South Portage Entry.

18 Jun 2000 (2) Oskar Bay, H, LB, LM, JM, JY.

Mid Sep 87 (2) Keweenaw Bay [probably L'Anse Bay] B, J. Hylander (JPW 66: 31; AB 42: 78).

28 Sep 95 (2) First Sand Beach, Pequaming, B, JY (photo by; MBNH 3: 92).

[14 Oct 2002 (1) Copper Harbor, LB, and fall 2002 (1) in Houghton Co., LB (MBNH 10: 70) are erroneous, pertaining instead to my records for Killdeer.]

9 Nov 2000 (1) pond at L'Anse Bay head, TA, JM (MBNH 8: 92).

Greater Yellowlegs *Tringa melanoleuca*

Status and Range (B, H, K). Because of their acceptance of muddy and grassy edges of small ponds, both species of yellowlegs are among the few transient shorebirds likely to be found away from sewage ponds and the coast. **Spring**: uncommon, irregularly and locally abundant, transient in B and H; casual in K (*e.g.*, 5 resting on islet off Manitou Is., JY). Earliest transient shorebird to arrive. Spring sewage pond data (Table 13) for both yellowlegs are not representative, because too few counts were during the April portion of their migration periods, and these ponds are often too full in spring. **Fall**: generally uncommon transient. Uncommon, on a few days common, at northern H sewage ponds, where, 86-2001, during its primary period of occurrence, 1 Jul-21 Oct (no later censuses), 83 seen on 30.1% of counts, or .6 per count (LB; Table 14); only 5.2% of all fall yellowlegs at these ponds were Greaters. Migration protracted, with no apparent peak. Occurs later than Lesser Yellowlegs (Table 14); birds before 22 Jul are most likely Lessers and those after 17 Sep probably Greaters; all after 7 Oct have been Greaters. Casual in K (*e.g.*, 13 Sep 2001, one resting on coastal rocks at Hebard Park, LB).

Habitat. Forages in shallow waters associated with mud edges, flats, and bars of ponds (including sewage ponds), river mouths, and marshes, and (spring) in temporarily flooded grassy fields. Casually rests on shoreline rocks of K.

Migration Dates. **SEAD**: 11 Apr 81 (near south end of Otter Lake, H, AW). **SMAD**: 27 Apr (n=22). **SP**: about 6 May (Table 13). **SMDD**: 13 May (n=18). **SLDD**: 3 Jun 98 (Calumet sewage ponds, LB). **FEAD**: 1 Jul 89 (Tamarack City sewage ponds, H, LB). **FMAD**: 25 Jul (n=12). **FMDD**: 15 Oct (n=9). **FLDD**: 12 Nov 98 (L'Anse Bay, JY); 22 Oct 2001 (2, L'Anse Bay head, LB).

High Counts. **Spring**: 27 Apr 2004 (**218**, exceptional) and 24 Apr 2003 (**68**) both Sturgeon River Road, H, LB; 11 May 96 (**34**) 3 mi NW Covington, B, LB. **Fall**: 3 Aug 93 (**7**) Tamarack City sewage ponds, H, LB.

NAMC. Baraga Co.: 25 on 5 of 6 counts (83.3%); mean 4.17; range 0-14; ind/PH .10. *Houghton Co.*: 64 on 6 of 7 counts (85.7%); mean 9.14; range 0-22; ind/PH .23.

Lesser Yellowlegs *Tringa flavipes*

Status and Range (B, H, K). See Greater Yellowlegs.

Spring: common transient. **Fall**: very common transient. Some days abundant at northern H sewage ponds, where, 86-2001, during its primary period of occurrence, 20 Jun-17 Sep, 1520 seen on 83.9% of counts, or 13.1 per count (LB; Table 14; Fig. 13). Earliest arriving fall shorebird (by two days over Least Sandpiper). Most yellowlegs after 18 Sep and all after 7 Oct have been Greaters.

Habitat. Same as Greater Yellowlegs.

Migration Dates. **SEAD**: 12 Apr 98 (Arnheim, H, JY). **SMAD**: 28 Apr (n=18). **SP**: probably first week of May. **SMDD**: 20 May (n=17). **SLDD**: 18 Jun 2000 (Lake Linden sewage ponds, LB); 10 Jun 2005 (1, Calumet sewage ponds, LB). **FEAD**: 20 Jun 99 (Arnheim, H, JM, JY). **FMAD**: 30 Jun (n=13). **FP**: most numerous in first three weeks of Aug (Table 14; Fig. 13), when some days abundant, with annually variable peak averaging about 11 Aug. **FMDD**: 10 Sep (n=13, northern H sewage ponds only, LB). **FLDD**: 7 Oct 99 and 25 Sep 89 (both Lake Linden sewage ponds, LB).

High Counts. **Spring**: 6 May 74 (**200**) H, AW, exceptional (JPW 52: 133; J. Granlund in McPeek & Adams, 1994); 19 May 2002 (**73**) Atlantic Mine sewage ponds, H, JK, a late spring for shorebirds; 4 May 99 (**33**) Calumet sewage ponds, LB. **Fall**: 20 Aug 2002 (**176**) Calumet (95), Lake Linden (38), and Tamarack City (43) sewage ponds, LB, Z. Gayk; 21 Aug 97 (**143**) Calumet sewage ponds, LB.

NAMC. Baraga Co.: 74 on 5 of 6 counts (83.3%); mean 12.33; range 0-26; ind/PH .29. *Houghton Co.*: 170 on 7 of 7 counts (100%); mean 24.29; range 2-122; ind/PH .61.

Solitary Sandpiper *Tringa solitaria*

Status and Range (B, H, K). Transient, more numerous inland, where the best habitat occurs, than on coast. **Spring**: very uncommon. **Fall**: generally common. Common, irregularly with a few days when abundant, at northern H sewage ponds, where, in 86-2001, during its primary period of occurrence, 27 Jun-9 Oct, 517 seen on 53.2% of counts, or 3.78 per count (LB; Table 14; Fig. 13).

Habitat. For foraging, seems to require mud or sedge-grass edges of ponds (especially sewage ponds) and marshes, rarely lakes and field streams, this preference resulting in it being one of the few transient shorebirds common inland and essentially absent from large open flats, bars, and beaches of the coast. Sometimes rests on sheltered rocky shores of small K bays (*e.g.*, Agate Harbor, LB).

Migration Dates. **SEAD**: 29 Apr 76 (Sturgeon River Road, H, F. B. Isaacs) and 2001 (Copper Harbor, LB, JM); 4 May 82 (Youngman's property, B, JY) and 99 (Calumet sewage ponds and Copper Harbor, LB). **SMAD**: 10 May (n=14). **SP**: about 16 May. **SMDD**: 22 May (n=14). **SLDD**: 10 Jun 92 (Liminga, AW). **FEAD**: 27 Jun 86 (Tamarack City sewage ponds, LB). **FMAD**: 11 Jul (n=13). **FP**: annually highly variable within first three weeks of Aug, averaging about 17 Aug (Table 14; Fig. 13). **FMDD**: 13 Sep (n=11). **FLDD**: 9 Oct 98 (Baraga sewage ponds, LB).

High Counts. **Spring**: 10 May 2005 (**14**) Atlantic Mine sewage ponds, H, RH, JK; 4 May 99 (**5**) Copper Harbor (4) plus Calumet sewage ponds (1) LB. **Fall**: 21 Aug 97 (**54**) and 8 Aug 95 (**48**) both Calumet sewage ponds, LB, exceptional; 2 Aug 2001 (**29**) Calumet sewage ponds, LB.

NAMC. Baraga Co.: 4 on 3 of 6 counts (50.0%); mean .67; range 0-2; ind/PH .02. *Houghton Co.*: 9 on 3 of 7 counts (42.9%); mean 1.29; range 0-5; ind/PH .03.

Willet *Catoptrophorus semipalmatus*

Status and Range (B, H, K). Transient, occasional in **spring** (12 records, 21 Apr-24 May) and accidental in **fall** (3 records, 9 Jul, 18 Aug, 9 Sep). Largely coastal; 3 records for the north coast of H and K, 7 at the head of L'Anse Bay, and 4 inland.

Habitat. See Significant Records.

Significant Records (all; all single birds unless otherwise stated).

21 Apr 2005, Pilgrim River mouth, H, RH.

23 Apr 2001 (2) L'Anse Bay head, JY.

6 May 2004 (12) Baraga marina, JY.

10 May 2002, sand beaches at Eagle Harbor, K (1) LB, and L'Anse (2) LB, JM, JY.

11-14 May 2002, mud hummocks in pond at head of L'Anse Bay, TA, LB, JM, JY.

12 May 2001, sand bar in town of L'Anse, LB, LM, JM, NAMC.

13-14 May 2005, head L'Anse Bay, LB (finder), Z. Gayk, RH, JK (photo), LM.

[14 May 82, Liminga, E. Weaver (JPW 60: 127); but see Weaver (2000) who considered this record "hypothetical."]

16 and 17 May 99, shallow waters and mud hummocks in pond at head of L'Anse Bay, LB, LM, JY (finder).

17 May 2004 (2) head of L'Anse Bay, JK.

17 May 2004, Atlantic Mine sewage ponds, H, TA, RH, JM.

23 May 96, opening within marsh at Sturgeon River Sloughs, Unit 1, JY (Youngman & Murphy, 1999).

24 May 2003, marsh at Arnheim, H, Z. Gayk, JM, JY.

9 Jul 88, beach at Stanton Twp. Park, North Portage Entry, H, D. Weaver, S. Weaver, AW (Weaver, 2000; JPW 67: 34; AB 42: 1291).

18 Aug 93, resting on rocky islet off Agate Harbor, LB (AB 48: 112).

9 Sep 2005 (2) beach at Seven Mile Point, K, N. Auer.

[Kneeland (1857) lists "Semipalmated Tatler, (doubtful.) *Totanus semipalmatus* Gmel." for "Keweenaw Point." However, he lists it as "doubtful," and in any event his "Keweenaw Point" includes parts of Ontonagon Co.]

NAMC. Baraga Co.: 2 on 2 of 6 counts (33.3%); mean .33; range 0-1; ind/PH .01.

Spotted Sandpiper *Actitis macularius*

Status and Range (B, H, K). Common **summer** resident at sewage ponds; uncommon elsewhere, both coastally and inland. Numbers augmented by **spring** and **fall** transients, but detectability remains within the same range of values as for summer. Small flocks seen occasionally in spring, especially on coast. Arrives moderately late in spring but leaves surprisingly early in fall (why?). An histogram (not shown, see Table 13) of spring abundance shows a peak about 5 Jun, when summer residents plus transients reach highest abundance; a steep decline to a low about 15 Jun, when birds are on nests, no young have fledged, and transients have left; then (Table 14; Fig. 13) a sudden increase in the third week of Jun and extending to about 15 Jul, as breeding adults are joined by their young and a few fall transients; a steady lengthy decrease to an average fall departure of 31 Aug as birds leave; regular lingering to last week of Sep; and finally a few stragglers to 12 Oct. No apparent fall peak after 15 Jul, suggesting that fall transients are fewer than in spring or most pass very early in mid Jul. At northern H sewage ponds, 86-2001, during the period 17 Jul-24 Sep, 221 seen on 62.7% of counts, or .2 per count, fewer than in summer (LB; Table 14; Fig. 13). Two recent Oct records for B extend the latest Upper Peninsula records listed by P. C. Chu (in Brewer *et al.*, 1991) for the fourth week of Sep.

Habitat. Nest a ground scrape hidden in herb-grass vegetation away from water's edge. When foraging, picks at ground surface; does not wade or probe and hence avoids saturated soil. Prefers sewage ponds for breeding and foraging, but found also along shores of rivers (particularly mouths), inland reservoirs, lakes and ponds (including some beaver ponds), and Lake Superior bays and inlets. Probably would not occur in natural marsh but does where man has provided dry dikes. Avoids pure sand (natural and stamp) and pebble beaches, which do not provide live food, but occurs at their peripheries.

Migration Dates. **SEAD**: 22 Apr 93 (Hancock, H, S. Andres, D. Richter; JPW 70 [6]: 22). **SMAD**: 11 May (n=26). **SP**: about 5 Jun (Table 13). **FMDD**: 31 Aug (n=24). **FLDD**: 12 Oct 96 (Baraga, JY); 9 Oct 92 (L'Anse Bay, B. Johnson; JPW 70 [2]: 22); 29 Sep 2003 (1) L'Anse, B. Johnson. See Status and Range for discussion of migration dates.

High Counts. **Spring**: multi-party, 13 May 2000 (**23**) B, NAMC; 3 Jun 98 (**16**) Calumet sewage ponds, LB; 18 May 99 (**12**) Baraga sewage ponds, LB; 22 May 96 (**12**) Ahmeek sewage ponds, K, LB. **Summer**: 16 Jul 95 (**14**) sewage ponds at Lake Linden (8) and Tamarack City, H (6) LB; 10 Jul 97 (**13**) Calumet sewage ponds, LB.

Breeding (**B** 2 co, 3 pr, 9 po; **H** 7 co, 5 pr, 6 po; **K** 4 co, 2 pr, 2 po).

1 Jun 2003 (nest with 4 eggs) Prickett Dam, B. Johnson, L. Usyk (MBNH 11: 29).

*15 Jun 86 (nest with 4 eggs) Cat Harbor, K, LB.

*27 Jun 87 (2 prejuveniles) along Sturgeon River, T49N, R35W, NW quarter, H, LB.

28 Jun 97 (3 young) Arnheim, H, JY.

*9 Jul 88 (partially downy prejuveniles) .5 mi E Centennial Heights, T56N, R33W, Sec. 12, H, LB; this should have been shown as confirmed, not possible, on the MBBA map (1991), but I failed to report it properly.

14 Jul 56 (1 large prejuvenile) Agate Harbor, LB.

17 Jul 2002 (1 large prejuvenile) Lake Linden sewage ponds, LB, JM.

25 Jul 95 (2 downy prejuveniles) Lake Linden sewage ponds, LB.

1 Aug 89 (1 prejuvenile) Tamarack City sewage ponds, H, LB.

Date unknown (nest with 4 eggs) near Lake Superior shore at Beacon Hill, H, AW (Weaver, 2000).

Note: data, if any, are unavailable for the confirmed breeding record in B on the MBBA map (1991).

BBS. Bootjack 67-73: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2. *Herman* (early Jul dates): 21 on 7 of 7 counts (100%); mean 3.00; range 1-5.

NAMC. Baraga Co.: 39 on 6 of 6 counts (100%); mean 6.50; range 1-11; ind/PH .15. *Houghton Co.*: 50 on 6 of 7 counts (85.7%); mean 7.14; range 0-23; ind/PH .18.

Upland Sandpiper *Bartramia longicauda*

Status and Range (B, H, K). **Spring**: one record of an apparent transient, 7 May 2000 (1 bird, Sturgeon River mouth, JY). **Summer**: resident; generally very uncommon in non-forested portions of B and H; locally common on Baraga Plains; absent from K, where suitable habitat very scarce. **Fall**: two records of transients, the only K records for the species, 26 Jul and 31 Aug. Breeders seem to depart nesting localities in Jul, the latest (and only fall) sightings for apparent breeders being 8 Aug and 10 Sep, but more data needed.

Habitat. Breeds most commonly in goose grassland of Baraga Plains and in large hayfields, but also nests in

grassy clearcuts in jack pine barrens (even with small scattered pines) and in old fields dominated by dense herb-grass vegetation. Pastures would seem ideal for foraging, but the few small ones in the Keweenaw are not used.

Migration Dates. **SEAD**: 27 Apr 86 (Liminga, D. Weaver). **SMAD**: 7 May (n=27). **FLDD**: 10 Sep 97 (l mi NE Little Lake, B, JY); 31 Aug 84 (Copper Harbor, Keweenaw Mt. Lodge golf course, LB, a transient); 8 Aug 72 (Liminga, AW); 26 Jul 82 (Agate Harbor, LB, a transient); see Status and Range.

High Counts. **Spring**: multi-party, 14 May 94 (**14**), B, NAMC; 10 May 99 (**7**) Big Burn Field, about 1 mi NE Little Lake, Baraga Plains, JY. **Summer**: 16 Jun 98 (**7**) Baraga Plains, JY; 30 Jun 96 (**6**, three pairs) Big Lake area, Baraga Plains, LB.

Breeding (**B** 3 co, 1 pr; **H** 3 co, 2 pr, 7 po).

13 Jun 2000 (nest with 3 eggs and 1 chick) Baraga Plains, T49N, R34W, Sec. 20, JY.

15 Jun 2003 (nest with 4 eggs) Baraga Plains, on Prison Camp Road, .8 mi E junction with Plains Road, Z. Gayk, RH, JK.

15 Jun 2003 (very small prejuvenile) just N of Robilard Lake, T49N, R34W, Sec. 20, B, JY.

2, 3, 4, 9 Jul 87 (4 tiny prejuveniles) Liminga, D. Weaver, photos by AW (Weaver, 2000).

[Summer 87, breeding in K, ascribed to "LB" (JPW 65: 78); I saw birds only in H, so the reference to K appears to be an error.]

BBS. Bootjack 67-73: 7 on 5 of 7 counts (71.4%); mean 1.00; range 0-3. *Bootjack* 92-2005: 3 on 3 of 14 counts (21.4%); mean .21; range 0-1. *Herman*: 8 on 3 of 7 counts (42.9%); mean 1.14; range 0-4.

NAMC. Baraga Co.: 36 on 6 of 6 counts (100%); mean 6.00; range 1-14; ind/PH .14.

Historical Changes (Table 17). When the Upland Sandpiper entered the Keweenaw is unknown. It was not mentioned by Kneeland (1857) or Cahn (1918); the latter found Eastern Meadowlark around Kenton (H) in 1914 but not Western Meadowlark, Bobolink, Savannah Sparrow, Greater Prairie-Chicken, or Sharp-tailed Grouse, so the habitat may not have been adequate for the sandpiper. Wing (1939) found Uplands in Gogebic and Delta Cos. in the early 1930s, but spent no time in the sandpiper's habitat in the Keweenaw. It may have invaded during the 1920s, along with the Greater Prairie-Chicken and Sharp-tailed Grouse. I believe that the Upland Sandpiper is becoming less common everywhere in the Keweenaw except on the Baraga Plains, as abandoned farmland, pastures, and old fields succeed to scrub and second-growth. This happened at Liminga in the 90s (AW, pers. comm.). The Houghton Co. NAMC has never recorded Uplands on the eight counts 94-2002. The Bootjack BBS indicates a 79% decrease from a mean of 1.00 to .21 per count; even during my tenure on the count, 92-2005, it became less common, then vanished (last record in 96), as I watched fields grow up into scrub. Nevertheless, Pardieck & Sauer (2000) demonstrated a national increase of 1.0% per year, 66-99. Today, many hayfields in B and especially H are devoid of Upland Sandpipers, perhaps because many are mowed in early Jul when the sandpipers have flightless young, or farm practices have changed (see Conservation in Discussions). I consider the Peninsula population "endangered," and it should be closely monitored.

Whimbrel *Numenius phaeopus*

Status and Range (B, H, K). **Spring**: occasional transient, 15 records, 19 May-14 Jun, on Portage Lake system (especially river mouths) and perimeter coast of all three counties. One interior record (Arnheim). Formerly recorded more often, when shorebird habitat at Sands (H) was more extensive. **Fall**: casual transient, with same distribution as in spring; 6 records, 5 Jul-4 Sep, 5 for K coast and 1 for H; expected in B.

Habitat. Frequents sand and mud beaches and bars. Sometimes seen resting on coastal islet at mouth of the Little Betsy River, where perhaps regular. Seen once each on a grassy roadside along north K coast, in a grassy field at Arnheim (B), and on shoreline rocks at Torch Lake (H).

Migration Dates (see Significant Records for data). **SEAD**: 19 May 80. **SP**: 26-27 May, judging only from high counts. **SLDD**: 14 Jun 84; 6 Jun 98. **FEAD**: 5 Jul 86; 5 Aug 90. **FLDD**: 4 Sep 63.

Significant Records (all).

19 May 80 (3) Sands, H, AW.

23 May 99 (1) L'Anse, LM, JY.

24 May 95 (1) Squaw Beach, Baraga, JY.

24 May 97 (4) Sands, H, RH.

25 May 96 (flock of 59) Little Betsy River mouth, K, RH, LM, Mrs. P. R. Siira.

27 May 76 (3) Sands, H, AW.

27 May 77 (18) Sands, H, AW.

27 May 2005 (two flocks totalling 124) Manitou Is., L. Dombroski, Z. Gayk, JK.

28 May 2005 (4) Manitou Is., L. Dombroski, Z. Gayk, JK.

29 May 2005 (2) Gull Rock near Manitou Is., JK.

29 May 65, Houghton, B. and D. Wolck (JPW 43: 158).

30 May 2002 (1) resting on large rocks along Torch Lake shore at Lake Linden, H, LB.

5 Jun 2000 (5) Little Betsy River mouth, K, LB, JM, Mrs. P. R. Siira; not 1 bird seen at Bete Grise by TA as in MBNH 8: 29.

6 Jun 98 (3) Arnheim, B, JY.

14 Jun 84, Sands, H, W. H. Riipi fide AW (notes);

"late spring migrant" (JPW 62: 107; AB 38: 1022).
5 Jul 86, Bete Grise, K, W. Booth and R. Smith (JPW 64: 76).
5 Aug 90 (1) Agate Harbor, LB, flying over (AB 45: 106).
21 Aug 2001 (1) Lake Linden, TA, JM.
22 Aug 80 (1) Agate Harbor, LB, flying over.
28 Aug 76 (1) Agate Harbor, LB, flying over.
4 Sep 63 (1) grassy roadside .5 mi W Copper Harbor, LB (Binford, 1965).

High Counts (see Significant Records for data). **Spring**: **124, 59, 18, 5.**

Hudsonian Godwit *Limosa haemastica*

Status and Range (B, H, K). Migrates northward through the Great Plains in spring, a route that irregularly brings it within reach of the Keweenaw, whereas its fall pathway through the Northeast apparently excludes the western Upper Peninsula. **Spring**: transient, seemingly occasional (Table 13) but perhaps very rare, recorded on the ground at L'Anse Bay head, on the Portage Lake system (Pilgrim and Sturgeon River mouths, including Sands and Unit 1), and at the Lake Linden, Tamarack City, and Atlantic Mine sewage ponds, except for inland reports at Liminga, Arnheim (B and H), and near Keweenaw Bay town. Occurs usually in ones and twos, but flocks of up to 55 have been seen. **Fall**: no record.

Habitat. Shallow waters associated with sand and mud beaches and bars on coast and Portage Lake system; sewage ponds; twice in flooded fields; and thrice in marsh ponds.

Migration Dates (see Significant Records for data). **SEAD**: 23, 24 Apr 2005; 11 May 2000. **SMAD**: 15 May (n=13). **SP**: probably third week of May (Table 13). **SLDD**: 8 Jun 84; 25 May 76 and 2002.

Significant Records (all).
23 (3, Arnheim field in B), 24 (5, Arnheim, Unit 4, H) Apr 2005, JY.
28 April 2004 (1) west end Sturgeon Road, 2.5 mi W town of Keweenaw Bay, B, N. Auer.
11 May (JY), 18 May (JY), 20 May (LB, JM) 2000 (2) head L'Anse Bay.
12 (LM), 13 (LM, AW), 17 (LB) May 90 (2) Lake Linden sewage ponds.
13 May 80 (1) Sands, H, AW.
14 May 82, Liminga, AW.
14 (L. H. Walkinshaw; JPW 66: 167), 15 (8 birds, LB, AW) May 88, L'Anse Bay shore at Baraga State Park.
15, 17 (3 birds), 18 (2), 19 (1) May 77, Sands, AW (JPW 55: 148).
17 May 88 (1) Tamarack City sewage ponds, H, LB.
18 May 2004 (2) Atlantic Mine sewage ponds, H, LB, RH, JK, JM.
18 (RH) and 19 (JM) May 2001 (4) Pilgrim River mouth, H.
19 (JK, photos), 20 (RH) May 2005 (2) Pilgrim River mouth, H.
19 (JK), 20 (LB) May 2002 (1) Atlantic Mine sewage ponds, H.
21 May 98 (55) one flock flying north over Academy sewage ponds, Mt. Horace Greeley, K, LB.
23 May 88 (2) Tamarack City sewage ponds, H, LB; considered a different record than 17 May 88 because of addition of one bird.
23 (15, male collected, UMMZ 151578, N. F. Sloan) and 24 (3 seen, R. R. Rafferty and J. H. Pann) May 56, Portage Lake 1 mi E Houghton (probably=Sands) (Zimmerman & Van Tyne, 1959; Payne, 1983; UMMZ, in litt.; probably Dodge, 1961, who merely refers to a specimen in UMMZ). 24 May 2000 (1) mouth Pilgrim River, H, RH.
25 May 76, Sands, H, AW (JPW 54: 121).
25 May 2002 (1) Sturgeon River Sloughs, Unit 1, K. Overman (MBNH 9: 222).
8 Jun 84 (1) Sands, H, W. H. Riipi fide AW (JPW 62: 107; AB 38: 1022).

High Counts (see Significant Records for data). **Spring**: **55, 15, 8.**

Marbled Godwit *Limosa fedoa*

Status and Range (B, H). More often seen in spring, when west winds associated with fronts drift birds eastward into the Keweenaw, whereas in fall, winds during early fall, when this species migrates, are largely from other directions. Occasional **spring** transient, 27 Apr-3 Jun, in B on L'Anse Bay coast and in H on Portage Lake system and inland; 12 records, none for K (no habitat); median date of occurrence 17 May. Accidental **fall** transient on L'Anse Bay; 1 record, 23 Jul. The exact count of 30 on 18 May 2001 doubles, and the 19 on 23 Jul 2001 exceeds, the previous Michigan state high of 15 (J. Granlund in McPeek & Adams, 1994).

Habitat (see Significant Records).

Significant Records (all).
27 Apr 76 (1) near end of Sturgeon River Road, H, F. B. Isaacs (orig. notes) and G. Lingle.
11 May 73 (1) flooded pasture near Liminga, AW (Weaver, 2000; JPW 51: 105).
12 May 2002 (2) sand bar in L'Anse, J. DeFoe, LM.
13 May 84 (1) flooded pasture near Liminga, AW (Weaver, 2000; JPW 62: 82).
14 May 2002 (flock of 5) resting on shore of Torch

Lake at Lake Linden, LB.
14 May 2005 (4) Sand Point, Baraga, J. DeFoe, NAMC.
16, 17, 18 May 99 (1) mud bars in small pond at L'Anse Bay head, LB, RH, JM, P. Musser, LM, AW, JY (finder).
17 (2) and 20 (1) May 2004, Chassell, H, JY.
18 May 2001 (30, exact count) Pilgrim River mouth, H, RH (notes in LB files); see Status and Range.
17 (2) and 20 (1) May 2004, Chassell, H, TA, S. Hicks, JY.
26 May 99 (1) Pilgrim River mouth, H, RH (pers. comm.); probably not same bird as 16-18 May 99.
3 Jun 78 (2) mud bars at Sturgeon River mouth, AW (Weaver, 2000; JPW 56: 204).
23 Jul 2001 (19) mud hummocks in pond at head of L'Anse Bay head, JY (MBNH 9: 31).

Ruddy Turnstone *Arenaria interpres*

Status and Range (B, H, K). **Spring**: occasional transient, rarely in small flocks, almost exclusively on Portage Lake system and outer coast of B and H, with only one sewage pond record. Only 3 records for K (27 May 2002, 3 birds, Eagle River, Z. Gayk; 29 May 2005, l, Gull Rock near Manitou Is., JK; 18 Sep 2004, see below). **Fall**: casual transient; 7 records, 20 Aug-28 Sep, 5 in 73, which obviously was an unusual year. Recorded in northern coastal H and at the Lake Linden sewage ponds adjacent to Torch Lake (Table 14).

Habitat. Picks among and under surface objects (pebbles, flotsam) on pebble, sand, and mud beaches and bars. Casual on sewage ponds, where normal foraging substrate not available.

Migration Dates. **SEAD**: 7 May 2000 (Sturgeon River mouth, JY). **SMAD**: 15 May (n=6). **SMDD**: 27 May (n=6). **SLDD**: 14 and 8 Jun 86 (Lake Linden sewage ponds, LB; an unusual year for shorebird timing); 5 Jun 2002 (L'Anse, LB, JM, LM). **FEAD**: 20 Aug 73 (1, North Portage Entry, H, AW). **FLDD**: 28 Sep 73 (2, Redridge beach, H, AW).

Significant Records (all fall).
20 Aug 73 (1) North Portage Entry, H, AW.
5 Sep 73 (1) North Portage Entry, H, AW.
7 (JY), 11 (LB) Sep 97 (1) Lake Linden sewage ponds.
9 Sep 73 (1) Redridge beach, H, AW.
18 Sep 2004 (1) Manitou Is., Z. Gayk, JK, JY.
26 Sep 73 (1) Redridge beach, H, AW.
28 Sep 73 (2) Redridge beach, H, AW.

High Counts. **Spring**: 31 May 98 (**42**) head L'Anse Bay, JY, exceptional; 5 Jun 2002 (flock of **12**) L'Anse, LB, JM, LM; 27 May 77 (**10**) Sands, H, AW (JPW 55: 147).

NAMC. Houghton Co.: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

Red Knot *Calidris canutus*

Status and Range (B, H, K). Accidental transient in **spring** (2 records, 23 May, 1 Jun) and **fall** (3 records, 17, 22 Aug, 18-19 Sep), observed once each in B and K and three times in H (see Table 14).

Habitat. Recorded on sand-mud bars at river mouths and mud of a sewage pond.

Significant Records (all).
23 May 99 (flock of 21) L'Anse Bay head, LM, JY, exceptional number.
1 Jun 2003 (1) Pilgrim River mouth, H, RH.
17 Aug 52 (1) Sands, H, LB.
22 Aug 86 (4) Lake Linden sewage ponds, LB.
18-19 Sep 2004 (1) Manitou Is., Z. Gayk, JK, JY (photos in LB files).

Sanderling *Calidris alba*

Status and Range (B, H, K). **Spring**: occasional late transient, rarely in small flocks; all but one record (11 May) from 27May to 10 Jun; found only on north coast of H and K, shore of L'Anse Bay, and river mouth bars of Portage Lake system. One record for K. Too few records to discern a peak. **Fall**: very uncommon transient at scattered localities along entire coast, on Portage Lake system, and at sewage ponds. At northern H sewage ponds, 86-2001, during its primary period of occurrence, 27 Jul-15 Oct, 24 seen on 13.0% of censuses, or .2 per count (LB; Table 14; Fig. 13). Rare moving eastward and westward along north shore of K (*e.g.*, Agate Harbor, LB; Manitou Is., JY).

Habitat. Forages on sewage ponds (drier parts, so far in fall only) and sand and mud beaches and bars, especially at river mouths. Occasionally rests on coastal rocks.

Migration Dates. **SEAD**: 11 May 2002 (2, L'Anse, LB, JM); 27 May 2002 (Eagle River, K, Z. Gayk). **SLDD**: 10 Jun 2000 (1, L'Anse Bay head, JY). **FEAD**: 26 Jun 2003 (4, L'Anse Bay head, TA); 27 Jul 73 (North Portage Entry, H, AW) and 2000 (15, L'Anse Bay, LM, JY). **FP**: about 19 Sep (Table 14; Fig. 13). **FMDD**: 24 Sep (n=16). **FLDD**: 11 Nov 97 (L'Anse, JY); 5 Nov 2000 (L'Anse Bay, JM, M. Scheiwe, JY); 15 Oct 99 (Lake Linden sewage ponds, LB).

Significant Records (all spring records not in Migration Dates or High Counts).
28 May 73, Sturgeon River Sloughs, AW.
29 May 2005 (1) Manitou Is., JK.
30 May, 1, 2 Jun 78, Sands, H, AW.
1 Jun 98, L'Anse Bay, AW.
2 Jun 2002 (1) Cat Harbor, K, TA.
3 Jun 2000 (2) Sturgeon River mouth, JY.

6, 8 Jun 84, Sands, H, AW.

8 Jun 76, North Portage Entry, H, AW.

High Counts. **Spring**: 29 May 98 (**22**) head L'Anse Bay, LB; 7 Jun 73 (**10**) H, AW. **Fall**: 1 Sep 2000 (**53**) L'Anse Bay, JY; 19 Sep 92 (**15**) Agate Harbor, LB; 18 Sep 87 (**7**) Tamarack City sewage ponds, H, LB.

NAMC. Baraga Co.: 2 on 1 of 6 counts (16.7%); mean .33; range 0-2; ind/PH .01.

Semipalmated Sandpiper *Calidris pusilla*

Status and Range (B, H, K). **Spring**: common, irregularly very common, transient on coast and inland in B and H; only two records for K (22 May 96, 4 birds, Ahmeek sewage ponds, LB; 2 Jun 2002, l, Eagle Harbor beach, TA), where habitat scarce. At northern H sewage ponds (LB; Table 13), 86-2001, during its primary period of occurrence, 13 May-9 Jun, 238 seen on 45.8% of censuses, or 9.9 per count; during its peak period, 28 May-5 Jun, 233 seen on 80.0% of counts, or 23.3 per count; however, if one day's total (130 on 3 Jun 86, an unusual year) is deleted, these figures become more realistic and comparable to fall, 4.7 and 11.4 per count, respectively. **Summer**: at the Lake Linden sewage ponds in 86, a very unusual year for shorebird timing, many present on 3 Jun, 7 on 14 Jun, 5 each on 23 and 27 Jun, and none on 3 or 10 Jul. I interpret these data, together with counts of other shorebird species during the same period, to indicate a probable attempt by spring transients to oversummer (see also White-rumped Sandpiper). **Fall**: common transient at same places as in spring; few records for K (*e.g.*, 5 Aug 95, 1, Ahmeek sewage ponds, LB). Common, many days very common, exceptionally abundant, at northern H sewage ponds (LB; Table 14; Fig. 13), 86-2001, during its primary period of occurrence, 14 Jul-12 Oct, where 828 seen on 66.9% of censuses, or 6.7 per count; during its peak period, 13-22 Aug, 444 seen on 94.1% of censuses, or 27.8 per count; again, however, if one day's total (160 on 22 Aug 86, that unusual year again!) is ignored, the figures become more representative, 5.4 and 18.9 per count, respectively. Arrival date of 24 Jun nearly three weeks earlier than first fall date for MI given by P. C. Chu (in McPeek & Adams, 1994). One of the earliest shorebirds to leave.

Habitat. Forages on sand and mud beaches, bars, and flats of river mouths, coastal ponds, sewage ponds, and large interior marshes.

Migration Dates. **SEAD**: 13 May 90 (Lake Linden sewage ponds, AW). **SMAD**: 18 May (n=13). **SP**: about 30 May. **SMDD**: 7 Jun (n=14). **SLDD**: 18 Jun 2000 (Lake Linden sewage ponds, LB, injured wing but could fly poorly); 15 Jun 2000 (Calumet sewage ponds, LB); 9 Jun 77 (Sturgeon River Sloughs, AW); see Jun dates under Summer. **FEAD**: 24 Jun 92 (Lake Linden sewage ponds, LB, an early fall for shorebirds); 14 Jul 98 (LB) and 2001 (TA; MBNH 9: 31) (both Calumet sewage ponds); see Jun dates under Summer. **FMAD**: 25 Jul (n=18). **FP**: about 21 Aug (Table 14; Fig. 13). **FMDD**: 30 Aug (n=21). **FLDD**: 12 Oct 2000 (Calumet sewage ponds, LB).

High Counts. **Spring**: 3 Jun 86 (**130**; unusual year) sewage ponds at Tamarack City (H) and Lake Linden, LB; 29 May 90 and 31 May 88 (**26** each) sewage ponds at Lake Linden and Tamarack City, H, respectively, LB. **Fall**: 22 Aug 86 (**160**; unusual year) Lake Linden sewage ponds, LB; 30 Aug 2001 (**63**) sewage ponds at Calumet (3) and Lake Linden (60) LB; 13 Aug 98 (**49**) sewage ponds at Lake Linden (45) and Calumet (4) LB; 16 Aug 93 (**44**) Tamarack City sewage ponds, H, LB.

[*NAMC.* I question the identification of 2 on the H NAMC, 10 May 97; early, and no details submitted (R. Shipper, in litt.).]

Western Sandpiper *Calidris mauri*

Status and Range (H). Accidental **fall** transient. One record, 11 Aug 2004 (1 juvenile) Calumet sewage ponds, TA (finder), LB (Brockway Lookout 11 [2]: 5).

Least Sandpiper *Calidris minutilla*

Status and Range (B, H, K). Like Solitary Sandpiper, the Least Sandpiper has the ability to forage on narrow mud edges of ponds and lakes, making it one of the commonest shorebirds inland; nevertheless, it is most abundant on the coast and at sewage ponds, because most natural lakes and ponds (even marsh ponds) in the Keweenaw have vegetated margins. **Spring**: common transient, abundant during peak period, in B and H; accidental in K due to scarcity of habitat (one record, 22 May 96, Ahmeek sewage ponds, LB). At northern H sewage ponds, 86-2001, during its primary period of occurrence, 5 May-3 Jun, 76 seen on 47.8% of censuses, or 3.3 per count (LB, Table 13). **Fall**: transient; usually very common, but abundant in peak period, in B and H; very rare in K. On northern H sewage ponds, 86-2001, during its primary period of occurrence, 23 Jun-5 Oct, 2059 seen on 69.9% of censuses, or 14.4 per count; however, during its peak period, 7-22 Aug, 1038 recorded on 100% of counts, or 37.1 per count (LB; Table 14; Fig. 13). The earliest fall date, 23 Jul, precedes by four days the earliest date for the state given by P. C. Chu (in McPeek & Adams, 1994).

Habitat. Most common at sewage ponds, but forages on most any open patch of soft mud, including edges, bars, and flats associated with natural ponds, lakes, marshes, and river mouths; casual among debris on sand beaches.

Migration Dates. **SEAD**: 5 May 2000 (7, L'Anse Bay, JY). **SMAD**: 16 May (n=12). **SP**: third week of May (Table 13). **SMDD**: 27 May (n=11). **SLDD**: 15 Jun 2000 (Calumet sewage ponds, LB); 3 Jun 86 (Torch Lake, H,

LB). **FEAD**: 23 Jun 86 (Lake Linden sewage ponds, LB). **FMAD**: 5 Jul (n=14). **FP**: escalates in first week of Aug to peak about 9 Aug (Table 14; Fig. 13). **FMDD**: 18 Sep (n=11). **FLDD**: 5 Oct 2000 (Calumet sewage ponds, LB); 29 Sep 73 (Redridge beach, H, AW).

High Counts. **Spring**: 17 May 90 (**39**) Lake Linden sewage ponds, LB. **Fall**: 8 Aug 97 (**170**) Calumet sewage ponds, LB; 20 Aug 2002 (**169**) Calumet (9), Lake Linden (2), and Tamarack City (158) sewage ponds, LB, Z. Gayk; 16 Jul 95 (**102**) sewage ponds at Lake Linden (96) and Tamarack City, H (6) LB.

NAMC. Houghton Co.: 16 on 2 of 7 counts (28.6%); mean 2.29; range 0-12; ind/PH .06.

White-rumped Sandpiper *Calidris fuscicollis*

Status and Range (B, H, K). This species has an elliptical migration route, most birds in spring passing northward through the US interior, but in fall following a southeastern path through the Maritime Provinces (P. C. Chu in McPeek & Adams, 1994). In the Keweenaw, this accounts for its more frequent occurrence in spring (the main migration route is closer to Michigan) and also for its irregularity then (marginal birds are drifted eastward into Michigan only with strong west winds, as especially in 2000 and 2002). Paucity of records in part due to difficulty of identification. **Spring**: occasional transient, recorded in only 11 springs during the 20-year period 86-2005; most records are for northern H sewage ponds, with a few on coast of B, H, and K, at Ahmeek (K), Sturgeon River mouth, Sturgeon River Sloughs, Arnheim (H), and L'Anse Bay head. A comparatively late transient. At northern H sewage ponds, 86-2001, during its primary period of occurrence, 15 May-4 Jun, 15 seen on 28.6% of counts, or .7 per count (LB; Table 13). **Summer**: I believe that birds on 3 (6 individuals), 14 (5), and 23 (7) Jun 86 (all Lake Linden sewage ponds, LB) and 27 (5) Jun and 3 (1) Jul 86 (not 1 Jul as given by P. C. Chu in McPeek & Adams, 1994) (both Tamarack City sewage ponds, H, LB) were accidental non-breeding summer residents. These localities are in line of sight only 3 miles apart, and I have seen shorebirds and ducks fly from one toward the other (see also Semipalmated Sandpiper). These five counts were all that were taken during that period, so birds were seen every count; all were adults. **Fall**: casual transient in all three counties. So far found only at L'Anse Bay, northern H sewage ponds, Sturgeon River mouth, and Copper Harbor. Recorded on 18 Aug, 21 Aug, 5 Sep, and 5 Oct-4 Nov in only 6 years from 86 to 2005 (86, 99, 2000, 2001, 2004, 2005) and on only 6.7% of my sewage pond censuses (Table 14). Year 2000 was exceptionally good in both spring and fall.

Habitat. Probes in soft mud submerged in shallow water, especially at sewage ponds but also sand/mud bars at river mouths and inland, marsh mud flats. One found foraging with Pectoral Sandpipers on a residential lawn in Copper Harbor (LB) demonstrates how desperate—and opportunistic—transient shorebirds can be where habitat is scarce.

Migration Dates (see Significant Records for data). **SEAD**: 15 May 98 (Calumet sewage ponds, LB). **SP**: probably end of May and first part of Jun (Table 13). **SLDD**: 21 Jun 2002; 18 Jun 2000 (5) and 16 Jun 92 (3), both Lake Linden sewage ponds, LB; 10 Jun 2003; 6 Jun 2000; see Summer. **FEAD**: 18 Aug 2001. **FLDD**: 4 Nov 2000; 21 Oct 86 and 2001.

Significant Records (all B and K and all fall dates).

22 May 96 (2) Ahmeek sewage ponds, K, LB.
25 May 2002 (1) Sturgeon River Sloughs, Unit 1, K. Overman; incorrectly attributed to Baraga Co. in MBNH 9: 222.
30 May 2000 (1) L'Anse Bay head, JY.
31 May 98 (1) L'Anse Bay, RH.
6 Jun 2000 (1) on rocky point at edge of Keweenaw Bay at Little Betsy River mouth, K, where just resting, JK.
10 Jun 2003 (2) L'Anse Bay head, RH.
21 Jun 2002 (1) L'Anse, JY, a late spring migrant.
[18 Jul 88 (5) L'Anse Bay (JPW 67: 34); questionable, because it predates the earliest fall transient for the state by 10 days (P. C. Chu in McPeek & Adams, 1994).]
18 Aug 2001 (1) Lake Linden sewage ponds, TA, LB, JM.
21 Aug 2005 (1) Tamarack City sewage ponds, JK.
5 Sep 2004 (1) Lake Linden sewage ponds, Z. Gayk, S. Haas.
5 Oct 2000 (3) Calumet sewage ponds, LB.
7 Oct 99 (1) Lake Linden sewage ponds, LB.
16 (2) and 17 (1) Oct 86, Copper Harbor, LB; one on 16 Oct on a lawn, other (both days) at a sewage pond.
17 Oct 2000 (1) L'Anse Bay (Ojibwa Beach) JY.
19 Oct 2000 (1) Calumet sewage ponds, LB.
21 Oct 2000 (1) Sturgeon River mouth, JY.
21 Oct 86 (6) Lake Linden sewage ponds, LB.
4 Nov 2000 (4) Sturgeon River mouth, JY.

High Counts (all Lake Linden sewage ponds, LB). **Spring**: 18 Jun 2000 (**5**). **Summer**: 23 Jun 86 (**7**). **Fall**: 21 Oct 86 (**6**).

Baird's Sandpiper *Calidris bairdii*

Status and Range (B, H, K). This species' rarity in spring but regularity in fall is accounted for by its migration route, through the Great Plains and hence normally west of Michigan in spring but spread from coast to coast in fall (P. C. Chu in McPeek & Adams, 1994). **Spring**: casual transient; only 3 records, 12

May-7 Jun, during two years (89, 90), all at northern H sewage ponds (Table 13). **Fall**: in most years, a common transient, some days abundant, on northern H sewage ponds, where, 86-2001, during its primary period of occurrence, 18 Jul-30 Sep, 499 seen on 54.1% of counts, or 4.6 per count; during its peak period there, 15 Aug-11 Sep, 375 seen on 69.2% of counts, or 9.6 per census (LB; Table 14; Fig. 13). Seemingly very uncommon elsewhere, but this probably partly a result of identification problems; recorded at the Slate River mouth (1 bird, 8 Aug 2000, B, JY), on the north coast of K (Copper Harbor area; Eagle Harbor twice; Manitou Is. thrice), on the Portage Lake system (Sands and Chassell beach, H), and at the Houghton County Memorial Airport (2 birds, 27 Aug 73, LB). Numbers vary considerably from year to year; 89 and 2000 were unusually poor and 95 and 2001 very good.

Habitat. Found primarily on sewage ponds, probing in mud submerged by shallow waters or picking off dry dirt, even when ponds dry on surface. Also recorded on natural sand beach, river mouth sand bars, and short grass of an airport.

Migration Dates. **SEAD**: 12 May 90 (see below). **SLDD**: 7 Jun 90 (see below). **FEAD**: 3 Jul 86 (1 adult, Tamarack City sewage ponds, LB, a very unusual year for shorebird timing); 18 Jul 94 (Lake Linden sewage ponds, LB) and 2000 (Calumet sewage ponds, LB). **FMAD**: 8 Aug (n=13, northern H sewage ponds only, LB). **FP**: third week of Aug (Table14; Fig. 13); about 25 Aug. **FMDD**: 16 Sep (n=12, northern H sewage ponds only, LB). **FLDD**: 13 Oct 99 (a late fall for shorebirds) and 30 Sep 99 (both Lake Linden sewage ponds, LB).

Significant Records (all spring).

12 (LM), 14 (LB) May 90 (1) Lake Linden sewage ponds.

4 (2), 7 (1) Jun 90, Lake Linden sewage ponds, LB.

5 Jun 89 (1) Tamarack City sewage ponds, H, LB.

High Counts. **Fall**: 5 Sep 2004 (**57**) sewage ponds in northern H, Z. Gayk, S. Haas (MBNH 12: 80); 22 Aug 2001 (**56**) sewage ponds at Calumet (2), Tamarack City (16) and Lake Linden (38) LB, JM; 16 Aug 2005 (**53**) Lake Linden sewage ponds, LB. These totals are among the highest for the state (P. C. Chu in McPeek & Adams, 1994).

Remarks. "12 on 19 Aug at Lake Linden, *Chippewa* (LCB)" (MBNH 6: 100) were actually in Houghton Co. in 1998.

Pectoral Sandpiper *Calidris melanotos*

Status and Range (B, H, K). **Spring**: transient, seemingly occasional, recorded primarily at northern H sewage ponds, but also on shores of Portage Lake system and L'Anse Bay, and inland at Arnheim, Sturgeon Road (B), Sturgeon River Road (H), and near McLain State Park (H). At northern H sewage ponds, 86-2001, during its primary period of occurrence, 25 Apr-11 Jun, only 10 seen on 20.7% of censuses, or .3 per count (LB; Table 13). Considering its abundance in late March and early April in the Lower Peninsula (P. C. Chu in McPeek & Adams, 1994), this scarcity may be an artifact, with birds passing before extensive spring coverage or when little habitat is available, but see High Counts. **Fall**: very common transient, many days abundant, at northern H sewage ponds, where, 86-2001, during its primary period of occurrence, 15 Jul-21 Oct (no later counts), 2439 seen on 81.8% of counts, or 18.5 per count (LB; Table 14; Fig. 13). Elsewhere, less numerous at other sewage ponds, head of L'Anse Bay, Arnheim, Portage Lake system (Pilgrim and Sturgeon River mouths), and on north coast of K. Earliest fall arrival date, 24 Jun, is 6 days earlier than the earliest listed for the state by P. C. Chu (in McPeek & Adams, 1994). Fall 99 was unique in producing large numbers in the last week of Sep and Oct; removing these gives a more realistic picture of fall migration (Fig. 13).

Habitat. Probes in soft mud submerged by shallow waters and hence most common on sewage ponds, but occurs also on natural ponds, river mouth bars, drier portions of inland marshes and lakes, and rarely on residential lawns (Copper Harbor, LB) and debris-strewn sand beaches. Tolerates (prefers?) mud with scattered grass or herbs. Most Keweenaw ponds and lakes have mudless forested shores.

Migration Dates. Few data for spring. See Status and Range. **SEAD**: 24 Apr 62 (Chassell, H, J. Weber; JPW 41: 31). **SMAD**: 12 May (n=9). **SMDD**: 1 Jun (n=7). **SLDD**: 14 Jun 86 (Lake Linden sewage ponds, LB); 11 Jun 2000 (L'Anse Bay, LB, JM); 8 Jun 84 (Sands, H, AW); this progression of dates shows that 14 Jun, during an unusual year for shorebird timing, is not an outlandishly late date. **FEAD**: 24 Jun 92 (Lake Linden sewage ponds, LB); 15 Jul 97 (Calumet sewage ponds, LB); see 14 Jun above. **FMAD**: 18 Jul (n=12, northern H sewage ponds only, LB). **FP**: highly variable from year to year, but a definite average in last week of Sep (Table 14; Fig. 13). **FMDD**: 17 Oct (n=15). **FLDD**: 4 Nov 2000 (7, Sturgeon River mouth, JY).

High Counts. **Spring**: 10 May 2005 (**59**) Atlantic Mine sewage ponds, H, RH, JK, exceptional; 7 May 2004 (**8**) end of Sturgeon Road, 2.5 mi W town of Keweenaw Bay, B, LB. **Fall**: 7 Oct 99 (**228**) sewage ponds at Calumet (38) and Lake Linden (190) LB; 27 Sep 95 (**109**) sewage ponds at Calumet (94) and Lake Linden (15) LB; 5 Oct 2000 (**105**) Calumet sewage ponds, LB; 10 Aug 2005 (**101**) Baraga sewage ponds, RH, JK.

NAMC. Houghton Co.: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

Dunlin *Calidris alpina*

Status and Range (B, H, K). **Spring**: common transient; regular at head of L'Anse Bay, on Portage Lake system (river mouths), and sewage ponds of H; irregular on large interior marshes during periods of low water; one record for a natural inland lake (19 May 2000, 1, Otter Lake, H, JY). One spring record for K (27 May 2002, 2 birds, Eagle River, Z. Gayk). At northern H sewage ponds, 86-2001, during its primary period of occurrence, 9 May-8 Jun, 84 seen on 44.0% of censuses, or 3.4 per count (LB; Table 13). **Fall**: a very late transient, occurring at same localities as in spring; detectability uncertain because of paucity of data from last half of Oct and early Nov, when this species should peak (P. C. Chu in McPeek & Adams, 1994); possibly, frosts usually prevalent at this time render sewage ponds and other muddy areas devoid of food. In any event, present data indicate that the Dunlin is uncommon in fall. At northern H sewage ponds, 86-2001, during the period 19 Sep-21 Oct (no later counts), only 22 seen on 29.0% of counts, or .7 per count (LB; Table 14; Fig. 13). Only two records for K, where habitat scarce: 13 Oct 86 (1 on coastal rocks) and 15 Oct 86 (3 flying westward), both Agate Harbor, LB. Timing also uncertain; arrives the latest of all shorebirds, the earliest normal arrival date being 19 Sep; seemingly departs on average in third week of Oct, with lingerers to 10 Nov, but probably leaves later; more data needed for late fall.

Habitat. Forages on sand and mud flats and bars at edges of sewage and natural coastal ponds, river mouths, and, less commonly, interior marshes.

Migration Dates: **SEAD**: 9 May 95 (Baraga, JY). **SMAD**: 15 May (n=14). **SP**: last week of May (Table 13). **SMDD**: 29 May (n=14). **SLDD**: 8 Jun 76 (North Portage Entry, H, AW). **FEAD**: 3 Jul 86 (Tamarack City sewage ponds, H, LB; unusual year for shorebird timing; southward migration based on arrival of other species during weekly censuses); 8 Sep 2004 (1 adult, Lake Linden sewage ponds, LB); 19 Sep 75 (Sands, H, AW). **FMDD**: 17 Oct (n=5); more data needed. **FLDD**: 10 Nov 2000 (1, L'Anse Bay head, TA, JM); 24 Oct 99 (2, Baraga State Park, JM, LM, JY).

High Counts. **Spring**: 17 May 2004 (**50**) Atlantic Mine sewage ponds, H, TA, RH, JM; 24 May 97 (**42**) Arnheim, B or H, JY; 31 May 98 (**37**) L'Anse Bay (36) and Sturgeon River Sloughs (1) JY. **Fall**: 17 Oct 85 (**15**) Baraga, AW; 19 Oct 99 (**6**) Calumet sewage ponds, LB.

Stilt Sandpiper *Calidris himantopus*

Status and Range (B, H). Normally migrates through the Great Plains, but like Baird's Sandpiper, spreads eastward (and westward) in fall, thus accounting for the difference between the seasons on the Keweenaw Peninsula. **Spring**: casual; 3 records, 10 May 2005 (2) Atlantic Mine sewage ponds, RH, JK; 24 May 2003 (1) Arnheim, H, Z. Gayk (finder), JM; 11 Jun 2003 (1) Sturgeon River Sloughs, TA. **Fall**: uncommon transient, more numerous some years than others, primarily on northern H sewage ponds, but also rarely on inland ponds (1 Sep 90, 1, Portage Lake Golf Course pond, H, LB; 17 Aug 52, 1, Sands, H, LB). At northern H sewage ponds (LB; Table 14; Fig. 13), 86-2001, during its primary period of occurrence, 13 Jul-27 Sep, 79 seen on 24.8% of counts, or .7 per count; however, during month of Aug, detectability rises to fairly common, with 67 seen on 42.0% of counts, or 1.3 per count. Only one record for B (13 Jul 97, 3 birds, Arnheim, JY), but habitat scarce. No record for K, where good habitat is absent. Probably overlooked by some observers because of its similarity to yellowlegs.

Habitat. Probes in soft mud beneath shallow waters of open mud flats, especially at sewage ponds and rarely natural pond edge.

Migration Dates. **FEAD**: 13 Jul 97 (3, Arnheim, B, JY). **FMAD**: 8 Aug (n=9). **FP**: last two weeks of Aug, centered about 21 Aug (Table 14; Fig. 13). **FMDD**: 1 Sep (n=9, northern H sewage ponds only, LB). **FLDD**: 27 Sep 95 (Lake Linden sewage ponds, LB).

High Counts. **Fall**: 8 Sep 2004 (**15**) sewage ponds at Lake Linden (13) and Tamarack City, H (2) LB; 16 Aug 2001 (**12**) sewage ponds at Calumet (2) and Tamarack City, H (10) LB, L. Cornwallis, E. David, JM; 23 Aug 88 and 4 Sep 97 (**5** each) both at Lake Linden sewage ponds, LB.

Buff-breasted Sandpiper *Tryngites subruficollis*

Status and Range (B, H). The Keweenaw Peninsula is one of the best places in the state to see this species in fall. Like Baird's Sandpiper, this species' normal migration route is through the Great Plains, but in fall the pathway widens to embrace both coasts, thus accounting for its spring absence and fall occurrence in the Keweenaw, as well as its variability in numbers from year to year. **Spring**: no record. **Fall**: uncommon transient, usually in groups of 1 to 4, exceptionally up to 18, primarily on dry portions of sewage ponds in northern H (Calumet, Lake Linden, Tamarack City), but also in short-grass fields in B (Arnheim), debris-covered sand beach on northwest coast of H (Redridge and west side of North Portage Entry, H), river mouth bars on the Portage Lake system (Pilgrim River, H), Slate River mouth (B), and on L'Anse Bay (lawns at Baraga marina and Baraga State Park; Ojibwa Beach). At northern H sewage ponds, 86-2001, during its primary period of occurrence, 27 Jul-28 Sep, 46 seen on 17.0% of counts, or .5 per count (LB; Table 14; Fig. 13). Limited Keweenaw data tend to support the theory of two waves suggested by P. C. Chu

(in McPeek & Adams, 1994), with adults passing in the last week of Jul, and juveniles peaking about the second week of Sep or earlier; more age data needed.

Habitat. Vegetation, if present, must be very short; see Fall above.

Migration Dates. **FEAD**: 27 Jul 99 (Tamarack City sewage ponds, H, LB). **FMAD**: 7 Aug (n=12). **FP**: see Status and Range. **FMDD**: 13 Sep (n=13). **FLDD**: 28 Sep 73 (Redridge beach, H, AW); 18 Sep 87 (Tamarack City sewage ponds, H, LB) and 93 (North Portage Entry, H, AW).

High Counts. **Fall**: 10 Sep 2000 (**18**) Ojibwa Beach, Baraga, RH, JM; 29 Jul 99 (**15**) Tamarack City sewage ponds, H, LB; 25 Aug 96 (**12**) Arnheim, field 7A, B, JY.

Ruff *Philomachus pugnax*

Status and Range (H). Accidental **fall** vagrant. One record, 13 Aug 98, adult female, Lake Linden sewage ponds, LB (Table 14); seen also by AW (photos sent to LB and MBRC), D. Weaver, RH, LM (MBNH 6: 100, where erroneously attributed to Chippewa Co.). Accepted by the MBRC (Internet).

Short-billed Dowitcher *Limnodromus griseus*

Status and Range (definite Short-billed: B, H, K). Identification problems obscure the status of both dowitchers. Clearly, however, Short-billed is regular and Long-billed irregular. Here I treat all dowitchers except those acceptably identified as Long-billed; this, I believe, gives a good, but not totally accurate status of Short-billed. Specific records of definitely identified Short-billed are marked with an asterisk (*) or are listed under Significant Records. In the future, a concerted effort should be made to identify all dowitchers encountered. Dowitcher identification is best treated by Wilds & Newton (1983); fall juveniles are easily separated. **Spring**: uncommon transient, usually in flocks of 1-6 but sometimes up to 50, once to 250, recorded at northern H sewage ponds, Sturgeon and Pilgrim River mouths on Portage Lake system, head of L'Anse Bay, Arnheim (B and H), and near Watton (B). At northern H sewage ponds, 86-2001, during the genus' primary period of occurrence, 7 May-3 Jun, 12 Short-billed seen on 18.2% of counts, or .6 per count (LB; Table 13). The only spring dowitchers for K were not identified. **Fall**: uncommon transient in flocks of up to 7; distribution as in spring but with the vast majority of records at northern H sewage ponds, where, 86-2001, during the primary period of occurrence for the genus, 3 Jul-30 Aug, 76 seen on 33.3% of censuses, or .8 per count (LB; Table 14; Fig. 13). Only one definite Short-billed record for K, where habitat scarce. Birds after 9 Sep (see Migration Dates) are most likely Long-billed.

Habitat. Dowitchers probe in soft submerged mud on flats, bars and edges of sewage ponds, natural ponds, river mouths, marshes, and once a moist, forest-edged beaver pond.

Migration Dates. **SEAD**: 7 May 2000 (Sturgeon River mouth, JY). **SMAD**: 15 May (n=14). **SLDD**: 3 Jun 99 (Tamarack City sewage ponds, H, RH). **FEAD**: 3 Jul 86 (Tamarack City sewage ponds, H, LB). **FMAD**: 20 Jul (n=11, northern H sewage ponds only, LB). **FP**: about 12 Aug (Table 14; Fig. 13). **FMDD**: 28 Aug (n=8). **FLDD**: 29 Sep 87 (6, beaver pond near Lake Eliza, west of Eagle Harbor, K, LB; late date suggests Long-billed); 25 Sep 97 (l, Calumet sewage ponds, LB; late date suggests Long-billed); 9 Sep 99 and *30 Aug 2001 (1 each, both Calumet sewage ponds, LB).

Significant Records (all identified as Short-billed not noted elsewhere; all LB except as noted).

11 May 2002 (10) near Watton, B, LB, JM, NAMC.
13 May 2001 (21) plus 14 dowitcher sp., Sturgeon River mouth, JY.
13 May 2005 (27) Baraga sewage ponds, RH, JK.
16 May 2000 (10) Pilgrim River mouth, H, RH, JM.
17 May 88 (2) Tamarack City sewage ponds.
17 May 90 (7) Lake Linden sewage ponds.
18 May 99 (22) head L'Anse Bay.
20 May 2000 (2) head L'Anse Bay.
22 May 2003 (1) Arnheim, B, S. Santner.
25 May 2000 (2) Calumet sewage ponds.
27 May 98 (3) Calumet sewage ponds.
28 May 99 (1) Calumet sewage ponds.
14 Jul 2000 (2) Calumet sewage ponds.
16, 18 Jul 2001 (adult) Calumet sewage ponds.
18 Jul 94 (1) Lake Linden sewage ponds.
9 Aug 2001 (juvenile) Calumet sewage ponds.
11 Aug (1),16 Aug (2) 2005, Lake Linden sewage ponds.
18 Aug 89 (7) Lake Linden sewage ponds.
21 Aug 63 (1) Agate Harbor.
28 Aug 89 (1) Lake Linden sewage ponds.

High Counts. **Spring**: *17 May 2004 (**250**, TA, RH, JM)), *15 May 2005 (**65**, RH, JK), *19 May 2002 (**60**, JK) all Atlantic Mine sewage ponds, H; 12 May 77 (**50**) Sands, H, AW. **Fall**: *27 Aug 2002 (**7**) sewage ponds at Tamarack City (3) and Calumet (4), LB; *10 Aug 99 (**7**) sewage ponds at Calumet (3) and Lake Linden (4) LB.

NAMC. Baraga Co.: 10 on 1 of 6 counts (16.7%); mean 1.67; range 0-10; ind/PH .04. *Houghton Co.*: 9 on 1 of 7 counts (14.3%); mean 1.29; range 0-9; ind/PH .03; also, 2 dowitcher sp. on 12 May 2001.

Long-billed Dowitcher *Limnodromus scolopaceus*

Status and Range (H). See Short-billed Dowitcher. The Long-billed Dowitcher normally follows a migration route west of the Mississippi River, but in fall some

spread eastward to the Atlantic coast, thus accounting for its rarity in spring and regularity but also scarcity in fall in Michigan. No **spring** record, but expected. **Fall**: casual transient; 4 records, 3 for northern H sewage ponds and 1 for the Sturgeon River mouth (see also Table 14). Probably will prove more common when we observers learn to identify it.

Habitat. Recorded probing in soft mud at two sewage ponds and a sand bar at the Sturgeon River mouth.

Significant Records (all).

[17 May 83 (1) Pilgrim River mouth, H, AW, W. Riipi (JPW 61: 86); later Weaver (2000) considered it a Short-billed, but identity is best treated as uncertain.]

19 Sep 2002 (1 juvenile) Calumet sewage ponds, LB.

27 Sep 99 (2 juveniles together) Calumet sewage ponds, LB.

28 Sep 2000 (1) Sturgeon River mouth, JY.

30 Sep 99 (1 juvenile) Lake Linden sewage ponds, LB.

Wilson's Snipe *Gallinago delicata*

Status and Range (B, H, K). **Spring**: fairly common transient throughout. Most common inland; sparse on coast, due to lack of vegetated mud. Most often detected in spring and early summer at breeding sites, where it is revealed by its "winnowing" courtship flight; elsewhere discovered much less often by spotting one motionless in, or flushing one from, sparse vegetation at water's edge. Only one spring sewage pond record (1 bird, 23 May 88, Tamarack City, LB; Table 13). **Summer**: uncommon resident, spottily distributed inland in the three counties, generally avoiding uplands, farmland, and heavily wooded lowlands (MBBA map 1991). No confirmed breeding record for K, because observers have not expended the effort in its wet habitat. **Fall**: fairly common transient. Birds begin appearing at sewage ponds (where they do not breed) in late Jun, more often in second week of Jul (Table 14), but whether these are congregating breeders (like Killdeer), transients, or both is unknown. At northern H sewage ponds, 86-2002, during its primary period of occurrence, 16 Jul-21 Oct (no later counts), 131 seen on 35.4% of censuses, or 1.0 per count (LB; Table 14). **Early winter**: casual lingerer to 31 Dec. **Late winter**: accidental visitant and resident during mild winters when some inland waters, even a creek trickle, remain open (see Significant Records).

Habitat. Breeds and forages in open black spruce-tamarack bogs and on mud edges of beaver ponds, other natural ponds, sedge-grass and cattail marshes, and openings in shrub wetland. On migration feeds at edges of sewage ponds (in fall but not spring, when ponds usually too full and birds are at breeding sites anyway) and in temporarily flooded grassy fields.

Migration Dates. **SEAD**: 30 Mar 2000 (Arnheim, B, JY). **SMAD**: 20 Apr (n=28). **SP**: last week of Apr; levels off to summer numbers in second week of May. **FEAD**: see Status and Range. **FMDD**: 15 Oct (n=23); more data probably would move this date about 10 days later. **FLDD**: 31 Dec 98, Arnheim, B, JY, seen in puddle (MBNH 6: 166); see Significant Records.

Significant Records (all after mid Nov; all single birds except as noted).

12 Nov 98, Arnheim, B, JY.

13 Nov 54, Jacobsville, H, G. Hesterberg (JPW 33: 27).

17 Nov 2001, near Ahmeek, RH.

22, 24 Nov 2000, Arnheim, B, JY.

12 (1) and 28 (2) Nov 2000, Sturgeon River Sloughs, Unit 1, JY, waters 95% frozen.

16 Dec 2001, Copper Harbor, TA, JM, Eagle Harbor Christmas Bird Count.

25 Jan 75, Liminga, near an open brook, E. and A. Welch fide AW (JPW 53: 70).

27 Feb 78, near Houghton, AW.

1 Mar 74, Cole's Creek mouth, H, AW (not 1 Feb as in JPW 52: 84; corrected to 1 Mar in JPW 52: 189).

High Counts. **Spring**: multi-party, 12 May 2001 (**26**) B, NAMC; 27 Apr 2000 (**16**) Copper Harbor, LB, 9 in one flock; 14 Apr 90 (**12**) H, AW. **Summer** (breeding birds): 25 Jun 2000 (**9**) Arnheim, B or H, LM, JY. **Fall**: 30 Jul 2002 (**12**) Calumet sewage ponds, LB; 10 Sep 87 (**9**) Tamarack City sewage ponds, H, LB; 3 Sep 96 (**9**) Calumet sewage ponds, LB.

Breeding (**B** 2 co, 3 pr, 4 po; **H** 3 co, 4 pr, 6 po; **K** 2 pr, 2 po).

27 May 2001 (nest with 2 eggs) T53N, R33W, Sec. 9, H, JY.

*7 Jun 83 (adult flushed from 2 just hatched prejuveniles) Baraga Plains, north of Big Lake, T49N, R34W, Sec 21, L. H. Walkinshaw (CLO).

14 Jun 2002 (distraction display) Arnheim, Unit 3, H, JY.

Note: numerous records of winnowing birds (probable breeding) are not included here; see MBBA map 1991.

BBS. *Bootjack* 67-73: 6 on 3 of 7 counts (42.9%); mean .86; range 0-2. *Bootjack* 92-2005: 9 on 7 of 14 counts (50.0%); mean .64; range 0-2.

NAMC. *Baraga Co.*: 78 on 6 of 6 counts (100%); mean 13.00; range 5-26; ind/PH .29. *Houghton Co.*: on 7 of 7 counts (100%); mean 3.14; range 1-7; ind/PH .08.

American Woodcock *Scolopax minor*

Status and Range (B, H, K). **Spring**: most conspicuous

during spring courtship, when common; spring and **Fall** transients not detected, as befits a secretive species near the northern edge of its range. Earliest arrival date, 20 Mar, is four days earlier than the earliest for the Upper Peninsula (P. C. Chu in McPeek & Adams, 1994). **Summer**: resident throughout, including Manitou Is.; recorded detectability uncommon, because of inconspicuousness after courtship period, but in reality probably common.

Habitat. Nests in a variety of semiopen, second growth forests (usually with quaking aspen) and shrublands that have copious, moist, ground litter and nearby grassy openings, including jack pine clearcuts, suitable for courtship. Feeds largely in shrub wetland (speckled alders) and moist grassy fields.

Migration Dates. **SEAD**: 20 Mar 87 (Youngman's property, B, JY). **SMAD**: 8 Apr (n=20). **FMDD**: 26 Oct (n=8). **FLDD**: 5 Nov 69 (female, MTU 1483, H, collector Nolan).

High Counts. **Spring**: multi-party, 8 May 99 (**10**) B, NAMC; 12 May 2001 (**8**) Baraga Plains, LB and JM only, NAMC. **Fall**: 30 Sep 34 (**10**) near Three Lakes, B, G. B. Saunders (Wood, 1951); 3 Oct 98 (**5**) Princess Point Road near Jacobsville, H, LM.

Breeding (**B** 2 co, 8 po; **H** 5 co, 1 pr, 5 po; **K** 2 co, 7 po).

23 May 2001 (adult with 4 small prejuveniles) Baraga Plains, T49N, R34W, Sec. 24, JY.

28 May 92 (adult plus 3 tiny prejuveniles) Liminga, D. Weaver (AW orig. notes).

6 Jun (nest with 3 eggs) and 8 Jun (adult with 1 young) 85, Liminga, D. Weaver, AW.

8 Jun 86 (adult with 3 young) Covered Road southeast of Redridge, H, AW.

11 Jun 95 (adult with 2 prejuveniles about 2 days old) crossing highway US 41, 2 mi E Mohawk, K, LB (yes, I rescued them).

18 Jun 2002 (adult with one 4-inch young) Manitou Is., Sec. 21, JY.

Note: the 2 confirmed records for K on the MBBA map (1991) should be reduced to possible.

Summary: 1 nest with eggs 6 Jun; 5 broods of tiny prejuveniles 23 May-11 Jun. Single-brooded.

BBS. *Bootjack* 92-2005: 3 on 2 of 14 counts (14.3%); mean .21; range 0-2. *Herman*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

NAMC. *Baraga Co.*: 33 on 6 of 6 counts (100%); mean 5.50; range 2-10; ind/PH .12. *Houghton Co.*: 6 on 2 of 7 counts (28.6%); mean .86; range 0-4; ind/PH .02.

Banding Recoveries. One hatching-year bird banded in WI 1 Jul 74 shot in H 2 Oct 75, indicating northward movement in fall or spring. Another, banded in WI 31 Mar 82 and shot in B 16 Oct 83, might indicate the same pattern or simply a spring transient in WI. One adult banded on wintering grounds in LA 28 Jan 60 shot in B in fall 60. Birds from neighboring Marquette Co. winter in KY, GA, AL, MS, and LA.

Wilson's Phalarope *Phalaropus tricolor*

Status and Range (B, H, K). **Spring**: very uncommon transient. Although recorded in only 19 of last 34 years (72-2005), today, with a larger number of sewage ponds and better coverage, recorded every year 95-2005. At northern H sewage ponds, 86-2001, during its primary period of occurrence, 5 May-7 Jun, 19 seen on 28.0% of counts, or .8 per count (LB; Table 13). In 2001, a record 21 birds were seen on the Peninsula. Recorded most often on B and H sewage ponds, but also noted on marsh ponds at the Sturgeon River Sloughs and Arnheim (B and H), a natural pond at head of L'Anse Bay, and flooded fields near Liminga. Two records for K (26 May 2002, male, Copper Harbor, LB, K. Overman; 30 May 2002, 2, Ahmeek sewage ponds, LB, JM). **Fall**: occasional early transient 3-23 Aug, with one date, 3 Jul, equivocal but here considered fall; total 12 records during 9 years; see below and Table 14. Noted only on sewage ponds, but expected elsewhere as in spring.

Habitat. See Status and Range.

Migration Dates. **SEAD**: 5 May 97 (Calumet sewage ponds, LB; and Arnheim, H, JY). **SMAD**: 13 May (n=10). **SP**: about 24 May (Table 13). **SLDD**: 14 Jun 86 (Lake Linden sewage ponds, LB, a female with an injured leg during an unusual year for shorebird timing); 7 Jun 90 (Lake Linden sewage ponds, LB) and 2003 (Calumet sewage ponds, LB). **FEAD**: 3 Jul 86 (3; unusual year for shorebird timing); 29 Jul 2002 (2, Lake Linden sewage ponds, Z. Gayk). **FLDD**: 23 Aug 88 (5, Lake Linden sewage ponds, LB).

Significant Records (all fall records not under Migration Dates).

3 Aug 93 (1) Tamarack City sewage ponds, H, LB.

6 Aug 2001 (2) Baraga sewage ponds, JY.

6 and 14 Aug 86 (1) Lake Linden Sewage ponds, LB.

10 Aug 2005 (3) Baraga sewage ponds, RH, JK.

11 Aug 88 (3) Lake Linden sewage ponds, LB.

13 Aug 91, Lake Linden sewage ponds, AW.

16 Aug 2001 (adult male) Calumet sewage ponds, LB, L. Cornwallis, E. David, JM.

16 Aug 2002 (1) Atlantic Mine sewage ponds, RH, JK.

20 Aug 96 (1) Lake Linden sewage ponds, LB.

High Counts. **Spring**: 28 May 88 (**7**) Tamarack City sewage ponds, H, LB, 3 males, 4 females; 4 Jun 2002 (**7**) Atlantic Mine sewage ponds, JK. **Fall**: 23 Aug 88 (**5**) Lake Linden sewage ponds, LB.

NAMC. *Baraga Co.*: 2 on 1 of 6 counts (16.7%); mean

.33; range 0-2; ind/PH .01. *Houghton Co.*: 1 on 1 of 4 counts (25.0%); mean .25; range 0-1; ind/PH .01.

Red-necked Phalarope *Phalaropus lobatus*

Status and Range (B, H, K). Casual **fall** transient; 5 records,18 Aug-13 Sep, on H and B sewage ponds and the waters of Lake Superior off the north coast of H and K.

Significant Records (all).

18 Aug 62, 15 mi N (4) and 30 mi N (2) North Portage Entry, H, on airline to Rock Harbor, Isle Royale, swimming on Lake Superior, LB (Binford, 1965).

19 Aug 62 (3) 20 mi SE Rock Harbor, Isle Royale, on line to Eagle Harbor, K, swimming on Lake Superior, LB (Binford, 1965).

2 Sep 67 (2) .25 mi N Grand Marais Harbor (east of Eagle Harbor), K, swimming on Lake Superior, LB.

2 Sep 87 (5) Tamarack City sewage ponds, H, LB.

13 Sep 2002 (1) Baraga sewage ponds, Z. Gayk.

[27 Sep 87 (1) Copper Harbor (JPW 66: 32); undocumented.]

Red Phalarope *Phalaropus fulicarius*

Status and Range (B). Accidental **fall** transient. Two records, both for L'Anse Bay off Baraga State Park: 26 Oct 59 (3 or 4 seen and 1 female collected, MSU 2826) R. R. Rafferty (Rafferty, 1960; Payne, 1983); and 29 Nov-2 Dec 2001 (1) TA (photo on 1 Dec in LB files), RH, JK (photo in LB files), JM, LM (description), JY (finder, description); accepted by the MBRC (Byrne, 2004, where noted as occurring only to 1 Dec).

Pomarine Jaeger *Stercorarius pomarinus*

Status and Range (K). Accidental **fall** transient. One definite record on north shore of K. Probably restricted to open coastal waters of Lake Superior proper and perhaps Keweenaw Bay.

Significant Records (all, plus all jaeger sp.).

5 Sep 93 (1 subadult light to intermediate morph with half-twisted central rectrices) Agate Harbor, LB, flying eastward parallel to coast; accepted by MBRC (Chu, 1993).

[Pomarine Jaeger. 11 Aug 65 (1 light morph) Portage Lake; rejected by MBRC (Chu, 1993).]

Jaeger sp., 31 Aug 93 (1 dark morph) flying east parallel to shore at Agate Harbor, LB; probably Pomarine.

Jaeger sp., 11 Sep 87 (1) Keweenaw Bay, B; J. Chynoweth and "Rhe" (JPW 66: 32; AB 42: 78); I accept as a jaeger sp. because it passed the scrutiny of the compilers in the two journals.

Jaeger sp., 21 Nov 99 (1 dark morph) on beach in L'Anse and elsewhere over L'Anse Bay, JM, JY; two convincing descriptions given to LB over phone.

Parasitic Jaeger *Stercorarius parasiticus*

Status and Range (K). See Pomarine Jaeger for jaeger sp. records. Casual **fall** transient; 2 records, 17-18 Sep, both along north coast of K. Probably restricted to open coastal waters of Lake Superior proper and Keweenaw Bay.

Significant Records (all).

17 Sep 87 (1 juvenile light [rufous] morph) Agate Harbor, LB; seen three times, 0908-1040 EDT, as it came in from west and foraged over Lake Superior.

18 Sep 94 (1 adult light morph) Agate Harbor, LB; flying eastward parallel to shore (FN 49: 50).

Long-tailed Jaeger *Stercorarius longicaudus*

Status and Range (B). See Pomarine Jaeger for jaeger sp. records. Accidental **fall** transient. One record: 17 Aug 65 (adult male, MSU 4796, weight 355 g) Keweenaw Bay at southwest tip of Pequaming Point, T51N, R32W, Sec. 6, B, E. M. Harger (MSU, in litt.; Payne, 1983; J. Granlund in McPeek & Adams, 1994). Accepted by the MBRC (Chu, 1996).

Franklin's Gull *Larus pipixcan*

Status and Range (B, H). Accidental vagrant in **spring** (1 record, 11 Jun) and **fall** (3 records, 10-20 Aug, 11 Aug, 16 Sep), recorded only in northern H and on L'Anse Bay. Expected more often, considering the Keweenaw's western position.

Habitat. See Significant Records. Probably restricted to coast and Portage Lake system, although feeds on inland fields, especially if freshly plowed, in western North America..

Significant Records (all).

[5 Jun 84 (1) H, probably Sands, W. H. Riipi, contributed to JPW (62: 108) and AB (38: 1023) by AW, who now agrees with me that this undocumented record is questionable.]

11 Jun 2000 (1 first-summer; not "adult" as in MBNH 8: 31) resting on stamp sands at Ojibway Beach, L'Anse Bay (LM, JY) and on sand bar at head of L'Anse Bay (RH, finder). Black head, dark gray back, and rosy blush on breast, but black bill and only a trace of white across primaries—RH).

10 (foraging over Lake Linden sewage pond)

and 20 (loafing on nearby shore of Torch Lake) Aug 91 (1 immature) LB.

11 Aug 66 (1 immature loafing on stamp sands) former Sands Airport, H, LB.

[6 Sep 82 (1) Sands, H, AW, M. Weaver (JPW 61: 20; AB 37: 183). Description in Weaver (2000; no other description available in AW notes) sounds more like a Laughing Gull, *L. atricilla* (*e.g.*, "light head"), a possibility as a vagrant in the Keweenaw.]

16 Sep 2004 (1 adult) on lawn at Baraga marina, RH.

Little Gull *Larus minutus*

Status and Range (B, H). Accidental vagrant in **spring** (2 records, 6 and 11 May) and **early winter** (1 record, 19 Dec). Most likely to be seen with Bonaparte's Gulls.

Significant Records (all).

6 May 2000 (adult in alternate plumage) loafing with 39 transient Bonaparte's Gulls on sand bar at mouth of Pilgrim River, Portage Lake, H, RH. Excellent description in LB files.

11 May 2002 (adult in alternate plumage) Baraga sewage ponds, LB, JM, J. DeFoe, LM.

19 Dec 83 (1 immature) Portage Lake in Houghton off National Park Service dock. Found with feet frozen in ice by NPS Superintendent D. Brown and given alive to N. F. Sloan of MTU. Photo in The Daily Mining Gazette for 20 Dec 83 (JPW 62: 56; AB 38: 320; Weaver, 2000; Payne, 1986). Rumor states that Sloan gave it to a student to release in Florida! I found no specimen at MTU.

HCCBC. Listed for count week in AB 38: 628, referring to 19 Dec 83 record.

Bonaparte's Gull *Larus philadelphia*

Status and Range (B, H, K). **Spring**: transient; fairly common at river mouths on Portage Lake system (Pilgrim and Sturgeon River mouths), L'Anse Bay, and Baraga and Chassell (H) sewage ponds, once on upper Keweenaw Bay; irregularly very abundant for a few days per year at these localities. Surprisingly, apparently unrecorded elsewhere, including K, but expected anywhere along coast. Narrow migration window, the median arrival and departure dates only 13 days apart. **Summer**: accidental visitant; 1 mid summer record (25 Jun 99, adult, Baraga marina, LB, not seen before or after). **Fall**: transient. Uncommon at same localities as spring; rare on northern H sewage ponds and north shore of H. A few arrive in the last two weeks of Jul, but the median arrival date is about 20 Aug. Migrates eastward along north coast of K (Agate Harbor, LB), where common in total numbers (because of flocks) but casual in frequency; 213 seen in 95.4 hours, 2-13 Oct, 86-2001, or 2.23 per hour (LB). Three inland records away from sewage ponds: 22 Aug 98 (4) Gratiot Lake, S. Andres; 2 Sep 31 (1 collected, UMMZ 68118) Phoenix, K, C. A. Beatty; 15 Oct 2002 (immature) Lake Bailey, K, LB. **Early winter**: accidental lingerer; 2 records after 15 Nov: 30 Nov and 15 Dec.

Habitat. Feeds primarily on open coastal waters of L'Anse Bay and Portage Lake system, but also on sewage ponds near these localities; loafs on adjacent sand bars and beaches. Migrates over, and rarely rests on, but does not forage on, Lake Superior off northern K.

Migration Dates. **SEAD**: 20 Apr 2005, Chassell sewage ponds, H (12) and head L'Anse Bay (1) JK. **SMAD**: 6 May (n=15). **SP**: about 14 May. **SMDD**: 19 May (n=9). **SLDD**: 8 Jun 2000 (2 immatures, L'Anse Bay, JY). **FEAD**: 15 Jul 2000 (l, Sturgeon River mouth, RH). **FMAD**: 20 Aug (n=18). **FMDD**: 19 Oct (n=18). **FLDD**: 15 Dec 79 (HCCBC); 30 Nov 2001 (1, L'Anse Bay, JY); 15 Nov 2000 (4, L'Anse Bay, JY).

High Counts. **Spring**: 15 May 76 (**300-400**) Pilgrim River mouth, H, F. B. Isaacs; 14 May 2000 (about **300**) on Keweenaw Bay 6 mi SE Chassell, H, JY); 14 May 2004 (**276**) head L'Anse Bay, JY. **Fall**: 8 Oct 88 (**112**) and 9 Oct 88 (**54**) both Agate Harbor, LB, migrating eastward along coast; 3 Oct 2000 (**59**) L'Anse Bay, JY, highest fall count for temporarily stationary birds.

NAMC. *Baraga Co.*: 228 on 3 of 6 counts (50.0%); mean 38.00; range 0-160; ind/PH .89

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Ring-billed Gull *Larus delawarensis*

Status and Range (B, H, K). Status very complicated; more data needed. Detectability and local range vary considerably with season. Unrecorded on inland lakes even during migration, as habitat not suitable. Unlike Herring Gull, normally forages terrestrially or begs for human handouts, and does less offshore searching for dead animals. **Spring**: movement of spring transients not observed but may occur; numbers seem no higher than would be expected by arrival of summer residents. **Summer**: abundant resident on Torch Lake (the only colony) and environs, adults becoming progressively less numerous farther away but known to travel at least 12 miles to Houghton, Calumet, and the Sturgeon River mouth. Essentially absent, except irregularly for a few immatures, in K and north coast of H from late May to late Jun, at which time breeders (failed?) arrive (*e.g.*, 29 Jun 96, 25 adults, Copper Harbor, LB), but common on L'Anse Bay then. At the Calumet sewage ponds, adults feed all summer, but increase abruptly in first week of Jul (*e.g.*, 8 Jul 2005, 75 adults), and the first independent juveniles appear about the second week of Jul (this varying somewhat with year; 16 Jul in 2001, 17 Jul in

2002, 21 Jul in 2005). Two seen copulating at the Ahmeek sewage ponds (K) 28 May 96, demonstrates that mating is not necessarily at the breeding site. **Fall**: no apparent increase over summer except on north coast of K. That some K birds are not summer resident individuals is demonstrated by obvious migrations from west to east along the Lake Superior shore at Agate Harbor (LB) in the last half of Sep. For example: 11 Sep 96, flock of 7 very high; 14 Sep 92, 105 in 4 flocks and 5 singles; 18 Sep 97, flock of 20; 27 Sep 98, flock of 20. **Early winter**: occasional lingerer as late as 12 Jan in years with open water; when present, common or even locally very common, occurring primarily on L'Anse Bay and South Portage Entry (H); numbers on the HCCBC have varied from 0 to 120. Casual lingerer on north coast of H and K (recorded in one of five years on Eagle Harbor Christmas Bird Count). Absent inland except when Portage Lake system remains open.

Habitat. Forages primarily on shallow waters, mud flats, grassy dikes of sewage ponds (where grasshoppers are abundant), and on inland hayfields, especially freshly cut or cultivated ones; also frequents coastal and Portage Lake system parks and docks where fed by man, and a variety of urban and residential sites affording scavenging for road kills and human refuse. During day, rests coastally and on Portage Lake system on river mouth bars, docks, large lawns, and nearshore rocks (northern K), less often jetties and inland fields. Requires islands for nests, which are poorly lined scrapes placed close together in dense colonies; the only known colony (in Torch Lake) is on stamp sand. Manitou and Traverse Islands probably are too heavily forested to water's edge for colonization and are far from foraging fields. Garbage dumps, before they were closed, were used much less than by Herring Gull. See Remarks. See Herring Gull.

Migration Dates. **SEAD**: 27 Feb 94 (Houghton, S. Andres; MBNH 1: 48); 9 Mar 2000 (South Portage Entry, H, RH). **SMAD**: 28 Mar (n=25). **FLDD**: 12 Jan 98 (Houghton, AW).

High Counts (away from Torch Lake breeding colony; see Historical Changes). **Spring**: multi-party, 10 May 97 (**565**) H, NAMC; 12 Apr 98 (**255**) Arnheim, B or H, JY. **Summer**: 22 Jul 97 (**250**) Calumet sewage ponds, LB; post-breeding birds. **Fall**: 15 Oct 96 (**135**) Calumet sewage ponds, LB; 10 Sep 2000 (**124**) Ojibwa Beach, Baraga, JM, P. Musser. **Early winter**: multi-party, 16 Dec 90 (**120**) HCCBC.

Breeding (**H** 1 co colony).

Only one colony, on "Stamp Sand Is." in Torch Lake off Hubbell, H (not off Lake Linden as said by Scharf [1979], who confused it with another stamp sand island closer to Lake Linden that does not support Ring-billed Gulls [Scharf, in litt.]); see Historical Changes. In 1990, egg laying commenced on 2 May, 88% of eggs hatched, and productivity (based on number of 21-day-old chicks) was a normal 1.08 young/pair.(Kozie & Kubiak, 1990). Recent counts needed.

BBS. *Bootjack* 92-2005: 995 on 14 of 14 counts (100%); mean 71.07; range 30-177. *Herman* 83-97: 110 on 7 of 7 counts (100%); mean 15.71; range 6-30.

NAMC. *Baraga Co.*: 313 on 6 of 6 counts (100%); mean 52.17; range 12-100; ind/PH 1.22. *Houghton Co.*: 1713 on 7 of 7 counts (100%); mean 244.71; range 85-565; ind/PH 6.15.

HCCBC. 440 on 15 of 26 counts (57.7%); mean 16.92; range 0-120; ind/PH .37. See Historical Changes.

Banding Recoveries. Of the many prejuveniles banded at the Torch Lake colony, 6 have been recovered on their probable wintering grounds to the southeast in WV (Dec), NC (Jan, 3 Mar), and FL (Dec, Feb, May). Six probable transients have been found during the fall migration period to the north in K (Aug), southeast in Marquette (Sep), Emmet (Aug), and Manistee (Aug) Cos., MI, and southeastern ON (Oct), and south in WI (Aug). Two have been discovered in southwestern ON north of Lake Superior, one during its hatching year and the other three years later. My comments under Herring Gull concerning direction of migration apply here as well. One prejuvenile banded 7 Jun 83 was recovered as a ten-year-old on 5 Jul 93 in H or K.

Historical Changes (Table 17). Elsewhere in Michigan, the Ring-billed Gull apparently did not breed until 1926, spread slowly until 41, remained stable until the late 50s, and exploded in the 60s, 70s, and 80s (J. P. Ludwig in Brewer *et al.*, 1991; Scharf & Shugart, 1998). It was not mentioned for the Keweenaw by Kneeland (1857), Cahn (1918), or Wood (1933, 1951), although all listed Herring Gull. No nesting colonies were known west of the east end of the Upper Peninsula in 73 (JPW 52: 155). No Ring-bills were recorded on the Bootjack BBS 67-73, where the species is abundant today (mean 71.07 per count, 92-2005). A. W. Weaver (orig. notes) first noted summer birds in 74 at the Sturgeon River Sloughs. The Torch Lake colony, the only one in the Keweenaw, was discovered in summer 76, when it contained 250 nests (Scharf, 1979). Prejuveniles were first banded there in 77. That in 76 the colony already supported 250 nests suggests it was established sometime earlier, at least by 74 (consistent with AW's first sightings) and probably a few years earlier. By 10 Jul 86, at least 450 pairs (grossly estimated from the mainland) occupied the island (LB). Counts revealed 2687 nests in 89 (Scharf & Scharf, 1998), about 2350 pairs in 90 (Kozie & Kubiak, 1990), but one only 1712 nests on 8 Jun 98 (Cuthbert *et al.*, 2001). Thus, the Ring-billed suddenly declined sometime between 90

and 98, perhaps because of the closing of all Peninsula garbage dumps in the late 80s and early 90s, although this species is not dependant on garbage. Today nests are confined to the low west end; the rest of the island, occupied by a few Herring Gulls, seemingly is still suitable for colonization. Because the Ring-bill, unlike Herring, prefers to feed inland, usually shunning the declining offshore fisheries (see Habitat), it should continue to prosper as long as hayfields supporting earthworms and insects are maintained by man. Early winter status has also changed. On the HCCBC (Table 15), Ring-bills were unrecorded 76-78, then on 4 of 10 counts 79-88, but annually since then (except 95 when all waters were frozen). These figures are roughly consistent with growth of the Torch Lake colony, with perhaps a slight annual time lag for wintering; however, winter presence is highly dependent on environmental conditions, especially the amount of open water and snowless ground, and I expect this species to remain scarce and irregular in winter.

Remarks. On 24 Sep 88, off Agate Harbor, I saw 2 immatures pecking at a dead floating passerine. On 16 Aug 2001, in Copper Harbor, about 10 juvenile Ring-bills picked fruit off a large black cherry tree by using wings to balance on horizontal limbs.

Herring Gull *Larus argentatus*

Status and Range (B, H, K). Status complicated; more data needed. Not here considered a permanent resident, because it is absent in severe winters. **Spring** transients usually cannot be separated from summer residents, although 500 on 21 Apr 74 (H, AW) certainly were mostly transients. Spring migration starts in earnest in late March. **Summer**: very common resident. Since 88 has bred at least on Traverse Island (H), the two stamp sand islands in Torch Lake (H), Manitou Is., and bedrock islets off the north shore of K (Seven Mile Point; Eagle Harbor; Grand Marais Harbor; Agate Harbor; near Devil's Washtub; Copper Harbor, where 45 birds seen, a few apparently nesting, 30 May 2001, LB). Formerly nested, and may still, on other nearshore islets of K from Cat Harbor around the tip of the Peninsula to the north shore of Bete Grise (see above and Breeding). Last bred on the Lake Linden sewage pond dikes in 89 (LB), a short time before closure of all garbage dumps. From 2000 through 2005, nested on the mainland shore of Keweenaw Bay 6 mi SE Chassell, H, and in 2004 farther south at Assinins, B. One other mainland breeding record, at Big Traverse, H, in 2005. Incipient mainland colonies are unlikely to survive predation. Fairly common visitor inland to fields in vicinity of Torch Lake and to all sewage ponds, where greatly outnumbered by Ring-billed Gulls. Also, unlike Ring-billed, regularly visits some large inland lakes (*e.g.*, Gratiot Lake, K; Portage Lake), where it closely watches fishermen such as LB, who has fed nearly all his useless catch to these gluttons. Immatures and non-breeding adults likely to be found anywhere on coast and Portage Lake system, but especially on jetties at North Portage Entry and Big Traverse Bay, docks and rocks from Eagle Harbor to Copper Harbor, and stamp sand beaches at Houghton, L'Anse Bay, and adjacent Keweenaw Bay proper. Only one breeding record for B, where there are no coastal islands. **Fall**: no apparent increase in abundance over summer, but some of the individuals and small groups occasionally seen flying east and west along the northern K coast (LB) appear to be transients; more data needed. **Early winter**: annual detectability varies from very rare to abundant depending on environmental conditions, especially amount of open water (absent in 95 when all waters frozen). Restricted to perimeter coastal waters after inland waters freeze, normally in late Dec, after which the most likely sites are South Portage Entry (H) and L'Anse Bay. **Late winter**: occasional resident, some years abundant, during winters when coastal waters remain open. Noted on north shore of K, at South Portage Entry (H), in Hancock, at Big Traverse Bay (H), and on L'Anse Bay, but doubtless occurs elsewhere.

Habitat. Rather different from Ring-billed Gull, which see. Formerly fed intensively throughout the year at garbage dumps, which no longer exist. Today prefers to forage for dead fish and other animal remains along the shore and floating on open, even deep, waters of Lake Superior, upper Keweenaw Bay, L'Anse Bay, and smaller bays, as well as some large inland lakes. Roosts more coastally (but including Portage Lake system) than Ring-billed, frequenting dry sand beaches (including stamp sand), large jetties, natural near-shore islets (K), and river mouth bars, all affording a view of adjacent foraging waters. Like Ring-billed, feeds on wet mud of sewage ponds and on inland fields, but in comparatively small numbers. Rarely visits residential areas or parks, as it is shy and little attracted to man's hand-feeding. Nests primarily on stamp sand islands and bedrock islets, rarely on ledges below mainland sandstone cliffs, stamp sand beach (once), and (formerly) grassy, pebble access roads on sewage pond dikes.

High Counts. **Spring**: 21 Apr 74 (**500**) H, AW, probable transients and before dumps closed; 18 May 99 (**40**) L'Anse Bay, LB. **Summer** (excluding breeding sites, which see): 3 Jul 68 (**147**) H and K, B. and D. Wolck, Bootjack BBS. **Fall**: 8 Oct 2000 (**130**) Big Traverse Bay (100) plus Jacobsville (30) both H, LB, JM; 26 Aug 57 (**88**) Sands, H, LB. **Early winter**: multi-party, 19 Dec 81 (**650**) HCCBC; 24 Dec 62 (**350**), K, LB only, Eagle Harbor Christmas Bird Count; 14 Dec 97 (**85**) Rabbit Bay plus Jacobsville, H, LM only, HCCBC. **Late winter**: 27 Jan 2002 (**100**) B and H, RH. *Note*: some of the old high counts above may never be duplicated because of the

closure of all garbage dumps in the late 80s and early 90s.

Breeding (**B** 1 co; **H** 11 co, 1 po; **K** 6 co, 1 pr, 5 po. These totals do not include records from Sharf (1979), Scharf & Shugart (1998), or Cuthbert *et al.* (2001), for which see beyond.

18 May (adults on 3 nests), 30 Jun (colony apparently destroyed) 2001; same locality as 5 Jun 2000.

29 May 2001 (adults sitting on 3 nests) nearshore rocks near Devil's Washtub, 2 mi W Copper Harbor, LB.

30 May 2004 (nest with 2 eggs) mainland coastal rocks, Assinins, B, JY.

*3 Jun 86 (nest with 2 eggs) dike at Lake Linden sewage ponds, LB; empty on 14 Jun.

5 Jun 2000 (about 40 adults; 5 young about 5 in long; 3 nests, possibly more, with eggs,) ledges and rubble below a vertical, sandstone, mainland cliff, T53N, R33W, Sec. 35, on shore of Keweenaw Bay 6 mi SE Chassell, H, JY; birds present here 2 May seemingly sitting on nests. No successful breeding in 2001 (see 18 May 2001 entry). Successful again in 2002 (9 Jun, 3 chicks; 30 Jun, 11 chicks; JY), 2004 (26 Jun, nest with 1 egg, JY), and 2005 (3 occupied nests, including 1 with 2 eggs and 1 chick, plus 3 chicks out of nest, JY).

*10 Jun 86 (adults sitting on 2 nests) on offshore rocks at Agate Harbor, LB; at least one later abandoned.

*10 Jun 89 (many birds nesting) Traverse Island, H, AW, C. Kurtz.

*14 Jun 86 (nest with 3 eggs) dike at Lake Linden sewage ponds, LB.

*15 Jun 86 (adult on nest) offshore rock at Cat Harbor, K, LB.

19 Jun 2005 (adult on nest with 3 eggs) mainland stamp sand beach on north side of river at hamlet of Big Traverse Bay, H, LB, Z. Gayk.

*25 Jun 89 (nest with 2 tiny prejuveniles) dike at Lake Linden sewage ponds, LB.

6 Jul 1840 (about 20 flightless young) islet off east end of Porter's Island, Copper Harbor, Bela Hubbard (Peters, 1983); still nested here in 2005 (LB).

*10 Jul 86 (10 pairs on nests) island in Torch Lake off Tamarack City, H, LB.

16 Aug 65 (2 old used nests) Gull Rock next to Manitou Is., LB.

Note: the following is a summary of the localities and number of nests found on censuses in 76 (Scharf, 1979), 89 (Scharf & Shugart, 1998), 90 (Kozie & Kubiak, 1990), and on 8 Jun 98 (Cuthbert *et al.*, 2001); locality names are as published:

Stamp Sand Island off Hubbell, H, 76 (5 nests), 89 (9), 98 (22). Under Ring-billed Gull, Scharf (1979) confused this island with the next below, and may have done likewise under Herring Gull.

Stamp Sand Island off Lake Linden, 76 (0), 89 (241), 90 (350), 98 (68).

Traverse Island, H, 76 (177), 89 (423), 98 (66).

Seven Mile Point, K, 98 (1).

Little Grand Marais Harbor, K, 98 (3).

Eagle Harbor, K, 89 (4).

Eagle Harbor north rock, K, 89 (3).

Eagle Harbor south rock, K, 76 (27), 89 (1), 98 (1).

Agate Harbor rocks and "Two Finger Bay" [=Agate Harbor], 76 (32), 89 (18), 98 (4).

Copper Harbor, 89 (3).

Copper Harbor Island, 76 (10), 89 (12).

Manitou Rock, 76 (32) [probably Gull Rock].

Manitou Island Light, 76 (10), 89 (131), 98 (17).

Bete Grise nw Rock 1, K, 89 (6).

Bete Grise nw Rock 2, K, 89 (8).

Note. In 90, the population on the stamp stand island in Torch Lake near Lake Linden produced 96% hatching success and an overall productivity (based on the number of 21-day-old young) of 1.17 young/pair (Kozie & Kubiak, 1990).

BBS. Bootjack 67-73: 669 on 7 of 7 counts (100%); mean 95.57; range 27-147. *Bootjack* 92-2005: 27 on 13 of 14 counts (92.9%); mean 1.93; range 1-6. *Herman*: 179 on 7 of 7 counts (100%); mean 25.57; range 8-66.

NAMC. Baraga Co.: 166 on 6 of 6 counts (100%); mean 27.67; range 17-44; ind/PH .65. *Houghton Co.*: 412 on 7 of 7 counts (100%); mean 58.86; range 6-94; ind/PH 1.48.

HCCBC. 3328 on 25 of 26 counts (96.1%); mean 128.00; range 0-630; ind/PH 2.82; absent in 95 when all waters frozen; decreasing (see Historical Changes).

Banding Recoveries. Of 14 prejuveniles banded in the Keweenaw, 9 were recovered in the same fall or winter to the east (Schoolcraft and Alger Cos., MI), east-southeast (ON, 2), southeast (Emmett Co., MI, 2), south-southeast (IN, 2), and east-northeast (QC, 1), indicating a general movement of first-year gulls toward the southeastern quadrant (but see comments below); one each of these from ON (Jan) and IN (20 Dec) were presumed winterers. The other 5 of the 14 were found in subsequent years; 3 indicate a similar movement to the southeast (Allegan Co., MI, 2) and south (WI), while the last 2 were found

to the west-southwest in MN. Prejuveniles banded elsewhere and recovered on the Peninsula the same fall, presumably as transients, came from the west-southwest in MN (2, probably southwestern tip of Lake Superior), the immediate east in Marquette Co., MI (2), the southeast in ON (3), and the south in WI (12). The WI 12 demonstrate that first-year Herrings may go most any direction, including north, despite the southeastward trend suggested above. Seven other birds banded in WI as hatching-year or unknown age have been recorded in the Keweenaw the same fall; presumably all were raised in WI. One prejuvenile banded in MN was recovered on the Peninsula during a subsequent "fall" (8 Jul), probably as a transient. Birds raised in Marquette Co. and recovered in B may have moved slightly west to take advantage of the food in Keweenaw Bay. One banded as a prejuvenile in northeastern WI 28 Jun 55 was found dead in H 18 years later in Jul 73. I theorize that Keweenaw-raised birds go all directions in their first year, as evidenced by both Peninsula and WI juveniles, but those moving north and west soon encounter advancing winter freezes and unsuitable forests, dry plains, or farmland; probably, those that are able return quickly, while others perish; those moving north enter the largely uninhabited and inhospitable regions of Ontario, and their bands are unlikely to be recovered. Movement north and west should elicit strong selective pressures favoring migration toward the southeast quadrant, a direction that takes them to good foraging habitats on the southern Great Lakes, Gulf coast, and Atlantic coast.

Historical Changes (Table 17). Bela Hubbard saw young at Copper Harbor in 1840 (see above). Kneeland (1857) considered this species "not uncommon" on Portage Lake, Cahn (1918) saw a "number of individuals" in Aug 1914 in Iron Co. south of Kenton (H), and Wood (1933) said it was rare at Copper Harbor in spring 31 but he saw "100 or more" near Portage Lake on 11 May. On 26 Aug 57, I saw 88 at Sands, H. Many of the above birds could have been transients, but I suspect the Herring Gull was a common breeder, at least on Portage Lake and Copper Harbor, as in the rest of the Great Lakes region. That some Michigan populations suffered greatly from the effects of environmental contaminants in the 1960s and early 70s has been documented (see J. P. Ludwig in Brewer *et al.*, 1991). However, no data indicate that Lake Superior birds were affected (see Kozie & Kubiak, 1990). Appreciable numbers were recorded on the Bootjack BBS from 67 to 73 (range 27-147 birds) and in 86 (106 birds), but dropped to a range of 1-6 from 92 to 2005. This decline was not the result of pesticides but the closure of all garbage dumps and the reduction of fish cleanings (see below). During the 70s and 80s, populations of large species of *Larus* gulls expanded throughout the US, apparently in response to additional food afforded by large "landfills" (a cosmetic term for garbage dumps and filled wetlands). The same was true in Keweenaw Co. between Cat Harbor and Copper Harbor, where dumps expanded and birds began breeding on near-shore rocks (pers. obs.; Scharf, 1979; Scharf & Shugart, 1998). Breeding populations on the Peninsula reached their zenith in the mid to late 80s (see Scharf & Shugart, 1998; see Breeding). All this, however, came to an abrupt halt in the late 80s or early 90s when all Peninsular dumps were ordered closed by the U. S. Environmental Protection Agency, the large Portage Lake dump in 87, Grant Township (Copper Harbor) and Eagle Harbor dumps in 91, and the rest about the same time (county records, fide J. Musser). Herring Gulls are now much scarcer in K during summer and breed only sparingly. For instance, Sharf & Shugart (1998) found 18 nests at Agate Harbor and 131 on Manitou Island in 89, whereas Cuthbert *et al.* (2001) recorded only 4 and 17, respectively, in 98; similarly, the two Torch Lake colonies combined decreased from 250 in 89 and 350 in 90 to 90 in 98. The Bootjack BBS, which embraces parts of both H and K, recorded a mean of 95.57 birds per count in the period 67-73 but only 1.93 in 92-2005, a 98% decline. Winter populations also have plunged. The HCCBC, during the 11-year period 76-86, before closure of the Portage Lake dump in 87, recorded 217.1 birds per count compared to only 67.1 in 87-2001 (not including 95 when no waterbirds were seen due to frozen waters), a decrease of 69%. In my opinion, the Herring Gull has also suffered, both in summer and winter, from decreasing Lake Superior (and even inland) fish populations and the resultant degeneration of the Keweenaw fishing industry, caused in part by lampreys but primarily by man's overfishing (including gill-netting) and introduction of highly predatory salmon; I doubt that contamination has greatly affected Lake Superior (the waters of which I still drink! See Kozie & Kubiak, 1990). A thorough, independent, scientific study is needed to test this assertion. I also doubt that competition with the Ring-billed Gull has afffected the Herring Gull, as the two occupy somewhat different nesting and foraging habitats.

Remarks. On 12 Oct 87 over Lake Superior about 200 yards off Agate Harbor, two second-year Herring Gulls chased a small migrating passerine for three minutes, causing it to descend from 50 to 10 feet above the waves, at which time one gull snatched it out of the air and few off pursued by the second gull (LB). On 23 Sep 87, at the same place, 300 yards offshore, a Herring Gull chased a Northern Flicker, which was migrating southward and escaped by gaining shore (LB).

Thayer's Gull *Larus thayeri*

Status and Range (H). Accidental **spring** transient; 1 record, one in first summer plumage, 30 Apr 2005, on beach of town of Big Traverse, T55N, R31W, Sec. 3 or 4, H, RH, JK, K. Tischler (description and many photos by

Kaplan examined by LB, A. Byrne, P. Chu). Probably more likely to occur in early winter.

Glaucous Gull *Larus hyperboreus*

Status and Range (B, H). Accidental transient in **spring** (1 record for B, 29 Apr) and **early winter** (2 records for H, 15-24 Dec); no record for K. Closure of all Keweenaw garbage dumps in the late 80s and early 90s assures this species' continued rarity.

Significant Records (all).

29 Apr 2000 (1 second-winter) resting on sand beach in L'Anse, LB, JM.

15 Dec 91 (1) HCCBC (AB 46: 781).

24 Dec 66 (1 adult) resting on ice on Portage Lake, Houghton Christmas Bird Count, B. and D. Wolck (in litt.; JPW 45: 31).

[15 Dec 69. See Great Black-backed Gull.]

[See Iceland Gull in Hypothetical List.]

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

[**Great Black-backed Gull** *Larus marinus*]

Status and Range (H). Accidental vagrant in H in early **spring** (1 record, 26 Mar) and **early winter** (1 record, 16 Dec). As with the Glaucous Gull, the permanent closure of all Keweenaw garbage dumps in the late 80s and early 90s assures the continued rarity of this species. See Vagrancy in Discussions.

Significant Records (all).

26 Mar 78 (1 adult) jetty at North Portage Entry, H, AW (Weaver, 2000).

16 Dec 84 (1) HCCBC (AB 39: 621, where boldfaced).

[15 Dec 69 (1 found dead, unsexed skin and skeleton, MSU 6218) mouth of the Huron River; received from Bob Huff, District Game Supervisor,Conservation Department; prepared by R. Fitzner (MSU, in litt.; Payne,1983, 1986). Payne (1983) inadvertently listed this specimen under both Great Black-backed and Glaucous Gulls. There is one Huron River in Baraga Co. and another in southeastern MI. The specimen label says "Baraga County" in handwriting different from the rest of the label. The MSU database, hand-written catalog, and accession card all say "Mouth of Huron River, Monroe and Wayne Counties." Huff lived in Jackson, Jackson Co., which is not far from this locality. Hence, I conclude that someone other than the collector erroneously added "Baraga County" to the label, and without doubt the bird was actually collected at the mouth of the Huron River on the Monroe-Wayne Co. border, probably in what is now the Pointe Mouillee State Game Area, where it occurs regularly today.]

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Sabine's Gull *Xema sabini*

Status and Range (B). Accidental **fall** transient on L'Anse Bay; 3 records, 8 Oct-2 Nov. No record for H or K, but possible, especially as a flyby on north coast during fall migration, as it occurs frequently at Whitefish Point (Granlund & Byrne, 1996).

Significant Records (all).

8 and 9 Oct 98 (1 juvenile seen) resting on sand bar and foraging over shallow waters of L'Anse Bay off Baraga State Park and on nearby Baraga sewage ponds, LB, LM, JY (finder). Accepted by the MBRC (Internet).

23 Oct 57 (G. A. Ammann) and a "few days later" (R. R. Rafferty) (1 seen) L'Anse Bay (Rafferty, 1960).

26 Oct 59 (3 seen, 1 of which collected, unsexed skeleton, MSU 2827, R. R. Rafferty) on beach at Baraga State Park; also, 1 (presumably of the remaining two) seen several times from 26 Oct to 2 Nov 59 on L'Anse Bay (Rafferty, 1960; Payne, 1983; MSU, in litt.).

Black-legged Kittiwake *Rissa tridactyla*

Status and Range (B, H). Accidental transient in **fall** (1 record, 27 Oct) and **early winter** (1 record, 16 Dec). No record for K, but should be sought migrating past north shore in late fall, as it is regular at Whitefish Point (Granlund & Byrne, 1996).

Significant Records (all).

27 Oct 59 (1 unsexed specimen, MSU 2828, W. T. Rafferty) found "huddled beside Bayshore Drive in L'Anse" (Rafferty, 1960; Payne, 1983).

16 Dec 90 (1 immature) Portage Lake, Houghton, J. Cochrane, HCCBC (AB 45: 788, boldfaced, "good details—Ed."; AB 45: 276; JPW 68 [3]: 14; Weaver, 1991).

[7 Dec 96 (1 immature) flying over downtown Houghton, AW, D. Weaver (Weaver, 2000; orig. notes); seen flying only and later questioned by AW himself (Weaver, 2000; pers comm.).

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Caspian Tern *Sterna caspia*

Status and Range (B, H, K). Exact status uncertain.

Spring: currently an uncommon transient from early May to early Jun, mostly in ones and twos, on Portage Lake system (Torch Lake, Pike Bay, South Portage Entry, and Sturgeon and Pilgrim River mouths) but most regular and numerous on L'Anse Bay (especially sand bars at head). Three records for K, birds flying over Agate Harbor (LB) 24 May 97 (2) and 13 Jun 93 (1) and at High Rock Bay, 29 May 2005 (1, JY). **Summer**: uncommon, non-breeding visitant at same places where regular in spring; numbers begin to pick up again in second week of Jun, reach a peak in last week of Jun, and decrease steadily to 30 Jul. Unusual localities include 2 west of Copper Harbor on 13 Jul 2002, JY, and 2 on Keweenaw Bay proper, 1 Jul 91, AW. Adult alternate plumage of all birds (no juveniles) suggest that summer birds are non-breeders or early returning (failed?) breeders, rather than normal fall transients, which, judging from other Michigan data, should pass in Aug and Sep. Records on Torch Lake (H) suggest birds might be prospecting for nest sites on the two stamp sand islands there; these should be monitored. **Fall**: accidental transient; 1 record, 16 Sep 2004 (2) L'Anse Bay, RH.

Habitat. Forages over moderately deep open waters of coastal bays and Portage Lake system and rests on adjacent sand bars.

Migration Dates. **SEAD**: 6 May 2004 (Baraga marina, JY). **SMAD**: 17 May (n=7). **SP**: roughly, third week of May, with the few in first week of Jun perhaps representing the end of spring migration. **Summer latest date** (see also Status and Range): 30 Jul 97 (2, L'Anse Bay, JY). **Fall** (one record): 16 Sep 2004 (see above).

Significant Records (all older records).

3 Jul 83 (5) L'Anse Bay, S. Patti, Herman BBS.

15 (2), 16, 22 (2) Jun 84, Sands, H, AW (photos by; Weaver, 2000).

1 Jul 84 (1) L'Anse Bay, S. Patti, Herman BBS.

10 Jul 86 (1 adult) over Torch Lake at Tamarack City, H, LB.

22 May 91 (1 adult) over Torch Lake at Tamarack City, H, LB.

1 Jul 91 (2) off town of Keweenaw Bay, B, AW.

High Counts. **Spring**: 7 May 2000 (**5**) Sturgeon River mouth, JY; 13 May 2005 (**5**) head L'Anse Bay, JK. **Summer**: 26 Jun 99 (**10** adults) head L'Anse Bay, LB; 29 Jun 98 (JY), 3 Jul 83 (see above), and 12 Jul 99 (JY) (**5** each) all L'Anse Bay.

BBS. Herman (early Jul dates): 6 on 2 of 7 counts (28.6%); mean .86; range 0-5.

Historical Changes (Table 17). None of the older authors (Kneeland, 1857; Cahn, 1918; Wood, 1933; Wing, 1939) mentions this species for the Keweenaw. AW saw none 1972-83 despite frequent birding at prime tern localities such as Sands (H) and L'Anse Bay. The first record I find was in 83, followed by four sightings in 84, one in 86, and two in 91. Thereafter this species has been of annual occurrence in increasing numbers, culminating with 15 birds in 98 and 19 in 99. Possibly, this seeming increase is an artifact of incomplete coverage in earlier years. However, the Michigan population more than tripled between 60 and 90, apparently in response to a large incursion of alewives and smelt introduced in the 30-40 period (J. P. Ludwig in Brewer *et al.*, 1991), and the Great Lakes population doubled between 77 and 89-90 (Cuthbert *et al.*, 2001). Keweenaw birds might be a result. Islands in Torch Lake should be watched for nesting birds, although the presence of many nesting Herring and Ring-billed Gulls there might be a deterrent.

Common Tern *Sterna hirundo*

Status and Range (B, H, K). Exact status uncertain. Recorded only along coast and on Portage Lake system. **Spring**: transient; abundant some years (88, 98-2000) but recorded in only 15 years in the period 72-2005, this irregularity here attributed to incomplete coverage. Recent (98-2005) excellent coverage of its main locality, L'Anse Bay, suggests it is regular and common, occurring in fairly large numbers but, as measured by annual high counts, during so few days per year that it is easily missed (as most observers did in 2001). Only a handful of records elsewhere, most older, specifically Torch Lake, Sands, Chassell, and the Sturgeon River mouth, all H. Dates of maximum one-day totals (see High Counts) vary somewhat from year to year, *e.g.*, 15 May 88, 18 May 99, 20 May 2000, 28 May 98, but suggest a peak in the third week of May, as does a histogram (not shown) of all records. Birds in the first week of Jun probably are normal spring transients, as is typical of many Keweenaw species. **Summer**: occasional visitant in mid and late Jun, when sometimes in flocks (see High Counts), Jul (7 records, 1-3 birds each), and Aug (3 records, 1-2 birds each); late Jul and Aug birds might be early fall transients. **Fall**: transient; large flocks of migrating birds on 31 Aug and 5 Sep (see High Counts) indicate true fall migration (although not necessarily the start or peak), and if these are regular, suggest that the species is at least common during a very narrow migration window; thereafter, an occasional transient to 22 Sep (3 records, 3-8 birds) and once on 4 Oct.

Habitat. Forages over large open bodies of moderately deep water along coast and on Portage Lake system, resting on adjacent sand bars and emergent logs and pilings; migrates eastward, but does not forage, along the Lake Superior coast of northern K in fall.

Migration Dates. **SEAD**: 2 May 93 (4, L'Anse Bay, JY). **SMAD**: 14 May (n=11). **SP**: probably third week of May; see Status and Range. **FLDD**: 4 Oct 90 (3, Agate Harbor, LB); 22 Sep 73 (3, Redridge, H, AW).

Significant Records (all spring and summer records except for L'Anse Bay).

6 (1) and 19 (1) May 77, Sands, H, AW.
14 May 82 (5) Sands, H, AW.
14, 15 May 76, Sands, H, AW.
22 May 91 (1) Torch Lake at Tamarack City, H, LB.
25 May 2002 (1) Keweenaw Bay 6 mi SE Chassell, H, JY.
31 May 74 (2) Sturgeon River mouth, AW.
10 Jun 99 (8) Chassell, H, JY.
4 Jul 2000 (1) Sturgeon River mouth, JY.
15 Jul 2002 (1) Chassell, H, RH, JY.

High Count. **Spring** (all L'Anse Bay): 15 May 88 (**300**) AW; 18 May 99 (**220**) JY; 20 May 2000 (**120**) LB, JM; 11 May 82 (**70**) JY; 23 May 2002 (**60**) JY; 28 May 98 (**36**) JY. **Summer** (L'Anse Bay): 30 Jun 96 (**35**) LB; 18 Jun 97 (**30**) JY; 29 Jun 97 (**21**) JY. **Fall**: 5 Sep 99 (**352**) L'Anse Bay, JY; 31 Aug 80 (**307**) Agate Harbor, LB, migrating eastward along Lake Superior coast, including 88 in one 10 min period, 1249-1258 EDT.

BBS. *Herman*: 2 on 1 (l Jul 84) of 7 counts (14.3%); mean .29; range 0-2; migrants.

NAMC. *Baraga Co.*: 94 on 2 of 6 counts (33.3%); mean 15.67; range 0-80; ind/PH .37.

Forster's Tern *Sterna forsteri*

Status and Range (B). Very rare **spring** transient in B (12 records, 8 May-10 Jun), resting on sand bars and pilings and foraging over open waters of L'Anse Bay. Presence of at least 53 individuals on 13 dates in 7 of the last 8 years (98-2005) suggests this species is regular and has simply been overlooked because of its similarity to the Common Tern, with which it often associates. A near-western species, its occurrence appears to depend on the frequency and strength of west winds.

Significant Records (all; all on L'Anse Bay).

8 May 99 (6 adults in alternate plumage) LB, JM, LM, NAMC.
8 (5 birds)-10 (12) May 2004, JY.
23 May 2004 (1) TA (MBNH 11: 196).
9 May 2003 (1) JY.
10 May 2002 (1 adult alternate plumage) LB, JM.
13 May 2000 (1 adult in alternate plumage) LB, JM; not Houghton Co. as in MBNH 7: 224 and Shipper (2000).
13 (11) and 14 (3) May 2005, LB, J. DeFoe, Z. Gayk, RH, JK (photos), LM, JY.
20 May 2003 (2 adults in alternate plumage) head L'Anse Bay, RH.
23 May 2002 (5) JY.
28 (10, JY) and 29 (2 adult alternate, 1 first-basic plumage, LB) May 98.
30 May 2000 (2) JY.
10 Jun 2002 (1) JY.

NAMC. *Baraga Co.*: 7 on 2 of 6 counts (33.3%); mean 1.17; range 0-6; ind/PH .03.

Black Tern *Chlidonias niger*

Status and Range (B, H). **Spring**: occasional transient, recorded 13 May-6 Jun at L'Anse Bay, Arnheim, Sturgeon River Sloughs, and Sturgeon River mouth. The preponderance of recent records, during a time of intensive observer coverage of all recorded localities, suggests this species is regular in spring but sometimes is missed because of its rarity and narrow, three-week, migration period. Keweenaw birds are probably from more western breeding populations, which would account for their irregularity, being more likely during springs with numerous west winds. **Summer**: accidental resident (1 record, see Breeding) and visitant (or fall transient, 4 and 5 Jul). **Fall**: no record, but expected.

Habitat. On migration, forages over open bay, river mouths and marsh ponds. The only breeding record was in marsh, the nest on sedges lying over a log at pond edge.

Significant Records (all except Breeding).

13 May 2000 (2 adults) perched on logs and foraging over L'Anse Bay, LB, JM, NAMC.
14 May 2005 (1) L'Anse Bay, NAMC.
16 May 99 (2 adults) L'Anse Bay, JY.
17 May 81 (1) L'Anse Bay, AW.
20 May 96 (1) marsh at Sturgeon River Sloughs, Unit 1, JY.
21 May 97 (2) L'Anse Bay, JY.
24 May 97 (1) Arnheim, B or H, JY (Youngman & Murphy, 1999).
6 Jun 76 (1) Sturgeon River mouth, AW (Weaver, 2000).
4 Jul 2000 (1 adult) Sturgeon River mouth, JY (Youngman & Murphy, 1999).
5 Jul 76 (1) Sturgeon River mouth, AW (Weaver, 2000).

Breeding (**H** 1 co).

16 Jun (nest with agitated pair, one sitting on nest), 2 Jul (1 nestling being fed and brooded), 4 Jul (chick 10-15 ft from nest), 9 Jul (1 adult, no chick), 11 Jul (no birds) 2003, Arnheim, Unit 4, T53N, R33W, Sec. 33, H, JY; breeding unsuccessful. See Habitat.

NAMC. *Baraga Co.*: 2 on 1 of 6 counts (16.7%); mean .33; range 0-2; ind/PH .01 (also seen on 2005 count).

Rock Pigeon *Columba livia*

Status and Range (B, H, K). Introduced. The Rock Pigeon, formerly called Rock Dove, is highly dependent on man for nest sites and food and therefore more

widespread and abundant in well-developed H than in B, and now only a visitant to K. **Permanent** resident; detectability fairly common in **summer** when birds spread out for breeding; very common in **winter** when flocked at favored roosts and feeding sites, but actual abundance probably does not really increase. Recorded primarily in larger towns in H (Calumet, Laurium, Lake Linden, Houghton, Hancock, Chassell) and B (Baraga, L'Anse), locally in farmland (west of Baraga; Pelkie, H, area). Formerly bred in K (Ahmeek; no record after 95), where now only a casual visitant to Copper Harbor (4 records, 1 bird each on 1 Jun 96, 2-6 Oct 99, 27 Sep-7 Oct 2000, and 2 May 2001, LB) and once to Manitou Is. (1, 10 Sep 2002, JY). Such wandering demonstrates a potential for further expansion, but usually nesting and/or foraging habitat is not encountered beyond its current range. Severe winters cause major declines in numbers (HCCBC, all counts in Dec; Table 15); for instance, after winter 78-79, with its all-time record snowfall, when .92 per party hour were seen, the population crashed and then recovered over a five-year period 79-83, the numbers per party hour being, respectively, .14, .16, 1.32, 3.13, and 5.08. Given the depth of snow, its winter survival, and hence its entire existence in the Keweenaw, probably depends on winter bird feeders.

Habitat. For nest sites, see Breeding. Confined largely to major towns, where it feeds on seeds and handouts on ground. Only rarely recorded in rural settings, as most Peninsular farms raise only hay, not row crops.

High Counts. **Spring**: multi-party, 13 May 2000 (**86**) H, NAMC. **Summer**: 15 Jun 2000 (**60** in one flock) Calumet, LB. **Fall**: 25 Sep 97 (**20**) Calumet, LB; no one has tried to obtain a high fall count. **Winter**: multi-party, 16 Dec 95 (**410**) HCCBC.

Breeding (**B** 1 pr, 3 po; **H** 2 co, 4 pr, 2 po; **K** 1 co).

28 Mar 97 (adult carrying nest material) Laurium, H, LM.

17 Apr 98 (flightless young) on beam of Houghton lift bridge, D. Richter.

*14 Jun 86 (10 adults and nest with 2 half-grown young) rafter inside abandoned mine lift building, Ahmeek, K, LB; building still standing, without birds, in 2001.

BBS. Herman: 15 on 3 of 7 counts (42.9%); mean 2.14; range 0-6.

NAMC. Baraga Co.: 26 on 4 of 6 counts (66.7%); mean 4.33; range 0-8; ind/PH .10. *Houghton Co.*: 376 on 7 of 7 counts (100%); mean 53.71; range 21-86; ind/PH 1.35.

HCCBC. 3256 on 26 of 26 counts (100%); mean 125.23; range 5-410; ind/PH 2.76. See Historical Changes and Status and Range.

Historical Changes (Table 17). The Rock Pigeon has increased over the past 26 years, as demonstrated by HCCBC data (Table 15). During Decembers 76-87, counts averaged 48.6 birds and 1.38 per party hour, whereas in the period 88-2001, numbers rose to 190.9 and 3.53.

White-winged Dove *Zenaida asiatica*

Status and Range (H, K). Accidental vagrant in **spring** (2 records, 12-17 May, H; 13 Jun, K) and **fall** (2 records; 17 Aug, H; 14 Oct, K). The eastern population of the species, *Z. a. asiatica*, began exploding by at least the mid 90s (LB) and may be expected to cast off more vagrants (I wrote this prediction just after the 99 record).

Significant Records (all).

12-17 May 2002 (1 at seed feeder) 1 mi W Schmidt Corner, T55N, R34W, Sec. 18, H, W. Sharp (finder), LB, RH, JK (photo in LB files), JM. Accepted by the MBRC (Byrne, 2004).

13 Jun 87 (1 seen feeding on weedy ground) in town of Copper Harbor, LB. Said to be present for several days. Accepted by the MBRC (Chu, 1991). Second Michigan record (Evers, 1989).

17 Aug 99 (1 seen on power line) in town of Lake Linden, LB. Accepted by the MBRC (Byrne, 2001a).

14 Oct 2001 (1 seen on grassy roadside) Pt. Isabelle, K, Z. Gayk (good description in LB files). Accepted by the MBRC (Byrne, 2004).

Mourning Dove *Zenaida macroura*

Status and Range (B, H, K). Formerly rare in summer and absent in winter (see Historical Changes). Now a fairly common **permanent** resident. **Spring** and **fall** numbers, apparently augmented by few if any transients, no greater than in summer, but recently a rare but regular spring and fall visitant between Agate Harbor and Manitou Is., with breeding expected. Spring birds appear at breeding localities as early as 20 Mar but on average the end of the month, either immigrating from the south or simply spreading out from winter flocks. **Summer**: fairly common and widespread in farming districts and residential settings of northwestern B and northern H. Very rare elsewhere, including heavily forested K, where there is only one confirmed breeding record (Ahmeek), although recorded out of habitat on 30 Jun 2003 (B. Johnson, L. Usyk, JY) and 15 Jul 2002 (JY) on Manitou Is. Remarkably, has nested successfully in late Feb in B (Youngman, 1999), although it remains to be seen if such timing is regular. Whether any birds emigrate from the Peninsula in **fall** is unknown, but current **winter** detectability seems to remain in the fairly common range, judging from HCCBC data. In winter, forms flocks at residential and rarely rural feeders, without which the species probably could not survive,

as heavy snows cover natural ground food. At least three winter records for K, all recent (1 bird, 1 Jan 2000, Lac La Belle feeder, JM, LM, JY, Eagle Harbor Christmas Bird Count; 9 Jan 2001, 1, Copper Harbor feeder, RH; 27 Jan 2002, 14 birds, Mohawk, RH).

Habitat. Breeds most commonly in residential and rural settings, which offer feeders and favored spruce or fir plantings for nest sites; however, also once singing in pines on Baraga Plains (27 Jun 2000, Big Lake Campground, LB). Forages also in pasture, cut hayfields, grass-herb old fields, and openings in broad-leaved shrub upland. In winter, feeds probably exclusively at feeders.

Migration Dates. **SEAD**: 20 Mar 98 (Liminga, D. Weaver). **SMAD**: 31 Mar (n=13, data 86-98). These dates based on localities where birds do not winter, but they could represent dispersal from local winter flocks.

High Counts. **Spring**: multi-party, 9 May 98, (**23**) in B and (**23**) in H, NAMC; 27 Mar 97 (**8**) B, JY. **Summer**: 15 Jun 2003 (**13**) H and K, LB, JM, Bootjack BBS. **Fall**: 9 Oct 2003 (**60**) Hancock feeder, RH; 8 Sep 2005 (**18**) northern H (including 15 in Dollar Bay), LB. **Early winter**: multi-party, 20 Dec 2003 (**63**) HCCBC; 12 Dec 98 (**23**) at one feeder in Houghton, LM. **Late winter**: 8 Feb 96 (**24**) B and H, JY.

Breeding (**B** 1 co, 1 pr, 7 po; **H** 5 co, 2 pr, 7 po; **K** 1 co, 1 po).

26 Feb through 25 Mar (adult on nest in spruce); 25 and 31 Mar (2 feathered nestlings); 3 Apr 98 (2 young on branch 4 ft from nest, one flying quite well); in L'Anse, JY (Youngman, 1999).

8 Apr 2002 (nest with 2 eggs) Chassell-Painesdale Road, H, JY.

27 May 2001 (one delivered a stick to another sitting on nest) Ahmeek, K, LB, JM.

15 Jun 2003 (nest with 1 egg) T56N, R32W, Sec. 28, H, LB, JM.

25 Jun 2003 (nest with 2 eggs) Cloverdale Road, H, R. and A. Toczydlowski (2003; Richter *et al.*, 2003).

30 Jun 98 (adult carrying nest material into spruce) Kearsarge, H, LB.

25 Jul 2003 (adult on nest) along Sturgeon River, T53N, R33W, Sec. 18, B. and R. Wheeler (Richter *et al.*, 2003).

BBS. *Bootjack* 67-73: 8 on 3 of 7 counts (42.9%); mean 1.14; range 0-4. *Bootjack* 92-2005: 73 on 13 of 14 counts (92.9%); mean 5.21; range 0-13. *Herman* 83-97: 19 on 4 of 7 counts (57.1%); mean 2.71; range 0-10.

NAMC. *Baraga Co.*: 82 on 6 of 6 counts (100%); mean 13.67; range 5-23; ind/PH .32. *Houghton Co.*: 133 on 7 of 7 counts (100%); mean 19.00; range 6-33; ind/PH .48.

HCCBC. 288 on 13 of 26 counts (50.0%); mean 11.08; range 0-47 (63 in 2003); ind/PH .24.

Historical Changes (Table 17). **Summer**: not listed for the Peninsula by Kneeland (1857), Wood (1933) or Wing (1939), but all concentrated their efforts in heavily wooded terrain. As recently as 1961, Dodge stated that there was no Upper Peninsula breeding record, but this I think reflects more a scarcity of birders than birds, because Cahn (1918) saw several at close range in the vicinity of Kenton, H, in Aug 1914. Nevertheless, it was a scarce, probably rare, summer bird. Beginning in 72, when AW first began birding the region, he saw it regularly at Liminga but elsewhere only twice through 80. Starting in 84, his records away from Liminga increased slowly but steadily. F. B. Isaacs recorded 3 on 29 Apr 76 along Sturgeon River Road, H. I saw none during August visits 55-85 but regularly and with increasing numbers and range thereafter. The Herman BBS recorded none in 83, 84, or 85, but 3 each in 90, 91, and 93, and 10 in 97. The Bootjack BBS demonstrates a rise from 1.14 birds per count during the 67-73 period to 5.21 in 92-2005, a 357% increase; also, data indicate a gradual increase within the latter period. Recent NAMC data reflect the current detectability of fairly common, with means of 13.67 per count (.32 ind/PH) for B (97-2002) and 19.00 (.48 ind/PH) for H (96-2002). Wisconsin experienced about a 1% increase per year 84-96 (Temple *et al.*, 1997). Summer bird feeders, most of which are closed anyway, are unimportant, as birds have ample natural seeds and insects on which to feed. The **winter** increase is even more striking. A. Weaver's latest fall record between 72 and 90 was 7 Nov 88 (B); he then recorded it on 20 Feb 90 (near Chassell, H) and 5-20 Dec 91 (his Liminga feeders). The HCCBC (Table 15), all taken in Dec, recorded none from 76 to 87 but small numbers in every year 88-2001 (count week only in 91), with a maximum of 47 the last year (and 63 in 2003) and an annual mean of 20.6. Starting in 94, all local observers maintaining or visiting feeders noted a burgeoning winter population in B and H. Neither summer nor winter expansion is related to agriculture (*e.g.*, corn production), as suggested for the Lower Peninsula (L. D. Caldwell in Brewer *et al.*, 1991), because the only major crop in the Keweenaw is hay. Rather, I suspect that the summer increase is a direct result of winter feeders allowing summer residents to remain, survive, and build up a permanent resident population. As long as man maintains feeders, especially during severe winters, the Mourning Dove should continue to prosper.

[Passenger Pigeon *Ectopistes migratorius*]

Status and Range (H, K). Extinct (see Table 17); previously a common **summer** resident. Two records. Kneeland (1857) stated that "I have seen them at Portage Lake as early as May 4" [1857]. Bela Hubbard (in Peters,

1983) noted in his journal for 7 Jul 1840 at Copper Harbor, that "At 5 PM we returned to camp [on Porter's Island], partook of a dinner of pigeons, both fried and stewed.... During our stay in this harbor pigeons have been found in plenty & liberally supplied our table. Mr. Penny or one of the men will in an hour bring in a doz." I conservatively consider the Copper Harbor record as evidence of probable breeding. Wood (1951) mentioned only two Upper Peninsula records, one each from Iron and Chippewa Cos. I accept the Keweenaw records, because the species is likely to have occurred here, and the authors gave specific data. The Mourning Dove was not listed by Kneeland and certainly did not occur then, before the forests were cleared; and even today "a doz" could not be obtained in an hour.

Black-billed Cuckoo *Coccyzus erythropthalmus*

Status and Range (B, H, K). One of the latest migrants in **spring**, arriving on average 28 May. Uncommon **summer** resident throughout open areas of B and H, most numerous in northern H, and very rare in K (including Manitou Is., 25 Jun 2004, Z. Gayk, B. Johnson) and the heavily forested southern two-thirds of B. Abundance and local range highly variable from year to year (see Breeding) in response to outbreaks of caterpillars; 67, 88, and 2001 (see High Counts) were exceptional years for both. No confirmed breeding for the Peninsula, in part because of birders' lack of interest in searching. The few **fall** records suggest early departure, but more data are needed for this inconspicuous species.

Habitat. Occurs primarily in broad-leaved shrub upland, rural hedgerows, isolated patches of dry deciduous forest (aspen), and dense shrub wetland with willows and other scattered trees.

Migration Dates. **SEAD**: 17 May 77 (Liminga, AW); [the date of 13 May 95 (B, NAMC) should be deleted, fide the observer]. **SMAD**: 28 May (n=18). **SLDD**: a migrant heard at night on 15 Jun 2001 (Agate Harbor, LB). **FLDD** (few data): 10 Sep 2002 (Manitou Is., JY, a transient); 2 Sep 96 (Arnheim, H, JY); 29 Aug 2005 (1, Seven Mile Point, K, T. Auer); 17 Aug 91 (Chassell, H, AW).

High Counts. **Summer**: 24 Jun 67 (**17**) H and K, B. and D. Wolck, Bootjack BBS; 1 Aug 96 (**7**) Arnheim, B or H, JY.

Breeding (**B** 6 po; **H** 2 pr, 12 po; **K** 1 pr, 3 po).

*30 May 88 (pair seen) Copper Harbor, LB, probable breeding.

29 Jun 2002 (5 singing birds) Elo area, H, TA, JM, probable breeding.

*Summer 88 (11 singing birds) Boston area, H, LB, probable breeding.

[Summer 94 ("nested") H (MBNH 2: 50); I doubt a nest was found; more likely a probable breeding record, but not counted in the above totals].

BBS. *Bootjack* 67-73: 37 on 6 of 7 counts (85.7%); mean 5.29; range 0-17. *Bootjack* 92-2005: 10 on 4 of 14 counts (28.6%); mean .71; range 0-4. *Herman* (early Jul counts): 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

Historical Changes (Table 17). First mentioned by Cahn (1918) for 1914 in the Kenton area (H). Data from the Bootjack BBS suggest a recent 86% decrease, from 5.29 birds per count, 67-73, to .71, 92-2005. If true, this may be a temporary phenomenon resulting from erratic annual variations in numbers of caterpillars or a more permanent response to shrub uplands reverting to dense second growth forest; however, this cuckoo also inhabits shrub wetland edge (with trees), which probably has undergone little change. Much more data needed.

Yellow-billed Cuckoo *Coccyzus americanus*

Status and Range (B, H, K). Casual **summer** resident (3 records, 30 Jun-14 Jul) and **fall** vagrant (5 records, 9-23 Sep), the latter mode of occurrence based on the time lag between 14 Jul and 9 Sep; this is one of a number of species that frequently undergoes "reverse migration" in fall as a result of misorientation abetted by south winds.

Significant Records (all).

30 Jun 49 (adult flushed from nest with 2 young several days old) along Little Gratiot River near Gratiot Lake, K, G. J. Wallace (1949).

11 Jul 82 (1 seen) near beaver pond on Youngman's property, B, JY.

*14 Jul 88 (one pair seen) .5 mi N Calumet, T56N, R33W, Sec. 11, H (not B as stated in JPW 67: 35) LB; at a large infestation of caterpillars in an isolated patch of quaking aspens.

9 Sep 76 (2 seen) Bete Grise, K, F. B. Isaacs.

9 and 10 Sep 2002 (1) Manitou Is., R. Krumm, JY.

20 Sep 98 (1 seen) Freda, H, AW, D. Weaver, P. Weaver (Weaver, 2000).

22 Sep 2003 (1) hit window in Copper City (not Calumet as in MBNH 11: 104) K, M. Schmidt; given to MTU (Brockway Lookout 11 [1]: 4)

23 Sep 88 (1) 2 mi NE Gay, K, LB; on ground at roadside, looking sluggish and perhaps injured.

[The MBBA map (1991) shows a spot for possible breeding in southwestern H for which data are unavailable.]

Breeding (**B** 1 po; **H** 1 pr; **K** 1 co); see Significant Records.

Great Horned Owl *Bubo virginianus*

Status and Range (B, H, K). Very uncommon presumed

permanent resident throughout. Poor coverage, especially at night, and a general lack of response to tapes, probably account in large part for the paucity of records (*e.g.*, note the few possible breeding localities on the MBBA map 1991), even though this species tends to avoid extensive tracts of unbroken forest in favor of more mosaic habitat where it is more likely to be recorded. Very few **winter** records, when few birders afield and birds silent. Both emigration and immigration occur in **fall** (see beyond), but to what extent is unknown.

Habitat. Rather tolerant of man, even in its choice of nest sites (see Breeding). Frequents a variety of habitats, including mesic/wet mixed, mesic deciduous, and dry coniferous (both jack pine and red pine) forests, provided they are adjacent to openings (farmland, beaver ponds, marshes, clearcuts) in which to hunt.

High Counts. **Spring**: multi-party, 9 May 98 (**4**) H, NAMC.

Breeding (**B** 1 co, 2 po; **H** 6 co, 1 pr, 3 po; **K** 2 co, 5 po).

22 Mar 98 (adult on nest in pine) Eagle Harbor cemetery, K, S. Andres.

31 Mar (adult on nest), 27 May (nest empty) 2002, Chassell, T54N, R33W, Sec. 31, H, LM.

1, 2 May 98 (2 half-grown nestlings) Lakeview Cemetery, Calumet, S. Andres, LB; nest a hollow between several nearly vertical limbs of a mature sugar maple; later both young died due to newspaper publicity and resultant public over-visitation.

7 May 98 (2 nestlings) Pontiac Road, Hancock, S. Andres.

9 May 95 (2 young just fledged) Ojibwa Campground, Baraga, LM, JY.

10 May 2004 (2 nearly full-grown young on ground, fed by adult) Lakeside Cemetery, Hancock, D. Richter.

15 May 2001 (adult sitting; at least one downy nestling about 10 in tall) Swedetown Creek, Hancock, LB, RH (finder), JM; old nest of Common Raven in large eastern white pine

30 May-4 Jun 2002 (adult and 1 large downy on nest) in densely built residential neighborhood next to house in Hancock, LB, JM, LM.

Spring 95 (large prejuveniles with some down) Ahmeek, K, LM; perched in opening of abandoned mine lift building.

Summary: above dates indicate egg-laying as early as about 1 Mar.

NAMC. *Baraga Co.*: 7 on 3 of 6 counts (50.0%); mean 1.17; range 0-3; ind/PH .03. *Houghton Co.*: 4 on 1 of 7 counts (14.3%); mean .57; range 0-4; ind/PH .01.

HCCBC. 3 on 2 of 26 counts (7.7%); mean .12; range 0-2; ind/PH .003.

Banding Recoveries. A juvenile (hatching year) banded 27 May 48 in H (where it almost certainly was raised) and shot 15 Oct 48 in Washtenaw Co., MI, demonstrates southeastward fall emigration from the Peninsula.

Remarks. I have seen two examples of a pale-bodied, gray-faced race, apparently *wapacuthu* or *occidentalis*, at Agate Harbor on 26 Aug 57 and 1 Sep 90 (JPW 68 [2]: 20). The latter allowed approach to 6 ft and probably could have been touched (local birds would never allow this); it seemed healthy and eventually flew strongly; I suspect it just came in off Lake Superior. Also, on 7 Oct 90 at Agate Harbor, I saw a very large, heavy-bodied owl arrive off the lake from the north at 1055 EDT, but could not rule out Great Gray Owl.

Snowy Owl *Bubo scandiacus*

Status and Range (B, H, K). **Fall** and **early winter**: rare transient, reported nearly every year, Oct-Dec. Highly eruptive and some years would be termed very uncommon. The only major flight year recorded for the Keweenaw was 96-97 (but presumably others have occurred), when there were at least 15 fall sightings, beginning 1 Oct (fide S. Andres). **Late winter**: casual resident in low-snow years. Most winters, deep snow covers the rodents needed to support this ground-feeding raptor. **Spring**: occasional transient, primarily in Mar and Apr, but some years to late May. Casual migrant flying past Brockway Mt. lookout (26 Mar 2000, JK; 4 and 12 Apr 76, F. B. Isaacs; 18 Apr 92, J. Peacock), where also seen perched several times in Apr and May (local observers; 26 Apr 75, F. B. Isaacs), and on Manitou Is. (29-30 Apr 2004, Z. Gayk, JY photos).

Habitat. Found anywhere in open areas, especially at water's edge on Lake Superior coast, Portage Lake system, and inland lakes and marshes, but also in towns, farm fields, and on bald top of Brockway Mt.

Migration Dates. **FEAD**: 1 Oct 96 (Hancock, local observer fide S. Andres; MBNH 4: 102); 1 Nov 2001 (1, Houghton, injured, RH); 6 Nov 54 (Jacobsville, H, G. Hesterberg; JPW 33: 28); [a report for 24 Oct 2000 in H, MBNH 8: 95, is questionable]. **SLDD** (all May dates): 28 May 60 (male skeleton, MSU 2864, Hancock, R. R. Rafferty, MSU, in litt.; 20 May 54 (Houghton, G. Hesterberg; JPW 32: 128) and 82 (Liminga, AW; AB 36: 856); 15 May 31 (female right wing specimen, UMMZ 67354, Manitou Is., Mr. Bender and N. A. Wood; Wood, 1933, 1951; UMMZ, in litt.); 7 May 86 (banded bird, B).

HCCBC. 5 on 5 of 26 counts (19.2%); mean .19; range 0-1; ind/PH .004.

Banding Recoveries. One hatching-year bird banded at Duluth, MN, 9 Dec 85 caught in B 7 May 86, presumably on its return flight. An adult banded in WI 7 Mar 65 found dead in K 19 Oct 65, but as a skeleton, so Oct

date means nothing; it probably died in spring 65 as a transient between WI and its breeding grounds.

Northern Hawk Owl *Surnia ulula*

Status and Range (B, H, K). Twelve records during only 6 years, embracing every season, but apparently only a visitant, not a permanent resident (see Great Gray Owl). Casual **fall** and **early winter** visitant (7 records, 14 Oct-15 Dec). Accidental **late winter** visitant (2 records, 10-11 Feb and 5 Mar); no evidence for overwintering unless records for 29 Oct 96 and 11 Apr 97 represent the same individual. Accidental **spring** (11 Apr) and **summer** (1 Jun) visitant; the latter was in its preferred breeding habitat—open black spruce bog—but was not found again. Likely to occur anywhere in forest edge situations, but 7 of 12 records are for K. An irruptive species; winter of 96-97 was exceptional, with 5 records, as was 1856-57 if Kneeland's (1857) assessment as "common" can be believed. Michigan's biggest invasion, in winter 91-92 (S. Allen and A. Trautman in McPeek & Adams, 1994), apparently did not include the Keweenaw.

Habitat. Found at the edges of clearings in a variety of forest habitats, including dry coniferous forest (jack pine), mesic mixed forest, and black spruce bog. A diurnal forager.

Significant Records (all; all single birds).

11 Apr 97 (1 caught and banded) north of Ahmeek, T57N, R32W, Sec. 18, K, S. Andres, R. Baetsen (in litt.; MBNH 4: 213); possibly same as 29 Oct 96, but here treated as different.

1 Jun 2000, about 5 mi ESE Lac La Belle, K, at telephone pole 413 on road to Gay, LB, Mr. and Mrs. L. W. Graf (finders), J. Rooks (photos).

14 Oct 90, 1.8 mi E Agate Harbor near east end of Lake Glazon, K, LB (JPW 68 [2]: 20).

16 Oct 79, Copper Harbor, M. Macdonald (AB 34: 166).

21 Oct 96, near Atlantic Mine, local observer fide S. Andres.

29 Oct 96, Farmer's Block Road near Ahmeek, K, J. Holtzhausen fide S. Andres and JY; possibly same bird as 11 Apr 97, but here treated as different.

8 (JY), 27 (RH) Nov 96, Big Burn Field, 1 mi NE Little Lake, Baraga Plains (MBNH 4: 102).

28 Nov 96, .5 mi S tip of Pt. Abbaye, B, JY (not 25 Nov as in MBNH 4: 102).

15 Dec 79, J. Hefling, HCCBC (Weaver, 2000; AB 34: 514).

10, 11 Feb 96, on highway M 203 near Calumet, photo by J. and J. Peters identified by R. Baetsen fide S. Andres (MBNH 3: 168).

5 Mar 2000, Rocky Ridge about 4 mi W Copper Harbor, LM, JY.

1856-57 ("common") neighborhood of Eagle River and Eagle Harbor, K, Kneeland (1857); no other data; season uncertain, as Kneeland was present Aug 1856 to Jun 1857.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Burrowing Owl *Athene cunicularia*

Status and Range (H). Accidental **spring** vagrant (2 records, 24 Apr and 2 May). Only 5 records for Michigan (S. Allen and A. Trautman in McPeek & Adams, 1994).

Significant Records (all).

24 Apr 79 (1) on stamp sand beach at Redridge, H, AW, A. E. Weaver (Weaver & Weaver, 1979; Payne, 1983; Weaver, 2000; JPW 57: 155; AB 33: 774). Accepted by the MBRC (Chu, 1995). Fourth Michigan record.

2 May 49 (female, UMMZ 118163; formerly mounted) 3 mi NW Chassell, H, E. A. Bourdo and G. A. Hesterberg (JPW 28: photo no. 2; UMMZ, in litt.). Accepted by the MBRC (Chu, 1993). First Michigan record.

Barred Owl *Strix varia*

Status and Range (B, H, K). Fairly common **permanent** resident. The most often detected and probably commonest owl in the Keweenaw in summer. Under "normal" conditions would be considered rare throughout the year, as it is seldom flushed or heard during daytime in its habitat of extensive older forests. However, using voice imitations and tapes, observers often elicit calls or even close appearance during both night and day, especially at dawn, and I therefore consider it fairly common in **spring** and **summer** in all three counties, although it generally avoids the farming districts of northern H and elsewhere, as shown by the MBBA map (1991). **Fall** wandering (or migration?) demonstrated by a bird on 7 Oct 89 at Agate Harbor (LB), where there is no other record. Rarely found in **winter**, when normally silent and observers few.

Habitat. Requires extensive tracts of older, denser, mesic/wet mixed and mesic deciduous forests, including pure sugar maple. Does not tolerate heavy logging.

Breeding (**B** 2 pr, 7 po; **H** 2 co, 5 pr, 6 po; **K** 2 pr, 1po).

18 May 2000 (1, 10-inch-tall prejuvenile) T53N, R33W, southern half of Sec. 35, H, JY.

21 May 81 (2 partly downy prejuveniles about three-quarters grown) near Cole's Creek mouth, H, AW (photo).

28 May 2001 (nest 35 ft up in depression at top of broken off trunk of large sugar maple; adult delivered a Boreal Red-back Vole

(*Clethrionomys gapperi*), Covered Road, T55N, R35W, Sec. 22, H, LB, JM.

1 Jul 49 (2 full grown young) Gratiot Lake, K, G. J. Wallace (1949); probable breeding.

BBS. *Bootjack* 92-2005: 13 on 10 of 14 counts (71.4%); mean .93; range 0-3.

NAMC. *Baraga Co.*: 10 on 4 of 6 counts (66.7%); mean 1.67; range 0-4; ind/PH .04. *Houghton Co.*: 3 on 2 of 7 counts (28.6%); mean .43; range 0-2; ind/PH .01.

HCCBC. 4 (plus 1 in count week) on 4 of 26 counts (15.4%); mean .15; range 0-1; ind/PH .003.

Remarks. From 1730 to 2030 EDT on 12 Mar 2001, a Barred Owl caught three small mammals at a bird feeder 6 mi SE Chassell, H, JY. Immitation of this bird's call during daytime often elicits response and sometimes close approach by the owl. More interestingly, imitations cause aggitation and approach by hole-nesting birds, including all woodpeckers (even Pileated and Black-backed) and White-breasted Nuthatch, but only minor interest by other birds (LB observations). I have never seen a Barred Owl mobbed by passerines. I suspect the owl preys on young and adults in nesting holes; I have been told of a Barred Owl that cleaned out a colony of Purple Martins in a Martin box in Louisiana.

Great Gray Owl *Strix nebulosa*

Status and Range (B, H, K). Status uncertain. At least 13 records, 1 for B, 2 for H, and 10 for K, embracing 9 different months; 11 are recent, 96-2005. A highly and irregularly irruptive species; 9 of the 13 records were in 78-79, 95-96, 96-97, and 2004-05 during major flight years elsewhere (D. C. Evers in Brewer *et al.*, 1991; MBNH). Elsewhere in its range, tends to linger into spring and summer after such winter invasions (*e.g.*, 70 birds in summer 96 in WI; FN 50: 953), and the same is true of the Keweenaw, with 1 mid summer and 7 spring and early summer sightings fitting this pattern. That 8 of 9 spring and summer records were from K suggests birds were funneled there during *northward spring migration*, with one (Jul) remaining; late May and early Jun birds might still be migrating, as at Whitefish Point (Granlund & Byrne, 1996). Indeed, only 3 records, 1 Oct 97, 20 Dec 97, and 11 Feb 79, suggest fall arrival, and the 2 in 97 could have been holdovers from the invasion of 96-97, because birds were recorded also in late May, Jun, and Jul of that year, suggesting permanent residency (non-breeding?), and the 11 Feb 79 record might have been an early returnee. This, if true, indicates that Great Grays do not cross Lake Superior in fall (at least at this longitude) but skirt the lake to the east or west; northbound spring birds might become "trapped" in the Keweenaw and then detour around it. Accepting the above hypotheses, the Great Gray is a casual **spring** transient and an accidental **summer** and **permanent**, perhaps breeding, resident.

Habitat. Found near openings in a variety of situations: dry coniferous forest (jack pine, red pine), mesic deciduous forest, mesic mixed forest (one, 8 Jun 98, near an old beaver pond supporting sedge-grass marsh and shrub wetland), a road cut in stunted oak forest on Brockway Mt., a sedge-grass meadow, shrub wetland between mesic deciduous forest and a lake, and a city. Oddly, no record for its primary breeding habitat elsewhere, black spruce-tamarack bog.

Significant Records (all; all single birds except as noted).

17, 18, 20 Mar 96 (Baraga Plains, 4.5 mi NW Covington, 1 mi N Sturgeon River on Plains Road, RH, LM, JY (photo by JY in LB files) (MBNH 3: 246).

18 Mar 79 (photo taken), Ft. Wilkins State Park, near Copper Harbor, Dr. La Pointe fide D. Grigg (AB 33: 774; JPW 57: 155; MDNR files).

23 Apr-12 May 96, Farmer's Block Road north of Ahmeek, K, photo and story by M. Kordes in Daily Mining Gazette (Hancock), S. Andres, RH *et al.*

21 May 2005, 1 mi N Central, K, T58N, R31W, Sec. 14, G. Swenson (pers. comm.); watched for some time, but flew when photo attempted.

31 May 97, Brockway Mt. Drive .5 mi E West Bluff, K, J. Rooks *et al.*

6 Jun 97 (2) Eagle Harbor, K, LB, J. Rooks (MBNH 5: 30).

7 Jun 96, Norland near Copper Harbor, photo by K. Bracco in LB files.

8 Jun 98, Sotola Road, 2 mi S Delaware, T58N, R30W, middle of east side of Sec. 28, K, LB; see above.

22 Jul 97, Seneca Lake near Mohawk, K, J. Rooks *et al.* (MBNH 5: 30).

13 Sep 2001, near Clark Mine, Copper Harbor, J. Rooks *et al.* (MBNH 9: 108).

1 Oct 97, East Bluff east of Copper Harbor, J. Rooks *et al.*

20 Dec 97, Princess Pt. Road north of Jacobsville, H, LM, JY, HCCBC (not also 12 Dec as in MBNH 5: 132).

11 Feb 79, in Houghton, M. J. Yerg (Weaver, 2000).

[1856-57. Listed without comment by Kneeland (1857), but his "Keweenaw Point" included Ontonagon Co.]

Note: other birds were rumored in 97, but I do not possess the data.

Breeding (**K** 6 po; but see Status and Range and late May-Jul dates under Significant Records).

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range

0-1; ind/PH .001.

Long-eared Owl *Asio otus*

Status and Range (B, H, K). Casual **summer** (perhaps permanent) resident; 5 records, 28 May-5 Aug, for B and H, and 1 incomplete record for K. Snow cover might be too deep to support the Long-eared in winter, although it is known to catch birds (LB). See Short-eared Owl, fall.

Habitat. In summer, heard in mesic mixed forest (K, LB) and seen flying over marsh into black spruce-tamarack bog forest (Arnheim). Should be sought in early spring and late fall roosting in pine plantations adjacent to hayfields and old fields, a common winter habitat farther south.

Significant Records (all).

28 May (1), 12 Jun (1, Unit A; B), 17 Jun (1 carrying food from Unit A in B into black spruce-tamarack bog forest in Unit 6 in H), 20 Jun (flew from Unit 6, H, into Unit A, B) 99, Arnheim, LM, JM, JY. Confirmed breeding for H.

29-30 May 2004 (1 perched) Arnheim, H, JY.

2 Jun (1 carrying food from Unit A, B, into Unit 6, H), 5 Jun (1, B, H), 28 Jul (1, H) 2000, Arnheim, LM, JY. Confirmed breeding for H.

8 Jul 94 (1) Liminga, D. Weaver (Weaver, 2000), possible breeding.

5 Aug 2003 (1) in Houghton, injured, JY.

Summer, date unrecorded (1 heard) Agate Harbor, LB, possible breeding.

[Date unknown ("nested") south of L'Anse (Payne, 1983, 1986; D. C. Evers in Brewer *et al.*, 1991); Payne (in litt.) was unable to find this record in Dec 2000, and thus I prefer to disregard it until data come to light.]

[*Note*: record of possible breeding in K on MBBA map (1991) is doubtful.]

Breeding (**H** 2 co, 1 po; **K** 1 po [LB]; see Significant Records).

Short-eared Owl *Asio flammeus*

Status and Range (B, H, K). **Spring**: very rare transient, recorded primarily over the Arnheim (B and H) and Sturgeon River Sloughs (Unit 1) and formerly in farmland around Liminga. Only 2 spring records for K, where foraging habitat very scarce (22 Apr 90, Eagle Harbor, AW; see below). **Summer**: accidental, probably breeding, early summer resident at Arnheim (H) in 96. No confirmed breeding for the Peninsula, and only one other summer record, 1 on 18 Jun 2000 at Oskar (H) RH (not Liminga, JY, as in MBNH 8: 33). **Fall**: casual transient, 17 Sep-5 Nov, in open areas, recorded at Arnheim (B and H), Sturgeon River Sloughs, Liminga, 5 mi S Sidnaw (H; Wood, 1951), and once migrating westward along Lake Superior shore at Agate Harbor (6 Oct 86, LB), this last the only fall record for K. On 8 Oct 2003, an *Asio* owl came in from the east and landed on the east end of Manitou Is., then continued westward (JY).

Habitat. In summer, sedge-grass marsh. On migration, marshes, open old fields, and presumably hayfields.

Migration Dates. **SEAD**: 30 Mar 2000 (1, Arnheim, B, JY). **SMAD**: 18 Apr (n=12). **SP**: preponderance of records in last two weeks of Apr. **SLDD**: 27 May 2000 (1, Copper Harbor, LB, JM); 13 May 2000 (Arnheim, B or H, LM); 4 May 2005 (1, Arnheim, Units 5, 6, H, JY). **FEAD**: 17 Sep 87 (Liminga, AW; JPW 66: 33). **FLDD**: 5 Nov 2000 (Arnheim, Units 4, 5, 7, B and H, JM, M. Schiewe, JY); [records for 6 Nov 88 and 29 Nov 72 (Binford *et al.*, 1999b) should be deleted as not conclusively identified.]

Breeding (**H** 1 pr).

3 May (1 chasing Rough-legged Hawk), 5 May (2 chasing Peregrine Falcon), 4 Jun (1 seen) 96, Arnheim, Unit 4, H, JY. Considered probable breeding, but not successful, as birds never seen again despite intensive searches (Youngman & Murphy, 1999).

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004.

Boreal Owl *Aegolius funereus*

Status and Range (B, H, K). Casual **winter** and **spring** visitant, 17 Jan-16 Apr. Nine records in 5 different years, all since 89, including 4 in the 95-96 irruption. The lack of fall and early winter records may be a result of inadequate coverage; however, this species is much more common at Whitefish Point on its return flight in spring, and such may well be the case in the Keweenaw (see Great Gray Owl). Heard calling in Apr and could breed. During very harsh winters, such as 95-96 and 96-97, Borealss sometimes search for prey near feeders, but still may not survive. In Jan 97, one emaciated Boreal apparently perished after, but not due to, a fight with a red squirrel; the mammal expired of its wounds (Richter & Andres, 1997).

Habitat. Most Keweenaw birds have been found near feeders in towns and rural settings, to which they are forced by inadequate food in the snowbound forests.

Significant Records (all).

17 (1 seen alive), 19 (found dead by R. Anderson, female, 123.8 grams, UMMZ 234817, prepared by S. Andres no. 96) Jan 97, 1.5 mi E McLain State Park, H (UMMZ, in litt.; S. Andres, in litt.; MBNH 4: 161; Richter & Andres, 1997; FN 51: 753).

5 (1 seen alive for several days), 12 (found dead) Feb 2005, Oskar, H, P. Lins, given to MTU (Brockway Lookout 12 [1]: 3).

6 Feb 96 (1 found dead by J. Geborkoff, male, UMMZ 234816, prepared by S. Andres no. 91) in town of Hancock (MBNH 3: 168; UMMZ, in litt.).

28 Feb 96 (1 found dead) in town of Hancock, RH.

March 89 (female skeleton, UMMZ 234786) L'Anse Twp., B, G. Belyea (UMMZ, in litt.).

5 (1 seen alive), 6 (found dead) Mar 96, Toivola, H, fide S. Andres.

21 Mar 97 (1 photographed) Dollar Bay, H, C. Pekkala fide RH; at feeder eating a European Starling.

8, 9, 16 Apr 96 (1 heard) east of Vermilac Lake, T48N, R33W, B, JY.

16 Apr 94 (1 heard on owl census) along Gay to Mohawk road, K, S. Andres (in litt.) and R. Baetsen (in litt.) (FN 48: 301; MBNH 1: 47).

Northern Saw-whet Owl *Aegolius acadicus*

Status and Range (B, H, K). **Spring**: uncommon transient. Road censuses taken by S. Andres (in litt.) and LM (in litt.) for R. Baetsen in H (Dreamland to Jacobsville and Rabbit Bay) and K (Ahmeek to Gay) recorded the following totals for spring birds: 1993 (18), 94 (21), 95 (23), 96 (3, a crash year in the Midwest, fide R. Baetsen), 97 (18). These included 2 on 17 Feb 95 and 6 on 5 May 95, both on the H route (LM), where, however, no birds were heard in 20 stops on 2 Mar 2002 (JM). How many calling spring birds actually remain to breed is unknown. **Summer**: rare resident in all three counties, recorded only 17 Feb-5 Oct. Breeding begins in late Mar (1 record). Juveniles wander in Jul (see Breeding Notes). **Fall** and **winter**: no records for Aug, Nov, Dec, Jan, or first half of Feb. Three banding recoveries indicate winter emigration toward the south and southwest; snow cover probably is too great to allow foraging for small mammals (see Boreal Owl).

Habitat. The two known nests were in old woodpecker cavities in large aspens. Most records have been in mesic mixed forest.

Migration Dates. **SEAD**: 17 Feb 95 (see above); 26 Feb 95 (2 heard, K, S. Andres; MBNH 2: 158); 9 Mar 76 (1 found dead, B; JPW 54: 85). **FLDD**: 5 Oct 2003 (1 heard, Manitou Is., B. Johnson, JY); 22 Sep 96 (1 heard, Hancock, S. Andres; MBNH 4: 103); 25 Jul 90 (1 juvenile seen, Agate Harbor, LB).

High Counts. **Spring**: 5 May 95 (6) H, see above.

Breeding (**B** 1 co, 1 po; **H** 2 co; **K** 1 co, 1 pr).

21 Mar-30 May 90 (nest in aspen cavity; 1 nestling seen 27 May, 2 on 29 May) Liminga, AW (Weaver, 2000).

1983-88 (confirmed breeding sometime during this period of years) southeastern B, MBBA map 1991; I have not seen the data on which this is based.

Summer, date unrecorded (nest in quaking aspen cavity) Agate Harbor, local observers, fide LB.

[Pre-1984 ("nesting") B (Payne, 1983, 1986); upon query, Payne (in litt.) found no data for this listing; it might refer to the MBBA record above.]

Notes: there are a number of possible breeding records, not in the above totals, based on presence of birds in habitat during spring and summer, including 1 heard, 2 May 2003, Manitou Is., JY. Also, 3 records of juveniles might confirm breeding, as young are said to complete their first prebasic molt before migration (M. J. Peczynski in Brewer *et al.*, 1991): 11 Jul 87 (juvenile smashed on city street in Hancock, LB); 25 Jul 90 (1 seen, Agate Harbor, LB); and 21 Jul 98 (1 seen, Arnheim, near Unit 3, H, JY). However, Saw-whets did not breed within at least .5 mi of the Agate Harbor bird, so at least wandering occurs, and I do not list these in the above summary.

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.6%); mean .17; range 0-1; ind/PH .004.

Banding Recoveries. Three hatching-year birds, two banded in WI on 8 Oct 88 and 13 Oct 92, and one in MN southwest of the Peninsula on 5 Oct 91, were found dead in the Keweenaw the next spring or summer on 22 Apr 89 (H), 20 Jul 93 (H), and 10 May 92 (B), respectively. The Jul bird suggests that some Keweenaw breeders migrate south for the winter; the other two records support the same theory but also could have been transients while on the Peninsula. However, it is also possible that all were raised to the south and dispersed northward in their first spring.

Common Nighthawk *Chordeiles minor*

Status and Range (B, H, K). **Spring**: a late arrival, as expected for a species dependent on flying insects; only slightly more numerous than in summer and rarely seen in migrating flocks (see High Counts). **Summer**: resident; very uncommon and widely but sparsely distributed in northern H; casual in K, including Manitou Is. (1 heard 30 Jun 2003, B. Johnson, L. Usyk, JY) (see also, Breeding). Locally common in clearcuts in southern H (Pori; north of Sparrow Rapids Campground) and very common on Baraga Plains (especially Prison Camp Road). Breeding not confirmed in B or H, but doubtless occurs. **Fall**: breeders remain at least through mid Jul. Transients uncommon in Aug-Sep, more widespread and numerous than summer birds, but usually seen in

similar habitats, where they pause to forage. Migrating flocks scarce but larger and more frequent than in spring (see High Counts).

Habitat. The only nest was unlined on bare poor-rock at an abandoned copper mine surrounded by mesic mixed forest and a wet sedge-grass meadow. Forages over, and probably nests in, major towns (*e.g.*, Calumet, at least formerly) and in recent clearcuts and old clearings amid dry coniferous and dry mixed forests (especially over jack pine plains). Occasionally feeds over large marshes in summer, more often during migration, and might nest where rocky substrate occurs nearby.

Migration Dates. **SEAD**: 21 May 98 (3 mi NW Boston, H, S. Andres). **SMAD**: 25 May (n=8). **SLDD**: 18 Jun 2002 (1, Manitou Is., JY); 5 Jun 98 (Copper Harbor, LB). **FEAD**: 7 Aug 78 (Agate Harbor, LB). **FP**: last week of Aug. **FMDD**: 4 Sep (n=12). **FLDD**: 22 Sep 99 (highway US 41, 1 mi S Arnheim Road, B, JY).

High Counts. **Spring**: 7 Jun 2002 (**25**) Lake Glazon, K, J. Rooks, J. Shea; 4 Jun 98 (**8**) Sturgeon River Sloughs, Unit 1, JY. **Summer**: 27 Jun 2000 (**17**) Baraga Plains, full length of Prison Camp Road, LB; many booming. **Fall**: 25 Aug 2000 (**109**) Arnheim, Units 4, 5, 6, H, JY, LM, exceptional; 7 Aug 78 (**26**) Agate Harbor, LB, transients flying westward high overhead at 1940 EDT; 23 Aug 31 (**20+**) Kenton, L. Wing (1939), two loosely drawn out bands migrating due south at dusk and probably numbering many more than the 20 seen; 9 Sep 74 (**7**) Houghton (JPW 53: 28).

Breeding (**B** 2 pr, 5 po; **H** 3 pr, 4 po; **K** 1 co, 2 po).

8 Jun 93 (presumed pair agitated, flying as close as 5 ft from observer) L'Anse Bay head, JY; probable breeding.

23 Jun 98 (adult on nest with 1 egg and 1 just hatching nestling) poor-rock pile 2.7 mi E Mohawk, K, LB (found previous day by RH); it was necessary to carefully push the female onto her side to determine nest contents; she made no protest and several minutes later slowly assumed her former position.

27 Jun 2000 (17, many booming) Baraga Plains, full length of Prison Camp Road, LB; probable breeding.

[*Note*: the two probable breeding records for K on the MBBA map (1991) should be disregarded.]

BBS. *Herman* (early Jul dates): 2 on 2 of 7 counts (28.6%); mean .29; range 0-1.

Historical Changes. Benefits from clearcuts in dry coniferous forest and from old poor-rock piles, the latter now being slowly but surely removed for use in construction.

Whip-poor-will *Caprimulgus vociferus*

Status and Range (B, H, K). **Spring**: confined largely to breeding localities, but occasionally found farther north as migrants or overshooting vagrants (see Significant Records). **Summer**: very local resident; common on Baraga Plains (Prison Camp Road and Plains Road) and road north of Sparrow Rapid Campground (H); uncommon south of Sidnaw, at and near Silver Mt., and at Pori (all H). No confirmed breeding for the Peninsula. No summer records for northern two-thirds of H or northern half of B, where farmland and dense forests prevail, and the preferred habitat is absent. **Fall**: few records; probably leaves mostly in Aug.

Habitat. Nearly restricted in breeding to tall, dry coniferous forest, primarily jack pine but also red pine, with sparse understory and adjacent openings, especially clearcuts; rare (?) during migration in openings in mesic deciduous forest.

Migration Dates. **SEAD**: 1 May 99 (5 mi SW Baraga, JY). **SMAD**: 10 May (n=9, B only). **SLDD**: 18 Jun 2002, see below. **FLDD**: 30 Aug 96 (1 mi NE Little Lake, T49N, R34W, Sec. 10, B, JY).

Significant Records (all spring migrants or overshooting vagrants).

10 May 64, L'Anse Bay, R. R. Rafferty (JPW 43: 31).

16 May 98, 3 mi NW Boston, S. Andres.

21 May 98 (1 heard) Sedar Bay, K, RH.

26 May 31 and a few times later, Copper Harbor, N. A. Wood. Wood (1933) considered it a rare resident, but his dates could represent migrants.

29 May 2001 and a few days thereafter (1 singing) Clark Mine, Copper Harbor, LB, J. Rooks.

6 Jun 2004 (1 heard) Clark Mine, Copper Harbor, J. Rooks.

17-18 Jun 2002 (1 heard) Manitou Is., JK, JY; not noted in Jul 2002, so here considered a spring migrant or vagrant.

High Counts. **Spring**: multi-party, 13 May 2000 (**15**) B, NAMC; 12 May 2001 (**10**) Baraga Plains, LB and JM only, NAMC, displaying, so probably summer residents. **Summer**: 26 Jun 99 (**9**) see Breeding.

Breeding (**B** 2 pr; **H** 1 pr, 3 po).

26 Jun 99 (9 singing) and 27 Jun 2000 (8 singing) Prison Camp Road, Baraga Plains, LB; probable breeding based on number of birds.

*Jun 87 (7 singing birds) road north from Sparrow Rapid Campground, T48N, R37W, SW quarter, H, LB, probable breeding.

NAMC. *Baraga Co.*: 36 on 4 of 6 counts (66.7%); mean 6.00; range 0-15; ind/PH .14.

Historical Changes. J. Eastman (in Brewer *et al.*, 1991)

hypothesized a population decline on the Keweenaw Peninsula (north of Baraga) based on listings by Kneeland (1857) and Wood (1933; field work in 31) compared to no Atlas reports. However, Kneeland gave no dates, and Wood considered it rare; in my opinion, their sightings could have been migrants, so no decline occurred. Clearcuts are temporarily beneficial for this species, providing openings for foraging.

Chimney Swift *Chaetura pelagica*

Status and Range (B, H, K). No noticeable difference in seasonal detectability. No certain, major, transient flights recorded (but see 13 May below). Spring and fall roosting birds (see below) seem too numerous not to include many transients, but some probably represent breeders (see 10 Jul 2002 below). **Spring**: two large roosts in L'Anse (see High Counts); occasionally 1 to 12 seen migrating eastward past Brockway Mt. (LB) or foraging temporarily over towns and sewage ponds. **Summer**: fairly common resident; recorded in virtually every township (MBBA map 1991), in part because of its extreme conspicuousness. Status unknown for 100 leaving a chimney in L'Anse at 1320 EDT on 10 Jul 2002 and flying away (LM). **Fall**: one large and two small roosts known (see High Counts).

Habitat. Nests and roosts in chimneys of towns and abandoned mine smelters and in hollow trees in mature mesic/wet mixed and mesic deciduous forests, once under a small bridge in forest. Snags large enough for nests and roosts are becoming rarer. Forages over these and many other habitats, including open water (but not Lake Superior or upper Keweenaw Bay).

Migration Dates. **SEAD**: 2 May 54 (Houghton, G. Hesterberg; JPW 32: 129). **SMAD**: 21 May (n=26). **SLDD**: 7 Jun 2002 (see High Counts); 31 May 90 (3, Brockway Mt., LB, migrating eastward). **FP**: about 1 Aug, based on high counts. **FMDD**: 11 Aug (n=20). **FLDD**: 9 Sep 81 (Silver Falls, B, JY).

High Counts. **Spring**: 7 Jun 2002 (**696**) L'Anse, including 277 in Sacred Heart school chimney and 419 in power plant chimney, LM, JY; 13 May 2005 (**73**) L'Anse, RH, JK, seemingly foraging transients, but perhaps congregating to roost in L'Anse chimney; 21 May 98 (**12**) Eagle River, K, LB, foraging transients; 28 May 2003 (**11**) Gratiot Lake sewage ponds, LB, transients. **Summer**: 1 Jul 69 (**12**) H and K, B. and D. Wolck, Bootjack BBS. **Fall**: census organized by JY on 7 Aug 2001 (**328**), including L'Anse (259, see below), Clark Mine, K (51), and Freda, H (18); 24 Jul 2000 (**314**) roost in brick chimney of Sacred Heart school, L'Anse, JY (also here, 294 on 30 Jul 2000, about 250 on 5 Aug 2000, and 296 on 6 Aug 2001); 15 Aug 74 (**12**) Eagle Harbor plus Eagle River, K, LB, foraging transients.

Breeding (**B** 3 co, 8 pr, 12 po; **H** 2 co, 5 pr; 21 po; **K** 1 co, 5 pr, 10 po).

13 Jun 2000 (side-by-side, V-winged courtship flight) Ahmeek, K, LB, probable breeding.

*16 Jun 87 (nest seen under tiny wooded bridge in forest; adult visited briefly and departed) north of Sparrow Rapid Campground, T48N, R37W, SW quarter, H, LB.

*24 Jun 87 (bird entering chimney) in town of Kenton, H, LB.

30 Jun 2002 (collecting nest material) L'Anse, JY.

1 Jul 2003 (3 birds, 1 entered and remained in chimney in mid afternoon, Manitou Is., JY.

Spring 31 ("some usually nested in the old chimney of the houses at Fort Wilkins") Copper Harbor, Wood (1933), here treated as probable breeding, because word "usually" suggests hearsay.

Note: confirmed breeding for K on MBBA map (1991) should be reduced to possible.

BBS. *Bootjack* 67-73: 21 on 4 of 7 counts (57.1%); mean 3.00; range 0-12. *Bootjack* 92-2005: 16 on 5 of 14 counts (35.7%); mean 1.14; range 0-6. *Herman*: 7 on 3 of 7 counts (42.9%); mean 1.00; range 0-3.

NAMC. *Baraga Co.*: 37 on 3 of 6 counts (50.0%); mean 6.17; range 0-35; ind/PH .14.

Banding Recoveries. Six birds banded as fall transients to the south recovered in the Keweenaw in subsequent years, as follows (banding data first, recovery data in parentheses): 27 Sep 38, LA (26 May 39, H or K); 1 Oct 55, TN (Jun 58, B); 11 Oct 42, TN (1 Jul 45, B or K); 30 Aug 33, IL (4 Jul 34, H or K); 2 Sep 57, IL (22 Jul 60, B); 21 Sep 35, TN (28 Jul 38, H or K). These records demonstrate a north-south migration path through IL, TN, and LA for birds breeding in (the 1 Jul 45 and 4 Jul 34 recoveries) or possibly migrating through (the other four) the Keweenaw.

Historical Changes (Table 17). Despite its conspicuousness, the Chimney Swift was not listed by Kneeland (1857), when heavy forests were still extant, but was considered common by Cahn (1918) in 1914 at Kenton (H) and found at all stations by Wing (1939) in 1931. I have the distinct impression of seeing increasingly fewer swifts over the last 20 years, as chimneys of old houses, buildings, and mines are destroyed or capped, and the few remaining large forest snags either collapse or are cut down. However, good data are lacking. Although the Bootjack BBS suggests a 62% decrease from 3.00 birds per count in 67-73 to 1.14 in 92-2005, this is the result of 12 seen on only one count (69).

Broad-billed Hummingbird *Cynanthus latirostris*

Status and Range (K). Accidental late **spring** vagrant. One record: 1-7 Jun 96, adult male photographed at a feeder in Lac La Belle, K; seen by LB, G. Belyea, A.

Byrne (photos), D. Chalfant, P. Chu, JK (photos, audio), F. Looker (finder), J. Rooks, K. Thomas, *et al.* (Binford, 1996; MBNH 4: 27). Northernmost record for the species. Accepted by the MBRC (Internet).

Ruby-throated Hummingbird *Archilochus colubris*

Status and Range (B, H, K). **Spring**: common transient throughout. Males arrive a few days before females. Much has been made of a supposed close relationship in spring timing between this hummingbird and the Yellow-bellied Sapsucker, the former supposedly surviving late freezes by feeding on insects attracted to the latter's sap holes (see references in C. N. Hull & I. Skutt in Brewer *et al.*, 1991). That hummingbirds may use sap holes during inclement weather I have little doubt, although I have never witnessed this behavior in 53 years of birding, nor has anyone I have asked. The relationship, however, has, in my opinion, nothing to do with the timing of spring arrival. In the Keweenaw, the sapsucker arrives about a month earlier than the hummingbird, as early as 4 Apr and on average 17 Apr, so why doesn't the hummingbird? Rather, I suspect, hummingbird arrival is correlated with the first major bloom of small flying insects, as appears to be true of most insectivorous passerines (pers. obs.), and probably also with the later peak of flowering (and insects) when the young are in or have just left the nest. **Summer**: fairly common resident, recorded in 56 of 77 censused townships (MBBA map 1991) but probably occurs in all. Although the Ruby-throat does summer in natural, forest edge situations far from civilization (LB), its local distribution today is more closely associated with feeders, and hence mirrors residential and rural developments. Range has also been correlated with that of the sapsucker. Although the overall Peninsular distributions are similar, summer detectabilities are not, the hummingbird being common and the woodpecker uncommon in K, and the hummingbird fairly common but the woodpecker common in B and H; at Agate Harbor, where the Ruby-throat is a common nester in the vicinity of feeders, the sapsucker is only a scarce spring transient. **Fall**: no apparent fall increase in numbers, except for what I interpret as local congregations of summer resident adults and their young. All adult males leave before some adult females and immatures, but the exact timing is unknown; some movement occurs in mid Aug.

Habitat. Common at nectar feeders in residential and rural settings. Also found far from civilization at edges of mesic deciduous forest, mesic mixed forest, and probably other habitats.

Migration Dates. **SEAD**: 3 May 2001 (Rabbit Bay, H, M. L. Wercinski). **SMAD**: 14 May (n=11, 90-2000 only). **SLDD**: 1 Jun (see High Counts). **FMDD**: 17 Sep (n=12, 90-2002 only. **FLDD**: 14 Oct 98 (Kearsarge, H, LB; not Chippewa Co. as in MBNH 6: 104); 6 Oct 97 (Agate Harbor, LB, A. Slagle). See Historical Changes.

High Counts. **Spring**: 1 Jun 2000 (**23**) Copper Harbor (17) and Agate Harbor (6) LB, many were transients; 1 Jun 99 (**18**) Agate Harbor, LB, in two yards with feeders; transients, as most left. **Summer**: 13 Jun 99 (**7**) H only, LB, Bootjack BBS. **Fall**: 8 Aug 2002 (**20**) feeders in Rabbit Bay, H, B. and M. L. Wercinski (pers. comm.); 15 Aug 2005 (**9**) Agate Harbor, LB.

Breeding (**B** 20 po; **H** 1 co, 6 pr, 18 po; **K** 1 co, 6 pr, 5 po).

*20 Jul 87 (nest with 2 eggs) Agate Harbor, LB

BBS. Bootjack 92-2005: 31 on 12 of 14 counts (85.7%); mean 2.21; range 0-7. *Herman*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1.

NAMC. Houghton Co.: 6 on 3 of 7 counts (42.9%); mean .86; range 0-3; ind/PH .02.

Historical Changes (Table 17). The Ruby-throat was not listed by Kneeland (1857) for the Keweenaw Peninsula or by Wing (1939) for the entire Upper Peninsula, and was seen only once by Cahn (1918) in 1914 in H; Wood (1933), however, termed it common at Copper Harbor in spring 1931. Thus, this species appears to be another example of a southern bird expanding northward and finding suitable habitat. In my opinion, it owes its current abundance, distribution, and timing to nectar feeders. A comparison of arrival and departure dates (almost all at feeders) demonstrates that in recent years birds have arrived earlier in spring and left later in fall. Fifteen spring arrival dates prior to 90 have a SMAD of 25 May, as opposed to the 90-2000 median of 14 May. Dates before 90 have a FMDD of 22 Aug (n=12), contrasted with the 90-2002 median of 17 Sep (n=12). I hypothesize that these apparent changes are a result of the increased number and reliability of feeders, which allow survival of individuals that arrive earlier or leave later than normal. In turn, early arrival should be favored by natural selection, because it allows first choice and occupancy of the best territories—those with feeders. Natural selection may even favor recognition of feeders as food sources, further enhancing the chances of early birds surviving and passing on their genes. Also, birds that breed successfully one year may arrive earlier in subsequent years because they know exactly where they are going, and the birds that are most likely to survive are those knowing the location of feeders. The Bootjack BBS data might seem to suggest a recent increase in abundance, as none was found 67-73, compared to 2.21 per count in 92-2005, but this is because two stops during the latter period were next to houses, with feeders, built after 73.

Rufous Hummingbird *Selasphorus rufus*

Status and Range (H). Accidental **fall** vagrant; 1

record: 7-11 Aug 88 (not 8-11 as in R. J. Adams in McPeek & Adams, 1994, and Hull *et al.*, 1989; not 7-10 as in MBNH 67: 155, 160), adult male at feeders, Rabbit Bay (not Lake Linden as in photo caption in AB 43: 107 and Chartier, 2002), T54N, R32W, Sec. 15 (not Sec. 22 as in Hull *et al.*, 1989), H, LB, B. Bouton (photos), D. Powell, M. L. and B. Wercinski (finders). Accepted by the MBRC (Chu, 1991).

Belted Kingfisher *Ceryle alcyon*

Status and Range (B, H, K). **Spring**: fairly common transient throughout. One seen flying back to mainland from Manitou Is., 5 May 2002, JY, was probably a breeder on the island (see Breeding). One flying into shore from about .5 mi out in Lake Superior at Hebard Park (K) on 4 May 2003 apparently was a nocturnal migrant caught over the lake at dawn (LB). **Summer**: uncommon resident throughout. Seeming absence in central B and northwestern H (MBBA map 1991) is probably an artifact of coverage. **Fall**: uncommon. Probably some fall birds are transients, but numbers do not seem to increase over summer. Departs on average by 4 Oct, frequently lingering to 15 Oct and casually into **early winter** to 20 Dec, when suitable shallow waters remain open. **Late winter**: casual resident; 5 records. Early Mar sightings for 99, 2000, and 2001 here treated as winterers, because birds were recorded at the same localities earlier in the same winters, and the swamp at the head of L'Anse Bay is thought to retain open rivulets well into and perhaps through some winters (JY).

Habitat. Nests in burrows in moderately soft, vegetationless earth of river banks, gravel and sand (including stamp sand) pits and (once) even a road bank, preferably adjacent to open water suitable for foraging, but often far away because of scarcity of nest banks. For foraging, requires open, shallow, clear waters of coastal bays, inland lakes, ponds, and slow rivers and streams.

Migration Dates. **SEAD**: 31 Mar 2000, South Portage Entry, H, JK. **SMAD**: 18 Apr (n=28). **SLDD**: some still migrating in second week of May (NAMC). **FMDD**: 4 Oct (n=20). **FLDD**: 20 Dec 97 and 2003 (HCCBC); see Significant Records.

Significant Records (all Nov-Mar records; all singles except as noted).

9 Nov 79, Baraga, E. M. Harger (MDNR files).
17 Nov 99, Hancock, RH.
29 Nov 98, 4 Mar 99, L'Anse Bay head, JY.
30 Nov 96, L'Anse Bay head, JY.
30 Nov 2001, L'Anse Bay, JY.
14, 20 Dec 99, 2 Mar 2000, L'Anse Bay, JY, LM.
14 Dec 2003, Sturgeon River, 3 mi S Chassell, H, JY.
16 Dec 84 (2) HCCBC.
17 Dec 97, L'Anse Bay head, JY.
20 Dec 97, HCCBC.
20 Dec 2003, HCCBC.
15 Dec 2001-4 Feb 2002 (1) Cole's Creek mouth, H, JK, JM, HCCBC.
7 Jan (JK), 9 Jan (JY), Mar (M. Scheiwe) 2001, L'Anse Bay head.
14 Jan 90, L'Anse Bay head, LM (AB 44: 271).

High Counts. **Spring**: multi-party, 11 May 96 (**19**) B, NAMC; same census (**8**) JY only.

Breeding (**B** 4 co, 2 pr, 11 po; **H** 7 co, 3 pr, 14 po; **K** 4 co, 5 pr, 6 po).

May 1931 (nest) Lake Manganese, K, Wood (1933).
*23 Jun 88 (carrying food) T51N, R31W, NW quarter, B, LB.
*23 Jun 86 (carrying food) Gratiot River, 2 mi N Ahmeek, K, LB.
30 Jun 2002 (nest in sandstone cliff) 6 mi SE Chassell, H, T53N, R33W, Sec 35, JY.
4 Jul 2003 (carrying food) T48N, R34W, Sec. 21, B, JY.
*9 Jul 87 (carrying food), T55N, R35W, SW quarter, H, LB.
13 Jul 2002 (adult taking food into nest cavity) Manitou Is., Sec. 20, JY.
15 Jul 98 (carrying food) Arnheim, B or H, LM (not in above totals).
Aug 1914 (two nest holes [probably inactive] in river bank) at Kenton, H, Cahn (1918).

BBS. Bootjack 92-2005: 6 on 5 of 14 counts (35.7%); mean .43; range 0-2. *Herman*: 14 on 7 of 7 counts (100%); mean 2.0; range 1-3.

NAMC. Baraga Co.: 57 on 6 of 6 counts (100%); mean 9.50; range 2-18; ind/PH .22. *Houghton Co.*: 55 on 7 of 7 counts (100%); mean 7.86; range 4-16; ind/PH .20.

HCCBC. 4 on 3 of 26 counts (11.5%); mean .15; range 0-2; ind/PH .003.

Lewis's Woodpecker *Melanerpes lewis*

Status and Range (K). Accidental **spring** vagrant; 1 record, 18 May 2004, Copper Harbor, TA, LB, RH, JK (photos), K. Karl, JM, J. Rooks (Kaplan, 2004). Second Michigan record. Accepted by the MBRC (Internet).

Red-headed Woodpecker *Melanerpes erythrocephalus*

Status and Range (B, H, K). Spring, summer, and fall vagrant overshoot from the south. **Spring**: today casual, recorded in all counties, with only 6 records after 88. **Summer**: today casual, with 3 documented records (see 14 May, 13 Jun, and 30 Jul under Significant Records), plus 1 spot for confirmed breeding and 2 for possible on the MBBA map (1991). In mid 70s to mid 80s, apparently a very rare breeding vagrant at one or two localities. Although both Cahn (1918) in 1914 and Wood

(1933, 1951) in 31 considered it a breeding bird, they provided no evidence; Cahn's birds were immatures in Aug, and Wood's latest spring record was 2 Jun (the same as my median departure date), so all could have been transients. Payne (1983) said it "has nested successfully in...Keweenaw (Copper Harbor)" county, but I find no Copper Harbor record except Wood's (1933, 1951) dubious statement, and Payne (in litt.) could not find the data on which to base his statement; probably this refers to the confirmed breeding in the MBBA block containing Gratiot Lake, not Copper Harbor (E. B. Pitcher in Brewer *et al.*, 1991), a record I tentatively accept, even though I cannot obtain the data (if any) from the Kalamazoo Nature Center. Weaver (2000) said other observers had confirmed nesting in Houghton, but gave no data. **Fall**: recorded in all three counties; occasional during the 70s and 80s, when arrived as early as 17 Aug and departed on average about 20 Sep, with only 4 later records. Today casual, with only 2 fall records after 87.

Habitat. Possible anywhere in trees on migration, but most likely in vagrant traps such as Copper Harbor. In summer, prefers open forest patches that include red oaks and other deciduous trees for foraging and snags for nests and night roosts. Has visited seed feeders.

Migration Dates (based largely on former status; see Significant Records for data). **SEAD**: 8 May 99. **SMAD**: 19 May (n=12). **SMDD**: 2 Jun (n=5). **SLDD**: 12 Jun 93. **FEAD**: 17 Aug 73; 19 Aug 77; 31 Aug 80. **FMDD**: 20 Sep (n=7). **FLDD**: 1 Nov 75; 22 Oct 84; 29 Sep 87.

Significant Records (all; all presumed to be singles unless otherwise stated).

8 May 99 (adult) near Three Lakes, T48N, R31W, Sec. 22, B, C. Van Lonkhuyzen, NAMC.

11 May 31, near Copper Harbor, Wood (1951).

11, 12 May 83, Liminga, AW (photos).

14 May (2), 19 May, 5 Jun, 17 Jul 76, MTU campus, Houghton, F. B. Isaacs, AW; here treated conservatively as possible breeding, because I do not know if any individuals were present continuously

15, 25 May 82, Houghton, AW.

15, 16 May 77, Houghton, F. B. Isaacs, AW.

16 May 81, Houghton, AW.

21 May 88, Liminga, AW.

22 May-4 Jun 2003, Copper Harbor, J. Rooks *et al.*; 4 Jun bird possibly different.

25 May 2002 (adult) at feeder in Boston, H, local observer fide TA.

27 May 79, Liminga, AW.

28 May 2004, Hancock, RH.

31 May 2002 (adult) in Copper Harbor, LB, J. Rooks.

2 Jun 31 (adult female, UMMZ 67356) Copper Harbor, N. A. Wood no. 110 (Wood, 1951; Dodge, 1961; UMMZ, in litt.),

10, 12 Jun 93 (adult) Keweenaw Mt. Lodge golf course, Copper Harbor, LB, migrant that did not remain.

13 (JY), 20 (LM, JY), and 25 (LB) Jun 99; 26 Jun 2000 (LB, JY) and 9 Jul 2000 (JY); on Plains Road about 3 mi NE Watton (not "in Watton" as in MBNH 8: 34), T48N, R34W, Sec. 9, B; presumably same unmated adult bird (in same trees) both years; here considered a single record of a non-breeding summer vagrant.

30 Jul 98, Ford Farm Road, B, JY, possible breeding.

17 Aug 73, 3 mi N Liminga, AW.

19 Aug 77 (2) McLain State Park, H, AW.

31 Aug 80, Agate Harbor, LB, transient seen flying over bay.

Aug 1914 (5 immatures) around Kenton, H, Cahn (1918), here tentatively treated as migrants.

4 Sep 75 (2) Houghton, AW.

9 Sep 76, Bete Grise, K, F. B. Isaacs.

9 and 10 Sep 2002 (adult) Manitou Is., R. Krumm, JY.

14 Sep 74, North Superior Road near Liminga, AW.

18 Sep 82, Arnheim, B, AW.

20 Sep 85 (immature) Redridge, H, AW (AB 40: 116).

22 Sep 2002 (adult flying) just north of Traverse Bay but in K, T56N, R31W, Sec. 34, LM, JY.

29 Sep 87 (immature) Liminga, AW.

22 Oct 84 (immature) Liminga, M. Weaver, photos.

1 Nov 75, Liminga, M. Weaver.

1983-88, 1 spot for confirmed breeding in K and 2 spots for possible breeding, one near Baraga, the other in extreme southeastern H, MBBA map (1991).

[1856-57. Listed without comment by Kneeland (1857) for the Peninsula, in which, however, he included Ontonagon Co.]

Breeding (**B** 2 po; **H** 2 po; **K** 1 co). Now extirpated as a breeder; see Status and Range and Significant Records.

Historical Changes (Table 17). Historically, the Red-headed Woodpecker was present but of uncertain status (Kneeland, 1857; Cahn, 1918). AW *et al.* recorded it in all but three years 73-88 (18 records, mostly on the MTU campus), but it declined during the 90s, with only 6 records since 88. The reasons for this decline are uncertain, but I suspect the MTU "colony" was composed of vagrants and was so small that it simply lost its viability because of limited recruitment. See also, Status and Range.

Red-bellied Woodpecker *Melanerpes carolinus*

Status and Range (B, H, K). Occasional vagrant, with 13 birds originally discovered in fall or winter (18 Oct-Feb), at least 2 of which wintered, and 5 in spring (17 Apr-27 May). The winter/spring of 2003-04 was exceptional, with 8 of the total 18 records. No **summer** record. These meager data suggest that most birds disperse northward in fall from natal sites south of the Peninsula (like Blue-gray Gnatcatcher seems to do). However, perhaps a more logical hypothesis is that they arrive originally as spring overshoots (like the Northern Mockingbird) and go undetected in their forest habitat until forced by the degenerating climate to visit feeders, which allow them to survive winter; then, in spring, they again "disappear" into the forests. The only other species that invaded the Keweenaw with a similar pattern is the Northern Cardinal, which has bred, a status perhaps in the woodpecker's future.

Habitat. Recorded twice in mesic deciduous forest (with some red oaks) and nine times at seed and suet feeders in residential sections of small settlements.

Significant Records (all; all singles).

18-19 Oct 2001, Rabbit Bay feeder, T54N, R32W, Sec. 15, H, RH, JM, B. and M. L. Wercinski (finders).

20 (LM), 22 (LB) Oct 99 (female) in mesic deciduous forest 2 mi W South Range, T54N, R35W, Sec. 13, H.

25 Oct 2003-10+ Feb 2004, Sedar Bay feeder, K, J. Ziemnick.

27 Oct 96, Rabbit Bay feeder, T54N, R32W, Sec. 15, H, M. L. Wercinski (photos by B. Wercinski shown to LB).

10 Dec 97 (L. Taccolini) to at least Feb 98, feeder at home of G. Stagliano, Lake Beaufort, B (MBNH 5: 133; L. Taccolini, in litt.).

15 Dec 2003-5 Feb 2004 (male) Atlantic Mine feeder, H, P. Bell (photo).

20 Dec 2003, female at feeder in Chassell, H, M. Vogler, P. Hurley, K. Tischler, HCCBC, seen only one day.

20 Dec 2003, female in woodlot in Ripley, H, K. Steiner, HCCBC, possibly same as Dollar Bay bird.

27 Dec 96, Toivola, H, local observer fide S. Andres (MBNH 4: 161).

Dec-third week Jan, including 1 Jan 2002, South Portage Entry ("near Chassell" in MBNH 9: 164), H, JK, G. Corace; same bird as incorrectly published as 18 Jan in Houghton (MBNH 9: 164).

24 Jan-22 Feb+ 2004, Dollar Bay feeder, H, J. and H. Hosafros, possibly same as Ripley bird.

4 Feb (J. Ziemnick, finder), 8 Mar (RH, LM) to late Apr 97, Sedar Bay feeder, K.

Feb 75, feeder between Chassell and Houghton, H, B. Krear (photo by Krear examined by LB and AW, sent to UMMZ; Weaver, 2000).

17 Apr 2004 (female) Chassell, H, LM.

22 Apr 2004 (male) Hancock, N. Auer.

18 May 2004, Copper Harbor, JK, JM, LM.

23 May 2002 (adult male) Copper Harbor feeder, LB, J. Rooks.

27 May 96, Pequaming feeder, B, JY (MBNH 3: 247 where attributed to JY and LB, but I did not see it).

Historical Changes. First recorded in 75. All other records (17) have been since 96, suggesting a recent expansion, as in the Lower Peninsula (MBBA 1991) and Wisconsin; the population in the latter state, from which Keweenaw birds presumably originate, increased steadily by about 1.5% per year 83-96 (Temple *et al.*, 1997); rapidly expanding populations such as this are most likely to produce vagrants. See Status and Range.

Yellow-bellied Sapsucker *Sphyrapicus varius*

Status and Range (B, H, K). See Ruby-throated Hummingbird. **Summer** resident, numbers augmented by spring and fall transients. Common throughout B and southern half of H, where recorded in virtually every township (MBBA map 1991); uncommon in K and northern half of H in summer but fairly common during migration. Termination of sap production by trees, freezing of sap wells, and lack of insects probably precludes wintering this far north.

Habitat. In summer, nests exclusively in mature live aspens and forages primarily in mesic/wet mixed forests and dry deciduous forest (quaking aspen-white birch), less often in mesic deciduous forest. Possible in almost any tree on migration.

Migration Dates. **SEAD**: 4 Apr 86 (Youngman's property, B, JY). **SMAD**: 17 Apr (n=24). **SP**: second week of May. **FMDD**: 25 Sep (n=13). **FLDD**: 20 Oct 94 (Liminga, AW).

High Counts. **Spring**: multi-party, 9 May 98 (**36**) B, NAMC; 9 May 98 (**13**) B, LB only, NAMC. **Summer**: 30 Jun 87 (**12**) SE of Twin Lakes, T52N, R35W, SW quarter, H, LB.

Breeding (**B** 10 co, 10 pr, 15 po; **H** 10 co, 7 pr, 8 po; **K** 1 co, 6 po).

7 Jun 90 (during day, bird entered hole in quaking aspen and stayed) Hubbell, H. LB.

20 Jun 98 (feeding young) Arnheim, B or H, JY; not in above totals.

22 Jun 2003 (carrying food) T47N, R33W, Sec. 33, B, JY.

*23 Jun 86 (nest with young heard) Farmer's Block Road about 3 mi N Ahmeek, K, LB.

25 Jun 99 (nest with young heard 12 ft up in 12 in DBH quaking aspen) old highway US 41 near Bovine, B, LB.
26 Jun 2004 (nest with young) T52N, R33W, Sec. 5, B, JY.
28 Jun 95 (nest with young) B, D. McWhirter (MBNH 3: 28).
29 Jun 2002 (feeding young in cavity) Chassell, H, JY.
4 Jul 2002 (feeding young in cavity) Youngman's property, B, JY.
4 Jul 2003 (carrying food) T48N, R34W, SW quarter, B, JY.
5 Jul2004 (nest with young) T48N, R33W, Sec. 12, B, JY.
12 Jul 2001 (nest with young) Chassell, H, LM.
13 Jul 2001 (nest with young) T50N, R31W, Sec. 7, B, LM.
Note: the two confirmations near the tip of the Peninsula, K (MBBA map 1991) should be reduced to possible.

BBS. *Bootjack* 92-2005: 25 on 11 of 14 counts (78.6%); mean 1.79; range 0-4. *Herman*: 17 on 4 of 7 counts (57.1%); mean 2.43; range 0-7.

NAMC. *Baraga Co.*: 107 on 6 of 6 counts (100%); mean 17.83; range 10-37; ind/PH .42. *Houghton Co.*: 24 on 5 of 7 counts (71.4%); mean 3.34; range 0-9; ind/PH .09.

Remarks. This species, even more so than other Keweenaw woodpeckers, is a sucker for a Barred Owl imitation.

Downy Woodpecker *Picoides pubescens*

Status and Range (B, H, K). More numerous and widespread than Hairy Woodpecker. **Permanent** resident, with seasonally variable detectability, recorded in about three-quarters of the townships (MBBA map 1991). **Spring**: few data; some birds must leave in spring to account for lower detectability in summer than in winter, but some must also arrive (see Banding Recoveries) or pass through. **Summer**: fairly common resident, perhaps somewhat less numerous in K. **Fall**: gradually becomes common as migrants from north arrive in Sep and especially Oct; presumably, some northern birds pass through while others winter. One bird migrating in off Lake Superior at Agate Harbor on 9 Oct 88 (arrived at 1024 EDT) outmaneuvered a Merlin and safely reached the forest (LB). At the east end of Manitou Is., JY recorded 4 birds coming in off the Lake from the northeast, as follows: 3 singles at 0749, 0750, and 0825 on 7 Oct and 1 at 0743 on 8 Oct 2003. The remarkable 17 seen in Copper Harbor on 24 Oct 97 (LB) were certainly migrants, I assume translake; note that all fall high counts are for the north shore of K. The one banding recovery suggests emigration of some Peninsula breeders, but the increase in winter over summer numbers necessitates a far greater fall influx (see Winter). **Winter**: common resident. The HCCBC demonstrates a detectability of common, averaging 17.77 per count, .39 ind/PH, or 3.1 per one-party, 8-hour day. However, annual variation is considerable, varying from 4 (1991) to 30 (87) birds per count or .13 (91) to .88 (83) ind/PH. The severe winter of 78-79 (record snowfall) produced the second lowest number, 5 birds, or .16 ind/PH; this was followed by a slow recovery (.25/PH in 79, .39 in 80, .74 in 81, .47 in 82, and .88 in 83), suggesting that many Peninsula birds perished. Unfortunately, there are no summer data to corroborate this assertion; a summer count conducted like the CBC would be useful in elucidating such situations. For the Upper Peninsula as a whole, Wing (1939) showed that the winter frequency of occurrence (percent of days afield) of 93% is 3X the summer frequency of 29%, and the winter relative abundance (birds per day afield) of 2.93 is almost 4X the summer abundance of .78; thus there must be a fall influx. Data for Whitefish Point (Granlund & Byrne, 1996) illustrate a similar fall movement in Sep-Oct.

Habitat. Occurs in a wide variety of habitats, but prefers mesic and wet deciduous forests and mesic/wet mixed forest. Unlike Hairy Woodpecker, also feeds in broad-leaved shrub upland and shrub wetland (speckled alders), especially when these are adjacent to forest or snag nest sites, and in scrubby, deciduous second growth. Avoids dry coniferous forest. Regularly visits seed feeders, but prefers suet. See Hairy Woodpecker.

High Counts. **Spring**: multi-party, 11 May 2002 (**28**) H, NAMC. **Summer**: 14 Jun 98 (**5**) H and K, Bootjack BBS, LB. **Fall**: 24 Oct 97 (**17**) Copper Harbor, LB, transients; 4 Nov 2000 (**15**) Horseshoe Harbor, K, JM; 2 Sep 2000 (**10**) Agate Harbor to Copper Harbor, LB, JM; 11 Sep 2001 (**9**) Pt. Abbaye, B, B. St.Clair. **Early winter**: multi-party, 15 Dec 2001 (**37**) HCCBC; 24 Dec 62 (**17**) K, LB; 1 Jan 2000 (**14**) K, JM, LM, JY.

Breeding (**B** 3 co, 5 pr, 17 po; **H** 5 co, 7 pr, 16 po; **K** 7 co, 3 pr, 4 po).

21 May 2000 (pair copulating) Copper Harbor, JM, probable breeding.
21 Jun 99 (prejuvenile barely able to flutter away from nest hole in short white birch stub) Agate Harbor, LB.
*24 Jun 86 (nest with young 25 ft high in dead quaking aspen) Agate Harbor, LB.
8 Jul 99 (agitated adult carrying food) Cliff Cemetery near Phoenix, K, LB.
11 Jul 2001 (prejuvenile) Gratiot Lake, T57N, R30W, NE quarter, LB, JM, D. Raven, M. Scheiwe.

BBS. Bootjack 67-73: 5 on 4 of 7 counts (57.1%);

mean .71; range 0-2. *Bootjack* 92-2005: 9 on 5 of 14 counts (35.7%); mean .64; range 0-5. *Herman*: 14 on 6 of 7 counts (85.7%); mean 2.0; range 0-5; counts were in early Jul when young out of nest and species more conspicuous.

NAMC. Baraga Co.: 40 on 6 of 6 counts (100%); mean 6.67; range 3-13; ind/PH .16. *Houghton Co.*: 79 on 7 of 7 counts (100%); mean 11.29; range 4-28; ind/PH .28.

HCCBC. 462 on 26 of 26 counts (100%); mean 17.77; range 4-37; ind/PH .39.

Banding Recoveries. One adult (after hatching year) banded in WI 10 May 58 and recovered in K 23 Jun 59 suggests southward emigration of a Peninsula breeder.

Hairy Woodpecker *Picoides villosus*

Status and Range (B, H, K). Less numerous and widespread than Downy Woodpecker. **Permanent** resident, with seasonally variable detectability, recorded in about two-thirds of the townships (MBBA map 1991); least widespread in woodlots of extensive farm country of northern and southwestern H. **Summer**: uncommon resident throughout. **Fall**: gradually becomes fairly common as migrants from the north arrive. Virtually every Oct, I saw Hairys at Agate Harbor, where they did not breed prior to 2005. An increase in fall (Oct) abundance has also been noted at Whitefish Point (Granlund & Byrne, 1996) and was demonstrated by Wing (1939) for the Upper Peninsula (see below). **Winter**: fairly common resident throughout. The HCCBC demonstrates a mean of 11.4 birds per count, or .25 ind/PH (2.0 per one-party 8-hour day); annual numbers vary greatly, from 1 (1984) to 27 (89) per count or .03 to .81 ind/PH, which indicates immigration, emigration, or most likely both. Wing (1939), for the entire Upper Peninsula, documented a winter influx. In summer he recorded a frequency of sightings of 39% of days afield and a relative abundance of .95 birds per field day, whereas in winter these figures jumped to 86% and 5.54, respectively. This he attributed to immigration of northern birds, a theory corroborated by the winter incursion of birds similar to the larger, paler, northern race, *P. v. septentrionalis*.

Habitat. One nest hole (5 Jun 99) was in a live quaking aspen. Occurs primarily in extensive, mature, mesic/wet mixed forest and dry coniferous forest (jack pine, red pine), uncommonly in mesic deciduous forest, and rarely in scrubby deciduous second growth. Compared to Downy Woodpecker, uses older forests with a higher percentage of conifers, avoids shrub uplands and shrub wetlands, and rarely visits feeders.

High Counts. **Spring**: multi-party, 11 May 2002 (**13**) H, NAMC. **Fall**: 11 Sep 2001 (**5**) Pt. Abbaye, B, B. St.Clair. **Early Winter**: multi-party, 17 Dec 89 (**27**) HCCBC.

Breeding (**B** 2 co, 6 pr, 18 po; **H** 4 co, 4 pr, 19 po; **K** 4 co, 3 pr, 5 po).

21 Apr 2000 (pair copulating) 1.5 mi N Arnheim Road on highway US 41, H, LM, probable breeding.

19 May 2000 (nest) Otter Lake, H, JY.

26 May 2003 (occupied nest) T52N, R33W, Sec. 2, B, JY.

5 Jun 99 (nest with young heard) Cliff Drive east of Ahmeek, K, LM.

13 Jun 2002 (nest with young) T55N, R32W, Sec. 31, H, LM.

13, 19, 20 Jun 98 (nest with young heard) Arnheim, west of Unit 8, B, LM.

16 Jun 2002 (carrying food) T53N, R33W, Sec. 31, H, JY.

19 Jun 2005 (carrying food) Agate Harbor, LB, Z. Gayk; first summer record for this locality, reflecting the maturation of its forest.

BBS. Bootjack 67-73: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1. *Bootjack* 92-2005: 4 on 4 of 14 counts (28.6%); mean .29; range 0-1. *Herman*: 6 on 4 of 7 counts (57.1%); mean .86; range 0-2.

NAMC. Baraga Co.: 11 on 4 of 6 counts (66.7%); mean 1.83; range 0-5; ind/PH .04. *Houghton Co.*: 36 on 6 of 7 counts (85.7%); mean 5.14; range 0-13; ind/PH .13.

HCCBC. 297 on 26 of 26 counts (100%); mean 11.42; range 1-27; ind/PH .25.

Banding Recoveries. A juvenile banded in WI 13 Jul 93 and killed in Iron Co. or H in 94 demonstrates northward dispersal.

American Three-toed Woodpecker *Picoides dorsalis*

Status and Range (B, H, K). Although no individual American Three-toed is known to have remained all year, tempting me to call it a visitant, I treat it as a casual **permanent** resident, because it has been recorded in all seasons and has bred. Six records: **spring** (2), **fall** and **early winter** (2), **late winter** (1), and **summer** (1 breeding record). That 4 of the 6 records are from B may reflect that county's more extensive conifer forests. I have not seen documentation (if any exists) for the 12 May, 9 Aug, and 12 Oct records.

Habitat. Recorded in mesic mixed forest and in an area containing both dry coniferous forest (jack pine and red pine) and black spruce bog.

Significant Records (all).

12 May 80 (1) B, L. H. and J. Walkinshaw (JPW 58: 116).

23 May 2000 (female) Headwaters Environmental Station, Stanton Twp., H, M. L. Scheiwe. Accepted by the MBRC (Byrne, 2001a; MBNH 7: 226).

9 Aug 53 (adult male feeding a young bird) eastern B, E. A. Bourdo, Jr. (R. J. Adams in McPeek & Adams, 1994; Payne, 1983, 1986; Zimmerman & Van Tyne, 1959, who say

notes in UMMZ).

12 Oct 52 (1) west of Lake Roland (lake in T51N, R31W, Secs. 12 and 13) B, F. V. Hebard (Dodge, 1961).

24 Dec 62 (male specimen, Louisiana State University 28793) 2 mi NW Lac La Belle, K, LB, Eagle Harbor Christmas Bird Count (Binford, 1965; not "at Eagle Harbor" and observer not "HB" as stated in AFN 17: 327). Accepted by the MBRC (Byrne, 2001a).

18, 19 Feb 2000 (female) near Big Lake Campground, T49N, R34W, Sec. 28, B, TA, RH, O. Mills, LM, JM, JY (finder). Accepted by the MBRC (Byrne, 2001a).

[10 May 97 (female) 1 mi E from west end of Covered Road, H, NAMC. Rejected by the MBRC (Internet).]

[Winter 1856-57, listed without comment by Kneeland (1857) for "Keweenaw Point," in which, however, he included Ontonagon Co.]

Breeding (**B** 1 co; see Significant Records).

Black-backed Woodpecker *Picoides arcticus*

Status and Range (B, H, K). Rare **permanent** resident throughout forested regions, including Manitou Is. (9 Sep 2002, 20 Sep 2004, JY), but not entirely sedentary. Recorded in every month. Most easily found, but perhaps no more abundant, on the Baraga Plains. No apparent increase in **spring**, indicating that there is no regular northward movement. **Fall**: a small but definite movement in fall, with nearly half of all records from last week of Aug through third week of Nov. Eight of these, between 28 Aug (93, Copper Harbor, Keweenaw Mt. Lodge golf course, LB) and 17 Oct (2000, Agate Harbor, LB), were at localities where summering is unknown and hence were either transients or Keweenaw dispersants; 7 of the 8 were on the immediate Lake Superior coast of northern H and K, where translake migrants might be expected (see Downy and Hairy Woodpeckers and Northern Flicker), but dispersants would also be concentrated. Said to be "common" near Rice Lake, H, on 15 Nov 42 (Bourdo & Hesterberg, 1951); this is no longer the case, although a pine forest burn there in spring 2000 did attract a few birds (*e.g.*, 3 Feb 2001, male, LM).

Habitat. Both Baraga Plains nests were in slender *dead* jack pines, one a stub, the other a leaning tree, the former bordering a clearcut and the latter a dirt road. Also recorded in dense, black spruce bogs, a jack pine burn, and, especially in fall, dry mixed (eastern white pine-red oak) and mesic/wet mixed forests.

Breeding (**B** 2 co, 1 po; **H** 2 pr, 2 po; **K** 1 co, 1 po).

10 (2 three-quarters grown young being fed in nest), 19 (1 young in nest), and 29 (nest vacant) Jun 49, northeast corner of Gratiot Lake, K, Bourdo & Hesterberg (1951; photo).

14 Jun 49 (young bird seen) village of Houghton, Bourdo & Hesterberg (1951); probable breeding.

20, 22 Jun 99 (nest with at least 2 young) Baraga Plains, T49N, R34W, Sec. 17, RH, LM, JY.

22 Jun 2000 (male feeding young in nest) Baraga Plains, about 1 mi NW Big Lake, T49N, R34W, Sec. 19, LM, JY; empty on 26 Jun, LB, JY.

HCCBC. 3 on 3 of 26 counts (11.5%); mean .16; range 0-1; ind/PH .003. Also, one seen during count week in Dec 93.

Remarks. Statement in MBNH 2: 110, "2 on 8 Oct in Keweenaw Co. (LB)" should have said "1 on 8 Oct and 1 on 12 Oct 94 (LB)."

Northern Flicker *Colaptes auratus*

Status and Range ((B, H, K). **Spring**: Common transient throughout. One bird on 30 Apr 2000 at Hebard Park, K, was spotted about 1 mile out over Lake Superior flying due south to coast, where it joined a flock of 11 others. In 2002, 72 were counted returning to the mainland from west end of Manitou Is., 28 on 5 May, 33 on 6 May, and 11 on 7 May (Youngman, 2002); just before this, on 4 May 2002, LB saw 11 transients between Agate Harbor and Copper Harbor. Topping these were an exceptional 139 flying back to the mainland from the west end of Manitou Is. on 29 Apr 2004 (JY), making one wonder if flickers cross Lake Superior in spring (see fall). **Summer**: common resident throughout Peninsula, recorded in at least 72 of 73 censused townships (MBBA map 1991) and on all BBS counts. **Fall**: very common fall transient, some days abundant, especially on north coast of K, where concentrated by Lake Superior. Single birds have been noted arriving off Lake Superior at Agate Harbor on 17 Sep 87 (0906 EDT) and 23 Sep 87 (0840), the latter chased but missed by a Herring Gull (LB); and at the east end of Manitou Is. on 8 Oct 2003 (0943, JY). **Winter**: accidental lingerer and resident. Three records (seven dates), two in consecutive winters at near localities, suggesting the same bird: (1) 13 Nov (Schmidt Corner, H, AW) and 29 Nov 96 (.5 mi S Oskar, P. Boutilier; not 24 Nov as in Binford *et al.*, 1999), and 1 Jan 97 (feeder on Rauhala Road near Schmidt Corner, M. Abbott, fide AW); (2) 9 Jan and 1 and 12 Feb 98 (Liminga, AW, D. Weaver); (3) 4 Jan 03 (1 feeding on American mountain-ash berries in Copper Harbor, RH).

Habitat. Nests usually in tree cavities it excavates; in the Keweenaw, nests found in a white birch stub, a jack pine, and a nest box. Breeds at edges or in open portions

of dry and mesic forests, edges of open wetlands and beaver ponds with snags, and rural situations, feeding largely on ants in adjacent clearings such as clearcuts, old fields, lawns, and small, natural or man-made forest openings, all with very short and sparse or no vegetation. On migration, found in most any opening affording ground foraging, including residential settings and especially roadsides (where they are easily counted but vulnerable to vehicles); the moss between my patio flag stones and the tiny subterranean ants beneath take a beating during fall migration.

Migration Dates. **SEAD**: 25 Mar 97 (3 mi NW Boston, S. Andres); 4 Apr 86 (Liminga, D. Weaver) and 91 (Copper Harbor, AW). **SMAD**: 19 Apr (n=28). **SP**: first week of May, judging from High Counts. **SLDD**: 11 May 96; see Spring. **FEAD**: probable transients seen as early as 5 Sep 2001 (5 together, Agate Harbor, LB). **FP**: second and third weeks of Sep. **FMDD**: 27 Sep (n=27). **FLDD**: occurs into Oct in about one-third of all years, latest 27 Oct 95 (near Oskar, H, AW); see Winter.

High Counts. **Spring**: **139**, **33**, **28**, see Status and Range; 11 May 96 (**26**) B, JY. **Summer**: 31 Jul 90 (**10**) T53N, R34W, NE quarter, H, LB. **Fall**: 10 Sep 2000 (**68**) B and H, JM, P. Musser, exceptional; 19 Sep 97 (**64**) northern K (Agate Harbor 4, near Agate Harbor 11, Brockway Mt. Drive 45, Central 4, one party, LB, A. Slagle, exceptional).

Breeding (**B** 9 co, 11 pr, 9 po; **H** 10 co, 9 pr, 14 po; **K** 3 co, 4 pr, 7 po).

20 May 2000 (adult entering nest box in midday) Farmer's Block Road near Ahmeek, K, JM.

*10 Jun 88 (occupied nest) T47N, R33W, SW quarter, B, LB.

*13 Jun 88 (carrying food) T49N, R32W, NW quarter, B, LB.

*14 Jun 86 (nest with young heard) Ahmeek marsh, K, LB.

22 Jun 2002 (nest with young) Covered Road, T55N, R35W, Sec. 21, H, LM.

26 Jun 2000 (nest with 2+ large young fed by adult) 1 mi NW Big Lake, Baraga Plains, LB, JY.

*26 Jun 88 (carrying food) T52N, R32W, SE quarter, B, LB.

2 Jul 2004 (prejuvenile) near Alberta, T49N, R34W, Sec. 13, B, JY.

*14 Jul 88 (adult with prejuveniles) Sand Point, Baraga, T51N, R33W, Sec. 22, JY.

*18 Jul 88 (carrying food) near Arnheim, T52N, R33W, NW quarter, B, LB.

BBS. *Bootjack* 67-73: 39 on 7 of 7 counts (100%); mean 5.57; range 3-8. *Bootjack* 92-2005: 53 on 14 of 14 counts (100%); mean 3.79; range 1-8. *Herman*: 35 on 7 of 7 counts (100%); mean 5.0; range 3-7.

NAMC. *Baraga Co.*: 108 on 6 of 6 counts (100%); mean 18.00; range 11-24; ind/PH .42. *Houghton Co.*: 157 on 7 of 7 counts (100%); mean 22.43; range 6-44; ind/PH .56.

Historical Changes (Table 17). The Northern Flicker was listed by all early authors. Nevertheless, it must have increased after the initial cutting of forests in the mid 1880s, because it is a bird that feeds in clearings and does not need dense forest in which to nest. The 32% decrease in mean numbers of birds on the Bootjack BBS from 5.57 in 67-73 to 3.79 in 92-2005 seems to mirror national (66-99; Pardieck & Sauer, 2000) and state (66-85; Adams *et al.*, 1988) declines. Among the reasons for a decrease suggested by G. A. McPeek & E. B. Pitcher (in Brewer *et al.*, 1991), only competition for nest sites with the European Starling is possible in the Keweenaw, but starlings are not plentiful and nest primarily in buildings. A more likely possibility, not advanced by McPeek and Pitcher, is that many forest clearings, needed for ground foraging, have matured into dense shrub upland or second growth forest., and fires that would produce new clearings are now quickly extinguished.

Pileated Woodpecker *Dryocopus pileatus*

Status and Range (B, H, K). Uncommon **permanent** resident. Widespread, but favors older forests over second growth or mosaic farmland/forest, and hence, less numerous in northern H (widely farmed) and K (heavily logged); for instance, at Agate Harbor, always present in spring and fall (see below) but in summer not until the late 90s, after local trees matured on this protected land (LB). Seen on 2 May 2003 on Manitou Is. (JY). **Spring** and **fall**: no evidence of migration, but birds wander, especially in fall, and suddenly appear at non-breeding localities; for instance, at Agate Harbor, first "fall" birds noted 16 Jul 88, 26 Jul 87, 30 Jul 98, and 21 Aug 96 (LB). Other individuals thought to be on the move seen 21 Sep 93 (Calumet, LB), 26 Sep 93 (Copper Harbor, LB), and 2 Oct 95 (2, Copper Harbor, LB). **Winter**: according to HCCBC data, becomes very uncommon. However, I doubt it is any less numerous and attribute this finding to its vocal silence, inaccessible (snow-covered) forest habitat, and usual disinterest in feeders.

Habitat. One nest was in a large living aspen. In summer requires large trees for nesting and large trees, snags, and logs for foraging and hence favors mature forests, especially mesic deciduous and mesic/wet mixed, rarely mature dry mixed (red pine-red oak). Trees in other forest habitats usually do not attain the dimensions needed for nests. At other times of year spreads into slightly younger forests. In fall, with ungainly dexterity, uses bill to pick choke cherries off small trees (LB). Very rarely visits feeders.

High Counts. **Spring**: multi-party, 11 May 2002 (**12**) H, NAMC. **Summer**: 23 Jun 96 (**5**) H only, LB, Bootjack

BBS. **Winter**: multi-party, 20 Dec 2003 (**11**) HCCBC.

Breeding (**B** 3 pr, 12 po; **H** 2 co, 7 pr, 9 po; **K** 2 co, 4 pr, 7 po).

11, 17, 27 Mar 87 (excavating hole in living aspen) Liminga, AW (Weaver, 2000).

26 Apr 2002 (copulating) Agate Harbor, LB.

25 Jun 41 (nest) near Eagle Harbor, K, F. V. Hebard (Wood, 1951).

26 Jun 53 (nest with 2+ young) Copper Harbor, Kelley (JPW 31: 144).

Note: confirmed breeding for K on the MBBA map (1991) should be reduced to probable.

BBS: *Bootjack* 67-73: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1. *Bootjack* 92-2005: 28 on 12 of 14 counts (85.7%); mean 2.00; range 0-5. *Herman* (Jul dates): 4 on 2 of 7 counts (28.6%); mean .57; range 0-3.

NAMC. *Baraga Co.*: 23 on 5 of 6 counts (83.3%); mean 3.83; range 0-7; ind/PH .09. *Houghton Co.*: 23 on 4 of 7 counts (57.1%); mean 3.29; range 0-12; ind/PH .08.

HCCBC. 50 on 16 of 26 counts (61.5%); mean 1.92; range 0-7; ind/PH .04; also seen during count week in four additional years.

Historical Changes (Table 17). Using BBS data, Pardieck & Sauer (2000) and Adams *et al.* (1988) showed increases for 66-99 nationally and 66-85 statewide, respectively. A similar trend is indicated by BBS data for the Keweenaw, the mean birds per count rising 1329% from .14 in the period 67-73 to 2.00 in 92-2005. Also has increased in winter; in the first 10 years of the HCCBC, averaged .01 birds per party hour, but in the last 16 years, .58 (Table 15). I attribute these changes to forest maturation, a good example being Agate Harbor, where the Pileated was for years an early fall arriver and early spring departer, but starting in the late 90s, has summered (presumably breeding) in a forest that has not been logged since the 1930s.

Olive-sided Flycatcher *Contopus cooperi*

Status and Range (B, H, K). **Spring** transient, more common than in summer, but too few individuals to raise detectability above very uncommon. One of the latest migrants, with some transients lingering to mid Jun, necessitating care when evaluating breeding status. **Summer**: very uncommon and local resident, most numerous in the extensive bogs of southern B and tip of K and least in the farm districts of northern H. Irregular or entirely absent from many apparently suitable localities, including those where spring transients may stop to sing for a week or so. **Fall**: one of the earliest species to leave. Little noticeable transient migration despite wide range to north.

Habitat. Breeds in open bogs with scattered trees, sedge-grass marsh and beaver ponds with snags, wet coniferous forest (black spruce-tamarack), and rarely dry coniferous and mixed forests (edges of jack pine and jack pine-red oak clearcuts on Baraga Plains); in all habitats, tall snags or dead crowns are needed as foraging and singing perches, and I suspect spruce is preferred for nest sites. On migration may be found at tops of any trees and even on power lines, but prefers above habitats.

Migration Dates. **SEAD**: 16 May 83 (Youngman's property, JY) and 99 (Mt. Houghton, K, LM). **SMAD**: 25 May (n=18). **SP**: first week of Jun. **SLDD**: migrants that did not remain seen as late as 13 Jun 98 (Agate Harbor, LB) and 14 Jun 98 (3 mi N Ahmeek, K, LB, Bootjack BBS). **FMDD**: 14 Aug (n=13). **FLDD**: 5 Sep 95 (Liminga, D. Weaver).

Breeding (**B** 2 pr, 11 po; **H** 1 pr, 5 po; **K** 1 co, 3 pr, 4 po).

*Summer (adults attending young) K (D. C. Evers in Brewer *et al.*, 1991).

*The three probable records for K on the MBBA map (1991) were singing birds at Phoenix, Agate Harbor, and Bete Grise (LB).

BBS. *Bootjack* 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1. *Herman* : 2 on 2 of 7 counts (28.6%); mean .29; range 0-1.

Eastern Wood-Pewee *Contopus virens*

Status and Range (B, H, K). **Spring**: arrives very late, 12 May at the earliest, 31 May on average. Because of its southern distribution that extends only slightly north of the Keweenaw, only casually seen on migration (2 Jun 96, Agate Harbor, LB; 5 Jun 90, near Eagle Harbor, K LB). **Summer**: resident, fairly common in B and H and very uncommon in K; widespread but tending to be local, probably because of the now scarce (due to selective lumbering) distribution of its preferred habitat—mature patches of red oak. Although B. Pinkowski (in Brewer *et al.*, 1991) noted correctly that the Bootjack BBS did not record this species during the MBBA period, it did before and has since. **Fall**: departs very early, 26 Aug on average and 9 Sep at the latest. As in spring, only casually noted on migration (22 Aug 2000, Dan's Point, K, LB; 2 Sep 81, Agate Harbor, LB).

Habitat. Here I differ from general Michigan analyses (*e.g.*, MBBA 1991) because I believe that in the Keweenaw this species is at the northern periphery of its range and therefore uncommon enough that all individuals can occupy their preferred habitat—patches (sometimes sparse) of mature red oaks. These are often on hilltops surrounded by mesic deciduous forest (both Peninsula nests), in dry mixed forest associated with jack, red, or eastern white pines, or (secondarily) in mesic/wet mixed forest. On migration, wood-pewees may to be found in any trees.

Migration Dates. **SEAD**: 12 May 2001 (H) NAMC; 22 May 99 (1 mi NE Little Lake, B, JY). **SMAD**: 31 May

(n=11). **FMDD**: 26 Aug (n=11). **FLDD**: 9 Sep 86 (North Portage Entry, H, AW).

High Counts. **Summer**: 5 Jul 97 (**5**) B, S. Patti, Herman BBS.

Breeding (**B** 4 pr, 19 po; **H** 2 co, 5 pr, 19 po; **K** 2 pr, 4 po).

7 Jun 90 (nest just begun) Hubbell, H, LB.

27 Jul 98 (adult feeding young in nest) Hancock cemetery, RH.

BBS. *Bootjack* 67-73: 4 on 4 of 7 counts (57.1%); mean .57; range 0-1. *Bootjack* 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1. *Herman*: 23 on 6 of 7 counts (85.7%); mean 3.29; range 0-5.

NAMC. *Houghton Co.*: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

Yellow-bellied Flycatcher *Empidonax flaviventris*

Status and Range (B, H, K). **Summer** resident, uncommon in K (common on Manitou Is.) and the extensive bogs of southern B, and seemingly rare in H. Occupies only a portion of available habitat, as perhaps befits a species at the southern edge of it range. Detectability slightly greater during spring migration but still within the uncommon range. In **fall**, is also uncommon, probably because breeders leave at about the same rate as transients arrive. Arrives very late in **spring** and departs very early in fall.

Habitat. In summer, nearly restricted to very dense, dark, shrub wetland (large speckled alders) shaded by close-canopied, wet, coniferous forest bog (black spruce mixed with northern white-cedar), the ground covered with sphagnum moss and scattered ferns and sedges. Found also in many drier forest habitats on migration.

Migration Dates: **SEAD**: 17 May 99 (2 mi NE Big Lake, B, JY). **SMAD**: 27 May (n=10). **SLDD**: migrants have been seen as late as 9 Jun 89 (Agate Harbor, LB). **FEAD**: migrant or local wanderer seen 20 Jul 88 (Copper Harbor, LB); probable transients noted 16 Aug 2001 (Copper Harbor, LB, JM) and 19 Aug 2000 (Agate Harbor, LB) might indicate peak. **FLDD**: 3 Sep 84 and 2000 (both Agate Harbor, LB).

High Counts. **Summer**: 30 Jun 2003 (**6**) Manitou Is., B. Johnson, JY, probable breeding; 21 Jun 96 (**5**) Arnheim, B or H, JY.

Breeding (**B** 1 co, 2 pr, 8 po; **H** 1 co, 2 po; **K** 4 pr, 4 po).

20, 21 (nest under construction on ground under tuft of sedge, *Carex arctata*), 25 Jun (nest with 1 egg), 6 Jul (4 eggs), 24 Jul 56 (4 nestlings, one male nestling collected 24 Jun, UMMZ 152271, L. C. Binford no. 103) 4.1 mi N Little Lake, T50N, R34W, SW corner Sec. 20 or NW corner Sec. 29, B, LB (Zimmerman & Van Tyne, 1959).

BBS. *Bootjack* 92-2005: 7 on 5 of 14 counts (35.7%); mean .50; range 0-2.

Alder Flycatcher *Empidonax alnorum*

Status and Range (B, H, K). Common **spring** and **fall** transient and **summer** resident throughout much of the Peninsula, but largely absent from areas supporting solid stretches of upland deciduous forest and dry coniferous forest, as in southern and coastal H and northeastern B (MBBA map 1991). Late to appear in spring and early to leave in fall. Transients uncommonly seen outside breeding habitat.

Habitat. Breeds primarily in shrub wetland, especially speckled alders and sandbar willows, sometimes including those adjacent to or interspersed with wet coniferous forest. Also occurs rarely in scrubby old fields and broad-leaved shrub upland. One nest (14 Jun 86) was a bulky structure in a short leafless tree in shrub wetland mixed with cattail-sedge marsh.

Migration Dates. **SEAD**: 16 May 90 (Liminga, AW). **SMAD**: 25 May (n=24). **FEAD**: transients or wanderers seen out of breeding range as early as 26 Jul 2000 (2 birds, 2 mi NE Arnheim but in H, JY). **FMDD**: 13 Aug (n=11). **FLDD**: 13 Sep 95 (near Phoenix, K, LB); 8 Sep 2002 (1, Copper Harbor, LB); 29 Aug 2004 (1, Copper Harbor, LB).

High Counts. **Spring**: 8 Jun 98 (**24**) Arnheim, B or H, LM; 30 May 98 (**11**) Arnheim, B or H, JY. **Summer**: 15 Jun 2004 (**19**) H and K, LB, JM, Bootjack BBS.

Breeding (**B** 1 co, 9 pr, 12 po; **H** 4 co, 2 pr, 16 po; **K** 3 co, 5 pr, 5 po).

*14 Jun 86 (adult on nest) Ahmeek marsh, K, LB; see Habitat.

6 Jul 98 (adult on nest; abandoned at later date) Ahmeek marsh, K, LB.

*9 Jul 86 (carrying food) T57N, R29W, NE quarter, K, LB.

15 Jul 2001 (nest with 5 almost fledged young, one of which moved onto branch) Arnheim, Unit 7, B, LM, JY.

27 Jul (nest with 3 eggs hatched today), 10 Aug 95 (young fledged today), Liminga, D. Weaver's property, AW (photos by).

BBS. *Bootjack* 67-73: 35 on 7 of 7 counts (100%); mean 5.00; range 2-7. *Bootjack* 92-2005: 114 on 14 of 14 counts (100%); mean 8.14; range 3-19. *Herman*: 46 on 7 of 7 counts (100%); mean 6.57; range 1-15.

Least Flycatcher *Empidonax minimus*

Status and Range (B, H, K). Common **summer** resident throughout, recorded in almost all townships (MBBA map 1991). Only slightly more numerous, but more widespread, in **spring** and **fall**. Departs rather early (FMDD 2 Sep); most Sep *Empidonax* are Leasts.

Habitat. Primary breeding habitat is mature, mesic deciduous forest (northern hardwoods or sugar maple only) with a closed canopy and an open understory. Less numerous in dry deciduous (red oak or aspen), dry mixed, and mesic mixed forests. Often nests in clusters (*i.e.*, aggregations of territories); see 2 Jul 90 under Breeding. Visits additional habitats during migration.

Migration Dates. **SEAD**: 6 May 2001 (Youngman's property, B, JY). **SMAD**: 21 May (n=24). **SLDD**: migrants have been seen as late as 8 Jun 86 (Agate Harbor, LB). **FEAD**: migrants or local wanderers have been seen as early as 26 Jul 97 (Agate Harbor, LB). **FMDD**: 2 Sep (n=7). **FLDD**: 28 Sep 96 (Agate Harbor, LB).

High Counts. **Spring**: multi-party, 12 May 2001 (**46**) B, NAMC; same date (**30**, exact count) B, LB and JM only, NAMC; 15 May 2000 (**11**) Belle Lake, T51N, R31W, Sec. 29, B, JY; both records during exceptionally early years for this species; probably many became summer residents; 27 May 2004 (**12**) Agate Harbor, LB, all transients. **Summer**: 3 Jul 93 (**20**) B, S. Patti, Herman BBS; 25 Jun 2000 (**12**) Arnheim, B or H, LM, JY.

Breeding (**B** 1 co, 15 pr, 12 po; **H** 6 co, 8 pr, 16 po; **K** 3 co, 5 pr, 6 po).

4 Jun (nest just begun 35 ft up in 45 ft quaking aspen), 7 Jun (nest three-quarters finished), 11 Jun (nest finished, adult sitting), 19 Jun (adult sitting), 27 Jun (adults carrying food but nest entirely gone), 9 Jul (adults carrying food) 90, Hubbell, H, LB; timing of events indicates that this nest failed, and the adults seen carrying food on 27 Jun and 9 Jul were a second pair, with the first pair renesting (see 2 Jul nest).

*27 Jun 87 (nest with at least two large young) T49N, R35W, NW quarter, H, LB.

2 Jul 90 (adult sitting on nest 20 ft from 4 Jun 90 nest; two pairs present) Hubbell, H, LB; see 4 Jun 90 nest.

5 Jul 2001 (carrying food) Gratiot Lake, T57N, R30W, NW quarter, K, M. Scheiwe.

9 Jul 2001 (carrying food) Gratiot Lake, T57N, R30W, NW quarter, K, JM, M. Scheiwe.

*9 Jul 87 (adult carrying food) Redridge, H, LB.

*15 Jul 86 (adult feeding very tiny prejuvenile) 2 mi SE Central, K, LB.

Summary: data indicate single-broodedness, but with renesting after failure.

BBS. Bootjack 67-73: 26 on 7 of 7 counts (100%); mean 3.71; range 1-7. *Bootjack* 92-2005: 7 on 6 of 14 counts (42.9%); mean .50; range 0-2. *Herman*: 83 on 7 of 7 counts (100%); mean 11.86; range 5-20.

NAMC. Baraga Co.: 50 on 4 of 6 counts (66.7%); mean 8.33; range 0-46; ind/PH .19. *Houghton Co.*: 24 on 1 of 7 counts (14.3%); mean 3.43; range 0-24; ind/PH .09.

Historical Changes (Table 17). On BBS routes from 66 to 99, Pardieck & Sauer (2000) noted a national decrease of 1.0% per year. The Bootjack BBS suggests an even sharper decline in the Keweenaw, from a mean of 3.71 in 67-73 to .50 in 92-2005, an 87% drop. I attribute this to extensive over-logging, which produces unsuitable habitat, either dense second growth or, if selective for mature sugar maple (as is often the case), an undesirable open canopy.

Eastern Phoebe *Sayornis phoebe*

Status and Range (B, H, K). **Summer** resident; widespread and fairly common in much of B and H, but rare in heavily forested regions of eastern B, west-central H, and all of K (except locally at Gratiot Lake). Numbers augmented by **spring** and **fall** transients, but not enough to exceed the fairly common detectability range. Arrives much earlier and leaves somewhat later than other flycatchers (see Migration in Discussions).

Habitat. Favors open regions in rural settings but occasionally inhabits lake edge and openings in heavy forests where bridges cross streams and rivers. Although it prefers to be near open water (mud is incorporated in the nest), I have seen two nests far from water. Nests usually placed under bridges and building eaves (even occupied buildings) and inside barns and abandoned sheds. The 20 Jun 2003 nest was the only one in a more natural site. A small tree had fallen into the edge of a man-made sand pit, with a few roots still attached to solid ground but most forming a bulky mass overhanging the pit. The nest was in a small pocket on the inside of this mass 2 ft from the sand wall. This situation resembles what a stream might cut into its banks and suggests one reason why phoebes frequently inhabit stream sides.

Migration Dates. **SEAD**: 28 Mar 86 (Liminga, D. Weaver). **SMAD**: 14 Apr (n=24). **SLDD**: migrants seen as late as 3 Jun 98 (3 mi NW Boston, S. Andres, arrival of female to join territorial male). **FMDD**: 13 Sep (n=23, H only). **FLDD**: 8 Oct 83 (Liminga, AW).

High Counts. **Spring**: multi-party, 11 May 2002 (**17**) B, NAMC; same census (**9**) LB and JM only. **Summer**: 13 Jun 99 (**5**) near Covington, B, JY.

Breeding (**B** 7 co, 1 pr, 12 po; **H** 9 co, 6 pr, 9 po; **K** 7 co, 1 pr, 1 po).

30 Apr 87 (nest under construction) Youngman's property, B, JY.

*30 Apr 88 (nest under construction) Youngman's property, B, JY.

27 May 2002 (nest with 5 eggs) under bridge, Arnheim, H, JY.

30, 31 May 99 (nest under construction) Youngman's property, B, LM, JY.

19 Jun 2000 (carrying food) Arnheim, B or H, LM; not in above totals.

20 Jun 2003 (nest with young) T50N, R34W, Sec.

12, B, JY, see Habitat.
*25 Jun 88 (nest with 3 very large young) T51N, R32W, Sec. 32, B, LB.
*26 Jun 87 (nest with 4 eggs) T49N, R37W, NW quarter, H, LB.
*28 Jun 87 (nest with 4 large young) T50N, R36W, NW quarter, H, LB.
5 Jul (nest with young), 10 Jul (3 nests with young), 11 Jul 2001 (nest with young) all 5 nests at Gratiot Lake, T57N, R30W, NW quarter, K, JM, M. Scheiwe.
12 Aug 80 (adults feeding prejuveniles) Phoenix, K, LB.
Aug 1914 (2 nests, one with 3 broken eggs) Kenton, H, Cahn (1918).

Summary: the lengthy breeding season (about 2.5 months) probably reflects both its normal double-broodedness and the broad span of spring arrival from 28 Mar-3 Jun.

BBS. *Bootjack* 67-73: 4 on 2 of 7 counts (28.6%); mean .57; range 0-3. *Bootjack* 92-2005: 32 on 12 of 14 counts (85.7%); mean 2.29; range 0-5. *Herman*: 8 on 5 of 7 counts (71.4%); mean 1.14; range 0-4.

NAMC. *Baraga Co.*: 62 on 6 of 6 counts (100%); mean 10.33; range 2-19; ind/PH .24. *Houghton Co.*: 20 on 6 of 7 counts (85.7%); mean 2.86; range 0-8; ind/PH .07.

Historical Changes. Because modern concrete bridges often lack suitable ledges, and old open buildings are becoming scarcer, I predict a future decline.

Say's Phoebe *Sayornis saya*

Status and Range (H, K). Accidental **spring** vagrant from the west; 2 records of single birds, 2, 21 May.

Significant Records (all).

2 May 74, bank of Sturgeon River along Sturgeon River Road, south of Chassell, H, N. A. Sloan (1975) and ornithology class (Weaver, 2000; JPW 52: 135); also RH (pers. comm.). Accepted as the first state record by the MBRC (Chu, 1995).
21 May 96, Brockway Mt., West Bluff lookout, K, LB. Accepted by the MBRC (MBNH 3: 248).
[May 77, Chassell, H, "UMMZ" (Payne, 1983: 37; R. J. Adams in McPeek & Adams, 1994). R. B. Payne (in litt.) informs me that this is "certainly" the same record as 2 May 74 above.]

Great Crested Flycatcher *Myiarchus crinitus*

Status and Range (B, H, K). Fairly common **summer** resident throughout; no more abundant on migration, as befits a species at the northern edge of its range. Like other aerial foragers, arrives late in **spring** and apparently leaves early in fall (see Migration in Discussions). **Fall** status uncertain, as there are only 5 records after 22 Jul: 9, 18, 22, and 24 Aug and 4 Sep. Regular occurrence into the third week of Sep at Lansing, MI (R. Brown in Brewer *et al.*, 1991) suggests that silent birds might have been overlooked in the Keweenaw. However, the mid to late Aug median departure dates of most other aerial foragers from the Peninsula suggest otherwise—that Great Cresteds really do leave early; allowing seven weeks for raising one brood, adults could be ready to depart in mid Jul; more data needed.

Habitat. See Breeding for nest sites. Prefers mesic/wet deciduous forest; also beaver ponds with snags that have old woodpecker excavations.

Migration Dates. **SEAD**: 7 May 2000 (Sturgeon River mouth, JY). **SMAD**: 23 May (n=23). **FLDD**: only 5 post-Jul records: 4 Sep 99 (Agate Harbor, LB, JM); 24 Aug 87 (Liminga, AW); 22 Aug 31 (Kenton, H; Wing, 1939); 18 Aug 82 (Youngman's property, B, JY); 9 Aug 2000 (2 mi NE Arnheim, H, JY, not at a breeding site).

Breeding (**B** 3 co, 4 pr, 18 po; **H** 4 co, 3 pr, 20 po; **K** 1 co, 4 pr, 6 po).

10 Jun 99 (entering Wood Duck nest box) Sturgeon River Sloughs, Unit 1, JY.
*19 Jun 85 (adult feeding young in nest cavity in aspen) Dollar Bay, H, R. E. Emmons (CLO).
*25 Jun 88 (adult carrying food) T51N, R32W, SW quarter, B, LB.
*28 Jun 87 (adult carrying food) T50N, R36W, NW quarter, H, LB.
29 Jun 97 (nest in nest box) Youngman's property, B, LM, JY.
*3 Jul 86 (adult entering hole in snag in sedge-grass marsh) near Iriquois Mine on Cliff Drive east of Ahmeek, K, LB.
22 Jul 78 (nest with young) 3 mi NW Boston, H, F. B. Isaacs.

BBS. *Bootjack* 67-73: 9 on 5 of 7 counts (71.4%); mean 1.29; range 0-3. *Bootjack* 92-2005: 15 on 7 of 14 counts (50.0%); mean 1.07; range 0-4. *Herman*: 14 on 6 of 7 counts (85.7%); mean 2.00; range 0-3.

NAMC. *Baraga Co.*: 4 on 2 of 6 counts (33.3%); mean .67; range 0-3; ind/PH .02. *Houghton Co.*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1; ind/PH .01.

Historical Changes (Table 17). This species was not listed by Kneeland (1857), Cahn (1918) for Aug 1914 (by which time some individuals might have left), Wood (1933) for 1931, or Wallace (1949). Wing (1939) however, found it at Kenton, H, on 22 Aug 31. In the late 50s, Zimmerman & Van Tyne (1959) stated that it was unrecorded on "Keweenaw Point" (meaning the northern portion of the Peninsula). AW (orig. notes), birding mostly in northern H, saw it during spring migration (as late as the first week of Jun) during his early birding years beginning in 74 and irregularly in summer

starting in 84. Thus it seems that historically this species was absent in summer from at least the northern half of the Keweenaw. If true, the Great Crested Flycatcher may be one of those southern species spreading northward in response to climatic warming (or other factors).

Tropical/Couch's Kingbird *Tyrannus melancholicus/couchii*

Status and Range (K). Accidental **spring** vagrant. One record: 23 May 97, 1 seen and heard, Eagle Harbor, K, L. Dombroski (FN 51: 873; MBNH 4: 220). This first state record was submitted to the MBRC as a Tropical Kingbird but was accepted as either a Tropical or Couch's (Internet).

Western Kingbird *Tyrannus verticalis*

Status and Range (B, H, K). Western vagrant, casual in **spring** (3 records, 24 May-7 Jun) and **fall** (5 records, 11 Aug-27 Sep) and accidental in **summer** (1 record). McPeek (in McPeek & Adams, 1994), who gives the earliest fall date for the state as 30 Aug, did not know of the earlier records herein.

Habitat. Possible in any open grassy area; recorded in farmland, old fields, a golf course, and on grassy dikes of a marsh and a sewage pond.

Significant Records (all; all single birds).

24 (LB, J. Rooks), 25 (LM, JY) May 97, Copper Harbor sewage ponds.

3 Jun 95, Liminga, D. Weaver's farm, AW, D. Weaver (Weaver, 2000).

[4 Jun 98, Obenhoff, H, AW, D. Weaver; although probably correct, the observers did not eliminate other yellow-bellied kingbirds, as stated by Weaver (2000).]

6, 7 Jun 98, old field in Copper Harbor, LB, J. Rooks.

1 Jul 84 (1) corner Krolik and Plains roads, T50N, R34W, Sec. 4, B, S. Patti, Herman BBS (S. Patti, in litt.; BBS summary). This presumably is the basis for the 1 Jul 84 record of "a pair" in Baraga Co. (G. A. McPeek in McPeek & Adams, 1994) and the MBBA (1991) reference to "possible" breeding in B. However, S. Patti (in litt.) saw only one bird, which disappeared into a large cottonwood, making him *speculate* that it went to a nest. Also, the BBS summary sheet (Internet) indicates only "1" bird, and the MBBA would have said "probable" breeding if a pair had been seen. I conclude that there is no basis for the presence of a second bird or for even possible breeding.

11 Aug 93, Freda, H, AW (Weaver, 2000).

29 Aug 86, Sturgeon River Sloughs, Unit 1, AW (Weaver, 2000).

30 Aug 88, Copper Harbor, Keweenaw Mt. Lodge golf course, LB.

10, 11 Sep 83, Liminga, AW farm, AW, D. Weaver, M. Weaver (JPW 62: 30; AB 38: 206; Weaver, 2000).

27 Sep 85, Redridge, H, AW (Weaver, 2000); not 26 Sep as in AB 40: 116.

Eastern Kingbird *Tyrannus tyrannus*

Status and Range (B, H, K). Fairly common **summer** resident throughout open regions and in clearings within forested areas; scarce in eastern and southern B, southern and west-central H, and southeastern K (MBBA map 1991), where forests largely unbroken. In **spring**, may occur in migrating flocks, but on average only slightly more numerous than in summer. Birds on north coast of K may be trapped by Lake Superior, although it crosses the Gulf of Mexico (LB). **Fall**: departs early, usually by last week of Aug. No apparent increase in detectability over summer. The only certain fall migrants (transients?) were 5 in a flock moving *north* past Brockway Mt. on 11 Aug 2001 (LB) and 2 each perched in Copper Harbor, 22 Aug 2001 and 28 Aug 2002 (LB).

Habitat. Inhabits rural settings that combine hayfields, pastures, or old fields for foraging with hedgerows and isolated trees (including farm yards) for perching and nesting; also occurs at beaver ponds and other open wetlands that have snags and isolated or bordering trees.

Migration Dates. **SEAD**: 4 May 88 (Liminga, AW). **SMAD**: 15 May (n=30). **SLDD**: migrants have been seen as late as 13 Jun 98 (Agate Harbor, LB, 2 flying east over forest). **FMDD**: 23 Aug (n=24, H only); see Status and Range. **FLDD**: 20 Sep 75 (Redridge, H, AW).

High Counts. **Spring**: multi-party, 12 May 2001 (**11**) B, NAMC; 30 May 2002 (flock of **10**) near Hebard Park, K, LB, JM. . **Summer**: 3 Jul 83 (**8**) B, S. Patti, Herman BBS; 12 Jun 92 (**7**) H and K, LB, Bootjack BBS; 6 Jul 98 (**5**) Baraga Plains, JY. **Fall**: 21 Aug 74 (**9**) Liminga, AW.

Breeding (**B**, 7 co, 5 pr, 12 po; **H** 10 co, 7 pr, 12 po; **K** 4 co, 5 pr, 3 po).

*9 Jun 88 (adult sitting on nest) T52N, R33W, Sec. 3, B, LM, M. Cooper.

*13 Jun 86 (pair collecting nest material) Agate Harbor, LB.

*14 Jun 86 (2 nests, adults sitting) Ahmeek marsh, K, LB.

20 Jun (nest with 2 eggs), 10 and 17 Jul (young in nest), 25 Jul 99 (nest empty) Arnheim, Unit 5, H, LM, JY.

*25 Jun 88 (carrying food) T51N, R32W, SW quarter, B, LB.

*28 Jun 87 (nest building) T50N, R36W, NW

quarter, H, LB.
5 Jul 2003 (feeding young) Arnheim, T52N, R33W, NW quarter, B, LM.
*10 Jul87 (prejuveniles) T54N, R34W, SW quarter, H, LB.
16 Jul 90 (adult feeding 2 prejuveniles) Boston Pond, H, LM.
2 Aug 2001 (adult feeding 2 prejuveniles three-quarters grown) T57N, R32W, Sec. 22, K, LB, JM.
5 Aug 2000 (adult feeding 1 prejuvenile) Arnheim, Unit 7, B, LM, JY.
Summary: data indicate single-broodedness, with either late nestings or renestings.

BBS. *Bootjack* 67-73: 8 on 5 of 7 counts (71.4%); mean 1.14; range 0-2. *Bootjack* 92-2005: 38 on 13 of 14 counts (92.9%); mean 2.71; range 0-7. *Herman*: 25 on 6 of 7 counts (85.7%); mean 3.57; range 0-8.

NAMC. *Baraga Co.*: 18 on 3 of 6 counts (50.0%); mean 3.00; range 0-11; ind/PH .04. *Houghton Co.*: 9 on 4 of 7 counts (57.1%); mean 1.29; range 0-1; ind/PH .03.

Scissor-tailed Flycatcher *Tyrannus forficatus*

Status and Range (K). Vagrant, casual in **spring** (3 records, 30 May-11 Jun) and accidental in **fall** (1 record, 16 Oct), all on coast of K, where Lake Superior probably acts as a barrier for this diurnal migrant.

Significant Records (all).
30 May 2002 (1) near Hebard Park, K, LB, JM; migrating eastward with Eastern Kingbirds. Accepted by the MBRC (Byrne, 2004).
5, 6, 7 Jun 98 (1) old field at edge of Copper Harbor, LB, J. Rooks. Accepted by the MBRC (MBNH 6: 43).
11 Jun 73 (1) Bete Grise, K, R. Smith, unpublished photo (JPW 51: 150; Payne, 1983, 1986, where inaccurately said to be "near Copper Harbor"; R. J. Adams in McPeek & Adams, 1994). I have seen no documentation for this record.
16 Oct 96 (1 immature) Copper Harbor, LB, RH, LM (FN 51: 60). Accepted by the MBRC (Internet).

Loggerhead Shrike *Lanius ludovicianus*

Status and Range (B, H, K). Transient, casual in **spring** (6 records, 17 Apr-30 May) and **fall** (4 records, 31 Aug-14 Nov); formerly an accidental visitant in **summer** (24 Jul 56) and **early winter** (17 Dec 77). Possibly bred formerly, perhaps as recently as 56 in farm country near Watton (B), but there are no other summer data; none of the early Keweenaw writers mentioned it. Now largely extirpated as a breeder in the upper Midwest; Keweenaw birds probably are transients (or vagrants?) from a more western breeding population.

Significant Records (all; all single birds).
[3 Apr 91, Franklin Twp., H (JPW 68 [6]: 29). I question this very early record, the date being more suitable for the Northern Shrike.]
17, 20 Apr 90, Liminga, AW, photos (Weaver, 2000).
[1 May, 8 Jun 77, Liminga, AW (Weaver, 2000); however, records are listed in AW orig. notes as "probable" and "possible," respectively.]
3 May 99, east end Brockway Mt. above Copper Harbor, R. and M. Planck (pers. comm.).
16 May 2001, Sturgeon River Sloughs area, T53N, R33W, Sec. 9, JY.
18, 19 May 2003, Calumet Twp. Waterworks Park, H, TA, G. Goode (finder), RH, JM.
24 May 99, head of L'Anse Bay, JY (MBNH 6: 206).
30 May 2000, Copper Harbor, LB.
24 Jul 56 (adult) 1.5 mi NE Watton, T48N, R34W, Sec. 20, B, LB.
31 Aug 80, Agate Harbor, North Point, LB.
6 Sep 85, Tapiola, H, AW (Weaver, 2000).
11 Oct 88, Liminga, AW (Weaver, 2000).
14 Nov 81, South Portage Entry, H, AW (Weaver, 2000; JPW 60: 38).
17 Dec 77, HCCBC ("excellent details"—AW); AB 32: 671 ("believable details—Ed.").

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Northern Shrike *Lanius excubitor*

Status and Range (B, H, K). **Fall** and **early winter**: uncommon transient, recorded throughout but primarily in unforested regions. Extremely punctual, the earliest arrival date of 7 Oct only two days before the median of 9 Oct; often earliest on the north shore of K. No apparent pattern of irruptions (Table 15). **Winter**: very uncommon resident, perhaps absent in very severe winters (unrecorded on 6 of 26 HCCBCs), but late winter coverage inadequate to tell. **Spring**: uncommon transient, as in fall.

Habitat. On migration, may be found in clearings (including villages) and forested regions, especially on north coast of K. When temporarily sedentary, favors old fields, rural hedgerows, shrub wetlands at edges of open aquatic habitats, and shrub-dotted marshes where these afford the necessary perches for hunting; also hunts at feeders, even in residential settings.

Migration Dates. **FEAD**: 7 Oct 90 and 95 (both Liminga, D. Weaver). **FMAD**: 9 Oct (n=14, 85-2000 only). **SMDD**: 16 Apr (n=21). **SLDD**: 4 May 97 (Oskar, H, S. Andres; MBNH 4: 215).

High Counts. **Early winter**: multi-party, 19 Dec 81

(7) HCCBC.

HCCBC. 48 on 20 of 26 counts (76.9%); mean 1.85; range 0-7; ind/PH .04.

Bell's Vireo *Vireo bellii*

Status and Range (H). Accidental **spring** vagrant; 1 record, a singing male watched at 25 ft for 10 min by N. F. Sloan (1974) and 15 students at Houghton on 17 May 73 (Payne, 1983, 1986). This appears to be the only Upper Peninsula record for this rare Michigan species (R. J. Adams in Brewer *et al.*, 1991; C. Nelson in McPeek & Adams, 1994; Granlund & Byrne, 1996). Sloan (1974) gives an adequate plumage description and says the song was thought by all to be identical to tapes of Bell's Vireo.

Yellow-throated Vireo *Vireo flavifrons*

Status and Range (B, H, K). Casual breeding **summer** vagrant, presumably arriving as a vagrant overshoot in spring. Five records: 2 for H, including the northernmost nest for Michigan; 2 for B, both representing possible breeding; 1 for K.

Significant Records (all).

1, 2, 16 Jun (adult seen), 7 Jul (at least 2 nestlings being fed by both adults) 2002, about 2 mi NE Otter Lake, at foot of the Sturgeon River's west bluff, T53N, R33W, Sec. 31, H (only 2.5 mi N of 88 record); nest at edge of beaver pond 40-50 ft up in 60 ft, 12 in DBH red maple; JY.

11 Jun 91 (singing male) 2 mi NE Skanee, T52N, R31W, Sec. 13, B, B. Stout (in litt.); not near L'Anse as in JPW 69 [1]: 29); possible breeding.

18 Jun 2005 (wandering singing male in poor breeding habitat), ca 1 mi NW Traverse Bay town, .2 mi N county line, T56N, R31W, Sec. 33, K, N. Auer; not found subsequently by LB, N. Auer *et al.*

14 Jul (singing male, Z. Gayk, JY), 15 Jul (nest with 2 adults feeding 1+ nestling, LB, Z. Gayk), 16-22 Jul (adults feeding at least 2 nestlings, TA, RH, JK, K. Tischler) about 2.5 mi WSW Painesdale, T53N, R35W, extreme NW corner Sec. 2, H; nest at edge of pond, 40 ft up in 50 ft, 10 in DBH sugar maple.

18 Jul 88 (singing male) in wet deciduous forest swamp, T52N, R33W, Sec. 7, B, LB; possible breeding.

Breeding (**B** 2 po; **H** 2 co). See Significant Records.

[*Note*: supporting evidence is unavailable for a spot on the MBBA map (1991) indicating possible breeding in extreme southern B.]

Historical Changes. See above and Historical Changes in Discussions, including Table 17.

Blue-headed Vireo *Vireo solitarius*

Status and Range (B, H, K). Fairly common **summer** resident throughout forested regions. Numbers augmented by transients, which are more widespread, but detectability remains in the fairly common range. No confirmed breeding for H.

Habitat. Breeds primarily in wet coniferous forest, especially in or adjacent to forested bogs (black spruce and tamarack-black spruce), secondarily in mesic/wet mixed forest, once in dry coniferous forest (red pine) near a marsh (26 Jul 2001).

Migration Dates. **SEAD**: 26 Apr 99, T50N, R35W, Sec. 16, H, JY. **SMAD**: 13 May (n=15). **SLDD**: a migrant was seen 2 Jun 2004 (Agate Harbor, LB). **FMDD**: 15 Sep (n=8). **FLDD**: 7 Oct 2003 (Manitou Is., B. Johnson, JY).

High Counts. **Spring**: 18 May 91 (**9**) K, LB.

Breeding (**B** 3 co, 5 pr, 10 po; **H** 2 pr, 17 po; **K** 2 co, 1 pr, 9 po).

*4 Jun 88 (nest building) south point at mouth of Lac La Belle, K, LB.

*14 Jun 88 (carrying food) T50N, R32W, NE quarter, B, LB.

26 Jul 2001 (female carrying food, male singing) north end of Deer Lake, K, LB, JM, see Habitat.

Note: the confirmation at the extreme tip of K (MBBA map 1991) should be reduced to possible.

BBS. *Bootjack* 92-2005: 5 on 4 of 14 counts (28.6%); mean .36; range 0-2. *Herman*: 4 on 4 of 7 counts (57.1%); mean .57; range 0-1.

NAMC. *Baraga Co.*: 31 on 6 of 6 counts (100%); mean 5.17; range 3-8; ind/PH .12. *Houghton Co.*: 9 on 3 of 7 counts (42.9%); mean 1.29; range 0-4; ind/PH .03.

Banding Recoveries. Adult banded in B 2 Aug 73, when probably a summer resident, shot in Honduras in 77.

Warbling Vireo *Vireo gilvus*

Status and Range (B, H, K). Very uncommon and local **summer** resident in open areas of northwestern half of B and northern half of H; very rare in K, where only breeding habitat and birds are at Ahmeek marsh. Only two confirmed breeding records for the Peninsula. No more numerous, but slightly more widespread, during migration, as befits a species at the northern edge of its range; two **spring** migration records (2 birds, 19 May 2001, 1 bird, 30 May 2005, both Copper Harbor, LB, JM). **Fall**: only three records after Jul, the latest 13 Sep (see Migration Dates).

Habitat. Restricted to patches of dry deciduous forest composed of aspen isolated in open areas; does

not occur in aspen patches within denser forests (where Philadelphia Vireo breeds).

Migration Dates. **SEAD**: 5 May 2001 (2, Chassell, H, LM). **SMAD**: 26 May (n=6). **FLDD**: only 3 post-Jul records: 13 Sep 90 (Calumet, LB); 4 Sep 2000 (Dan's Point, K, LB, a transient); 30 Aug 98 (Sturgeon River Sloughs, LM).

High Counts. **Summer**: **5** (see Breeding).

Breeding (**B** 2 pr, 8 po; **H** 2 co, 5 pr, 6 po; **K** 1 pr, 1 po).

26 May 2003 (female carrying nest material, male singing) in Dollar Bay, H, LB.

6 Jun 2002 (5 singing) T53N, R33W, Sec. 20, H, JY, probable breeding.

12 Jun 99 (1 on territory) Arnheim, Unit 7, B, JY, probable breeding.

13 Jun 2002 (adult on nest) Chassell, H, LM.

*19 Jun 87 (pair on territory) T51N, R35W, SE quarter, H, LB, probable breeding.

25 Jun 2000 (5 on territory) Arnheim, B, LM, JY, probable breeding.

6 Jul 98 (pair on territory) Ahmeek marsh, K, LB, probable breeding.

BBS. *Bootjack* 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1. *Herman*: 9 on 7 of 7 counts (100%); mean 1.29; range 1-2.

NAMC. *Baraga Co*.: 4 on 2 of 6 counts (33.3%); mean .67; range 0-3; ind/PH .02.

Philadelphia Vireo *Vireo philadelphicus*

Status and Range (B, H, K). **Spring**: very uncommon transient throughout. **Summer**: generally rare resident, locally very uncommon in central H and northwestern B and rare in K (MBBA map 1991). The only Michigan nest was found in Hubbell, H (LB). **Fall**: uncommon transient throughout.

Habitat. Breeds in patches of mature dry deciduous forest composed primarily of aspen (quaking or bigtooth) adjacent to, or mixed with, mesic deciduous forest (sugar maple, red maple, red oak, white birch, and yellow birch), primarily in edge situations (L. C. Binford in Brewer *et al*., 1991).

Migration Dates. **SEAD**: 12 May 2001 (2 birds, 4 mi S Watton, B, LB, JM); 20 May 95 (Brockway Mt., K, LB). **SMAD**: 23 May (n=6). **SLDD**: migrants (probably transients) seen as late as 2 Jun 96 (Agate Harbor, LB). **FEAD**: transients or local post-breeding dispersants seen as early as 4 Aug 82 (Agate Harbor, LB). **FMDD**: 1 Sep (n=9, north coast of K only). **FLDD**: only five dates after 4 Sep: 28 Sep 96, 20 Sep 2002, 15 Sep 93 and 94, and 11 Sep 2000 (all Agate Harbor, LB).

Breeding (**B** 1 co, 1 pr, 2 po; **H** 1 co, 2 pr, 4 po; **K** 2 pr, 2 po).

29 May (pair), 19 Jun (pair), 27 Jun (adult sitting on nest high in red maple), 2 Jul 90 (nest abandoned) Hubbell, H, LB; only Michigan nest (L. C. Binford in Brewer *et al*., 1991).

*27 Jun 87 (pair) T49N, R36W, NE quarter, H, LB, probable breeding.

*29 Jun 87 (pair) T51N, R36W, Sec. 24, H, LB, probable breeding.

11 Jul 95 (pair) T57N, R31W, Sec. 1, K, LB, probable breeding.

*18 Jul 88 (adult feeding 1 small prejuvenile) T52N, R33W, Sec. 18, B, LB (L. C. Binford in Brewer *et al*., 1991).

*27 Jul 88 (pair; female carried part of dragonfly into canopy) road between Prickett Dam Backwater and highway M 38, T50N, R35W, NE quarter, B, LB, probable breeding.

Note: the 7 Jul 86 record attributed to H in AB 40: 1207 was a singing male at Central Lake, K, LB.

NAMC. *Baraga Co*.: 2 on 1 of 6 counts (16.7%); mean .33; range 0-2; ind/PH .01.

Red-eyed Vireo *Vireo olivaceus*

Status and Range (B, H, K). Very common **summer** resident throughout, recorded in 73 of 77 censused townships (MBBA map 1991) and doubtless occurs in all. According to my data, the second commonest of all bird species (next to the Ovenbird), but conspicuousness plays a major part in this assessment. On average, seemingly no more abundant during **spring** or **fall** migration except irregularly and locally on the north shore of K, where concentrated by Lake Superior.

Habitat. For breeding, requires mature deciduous trees with short-tree understory; occurs primarily in mesic deciduous forest (northern hardwoods or only sugar maple), but also found in dry deciduous forest (aspen-birch), wet deciduous swamp, and dry and mesic/wet mixed forests. Most common in large expanses of forest but also inhabits woodlots. Rare in residential settings.

Migration Dates. **SEAD**: 6 May 2000 (Copper Harbor, LB, JM). **SMAD**: 23 May (n=26, H and K only). **FMDD**: 25 Sep (n=8, H and K only). **FLDD**: 17 Oct 86 (Copper Harbor, LB); 1 Oct 2000 (Copper Harbor, LB, JM).

High Counts. **Summer**: 2 Jul 1971 (**63**) H and K, B. and D. Wolck, Bootjack BBS. **Fall**: 22 Aug 2001 (**26**) Copper Harbor, LB, JM, exceptional; 4 Sep 2001 (**16**) Agate Harbor area, K, LB.

Breeding (**B** 4 co, 23 pr, 1 po; **H** 3 co, 27 pr, 4 po; **K** 7 co, 10 pr).

*13 Jun 86 (lining nest 5 ft up in sapling) Agate Harbor, LB.

19 Jun 90 (female lining nest 35 ft up in big-toothed aspen) Hubbell, H, LB.

*23 Jun 86 (carrying food) near Ahmeek, K, LB.

4 Jul 2001 (carrying food) Chassell, H, LM.
8 Jul 2001 (carrying food) Gratiot Lake, T57N, R30W, NW quarter, K, JM, M. Scheiwe.
10 Jul 95 (carrying food) 2 mi W Gratiot Lake, T57N, R31W, Sec. 1, K, LB.
20 Jul 2000 (carrying food) Sotola Road south of Delaware, K, LB.
18 Aug 82 (feeding prejuveniles) Agate Harbor, LB.
25 Aug 2002 (feeding 2 prejuveniles) Craig Lake, B, LM, JY.

Note: Aug dates suggest double-broodedness.

BBS. *Bootjack* 67-73: 294 on 7 of 7 counts (100%); mean 42.00; range 26-63. *Bootjack* 92-2005: 372 on 14 of 14 counts (100%); mean 26.57; range 4-57. *Herman* (Jul): 241 on 7 of 7 counts (100%); mean 34.43; range 15-49.

NAMC. *Baraga Co.*: 9 on 2 of 6 counts (33.3%); mean 1.50; range 0-8; ind/PH .03. *Houghton Co.*: 7 on 2 of 7 counts (28.6%); mean 1.00; range 0-4; ind/PH .03.

Gray Jay *Perisoreus canadensis*

Status and Range (B, H, K). **Permanent** resident. Uncommon in the southern half of B. Very uncommon in southern and northeastern H, and the northern half of B, where habitat scarcer. Very rare in K, recorded definitely only in extreme southeastern corner, 3.5 mi WSW Gay in T56N, R31W, Secs. 33 and 34 (Aug, Sep, Dec, Jan; LB, RH, JM, LM, JY), where seemingly resident and up to 6 seen. Also, there is a "possible" breeding record from near Gay (MBBA map 1991; see Breeding) and reports from K in summers 91 (JPW 69 [1]: 29) and 93 (MBNH 1: 38), but on what evidence, I do not know. That it is not regular elsewhere in K is surprising, as ample habitat seems to be available between Lac La Belle and Gay. Northern records for H are from 3.5 mi SW Gay in T55N, R31W, Sec. 4; north of Jacobsville in a bog along Silver Creek, T53N, R33W, Sec. 1 (14 Jun 98, 14 and 20 Dec 97, LM, JY); and at Rabbit Bay (31 Oct 99, LM, JY; 4-9 Nov 2000, M. L. Wercinski). Thus the Gray Jay is absent from the Lake Superior drainage of K and H, which is the higher drier part of the Peninsula lacking extensive bogs. Said to nest in Feb-Apr elsewhere in Michigan, and black juveniles may wander with their parents into fall, so family groups in spring and summer are poor indicators of *local* breeding status.

Habitat. Breeds primarily in wet coniferous forest (black spruce or black spruce-tamarack), either along creeks or more often in extensive low areas with a mosaic mixture of such forest and open bogs, beaver ponds, or meadows. Also, occasionally visits the dry jack pine forests of the Baraga Plains and mesic/wet mixed forest. In winter, sometimes attends feeders in or adjacent to forest.

High Counts. **Spring** (but the jay's breeding season): 12 May 2001 (**14**) Honker's Pond (10), Big Lake (1), May Lake (3), B, LB and JM only, NAMC. **Summer**: 25 Jun 97 (**8**) T48N, R37W, SW quarter, plus T47N, R36W, NW quarter, H, LB; 9 Jun 88 (**8**) T48N, R33W, SW quarter, B, LB. **Fall**: 14 Oct 2001 (**11**) south of Nestoria, B, LM. **Winter**: 8 Feb 96 (**5**) B or H, JY.

Breeding (**B** 5 co, 2 pr, 4 po; **H** 1 pr, 5 po; **K** 1 po).

14 Mar 2005 (carrying nest material) T48N, R32W, Sec. 36, JY.
20 May 2002 (adults feeding prejuvenile) near Little King Lake, T48N, R33W, Sec. 25, B, JY.
20 May 2002 (adults feeding prejuvenile) near Big Lake, T48N, R34W, Sec 5, B, JY.
1 Jun 2003 (pair with 1 small prejuvenile) Baraga Plains, T49W, R34W, Sec. 21, JY.
*25 Jun 87 (two adults with juvenile) T48N, R37W, SW quarter, H, LB; this record is shown on the MBBA map (1991) as probable breeding, but should be reduced to possible.

[*Notes*: the probable breeding noted for the tip of K on the MBBA map (1991) should be deleted. The 11-12 Sep 76 record (adults feeding fledglings, B, JPW 55: 9) seems highly improbable in light of the Sep dates.]

NAMC. *Baraga Co.*: 25 on 4 of 6 counts (66.7%); mean 4.17; range 1-14; ind/PH .10. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

HCCBC. 4 on 2 of 26 counts (7.7%), mean .15; range 0-3; ind/PH .003.

Remarks. On 15 Sep 2001, on the Baraga Plains, LM saw Gray Jays eating mushrooms.

Blue Jay *Cyanocitta cristata*

Status and Range (B, H, K). **Permanent** resident throughout peninsula, but resident birds partially migratory and population greatly augmented by spring and fall transients. **Spring**: common throughout; abundant on immediate north coast of H and K, where flocks noted annually migrating eastward and westward along the Lake Superior shoreline from Freda (H, flock of 20, 28 May 2001, LB) past North Portage Entry (H, flock of 85, 8 Jun 98, S. Andres) and Copper Harbor (many, LB) to Manitou Is. (flock of 24, 20 Jun 2002, JY) during the period from 15 May (98, flock of 19, Calumet Waterworks Twp. Park, H, LB) to 24 Jun (97, flock of 10, Agate Harbor, LB), with a maximum of 270 in 9 flocks flying west along the north K coast on 22 May 2002 (LB). **Fall**: common. Flocks have been noted flying east and west at Agate Harbor (LB) from 8 Aug 80 (48) to 18 Oct 97 (10), with a maximum of 65 on 5 Oct 89, but they are not as numerous nor annually regular as in spring. That spring and fall flocks following the Lake Superior coast fly both east and west (and two spring flocks went east, then turned west), and some do so throughout the

breeding season (Jun-Aug), suggests they are "trapped" on the Peninsula by Lake Superior (see also Brown-headed Cowbird). Some spring birds probably pair up for breeding, but most leave. That I have seen none crossing Lake Superior during my intensive fall (Aug-Oct) surveys of migrating waterfowl, suggests they, like most other diurnal migrants, do not do so. Perhaps, like some raptors, they skirt the west tip of Lake Superior in spring, then, in certain falls only, some birds retrace their spring route back through the Keweenaw. Alternatively, fall flocks may be left over from spring, be congregating breeders, or both. That neither AW nor D. Weaver ever saw migrant flocks at their inland homes near Liminga, H, nor JY in B, suggests this is strictly a coastal phenomenon, perhaps restricted to the north coast of K and H. Hugh flocks have been recorded on the coast of Berrien Co. in southwestern Michigan (*e.g.*, Booth, 1971) and at Whitefish Point in the eastern Upper Peninsula (*e.g.*, AB 36: 856), which makes me wonder why there are relatively so few on the Keweenaw Peninsula and how they bypass B (if they do); much more data needed. **Summer**: common resident, recorded in 67 of 77 censused townships (MBBA map 1991) but doubtless occurs in all 83. Some birds are still moving in flocks in Jul (16 Jul 2002, flock of 15, Manitou Is., JY); see also 8 Aug 80 record. **Winter**: HCCBC averages of 73.23 birds per count and 1.61 ind/PH yield a detectability in the very common range as opposed to my calculation of common in summer. However, whether this is the result of an influx from the north (or other direction) or merely a function of birds being more conspicuous in leafless forests and at feeders is uncertain; because nesting birds can be quiet and secretive, I tend to favor the latter theory. Also, Wing (1939), for the entire Upper Peninsula, found relative abundance and frequency of occurrence to be much less in winter than in summer. Annual variation in winter numbers (HCCBC, Table 15) is considerable, from 26 (year 82) to 164 (97) birds per count and .55 (87) to 4.08 (89) ind/PH. Count data suggest a three to four year cycle (Fig. 1), but I do not consider this species irruptive. The apparent absence of fall translake migration and Wing's (1939) findings suggest that this cycle involves only breeding birds, and might, I suggest, be related to acorn production by the red oak in the Keweenaw (study needed). The lows in 78-83 roughly parallel those for the Rock Pigeon, theorized to be caused by severe winters followed by a lengthy period of recovery.

Habitat. Breeds in a wide variety of forests, deciduous and mixed, mesic and dry, and even in residential settings, but probably most common in mesic/wet mixed, mesic deciduous, dry mixed, and dry deciduous (especially red oak) forests. Migrating fall flocks sometimes feed on ground juniper berries (LB). In winter and during migration, birds may descend en masse on seed feeders, but are not restricted to them.

Migration Dates. See Status and Range.

High Counts. **Spring**: 22 May 2002 (**270** in 9 flocks) Agate Harbor to Copper Harbor, LB. **Summer**: 15 Jun 2003 (**13**) H and K, LB, JM, Bootjack BBS. **Fall**: 5 Oct 89 (**65**) Agate Harbor, LB. **Early winter**: multi-party, 20 Dec 97 (**164**) HCCBC; 17 Dec 2000 (**25**) Eagle Harbor Christmas Bird Count, TA, JM, J. Ongie in one party. **Late winter**: 24 Feb 97 (**11**) B, JY.

Breeding (**B** 3 co, 7 pr, 19 po; **H** 3 co, 4 pr, 21 po; **K** 1 co, 5 pr, 8 po).

23 May 98 (nest under construction) Sturgeon River Sloughs, deVriendt Nature Trail, LB.

5 Jun 2003 (nest with 4 eggs) Big Lake, T49N, R34W, Sec. 29, B, JY; nest against trunk 5 ft up in jack pine.

23 Jun 98 (carrying either food or nest material) 1 mi E Eagle Harbor, K, LB.

27 Jun 98 (carrying food) Arnheim, B or H, LM, not shown in above totals.

*2 Jul 88 (adults attending fledgling) Ojibwa Campground, T51N, R33W, Sec. 22, B, LM.

10 Jul 98 (prejuveniles begging food) Arnheim, Unit 7, B, LM.

BBS. *Bootjack* 67-73: 52 in 7 of 7 counts (100%); mean 7.43; range 4-11. *Bootjack* 92-2005: 96 on 14 of 14 counts (100%); mean 6.86; range 3-13. *Herman*: 23 on 6 of 7 counts (85.7%); mean 3.29; range 0-9.

NAMC. *Baraga Co.*: 141 on 6 of 6 counts; mean 23.50; range 11-39; ind/PH .55. *Houghton Co.*: 138 on 7 of 7 counts (100%); mean 19.71; range 6-53; ind/PH .50.

HCCBC. 1904 on 26 of 26 counts (100%); mean 73.23; range 26-164; ind/PH 1.61.

Remarks. L. Murphy noted this species giving "perfect" imitations of the Broad-winged Hawk's

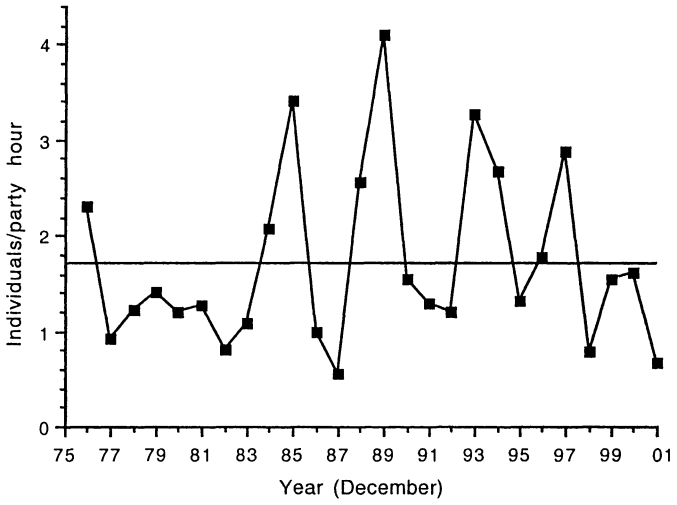

Fig. 1. Detectability of the Blue Jay on the Houghton County Christmas Bird Count, 1976-2001. The horizontal line is the average for all years. Data from Table 15.

whistle on 9 Aug 98 (Arnheim, B or H) and 7 Sep 98 (Bear Lake Trail, McLain State Park, H). I have heard the same call on two occasions in K. Farther south, Blue Jays frequently mimic the Red-shouldered Hawk, but I have never heard one do so in the Keweenaw, where this raptor is a very rare breeder, whereas the Broad-wing is fairly common.

Black-billed Magpie *Pica hudsonia*

Status and Range (B, H). Accidental **spring** and **summer** vagrant that probably moved southward originally in fall, although not necessarily directly to the Keweenaw. Two records: 3 and 17 Mar 73, near A. S. Weaver's Liminga farm, AW (Weaver, 2000); 25-29 Jul 2003, 1.8 mi ESE Pelkie, T51N, R34W, Sec. 22, B, seen by local farmer on 25 and 27 Jul and LB and JM on 29 Jul, but not found later despite several searches (accepted by the MBRC, Internet). The fall of 72 and winter of 72-73 produced a major influx of magpies into Minnesota (one as far east as Duluth, AB 27: 65, 621), the northern US Great Plains (AB 27: 631), and even one to Ohio (AB 27: 624), which strongly supports the wild origin of the Liminga bird; no description exists for this record, but conversations with Weaver convince me of its validity. [Kneeland (1857) claimed to "have seen a few specimens obtained near Eagle River" in fall-spring 1856-57, but this record was rejected by Wood (1951) for lack of evidence, and I agree.]

American Crow *Corvus brachyrhynchos*

Status and Range (B, H, K). **Permanent** resident throughout Peninsula, but avoids interior of extensive tracts of dense forest such as found in some places in northwestern H and northeastern and southern B, and is largely migratory. **Spring**: very common after arrival of spring migrants, which may begin to appear as early as Feb (rarely the beginning, more often the end), but usually, and rather abruptly, in mid Mar and reach a peak in the last week of Mar and first week of Apr. Flocks are fewer and smaller than in late summer and fall, *e.g.*, flocks of 25 on 20 May 96 at Brockway Mt., 33 on 7 May 2001 at Copper Harbor, 55 on 18 May 2002, 1 mi W Copper Harbor (all LB), and 6 on 5 May 2002 flying to mainland from west end of Manitou Is., (JY). What happens to these flocks is unknown; I suspect they are like Blue Jays and raptors that are "trapped" on the Peninsula, unwilling to cross Lake Superior, and eventually skirt the lake via Duluth. **Summer**: very common resident, much more numerous than Common Raven except in heavily forested areas. **Fall**: very common but less widespread, locally abundant where flocking occurs. Wandering and formation of flocks of up to 230 birds begins at favored localities as early as the first week of Jul (Arnheim, JY) and 16 Jul 2001 (flock of 55, Calumet sewage ponds, LB),

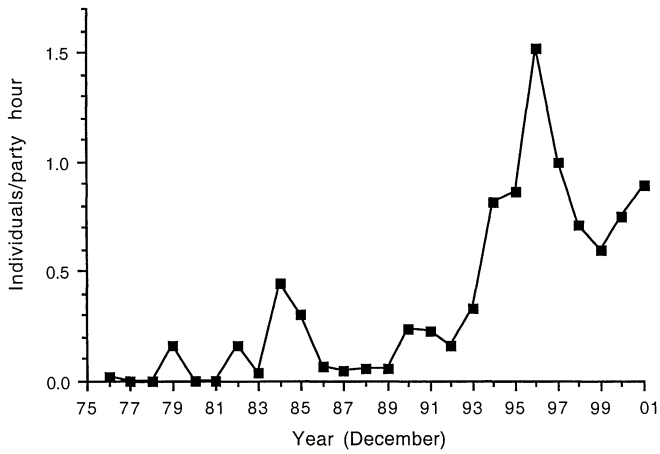

Fig. 2. Detectability of the American Crow on the Houghton County Christmas Bird Count, MI, 1976-2001. Data from Table 15.

about the time young fledge; flocks reach peak numbers in the third week of Aug and remain intact into mid Oct, at which time, in normal years, most leave. These flocks probably are composed largely of local birds, which disappear from their breeding territories at the same time flocks form; whether they also contain transients is uncertain, but a flock of 20 along the coast at Hebard Park, K, 5 Aug 2002 (LB) appeared to be migrating eastward, silently and high. **Winter**: in H and B today, averages fairly common through Dec—common when environmental conditions are mild and uncommon when severe. Formerly occasional in Dec and casual in late winter, but starting in 94 has been uncommon all winter (see Historical Changes and Fig. 2). Only 3 early winter records for K, 17 Dec 2000 (1), 16 Dec 2001 (1), and 22 Dec 2002 (3), all Eagle Harbor Christmas Bird Count.

Habitat. Nests in trees (see Breeding) and forages on ground in openings. Hence, requires mosaic situations with any upland forest—dry or mesic, deciduous, mixed, or coniferous—adjacent to old fields, mowed hayfields, grassland, sewage pond dikes, villages, rural settings, and even aquatic habitats (shorelines of Lake Superior and larger inland lakes). Avoids the unbroken expanses of heavy forest frequented by the Common Raven. Although shy, will occasionally visit feeders and may be trained to come when called (LB). Eats road kills but does not patrol highways like the Common Raven. Prefers more open foraging habitats than the Common Raven.

High Counts. **Spring**: multi-party, 13 May 2000 (**178**) B, NAMC; 18 May 2002 (**55**) near Copper Harbor, LB; 13 May 96 (**53**) B, JY. **Summer** (before flocking): 27 Jun 73 (**81**) H and K, B. and D. Wolck, Bootjack BBS. **Fall** (after flocking commences): 15 Aug 2003 (**230**) Calumet sewage ponds, LB; 21 Aug 97 (**200**) B and H, JY; 10 Sep 97 (**200**) Baraga Plains, JY; 13 Aug 98 (**176**) Arnheim, B and H, JY; 28 Jul 2002 (**190**) sewage ponds at Tamarack City

(110) and Calumet (6) LB, JM; 14 Aug 2000 (**147**) Calumet sewage ponds, JM, M. Scheiwe; 15 Oct 96 (**115**) Calumet sewage ponds, LB. **Early winter**: multi-party, 20 Dec 2003 (**163**) HCCBC; 31 Dec 98 (**48**) Arnheim, B, JY, warm winter, exceptional. **Late winter**: 15 Jan 95 (**20**) H, AW.

Breeding (**B** 4 co, 5 pr, 14 po; **H** 6 co, 9 pr, 11 po; **K** 3 co, 3 pr, 9 po).

1 May 98 (pair building nest in tall white spruce in town) Copper Harbor, LB.

19 May 2002 (occupied nest in red pine) Agate Harbor, LB.

*21 Jun 89 (nest with at least 1 large nestling in white spruce in mesic mixed forest) Agate Harbor, LB, fledged 21 or 22 Jun.

2 Jul 88 (adult with fledglings) Ojibwa Campground, T51N, R33W, Sec. 22, B, LM.

BBS. *Bootjack* 67-73: 453 on 7 of 7 counts (100%); mean 64.71; range 47-81. *Bootjack* 92-2005: 608 on 14 of 14 counts (100%); mean 43.43; range 26-65. *Herman*: 120 on 7 of 7 counts (100%); mean 17.14; range 10-35.

NAMC. *Baraga Co.*: 551 on 6 of 6 counts (100%); mean 91.83; range 42-178; ind/PH 2.14. *Houghton Co.*: 556 on 7 of 7 counts (100%); mean 79.43; range 60-96; ind/PH 2.00.

HCCBC. 543 on 22 of 26 counts (84.6%); mean 20.88; range 0-101; ind/PH .46.

Historical Changes (Table 17). The American Crow has been common in the Keweenaw since at least 1856-57 (Kneeland, 1857; Cahn, 1918; Wood, 1933), having invaded sometime previously, probably from WI (J. D. Wenger in Brewer *et al.*, 1991). The Bootjack BBS suggests a recent summer decrease of 33% between the periods 67-73 and 92-2005, which, if real, might be attributed to succession of farm fields to second growth along this route. On the other hand, I have observed an apparent summer and fall increase in northern K over the same period, perhaps due to more numerous clearcuts, human habitations, feeders, and road kills. The first mid fall records for Copper Harbor were in 2002 (12 Oct, 5 birds, LB, Z. Gayk). Early winter abundance seems also to have increased, judging from HCCBC data (Fig. 2). From 76 to 83, counts averaged .05 ind/PH, or uncommon. From 84 to 92, the crow became fairly common, averaging .18 ind/PH. Then, suddenly, from 93 to 2001, the mean rose to .85 ind/PH, or common; the highest total, 163, was in 2003. At the same time, records for late winter also increased. The first early winter record for Copper Harbor was on 17 Dec 2000. Whether or not winter increase is permanent or temporary, perhaps engendered by a series of mild winters, remains to be seen. The closure of all Peninsular garbage dumps in the late 80s and early 90s might have been expected to reduce the abundance of this scavenger, but HCCBC data do not indicate such. As a spring transient, the crow has increased in recent years on the north coast of K (LB; see Spring).

Remarks. The apparent summer increase in K has aided the spread of the Merlin, which has only crow and a few raven nests to use in its preferred coastal range. One crow on 2-30 Aug 2001 at and near the Calumet sewage ponds was buffy-white on the outer webs of the remiges, middle wing coverts, and sides of the neck and mostly grayish-brown elsewhere (LB, LM). See Common Grackle.

Common Raven *Corvus corax*

Status and Range (B, H, K). **Permanent** resident throughout Peninsula, but considerable migration is evident. **Spring**: transient, its migration behavior similar to diurnal raptors. Locally very common in first half of Apr at Brockway Mt., where J. Peacock recorded 275 in the period 2-18 Apr 92, an average of 16.2 per day, with a maximum of 115 on 5 Apr. At least some birds continue east to Manitou Is. (6 May 2002, 3 came in from mainland, JY). Exactly when spring migration begins is uncertain, but early Mar is indicated by 9 flying eastward at Mt. Lookout, K, on 3 Mar 2000 (JY) and 22 observed at Arnheim, B or H, on 10 Mar 2000 (JY). Migration continues as late as early Jun (1 Jun 90, 15 birds, and 2 Jun 90, 8, migrating east at Brockway Mt., LB). There is no evidence of return to the west, even at Brockway Mt., suggesting that birds cross Lake Superior (see Fall). **Summer**: fairly common resident, nesting very early in more extensive and less inhabited forests and hence avoiding, for the most part, the developed immediate coast. Slightly more widespread (MBBA map 1991) than the American Crow, because forests are more extensive than open lands, but much less numerous, especially in farming districts. **Fall**: fairly common. Unlike spring, flocks infrequent and probably composed mostly of local birds; flocking begins as early as mid Jul (*e.g.*, 18 on 16 Jul 2001 at Brockway Mt., B. Johnson, L. Usyk; MBNH 9: 37). Because southward emigration from the Peninsula is shown by banding recoveries, one might also expect immigration from the north, east, or west, but there is no evidence for southbound trans-lake migration and, indeed, little for any movement of fall transients (3 in a flock flying east very high along the shore at Hebard Park, K, on 10 Sep 2001 were seemingly migrating, LB; see also Remarks). Ravens may behave like some raptors (*e.g.*, Sharp-shinned Hawk), which are much less numerous in fall than spring, perhaps skirting Lake Superior and missing the Peninsula. **Winter**: numbers vary in early winter, as shown by HCCBC data (Table 15), with a mean of 46.62 per count and 1.03 ind/PH (common) and annual variation in detectability from .23 (fairly common) to 2.55 (very common) ind/PH. Data needed for late winter, when an apparent drop in abundance may be simply a matter of poor coverage.

The original notes of AW also indicate an increase in numbers over fall, but whether this is real or a result of greater detectability due to leafless trees, more extensive territories, less secretive behavior, greater use of road kills, *etc.* is uncertain; I favor the latter hypothesis, because of known winter emigration demonstrated by both banding data and variation in HCCBC numbers.

Habitat. Nests on cliffs (*e.g.*, West Bluff of Brockway Mt.) and in large trees. More secretive than American Crow, breeding usually in extensive tracts of mature forest away from man. Frequents mesic deciduous, mesic mixed, dry coniferous, dry mixed, and probably other forest types. Regularly patrols highways in search of road kills (see also Historical Changes and American Crow). Very rarely visits feeding stations; prefers meat scraps (LB).

High Counts. **Spring** (all Brockway Mt.): 5 Apr 92 (**115**) J. Peacock, exceptional; 12 May 98 (**31** in 6 flocks) LB; 14 May 2003 (**25**, including 17 in one flock) LB. **Summer**: 24 Jul 56 (**13**) Baraga Plains, LB; 15 Jun 2003 (**12**) H and K, LB, JM, Bootjack BBS. **Fall**: 5 Oct 90 (**30**) Copper Harbor, LB. **Early winter**: multi-party, 18 Dec 99 (**182**) HCCBC; 24 Dec 62 (**19**) Eagle Harbor Christmas Bird Count, LB only. **Late winter**: 26 Jan 99 (**6**) H, AW.

Breeding (**B** 4 co, 4 pr, 20 po; **H** 1 co, 3 pr, 24 po; **K** 5 co, 2 pr, 9 po).

17 Feb 2002 (carrying nest material) Big Lake campground, B, LM.

16 Mar 2003 (carrying grass in bill) summit of Mt. Lookout, K, JY.

29 Apr 2004 (nest with at least 2 young nearly ready to fledge) Manitou Is., JY.

2 May 55 (nest with 3 young) B, Ross (JPW 33: 128).

5 May 94 (2 prejuveniles) Youngman's property, B, JY.

7 May 76 (nest with 3 young nearly ready to fledge) south cliff of West Bluff, Brockway Mt., fide F. B. Isaacs.

16 May 94 (prejuveniles fledged today or 15 May) Youngman's property, B, JY.

Note: observed numerous times engaged in apparent aerial courtship during fall (*e.g.*, 6 Aug 2004, 3 "pairs," Copper Harbor, LB); said to mate for life (Terres, 1980).

Summary: above data indicate egg-laying as early as first week of Mar, making the raven one of our earliest nesters.

BBS. *Bootjack* 67-73: 4 on 3 of 7 counts (42.9%); mean .57; range 0-2. *Bootjack* 92-2005: 60 on 13 of 14 counts (92.9%); mean 4.29; range 0-12. *Herman*: 17 on 7 of 7 counts (100%); mean 2.43; range 1-5.

NAMC. *Baraga Co.*: 97 on 6 of 6 counts (100%); mean 16.17; range 5-27; ind/PH .38. *Houghton Co.*: 94 on 7 of 7 counts (100%); mean 13.43; range 5-27; ind/PH .34.

HCCBC. 1212 on 26 of 26 counts (100%); mean 46.62; range 14-182; ind/PH 1.03.

Banding Recoveries. Southward fall movement shown by 5 adults banded in B in 69 on 11 May, 26 May, 21 Jun, 1 Aug, and 30 Aug, and recovered, respectively, in: Marquette Co., MI, 9 Nov 69; Iron Co., MI, 3 Feb 77; WI, 18 Nov 73; Menominee Co., MI, 20 Nov 69; and WI, 5 Apr 70. A non-flyer banded 26 Apr 60 in Marquette Co., MI, and shot 18 Jul 61 in H or K indicates westward dispersal, presumably to a new breeding ground. See Remarks.

Historical Changes (Table 17). All early writers mentioned the Common Raven for the Keweenaw, and no evidence suggests temporary extirpation. However, the logging era reduced populations in the Keweenaw as elsewhere in Michigan (D. C. Evers in Brewer *et al.*, 1991). Wood (1933) considered it a "rare resident" at Copper Harbor in spring 31, and Messner & Messner (1953) found it at only four localities on the Peninsula in Jan-Jul 49, using these data to demonstrate an increase coincident with forest maturation. The Bootjack BBS shows a 653% rise from a mean of .57 birds per count in the period 67-73 to 4.29 in 92-2005. This is coincident with a 3.1% per year national increase (Pardieck & Sauer, 2002). Finally, the original notes of AW show a gradual summer increase from the early 70s to the late 90s. Even the closure of all garbage dumps in the late 80s and early 90s seems not to have stemmed the tide, although what these birds eat, other than road kills, is a mystery. In this regard, however, only once have I seen a Turkey Vulture feeding in the Keweenaw (except at dumps), yet they survive, probably on the same remote carcasses as the ravens (see Remarks). Winter abundance, based on the HCCBC, has not changed since 76, indicating that many birds emigrate.

Remarks. On 16 Apr 99 a raven took one egg from a Sandhill Crane nest at Arnheim (H, JY). On 16 Sep 2001 I witnessed an amazing occurrence. At Dan's Point, K, I spotted two ravens flying together about .5 mi from shore and 200 ft above the surface of Lake Superior heading north-northwest toward Isle Royale. I watched them for 17 minutes through a 20X60 spotting scope until they faded into the distance. Using a conservative speed of 25 miles per hour (previously timed by me for ravens patrolling roads), they were about 7.5 miles out when they disappeared. I tentatively consider this a case of post breeding dispersal, albeit in a surprising direction.

Horned Lark *Eremophila alpestris*

Status and Range (B, H, K). **Spring**: very rare transient in all three counties, occurring probably largely as wind drifted migrants from the near west. **Summer**: accidental visitant. Two records: 18 Jul 94 (1 bird) Lake

Linden sewage ponds, LB; 28 Jul 97 (2) Menge Creek Road, Baraga Plains, JY. Should be sought as a breeder, especially on the Baraga Plains, where the MBBA map (1991) locates an undocumented spot for possible breeding. **Fall**: common transient, often in flocks, some of up to 65. Sometimes migrates east to west over water and coastal rocks along north shore of K (LB). Most gone by mid Oct, but a few often linger to mid Nov. **Early winter**: casual lingering transient; 7 records, 11 Nov-31 Dec; see Migration Dates.

Habitat. Requires a foraging substrate with little or no vegetation. Recorded on coastal rocks of K, stamp sand beaches, dry bottoms of sewage ponds, cut hayfields, rural roadsides, streets in coastal villages of K, and bald tops of mountains.

Migration Dates. **SEAD**: 19 Apr 75 (east of Mohawk, K, F. B. Isaacs). **SLDD**: 30 May 98 (2, Arnheim, B, JY). **FEAD**: 12 Sep 96 (Arnheim, B, JY); the date of 13 Aug 76 in Weaver 1991 should have been 13 Sep, fide AW. **FMAD**: 24 Sep (n=22). **FP**: last few days of Sep and first few of Oct. **FMDD**: 15 Oct (n=20). **FLDD** (all Early Winter dates): 26-31 Dec 2001 (Pequaming, B, RH, JK, JY; not "26-31 Jan in Pequammining" as in MBNH 9: 165); 17 Dec 77 (HCCBC); 2 Dec 2001 (1, L'Anse Bay, RH); 26 Nov 82 (Pelkie, B, AW); 24 Nov 77 (Liminga, AW); 20 Nov 2002 (2, head L'Anse Bay, RH); 11 Nov 2000 (2, near South Portage Entry, H, JM, M. Scheiwe).

High Counts. **Spring**: 7 May 97 (**16**) B or H, JY; 16 May 2004 (**12**) Brockway Mt., LB, M. Myers, J. Peacock. **Fall**: 1 Oct 2002 (flock of **65**) Lake Linden, LB; 27 Sep 86 (**61**) Eagle Harbor and Ahmeek, K, LB; 29 Sep 75 (**50**) Sands, H, AW.

NAMC. Baraga Co.: 16 on 1 of 6 counts (16.7%); mean 2.27; range 0-16; ind/PH .06.

HCCBC. 3 on 1 of 26 counts (3.8%); mean .12; range 0-3; ind/PH .003.

Remarks. In fall, the commonest subspecies in the Keweenaw is *E. a. alpestris*, the "Northern Horned Lark," with its entirely yellow face (Barrows, 1912; LB), but white-faced birds also occur then (LB).

Purple Martin *Progne subis*

Status and Range (B, H). Formerly a very rare and local **summer** resident in H and probably B, recorded 26 Apr-24 Aug. Aug records prior to 90 may pertain to wanderers from former Keweenaw breeding sites or transients from the northwest. No record for K. Now extirpated as a breeder despite continued presence of martin houses. Currently an accidental **fall** transient (or vagrant?)

Habitat. Recorded breeding in a farmyard and feeding over sloughs, farms, and a sewage pond.

Significant Records (all; chronological order by year to emphasize history).

Aug 1914, Kenton, H, Cahn (1918) "A breeding species in small numbers in many of the towns." I treat this as possible breeding.

6 Apr 62, Chassell, H, J. Weber (JPW 41: 33).

23 May 76, Chassell, H, AW.

5 Jun 76, Chassell, H, AW.

17 Jul 77, Sturgeon River Sloughs, AW.

21 Jul 78, near Oskar, H, AW.

28 Jul 79, Chassell, H, AW.

23 May 82, Chassell, H, AW

4 Jun 82, at beach in L'Anse, JY.

21 Aug 82 (1 immature) Liminga, AW.

3 Jul 83 (2) at a motel martin house on L'Anse Bay head where Menge Creek Road intersects highway US 41, B, S. Patti (in litt.) Herman BBS; probable breeding.

23 Jul 84 (2) Liminga, AW.

1 Jul 84 (1) on Wadaga Road at south edge of Baraga, T51N, R33W, Sec. 33, S. Patti (in litt.) Herman BBS; probable breeding.

24 Aug 86, Liminga, D. Weaver.

*20 Aug 87 (female on wire with migrant swallows) Lake Linden sewage ponds, LB.

*26 Jun 88 (adult male on wire near shore of L'Anse Bay) north edge of L'Anse, T51N, R33W, Sec. 36, LB; possible breeding.

2 May 90, Sturgeon River Sloughs, AW.

31 Jul 90 (2 adult males, 1 female, at martin house) southwest of Chassell, T53N, R33W, Sec. 6, H, LB; confirmed breeding.

9 Aug 2005 (1 female or immature male) Baraga sewage ponds, JY.

Breeding (formerly: **B** 1 pr, 3 po; **H** 2 co, 1 pr, 3 po; see Significant Records).

Notes. On the MBBA map (1991), the confirmed spot near Chassell is in the same township as the above record for 31 Jul 90 and thus probably represents the same martin house (but not year). [The other H supposed confirmation on the MBBA map is from Redridge, which I visited 9 Jul 87 without finding martins; this record is based on a "used nest," which is unacceptable for this species, whose "nests" (martin houses) are used by other species, primarily the Tree Swallow.]

BBS. Herman (early Jul dates): 3 on 2 of 7 counts (28.6%); mean .43; range 0-2.

Historical Changes (Table 17). Kneeland (1857), Wood (1933), and Wing (1939) did not list the Purple Martin for the Keweenaw, but Cahn (1918) considered it "A breeding species in small numbers in many of the towns" around Kenton (H) in 1914. From 1962-90 it bred, at least irregularly, near Chassell, H. It was recorded, and

probably bred, along the Herman BBS route in B in 83 and 84, but was not found there from 85-97. The House Sparrow is so rare in the K that I consider it a non-factor in competition with martins, but the European Starling could be a major competitor. Regardless, the martin's demise probably is related in part to its rarity, probably compounded by the effect of climate on food supply, here on the northern periphery of its range.

Tree Swallow *Tachycineta bicolor*

Status and Range (B, H, K). **Spring**: very common transient throughout. Arrives earlier than other swallows, in mid Apr, when the first blooms of flying insects and perhaps vegetable matter (frequent in this swallow's diet) provide sustenance. Despite the early arrival of some individuals, numbers (spring transients plus residents) peak in the last week of May and first week of Jun, then decline sharply to summer abundance. See Fall. Common **summer** resident in B and H; uncommon in heavily forested K, probably because of the scarcity of openings in which to feed. A slight increase in the last week of Jun and first week of Jul heralds the fledging of young. **Fall**: flocking begins in Jul, shortly after fledging. Although numbers might appear high if one finds a flock, in fact there are few flocks. Numbers decline to an average departure of 2 Aug (latest 20 Aug), making this the earliest of all passerines to leave, a bit of a paradox—if they can survive the harsh climate of mid Apr, why don't they remain later? I theorize that early arrival allows early breeding and departure. Also, the late summer abundance of flying insects with aquatic stages does not match that of spring (LB); presumably, better food resources are available in staging areas farther south. I find no discernible peak that would represent fall transients. The only apparent fall transients were a congregation of 200 on 26 Jul 68 (Eagle Harbor, K, where breeders have never been known to stage, LB), and actively migrating flocks on 16 Aug 2001 (Copper Harbor, 20 birds going west, and Tamarack City, 10 flying south, LB, JM). Perhaps these few arrive at the same time and rate as summerers depart, so that the total population declines gradually. However, I suspect that this diurnal migrant does not cross Lake Superior, and that spring birds eventually skirt the Lake through Duluth; in fall, most birds pass through Duluth, with only a few retracing their spring route through the Keweenaw. More data needed.

Habitat. Nests primarily in boxes meant for Eastern Bluebirds and Purple Martins, but also uses woodpecker holes in snags and other cavities (see Breeding). Feeds in open areas, such as rural settings, small towns, hayfields, old fields, and open wetlands, but particularly, and especially in early spring, over open water of lakes and sewage ponds. In forested regions, also forages over beaver ponds with snags.

Migration Dates (see also Status and Range). **SEAD**: 4 Apr 91 and 97 (both Liminga, AW). **SMAD**: 17 Apr (n=27). **SP**: last week of May and first week of Jun. **SLDD**: migrants have been seen as late as 5 Jun 2002 (5 in mixed flock, Baraga sewage ponds, LB, JM); 3 Jun 98 (190 in mixed flock, Calumet sewage ponds, LB); and 3 Jun 2002 (200 in mixed flock, Calumet sewage ponds, LB). **FEAD**: migrants have been seen as early as 1 Jul 2005 (10 in mixed flock, Calumet sewage ponds, LB). **FMDD**: 2 Aug (n=27). **FLDD**: 20 Aug 83 (Sturgeon River Sloughs, AW).

High Counts. **Spring**: multi-party, 13 May 2000 (**261**) B, NAMC; same date (**200**+) Baraga sewage ponds, LB and JM only, NAMC; **190** and **200**, see SLDD. **Summer**: 13 Jun 99 (**12**) H and K, LB, Bootjack BBS. **Fall**: 26 Jul 68 (**200**) Eagle Harbor, K, LB.

Breeding (**B** 13 co, 3 pr, 9 po; **H** 24 co, 1 pr, 7 po; **K** 4 co, 6 po).

13 May 84 (starting to nest in snag) Youngman's property, B, JY.

16 May 98 (adult in nest box) Sturgeon River Sloughs, LM.

17 May (adult in nest box), 12 Jul (nest with young) 99, Arnheim, H, JY.

25 May 98 (nest box with 5 eggs) Arnheim, H, JY.

2 Jun (nest box with eggs), 25 Jun (prejuveniles) 2000, Arnheim, H, JY.

8 Jun 2002 (nest box with 6 eggs) Arnheim, H, JM.

*17 Jun 87 (nest with young in stump) T49N, R37W, NW quarter, H, LB.

*19 Jun 86 (nest with young in metal pipe forming part of playground swings) Ahmeek, K, LB; this pair had at least one helper.

*23 Jun 88 (occupied nest) T51N, R31W, NW quarter, B, LB.

*26 Jun 88 (occupied nest) T52N, R32W, SE quarter, B, LB.

*28 Jun 87 (prejuveniles) T50N, R36W, NW quarter, H, LB.

*29 Jun 87 (occupied nest) T51N, R36W, SE quarter, H, LB.

*10 Jul 87 (prejuveniles) T54N, R34W, SW quarter, H, LB.

Summary: nests occupied 13 May-29 Jun; prejuveniles 28 Jun-10 Jul; single-brooded.

BBS. Bootjack 67-73: 21 on 6 of 7 counts (85.7%); mean 2.63; range 0-7. *Bootjack* 92-2005: 98 on 14 of 14 counts (100%); mean 7.00; range 3-12. *Herman* (early Jul dates): 183 on 7 of 7 counts (100%); mean 26.14; range 15-47; numbers probably inflated by young and Jul flocking.

NAMC. Baraga Co.: 561 on 6 of 6 counts (100%);

mean 93.50; range 25-261; ind/PH 2.18. *Houghton Co.*: 493 on 7 of 7 counts (100%); mean 70.43; range 10-169; ind/PH 1.77.

Historical Changes (Table 17). Bootjack BBS data indicate a 166% increase between the periods 1967-73 (mean 2.63 per count) and 1992-2005 (7.00), possibly in response to erection of nest boxes for bluebirds and the availability of empty martin houses. The House Sparrow is too scarce in the Keweenaw to pose a competitive threat for nest sites.

Northern Rough-winged Swallow *Stelgidopteryx serripennis*

Status and Range (B, H, K). Uncommon and local **summer** resident, numbers seemingly no greater in **spring** or **fall**, as expected for a species at the northern limits of its range (at this longitude). Seems to be most common in summer along the Lake Superior Border Plains of the Keweenaw Bay drainage (see MBBA 1991: 18, 19, 304), presumably because of the sandy soil suitable for nest holes, a factor that helps determines summer range. Departs early, but exact timing uncertain; presumed fall transients have been seen as early as 1 Jul 2005 (1, Calumet sewage ponds, mixed flock, LB) and 26 Jul 68 (Agate Harbor, LB); the latest date is 18 Aug.

Habitat. Nests in holes in sand (natural sand dunes and stamp sands) and earthen banks along rivers and in man-made pits. Although a solitary nester, often occurs within Bank Swallow colonies. Feeds over most any open area, including gravel pits, open bogs, marshes, and open water of rivers, sewage ponds, lakes, and bays.

Migration Dates. **SEAD**: 30 Apr 2004 (1) Pilgrim River mouth, H, LB. **SMAD**: 20 May (n=12). **SLDD**: 5 Jun 2002 (1 in mixed transient flock, Baraga sewage ponds, LB, JM). **FLDD**: 18 Aug 72 (Liminga, AW).

High Counts. **Summer**: 1 Jul 84 (**11**) B, S. Patti, Herman BBS. **Fall**: 16 Jul 98 (**7**) Sturgeon River Sloughs, LM.

Breeding (**B** 2 co, 1 pr, 6 po; **H** 7 co, 6 po; **K** 2 co, 1 pr, 3 po).

15 May 2003 (carrying grass into hole in gravel pit) T47N, R33W, Sec. 20, B, JY.

2 Jun 84 (occupied nest hole) Redridge, H, AW (Weaver, 2000).

3 Jun 2000 (occupied nest hole) T55N, R34W, Sec. 14, H, LB, JM.

*15 Jun 86 (adult flushed from hole) Great Sand Bay, K, LB.

*15 Jun 87 (2 occupied nest holes) T47N, R37W, SW quarter, H, LB.

*19 Jun 86 (occupied nest hole) Ahmeek, K, LB.

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1. *Herman* (early Jul dates): 22 on 5 of 7 counts (71.4%); mean 3.14; range 0-11.

NAMC. Baraga Co.: 5 on 2 of 6 counts (33.3%); mean .83; range 0-4; ind/PH .02. [*Houghton Co.*: 19 on 2 of 7 counts (28.6%); mean 2.71; range 0-14; ind/PH .07; I suspect these birds, especially is such high numbers (5, 14) and at such early dates, were brownish-backed Tree Swallows.]

Bank Swallow *Riparia riparia*

Status and Range (B, H, K). Local **summer** resident in open areas with suitable nest banks; common in northern half of H, where extensive humanization provides the most nest sites; fairly common in northwestern B; formerly fairly common in western K, but no nesting noted in the county since the late 1980s; uncommon to absent elsewhere. Avoids heavily forested regions of western H and most of B (MBBA map 1991), where there are few nest sites and openings for foraging. Man-made and even natural colony sites tend to be transient, so local populations can vary considerably from year to year; three large former colonies (see Breeding), one in a natural sand dune at Great Sand Bay (K), another in a gravel pit near Ahmeek (K), and a third in a stamp sand bank at Sands (H), no longer exist (LB). **Spring**: more numerous than in summer, but only when flocking is it occasionally locally abundant. **Fall**: less numerous than in summer. Departs early; presumed transients seen as early as 1 Jul 2005 (25 in mixed flock, Calumet sewage ponds, LB) and 27 Jul 68 (2, Agate Harbor, LB).

Habitat. Nests in colonies in vertical sand and earthen banks, especially sand piles (including stamp sand where creeks have formed banks) and man-made gravel pits, but also natural sand dune cliffs. Forages over marshes, hayfields, and open water of rivers, lakes, and sewage ponds.

Migration Dates. **SEAD**: 6 May 81 (Sands, H, AW). **SMAD**: 18 May (n=26). **SLDD**: migrants have been seen as late as 4 Jun 2002 (15 in mixed flock, Calumet sewage ponds, LB). **FMDD**: 11 Aug (n=18). **FLDD**: 30 Aug 86 (Sturgeon River Sloughs, AW).

High Counts. **Spring**: multi-party, 13 May 2000 (**34**) B, NAMC; 18 May 99 (**30**) L'Anse Bay off Baraga State Park, LB. **Summer**: see Breeding.

Breeding (colonies: **B** 4 co, 6 po; **H** 13 co, 8 po; **K** 2 co, 4 po).

27 May (excavating cavity), 12 Jun (about 10 occupied holes) 2002, T53N, R33W, Sec. 20, H, JY.

*Jun 87 (3 pairs attending young in nest cavity) T47N, R37W, SW quarter, H, LB.

*Jun 87 (3 pairs, occupied nest) T51N, R35W, SE quarter, H, LB.

6 Jun 2004 (210 holes in sand pit, at least 24 adults) Myllala Rd. near Arnheim, B, JY.

*15 Jun 86 (17 pairs, nest with young in natural

sand dune) Great Sand Bay, T58N, R31W, NE quarter, K, LB.

*19 Jun 86 (nest with young) near Ahmeek, T57N, R32W, SW quarter, K, LB.

26 Jun (new colony, 51 holes, many adults, in new man-made sand pile); 5 Jul (colony destroyed by sand removal but relocated to opposite side of same pile, 60 holes, many adults); 31 Jul 2001 (birds gone); Calumet sewage ponds, LB, JM; did not return in 2002.

*6 Jul 87 (15 pairs, occupied nest) T55N, R34W, SE quarter, H, LB.

*9 Jul 87 (30 pairs, occupied nest) T55N, R35W, SW quarter, H, LB.

*10 Jul 87 (10 pairs, occupied nest) T54N, R34W, SW quarter, H, LB.

*18 Jul 88 (6 pairs, occupied nest) T52N, R33W, NW quarter, B, LB.

21 Jul 56 (about 280 holes in stamp sand bank, 30 adults at any one time, 4 nests, 3 containing at least 2, 3, and 4 nearly full grown nestlings and 1 with 1 egg) Sands, H, LB.

Aug 1914 (nest holes [old?] in river bank) Kenton, H, Cahn (1918).

BBS. *Bootjack* 67-73: 15 on 2 of 7 counts (28.6%); mean 2.14; range 0-11. *Herman* (Jul dates): 21 on 4 of 7 counts (57.1%); mean 3.00; range 0-10.

NAMC. *Baraga Co.*: 45 on 3 of 6 counts (50.0%); mean 7.50; range 0-34; ind/PH .17. *Houghton Co.*: 35 on 2 of 7 counts (28.6%); mean 5.00; range 0-33; ind/PH .13.

Cliff Swallow *Petrochelidon pyrrhonota*

Status and Range (B, H, K). **Summer** resident, distribution largely correlated with that of farmland, in which very common in northern half of H and northwestern half of B and common elsewhere in B and H; absent from extensive forests of southern H, southeastern half of B, and most of K (where rare; formerly bred in Ahmeek, Copper Harbor, and Eagle River, succumbing to man's cleanliness). **Spring** and **fall**: more abundant than in summer but not enough to raise detectability. Flocking begins rather abruptly with fledging in second week of Jul and peaks at end of Jul, with flocks of 100+ still present to mid Aug (AW). What proportion of these are transients is unknown; the only probable transients were 25 at Agate Harbor on 17 Aug 80 (LB).

Habitat. Nests in colonies, sometimes dense, mostly in rural and less commonly residential settings under bridges and overhangs of buildings (including schools, barns, an airport hangar, a house porch, a tavern, an apartment building, and an abandoned mine lift) with nearby old fields, hayfields, pasture, shrub wetlands, open wetlands, and open water for foraging. The few rock cliffs in the Keweenaw are not used, probably because they have few overhangs, are far from open foraging habitats, and sometimes support nests of a possible predator—the Common Raven.

Migration Dates. **SEAD**: 2 May 98 (Arnheim, B or H, JY). **SMAD**: 16 May (n=29). **SLDD**: migrants have been seen as late as 5 Jun 2002 (2 in mixed flock of transients, Baraga sewage ponds, LB, JM) and 3 Jun 98 (60 in mixed flock, Calumet sewage ponds, LB). **FMDD**: 16 Aug (n=25). **FLDD**: 27 Sep 85 and 10 Sep 78 (both Liminga, AW).

High Counts. **Spring**: 25 May 82 (**1000**+) over Keweenaw Bay [probably L'Anse Bay], B, A. J. Ryff (JPW 60: 128); exceptional if accurate; 3 Jun 98 (**60**) Calumet sewage ponds, LB. **Summer**: 7 Jul 85 (**64**) B, S. Patti, Herman BBS. **Fall**: 16 Aug 2001 (**225**) Tamarack City sewage ponds, H, LB, L. Cornwallis, E. David, JM; 24, 28 Jul 83, 16 Jul 85 (**200** each day) Liminga, AW.

Breeding (colonies: **B** 19 co, 1 pr, 5 po; **H** 22 co, 2 pr, 6 po; **K** 5 co, 2 po).

8 May 93 (collecting mud for nest) in Baraga, JY.

20 May 90 (colony of 50 birds on boathouse) Copper Harbor, LB; colony present for years but now gone; same colony as shown on MBBA map (1991).

4 Jun 78 (4 nests with eggs) Kenton, H, N. J. Ilnicky (CLO).

*14 Jun 86 (3 nests with young) Ahmeek, K, LB.

18 and 20 Jun 85 (adults on 6 nests) Dollar Bay, H, R. E. Emmons (CLO).

*19 Jun 85 (adults on 2 nests) Eagle River, K, R. E. Emmons (CLO).

*20 Jun 85 (adults on 2 nests) Houghton County Memorial Airport, H, R. E. Emmons (CLO).

*24 Jun 87 (12 pairs; nests with young) in Kenton, H, LB.

25 Jun 56 (23 active nests) 2 mi W Covington, B, LB.

27 Jun 2002 (nests with young) T55N, R32W, Sec. 10, H, LB, JM.

3 Jul 2002 (8-15 birds nesting under bridge) Sturgeon River Sloughs at highway US 41, JY.

9 Jul 32 (18 nests) 3 or 4 mi W Kenton, H, L. Wing (Wood, 1951).

10 Jul 2002 (adults feeding nestlings) L'Anse, LM.

14 Jul 2002 (1 nest with young) in Baraga, LM.

17 Jul 76 (1 nest with eggs) Watton, B, M. Vancheck (CLO).

17 Jul 76 (1 nest with eggs) Watton, B, N. J. Ilnicky (CLO).

20 Aug 2000 (nest with at least 1 young) Sturgeon

River bridge at highway US 41, H, LM, JY.
24 Aug 31 (13 nests, nestling collected, UMMZ) 3 or 4 mi W Kenton, H, L. Wing (Wood, 1951); possibly same colony as 9 Jul 32.
Summary: building nest 8 May; eggs 4 Jun-17 Jul; nestlings 14 Jun-24 Aug; these data support its normal double-broodedness.

BBS. *Bootjack* 67-73: 308 on 7 of 7 counts (100%); mean 44.00; range 21-63. *Bootjack* 92-2005: 118 on 13 of 14 counts (92.9%); mean 8.43; range 1-27. *Herman*: 214 on 7 of 7 counts (100%); mean 30.57; range 13-64.

NAMC. *Baraga Co.*: 149 on 6 of 6 counts (100%); mean 24.83; range 4-69; ind/PH .58. *Houghton Co.*: 132 on 5 of 7 counts (71.4%); mean 18.86; range 0-50; ind/PH .47.

Banding Recoveries. A non-flyer banded 26 Jul 54 in K was recorded in Jun 55 in H.

Historical Changes (Table 17). The Cliff Swallow was not listed by Kneeland (1857) or Cahn (1918) but was by Wing (1939) and Wood (1933). Hence, it apparently invaded, probably from the west, between 1914 and 1931, as man provided buildings for nest sites and clearings for foraging. Data from the Bootjack BBS suggest a 81% decline from the period 67-73 (mean of 44.00 birds per count) to 92-2005 (8.43), culminating in 2002, when only one colony (2 nests) was found (LB, JM), and 2004, when no birds were seen. I attribute this to the destruction and recovering of old buildings, especially barns, and a human desire to keep buildings clean of messy colonies. From 92 to 2001, I witnessed one case of each along this route; other colonies succumbing to the cleanliness syndrome are those mentioned by Payne (1983) on the MTU library and Fort Wilkins State Park buildings. I suspect the Bootjack data are representative of the entire Peninsula. Note, for instance, that most high counts were during the early 80s. In the Keweenaw, the House Sparrow, whose state abundance is negatively correlated with that of the swallow (R. Wolinski in Brewer *et al.*, 1991) is too uncommon to pose much of a threat to swallow populations.

Barn Swallow *Hirundo rustica*

Status and Range (B, H, K). **Summer**: resident, distribution and abundance correlated with farmland, and hence most numerous in northern half of H and northwestern half of B, where common; fairly common elsewhere in open areas, except very uncommon in K. Avoids heavily forested areas, which include much of southern H and southeastern half of B, and most of K. **Spring**: abundance only slightly greater than in summer, but species more widespread, and flocks occur. **Fall**: detectability seems no greater than in summer. Flocking begins in first week of Jul and peaks in last two weeks of Jul, although the species remains in low numbers to its average departure date of 30 Aug and lingers to mid Sep, making it the latest swallow to leave. Staging varies in locality from year to year.

Habitat. Nests primarily in rural settings or tiny villages on man-made structures (recorded inside barns, under a pier, and in an open boathouse) and forages over adjacent hayfields, grassy old fields, pastures, farm yards, village yards, ponds, and bays. Avoids urban and large residential areas, which provide ample nest sites but little foraging habitat.

Migration Dates. **SEAD**: 23 Apr 89 (Liminga, AW), 94 (Pequaming, B, JY) and 2000 (Arnheim, B or H, JY). **SMAD**: 2 May (n=28). **SLDD**: 3 Jun 98 (see High Counts). **FMDD**: 30 Aug (n=24, H only). **FLDD**: 14 Sep 79 (Liminga, AW).

High Counts. **Spring**: multi-party, 13 May 2000 (**56**) B, NAMC; same census (**45**) Baraga sewage ponds (40) and Alberta, LB and JM only; 3 Jun 98 (**40**) Calumet sewage ponds, LB, migrants in mixed flock. **Summer**: 1 Jul 69 (**17**) H and K, B. and D. Wolck, Bootjack BBS; 3 Jul 83 (**15**) B, S. Patti, Herman BBS; 19 Jun 97 (**10**) Calumet sewage ponds, LB. **Fall**: 1 Aug 74 (**50**) Liminga, AW; 23 Jul 96 (**40**) Calumet sewage ponds, LB.

Breeding (**B** 7 co, 1 pr, 11 po; **H** 8 co, 4 pr, 11 po; **K** 4 co, 1 pr, 4 po).
8 May 93 (collecting mud for nest) Baraga, JY.
3 Jul 2002 (carrying fecal sac) Sturgeon River Sloughs, highway US 41 bridge, JY.
15 Jul 2004 (2 prejeveniles) near Ahmeek, K, LB, Z. Gayk.
28 Jul 97 (nest with young) Copper Harbor, LB.
21 Aug 85 (nest with young) Liminga, AW (Weaver, 2000).
Summary: the limited data, with breeding 8 May-21 Aug, support this species' normal double-broodedness.

BBS. *Bootjack* 67-73: 38 on 6 of 7 counts (85.7%); mean 5.43; range 0-17. *Bootjack* 92-2005: 43 on 11 of 14 counts (78.6%); mean 3.07; range 0-9. *Herman*: 50 on 7 of 7 counts (100%); mean 7.14; range 3-15; numbers inflated by late dates of counts (1-7 Jul).

NAMC. *Baraga Co.*: 124 on 6 of 6 counts (100%); mean 20.67; range 6-56; ind/PH .48. *Houghton Co.*: 17 on 2 of 7 counts (28.6%); mean 2.43; range 0-11; ind/PH .06.

Historical Changes. This species benefited greatly from man's clearing of the forests in the 1800s and early 1900s (R. Wolinski in Brewer *et* al., 1991) and has done well in the Keweenaw until recently. Along the Bootjack BBS route, the Barn Swallow population suddenly dropped 80.5% from a mean of 5.14 (36 birds) in the period 92-98 to 1.00 (7birds) in 99-2005. Although this is a short period from which to judge, I believe this change is real and reflects conditions throughout the Peninsula,

as old farm buildings burn, collapse, or are renovated and sealed, and new bridges lack nest supports.

Black-capped Chickadee *Poecile atricapilla*

Status and Range (B, H, K). **Permanent** resident as a species, but detectability varies greatly because of a fall influx of winter residents and transients, and the probable exodus of some summer residents (at least in harsh winters). **Spring**: very common resident and presumably transient throughout. Unlike other places in MI (see R. Brewer in Brewer *et al.*, 1991), flocking not as apparent in spring as in fall, and no large flocks or major spring flights have been noted; data from early spring are needed. **Summer**: common resident throughout, recorded in 73 of 77 censused townships (MBBA map 1991) but doubtless occurs in all 83. Adults become quiet and hence less conspicuous during the breeding season from mid Apr to mid Jul. **Fall**: abundant transient and resident throughout. Transients arrive in first week of Oct, perhaps earlier. The primary nuclear species in mixed flocks. Groups of 10-20 are common; large flocks are rare and irregular, the fall of 99 being exceptionally good (maximum 121 in one flock). Although birds have not been recorded crossing Lake Superior, concentrations on the north shore of K suggest they do (see High Counts). Whether some summer resident individuals emigrate from the Peninsula is unknown but I think likely. **Winter**: abundant resident. The commonest and most widespread winter species, with an average of 346.9 (7.65 ind/PH) on the HCCBC (Table 15); these are widely distributed in natural shrub and forest habitats, not restricted to feeders, as demonstrated by the Eagle Harbor Christmas Bird Count, where feeders are few but single parties have recorded 29, 42, 65, and 87 birds in a day, with the highest multi-party count of 129 (Table 16). Wing (1939) documented this winter increase for the Upper Peninsula.

Habitat. Excavates holes in rotting snags, especially white birch. Habitat tolerance perhaps the greatest of any Peninsula species, occurring in all forest types and often at beaver ponds with snags. Forages out into broad-leaved shrub upland and shrub wetland. Also found in rural settings in summer and residential areas in winter. I cannot imagine a Keweenaw feeder in winter without a chickadee!

High Counts. **Spring**: multi-party, 11 May 2002 (**115**) H, NAMC; 9 May 98 (**17**) B, LB. **Summer**: 3 Aug 57 (**20**) Big Lake, B, LB. **Fall**: 7 Oct 99 (**130**) Agate Harbor to Kirkish Point (2.5 mi W Copper Harbor), with 121 in one flock at Dan's Point, K, LB, JM, JY (exceptional); 31 Oct 99 (**55**) H, LM, JY; 11 Sep 2001 (**51**) Pt. Abbaye, B, B. St.Clair. **Early winter**: multi-party, 17 Dec 88 (**543**) HCCBC; 1 Jan 2000 (**87**) Eagle Harbor Christmas Bird Count, 1 party, JM, LM, JY; 17 Dec 94 (**75**) LM only, HCCBC. **Late winter**: 7 Feb 98 (**65**) B, JY; 7 Jan 2001 (**60**) Hancock campground feeders, RH, one locality!

Breeding (**B** 7 co, 15 pr, 6 po; **H** 14 co, 10 pr, 12 po; **K** 13 co, 1 pr, 7 po).

18 Apr 98 (3 nests being excavated) Swedetown, H, LM.

9 May 2000 (nest under construction) Copper Harbor (Norland), LB.

25 May 98 (nest with 5 eggs) Arnheim, H, JY.

6 Jun 98 (carrying food) Eagle River, K, LB.

*9 Jun 88 (carrying food) T48N, R33W, SW quarter, B, LB.

*12 Jun 88 (carrying food) T47N, R32W, NE quarter, B, LB.

*13 Jun 88 (nest with young) T49N, R32W, NW quarter, B, LB.

17 Jun 98 (3 large prejuveniles) Ahmeek marsh, K, LB.

18 Jun 99 (nest with young) between Gratiot Lake and Brunette Park, K, LB.

19 Jun 91 (carrying food) Rice Lake, H, LB.

*26 Jun 88 (carrying food) T52N, R32W, SE quarter, B, LB.

4 Jul 2001 (carrying food) Gratiot Lake, T57N, R30W, NW quarter, K, JM, M. Scheiwe.

*8 Jul 84 (nest with young) Lake George, B, N. J. Ilnicky (CLO).

*8 Jul 86 (2 prejuveniles) Agate Harbor, LB.

8 Jul 99 (nest with young) Cliff Cemetery near Phoenix, K, LB.

14 Jul 2002 (3 prejuveniles) Manitou Is., Sec. 16, JY.

Summary: nests under construction 18 Apr-9 May; nest with eggs 25 May; nests with young 13 Jun (and probably 6 Jun) to 8 Jul. This species is normally single-brooded, but the length of the season indicated by Keweenaw data suggests either an unusually long period for nest-building, late renesting, or double-broodedness. More data needed. Also, I wonder why breeding ends in mid Jul, when another brood could easily be raised by mid Aug, when insects are still plentiful. Perhaps this is related to the cohesiveness of family groups—the young remain with the parents for a considerable time after fledging.

BBS. *Bootjack* 67-73: 20 on 7 of 7 counts (100%); mean 2.86; range 2-6. *Bootjack* 92-2005: 107 on 14 of 14 counts (100%); mean 7.64; range 1-18. *Herman*: 64 on 7 of 7 counts (100%); mean 9.14; range 4-14.

NAMC. *Baraga Co.*: 293 on 6 of 6 counts (100%); mean 48.83; range 25-69; ind/PH 1.14. *Houghton Co.*: 422 on 7 of 7 counts (100%); mean 60.29; range 34-115: ind/

PH 1.64.

HCCBC. 9020 on 26 of 26 counts (100%); mean 346.92; range 131-543; ind/PH 7.65.

Banding Recoveries. One hatching-year bird banded in H 4 Oct 86, presumably on fall migration, found dead south of Minneapolis, MN on 17 Mar 87.

Boreal Chickadee *Poecile hudsonica*

Status and Range (B, H, K). **Permanent** resident, generally rare, but uncommon in parts of B. An additional few arrive irregularly in fall with migrant Black-capped Chickadees, *e.g.*, 5 seen with 121 Black-caps, 9 Oct 99, in K at Dan's Point (2 birds, LB) and Kirkish Point (3, JM, JY). Recorded in **summer** (late Apr-Aug) at the following localities (partial lists). **B**: Little Lake; around Big Lake (including east end of Big Lake Field and Honker's Pond, the latter the most reliable and accessible locality for the species); May Lake; northwest corner of Little King Lake; Parent Lake; in T50N, R31W, Sec. 26; and in T48N, R33W, Sec. 23. **H**: Rabbit Bay, T54N, R32W, Secs. 15 and 22; .5 mi W Traverse Bay, T55N, R31W, Sec. 8 (28 Apr, 6 Aug). **K**: Manitou Is. (19 Jun 2002, JY); 3.5 mi WSW Gay in T56N, R31W, Sec. 33 (23 Aug 2002, LB, JM; same bog as .5 mi W Traverse Bay); southeast of Lac La Belle, T57N, R29W, Secs. 3 (Aug). More widespread in **fall**, **winter**, and **spring**; some of these localities are probably occupied also in summer (partial lists). **B**: King Lake Road (Feb); southeast of Vermilac Lake, T48N, R33W, Secs. 30 and 31 (Nov, Jan, Feb, Mar, Apr); Tracy Creek Road, T48N, R32W, Sec. 33 (Mar). **H**: Liminga (Jan, Feb); South Portage Entry (Mar); 2 mi N Arnheim (Jan, Mar); Arnheim (Mar). **K**: in Eagle Harbor (Mar); at and near Dan's Point (Oct); Keystone Bay (Sep); Pt. Isabelle (Oct); Brunette Park (Oct); southeast of Lac La Belle, T57N, R29W, Sec. 10 (Dec); in Gay (Dec).

Habitat. See Breeding for nest sites. Black spruce appears to be the most important element in its foraging habitat. Known to nest in dry coniferous forest (jack pine) and mesic mixed forest, but always with what I consider its primary habitat, wet coniferous (boreal) forest (black spruce-leatherleaf bog) nearby. In winter, spreads into mesic mixed forest and sometimes visits seed feeders. Description of "thick forests with stunted white and black spruce and other conifers in low areas mixed with aspen and birch on slightly elevated ridges" (D. C. Evers in Brewer *et al.*, 1991) matches the Rabbit Bay habitat perfectly.

High Counts. **Spring**: multi-party (**13**) H, NAMC; 25 Apr 93 (**5**) Parent Lake, B, JY. **Summer**: 8 Jul 88 (**5**) Rabbit Bay, H, LB; 24 Jul 56 (**5**) Big Lake and Little Lake, B, LB. **Fall**: 16 Oct 95 (**11**) May Lake, B, JY (MBNH 3: 95); 23 Aug 37 (**10**) near Hubbell, H, A. D. Tinker and R. E. Olsen (Wood, 1951); 6 Oct 88 (**5**) Pt. Isabelle, K, LB. **Winter**: 16 Dec 2001 (**8**) T57N, R29W, Sec. 10, K, JY, Eagle Harbor Christmas Bird Count; 28 Jan 2001 (**7**) southeast of Vermilac Lake, T48N, R33W, Secs. 30 and 31, JY.

Breeding (**B** 3 co, 2 pr, 2 po; **H** 1 co, 1 pr, 1 po; **K** 1 po).

28 Apr 2001 (investigating hole but not seen on later dates) .5 mi W Big Traverse Bay, LB, JM, possible breeding.

12 May 2001 (2 pairs) Honker's Pond near Big Lake Campground, B, LB, JM, probable.

25 Jun 56 (6 nestlings just hatched) Baraga Plains, T49N, R34W, Sec. 32, LB (photos by; notes in UMMZ) (Zimmerman & Van Tyne, 1959; D. Schinkel in McPeek & Adams, 1994). Nest 12 in above ground in 45 in tall, 8 in DBH, dead jack pine stub in jack pine plains.

30 Jun 2002 (adult feeding prejuvenile) northwest corner of Little King Lake, T48N, R33W, Sec. 25, B, JY.

*3 Jul (nest with 4 eggs), 11 Jul 87 (nest with young) Rabbit Bay, T54N, R32W, Sec. 15, H, LB (D. C. Evers in Brewer *et al.*, 1991; D. Schinkel in McPeek & Adams, 1994). Nest entrance 6 ft high in 6.5 ft dead white birch stub in mesic mixed forest with nearby patch of mesic (balsam fir-eastern white pine) and wet (black spruce bog) coniferous forests.

1974 (nest) B (Payne, 1986). I have not seen the data for this record.

NAMC. Baraga Co.: 6 on 3 of 6 counts (50.0%); mean 1.00; range 0-4; ind/PH .02.

HCCBC. 12 on 5 of 26 counts (19.2%); mean .46; range 0-5; ind/PH .01.

[**Tufted Titmouse** *Baeolophus bicolor*]

Status and Range (H). Accidental **winter** vagrant, presumably arriving in fall; 1 record, Nov 1950-9 Feb 51, at a feeder in Houghton, Robinson (JPW 29: 40, 44). Although this record is undocumented, I feel it is legitimate. Misidentification is unlikely given the length of time it stayed and the ease with which this species can be identified. Also, there are other western Upper Peninsula records from Delta and Menominee Cos. (D. Schinkel in McPeek & Adams, 1994), Ontonagon Co. (31 Oct 83, White Pine, M. Frick; AB 38: 206), and Marquette Co. (6 Jun 80, D. Cudworth; AB 34: 897; Payne, 1983). Even some supposedly sedentary species may broadcast vagrants to localities far from the breeding range.

Red-breasted Nuthatch *Sitta canadensis*

Status and Range (B, H, K). **Permanent** resident throughout coniferous and mixed forests. Irruptive; detectability varies seasonally and annually. **Spring** and **summer**: common, seemingly only slightly more numerous, but more widespread, in spring. **Fall**:

averages common, but in some years irruptions raise detectability to very common (see Winter). Transients begin arriving by at least the first week of Sep. Crosses Lake Superior in fall (Agate Harbor, LB): 5 Sep 93, 1 first seen 100 yards out chased but missed by Merlin, arriving 0919 EDT; 3 Oct 93, 1 seen 100 ft out, arriving 1023. **Winter**: averages common, but varies from very common to very uncommon depending on the size of the fall flight and the number of individuals remaining through Christmas instead of continuing southward (see Irruptions, including Fig. 5, in Discussions). Numbers on the HCCBC demonstrate this variation, ranging from 2 (1977) to 87 (96) birds per count and .03 (82) to 2.24 (89) ind/PH (Table 15, Fig. 5). Major irruption winters occurred erratically in 84 (1.41 ind/PH), 87 (.74), 89 (2.24), 94 (1.32), and 96 (1.31), the next highest ind/PH being .47 in 97. These data do not support Bock and Lepthien (1972), who suggested regular biennial flights into the eastern US during the period 1960-70. Differences between early winter and late winter, if any, are unknown.

Habitat. Requires conifers for most foraging, but nests in deciduous trees or stubs, and hence prefers wet/mesic mixed forest. Also occurs in all other dry, mesic, and wet coniferous and mixed forests. Found sparingly in pine plantations. Feeds intensively on white spruce cones, at least in fall (LB). Seeks out the same habitats on migration. Regularly attends feeders with sunflower seed.

High Counts. **Spring**: multi-party, 10 May 97 (**16**) B, NAMC; 10 May 97 (**9**) same census, LB only. **Summer**: 15 Jun 2003 (**8**) H and K, LB, JM, Bootjack BBS; 31 Jul 90 (**7**) T53N, R34W, NE quarter, H, LB. **Fall**: 10 Oct 94 (**25**) Pt. Isabelle, K, LB; 4 Sep 84 (**22**) Agate Harbor, LB. **Early winter**: multi-party, 21 Dec 96 (**87**) HCCBC; 17 Dec 94 (**35**) Rabbit Bay and Jacobsville areas, LM only, HCCBC. **Late winter**: 26 Feb 95 (**20**) Parent Lake, B, JY.

Breeding (**B** 5 co, 5 pr, 19 po; **H** 2 co, 4 pr, 20 po; **K** 10 co, 3 pr, 4 po).

3 May 2004 (adult hammering inside stub) Copper Harbor, LB.

4 May 2003 (both adults repeatedly entering cavity near top of 25 ft white birch stub) Copper Harbor, LB.

8 May 98 (adults making frequent trips to nest cavity) .5 mi WSW Baraga, LB.

8 Jun 2003 (carrying food) T50N, R34W, Sec. 12, B, JY.

*10 Jun 88 (carrying food) T47N, R33W, SW quarter, B, LB.

*16 Jun 96 (nest) Agate Harbor, LB; nest hole 20 ft up in 25 ft tall, 7 in DBH white birch snag.

*24 Jun 88 (carrying food) T51N, R30W, SW quarter, B, LB.

*25 Jun 86 (carrying food) 2 mi W Eagle Harbor, K, LB.

*3 Jul 86 (excavating hole) Iriquois Mine, K, LB.

4 Jul 2001 (2 prejuveniles at nest hole) Little Lake, B, LM.

*8 Jul 86 (adult feeding 1 prejuvenile) Agate Harbor, LB.

3 Aug 2002 (2 adults feeding 2 prejuveniles) Agate Harbor, LB, probably a renesting, as species said to be single-brooded elsewhere (Baicich & Harrison, 1997).

BBS. *Bootjack* 67-73: 8 on 5 of 7 counts (71.4%); mean 1.14; range 0-2. *Bootjack* 92-2005: 19 on 10 of 14 counts (71.4%); mean 1.36; range 0-8. *Herman*: 15 on 4 of 7 counts (57.1%); mean 2.14; range 0-5.

NAMC. *Baraga Co.*: 62 on 6 of 6 counts (100%); mean 10.33; range 5-16; ind/PH .24. *Houghton Co.*: 34 on 7 of 7 counts (100%); mean 4.86; range 1-14; ind/PH .12. *Note*: fewer conifers in H than B.

HCCBC. 521 on 26 of 26 counts (100%); mean 20.04; range 1-87; ind/PH .44.

White-breasted Nuthatch *Sitta carolinensis*

Status and Range (B, H, K). **Permanent** resident, but detectability varies seasonally. Perhaps spreading northward like some other southern birds (*e.g.*, Northern Cardinal). **Spring**: limited data suggest a movement through non-breeding localities in the last week of Mar (*e.g.*, 27 Mar 99, Eagle River, K, RH), second week of Apr (six records in northern H; one at Brockway Mt., 14 Apr 90, LM), and mid May (*e.g.*, 22 May 2002, Eagle River, JM). These might be vagrant overshoots from the south or transients moving northwest. **Summer**: uncommon in most of H (but rare at northern periphery) and in western third of B. Seemingly rare (or absent?) in eastern two-thirds of B (MBBA map 1991), but coverage incomplete. Very rare in K, where I have only one personal summer record (14 Jun 87, near Mt. Horace Greeley). No confirmed breeding for K or B. **Fall**: remains uncommon, but more widespread, appearing irregularly in K 7-23 Oct (Eagle River, Agate Harbor, Copper Harbor, Lac La Belle, Gratiot Lake) and 18-26 Nov (Gratiot Lake) and in northern H in late Sep-early Nov. **Winter**: resident, averaging fairly common, but varying from uncommon to common, as shown by HCCBC data, on which birds per count have ranged from 3 (90, 91) to 35 (2001), mean 12.85, and ind/PH from .10 (91) to .64 (86), mean .28 (Table 15). Wing (1939) noted the same phenomenon in the Upper Peninsula as a whole, presenting figures indicating a frequency of occurrence (% of days seen) of .12 in summer but .50 in winter, and a relative abundance (individuals per day) of .22 *vs.* 1.00. Given that the Upper Peninsula is at the northern edge of this species' range at this longitude, the origin of

winter birds is puzzling. Do they come as vagrants from the south or transients from the rather small population to the northwest? Or are they summer residents that wander and become more conspicuous due to leafless trees, increased vocalizations, and frequent attendance at feeders? There is no doubt they invade non-breeding localities in fall, as shown by seven Oct records from the north coast of K (LB; see above). Only 3 winter records for K (16 Dec 2001, 2, Lac La Belle, JY; 22 Dec 2002, Eagle Harbor, JK; 8 Jan 99, Copper City, LM), but others rumored.

Habitat. Breeds primarily in mature dry and mesic deciduous forests, with either scattered or hilltop patches of red oaks, but once found in summer in a small stand of wet deciduous forest (a rare habitat in the Keweenaw). In winter and on migration, occurs in a greater variety of forests and frequents sunflower seed feeders in residential and rural settings.

High Counts. **Spring**: multi-party, 11 May 2002 (**16**) H, NAMC. **Summer**: 27 Jun 88 (**8**; 4 pairs) near Prickett Dam, B, LB. **Winter**: multi-party, 15 Dec 2001 (**35**) HCCBC.

Breeding (**B** 5 po; **H** 3 co, 1 pr, 14 po; **K** 7 po).

28 May 2001 (both adults entering occupied nest, one carrying something) along Covered Road, T55N, R35W, SE quarter, H, LB, JM.

*Jun 87 (pair) T49N, R36W, NE quarter, H, LB, probable breeding.

27 Jun 2002 (carrying food) T55N, R32W, Sec. 13, H, LB, JM.

*30 Jun 87 (carrying food) T52N, R35W, SW quarter, H, LB.

Note: the three confirmations for K on the MBBA map (1991) should be reduced to possible, as I have done in the above summary.

BBS. Bootjack 67-73: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1. *Herman*: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2.

NAMC. Baraga Co.: 15 on 5 of 6 counts (83.3%); mean 2.50; range 0-6; ind/PH .06. *Houghton Co.*: 31 on 6 of 7 counts (85.7%); mean 4.43; range 0-16; ind/PH .11. *Note:* more upland habitat in H than B.

HCCBC. 334 on 26 of 26 counts (100%); mean 12.85; range 3-35; ind/PH .28.

Brown Creeper *Certhia americana*

Status and Range (B, H, K). **Permanent** resident. **Spring**: uncommon transient; numbers and distribution greater than in summer, but not enough to raise detectability. **Summer**: uncommon but widespread in forested regions. Absent to rare in farming and urbanized regions, especially of northern H, where woodlots are usually too small and trees too young. **Fall**: uncommon; compared to summer, distribution more widespread and numbers augmented by transients in Sep-Oct (and perhaps late Aug), but not enough to increase detectability. A trans-lake migrant; two arrived off Lake Superior at Hebard Park, K, at 0905 and 1005 EDT on 28 Sep 2002 (LB). **Winter**: rare resident. Although recorded on only 50.0% of HCCBCs (Table 15), with a maximum of 3 per count and an average of .02 ind/PH, I believe it occurs every year and is missed only because of its scarcity, largely inaccessible forest habitat, cryptic plumage, and weak high-pitched call.

Habitat. Breeds primarily in heavily shaded, mature forests, especially mesic/wet mixed forest but also mature stands of wet deciduous swamp and mesic deciduous forest. Prefers larger trees for foraging and nests, which elsewhere are often under loose bark.

Migration Dates (for transients outside breeding and wintering localities). **SEAD**: 1 Apr 90 (Liminga, AW). **SMAD**: 7 Apr (n=8). **SP**: middle two weeks of Apr. **SLDD**: mid May (*e.g.*, 13 May 2004, 1, Copper Harbor, LB). **FP**: possibly last week of Sep (see Fall and High Counts).

High Counts. **Spring**: multi-party, 10 May 97 (**7**) B, NAMC, probably mostly breeders;
27 Apr 2000 (loose flock of **6**) Agate Harbor, LB. **Fall**: 26 Sep 94 (loose flock of **6**) Agate Harbor, LB.

Breeding (**B** 2 co, 16 po; **H** 2 co, 1 pr, 15 po; **K** 4 co, 5 po).

*9 Jun 88 (carrying food) T48N, R33W, SW quarter, B, LB.

2 Jul 99 (adult feeding prejuveniles) road from Gratiot Lake to Brunette Park, K, LB.

*5 Jul 87 (distraction display) Mud Lake near Copper Harbor, K, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

BBS. Herman: 3 on 2 of 7 counts (28.6%); mean .43; range 0-2.

NAMC. Baraga Co.: 17 on 5 of 6 counts (83.3%); mean 2.83; range 0-7; ind/PH .07. *Houghton Co.*: 18 seen on 5 of 7 counts (71.4%); mean 2.57; range 0-7; ind/PH .06.

HCCBC. 19 on 13 of 26 counts (50.0%); mean .73; range 0-3; ind/PH .02.

Rock Wren *Salpinctes obsoletus*

Status and Range (B, H, K). Western vagrant, accidental in **summer** (1 record, 9 Jul-4 Aug) and **fall** (2 records, 21-29 Oct).

Significant Records (all).

9 Jul-4 Aug 88 (singing male). First found 9 Jul at Centennial Mine No. 6, .5 mi E Centennial Heights, T56N, R33W, Sec. 12, H, LB (tape recording of song, UMMZ), C. T. Clark, but presumably arrived in spring. Refound (LB)

13 Jul and remained to at least 4 Aug on poor rock pile next to landfill, .5 mi E Centennial, T56N, R32W, Sec. 7, H, where seen by many, including R. J. Adams, G. Belyea, B. Bouton (photos), P. Chu, J. Granlund, D. Powell, R. Smith, and T. Wells (R. J. Adams in Brewer *et al.*, 1991; R. J. Adams in McPeek & Adams, 1994; AB 43: 107). First date not 10 Jun as in JPW 67: 37 and Chu (1991). Accepted by the MBRC (Chu, 1991).

29 Oct 79 (1) in Copper Harbor, M. Macdonald; observed for several hours on rocks in residential yard at edge of harbor (Macdonald, pers. comm.; AB 34: 165; Payne, 1983, 1986; R. J. Adams in Brewer *et al.*, 1991; R. J. Adams in McPeek & Adams, 1994). I have seen no documentation for this record, if any exists, but conversations with the observer convince me of its validity.

21-30 Oct 2002 (1) on rock jetty at boat launch in L'Anse, R. Brigham (photos), A. Byrne (photos), Z. Gayk, S. Hickman, RH, JK (photos in LB files and MBNH 10: 79), D. Lovitch (finder), B. Murphy, LM, M. Petrucha, JY. Accepted by the MBRC (Byrne, 2004)

House Wren *Troglodytes aedon*

Status and Range (B, H, K). **Summer** resident. Uncommon in northern and extreme southern H and northwestern and southwestern B, rare elsewhere in B and H, avoiding regions with extensive dense forest. Occasional in southwestern K (Ahmeek, Mohawk), where all have been singing males, apparently unmated. Summer numbers augmented only slightly in **spring** but not at all in **fall**, as befits a species near the northern edge of its range (at this longitude). Four spring birds in northern K were probably vagrant overshoots, although it breeds on Isle Royale (Johnsson *et al.*, 1982).

Habitat. Nearly restricted to rural and residential settings where nest boxes are available, but also recorded (LB) in summer in slashings of over-logged, mesic deciduous forest. See Breeding for nest sites.

Migration Dates. **SEAD**: 15 May 95 (Liminga, D. Weaver). **FLDD**: 8 Oct 2003 (see below); 20 Sep 91 (Franklin Location, 1 mi NE Hancock, S. Andres, D. Richter; JPW 69 [2]: 29); 24 Aug 96 (Liminga, DW).

Significant Records (all K not under Breeding; males thought to be unmated not considered even possible breeders).

17 May 2000 (singing male) Eagle River, LB, did not remain.

18 May 2004 (1) Copper Harbor, JK, LM, JM.

23 May 2002 (1) Agate Harbor, migrant, LB.

1, 2 Jun 95 (singing male) 3 mi E Agate Harbor, LB, did not remain.

6 Jun 99 (unmated singing male) Ahmeek, LB.

13 Jun 2000 (2 unmated singing males, one with his nest in box) Ahmeek, LB, JM.

16 Jun 2002 (2 singing males) Ahmeek, and (1 singing male) Mohawk, K, LB, all probably unmated.

23 Jun 96 (singing male) Ahmeek, LB; no evidence of a mate.

6 Jul 98 (singing male) Ahmeek, LB; no evidence of a mate.

8 Oct 2003 (1) Manitou Is., B. Johnson (pers. comm; MBNH 11: 108).

Breeding (**B** 3 co, 3 pr, 1 po; **H** 5 co, 1 pr, 7 po; **K** 1 co).

29 May 31 (pair visited boxes) Copper Harbor, Wood (1933).

29 May 98 (pair at nest box) Hancock, fide LM.

18 Jun 96 (pair at nest box) Calumet, LB.

18 Jun 82 (two groups of prejuveniles raised in boxes) Youngman's property, B, JY.

10 Jul 2002 (nest with young) L'Anse, LM.

24 Aug 96 (2+ prejuveniles fledged from box this date) Liminga, D. Weaver.

Aug 1914 (pair at nest in corner of abandoned planing mill) Kenton, H, Cahn (1918).

Summary: Span of dates indicates its normal double-broodedness (Baicich & Harrison, 1997).

BBS. Bootjack 67-73: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2. *Bootjack* 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1. *Herman*. 7 on 5 of 7 counts (71.4%); mean 1.00; range 0-2.

Winter Wren *Troglodytes troglodytes*

Status and Range (B, H, K). Common **summer** resident throughout, less numerous in farming districts but still present because of mosaic forest patches. Very common in a few townships where suitable habitat is extensive; one of the commonest passerines in summer on Manitou Is. (18-20 Jun 2002, 35 on 21 of 22 point counts, JY). Seemingly no more numerous in **spring** or **fall**. In fall, crosses Lake Superior; singles noted (LB) arriving off the lake at Agate Harbor on 13 Oct 90 (0954 EDT), 17 Oct 86 (1035), and 22 Oct 94 (2 birds, 0945 and 1005, the latter chased but missed by a Merlin).

Habitat. Breeds and forages primarily in densely shaded, usually mature, forests with numerous logs, exposed root systems, or dense tangles, often in association with forested streams and bogs, including mesic/wet mixed forests, northern white-cedar swamp, and to a lesser extent, mesic deciduous forest.

Migration Dates. **SEAD**: 2 Apr 82 (Youngman's

property, B, JY). **SMAD**: 13 Apr (n=15, B only). **FLDD**: 3 Nov 2002 (1) near Obenhoff, T54N, R35W, Sec. 11, H, JK; 22 Oct 94 (Agate Harbor, LB).

High Counts. **Spring**: multi-party, 11 May 2002 (**15**) H, NAMC. **Summer**: 14 Jun 88 (**14**) T50N, R32W, NE quarter, B, LB; 30 Jun 2003 (**11**) Manitou Is., B. Johnson, JY. **Fall**: 27 Sep 96 (**5**) Agate Harbor, LB.

Breeding (**B** 7 pr, 18 po; **H** 2 co, 2 pr, 22 po; **K** 1 co, 6 pr, 6 po).

*30 Jun 87 (carrying food) T52N, R35W, SW quarter, H, LB.

9 Jul 2001 (carrying food) Gratiot Lake, T57N, R30W, NE quarter, K, JM, D. Raven.

Note: the confirmed breeding for K on the MBBA map (1991) should be reduced to possible.

BBS. Bootjack 67-73: 7 on 4 of 7 counts (57.1%); mean 1.75; range 0-2. *Bootjack* 92-2005: 44 on 14 of 14 counts (100%); mean 3.14; range 1-7. *Herman*: 20 on 7 of 7 counts (100%); mean 2.86; range 1-5.

NAMC. Baraga Co.: 46 on 6 of 6 counts (100%); mean 7.67; range 1-10; ind/PH .18. *Houghton Co.*: 23 on 4 of 7 counts (57.1%); mean 3.29; range 0-15; ind/PH .08.

Historical Changes (Table 17). I attribute the 79% increase on the Bootjack BBS to forest maturation.

Sedge Wren *Cistothorus platensis*

Status and Range (B, H, K). **Summer** resident; widely but very sparsely distributed, but may be locally very common, as at Arnheim (B and H), Sturgeon River Sloughs, and Oskar (H) area; uncommon elsewhere in B and H. Occasional in K (little habitat). No confirmed breeding for H, where it certainly breeds, or K, where it may not. Little indication of a transient population (but see 20 May 88 below), as expected for a species near the northern edge of its range (at this longitude), although it breeds on Isle Royale (Johnsson *et al.*, 1982). **Fall** dates too few to determine average time of departure; breeders simply disappear.

Habitat. Breeds almost exclusively in moist sedge-grass meadows and marshes, and occasionally sections of hayfields low and wet enough to support some sedges.

Migration Dates. **SEAD**: 30 Apr 98 (Sturgeon River Sloughs, LM). **SMAD**: 7 May (n=4, H and B only). **FLDD**: 19 Sep 2001 (2, Arnheim, H, JY).

Significant Records (all K).

20 May 88 (1 found dead) West Bluff, Brockway Mt., LB, migrant.

10 Jun 95 (1 singing) Cliff Drive near Phoenix, K, LB.

17 Jun 2000 (1 singing) edge of Ahmeek, LB, JM.

18 Jul 94 (2 singing) 3 mi NE Ahmeek, T57N, R32W, Sec. 22, LB, sedge-grass meadow.

High Counts. **Summer**: 25 Jun 2000 (**20**) Arnheim, H, LM, JY; 31 May 98 (**18**) Sturgeon River Sloughs, JY.

Breeding (**B** 1 co, 2 pr, 6 po; **H** 3 pr, 4 po; **K** 4 po, see Significant Records).

3 Jun 2000 ("dummy" nest) Sturgeon River Sloughs, Unit 1, LB, JM, being built by singing male, with green grass blades incorporated into exterior; probable breeding.

23 Jul 33 (nest with 3 eggs, UMMZ 198884) Sturgeon River valley, B (Wood, 1951; UMMZ, in litt.).

[*Note*: the record for probable breeding in K on the MBBA map (1991) should be deleted.]

BBS. Bootjack 67-73: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2. *Herman*: 3 on 3 of 7 counts (42.9%); mean .43; range 0-1.

NAMC. Baraga Co.: 16 on 5 of 6 counts (83.3%); mean 2.67; range 0-10; ind/PH .06. *Houghton Co.*: 4 on 2 of 7 counts (28.6%); mean .57; range 0-3; ind/PH .01.

Marsh Wren *Cistothorus palustris*

Status and Range (B, H, K). Rare **summer** resident, today known only from the Arnheim sloughs (B and H), where a very small, probably breeding, population has existed since at least 95 (LM, JY). However, there is no confirmed breeding for the Peninsula. Only 1 record for K (23 May 2002, Agate Harbor, LB, migrant). Two records elsewhere, Swedetown marsh and Boston Pond, both H (see Breeding). Formerly (72-78) summered or bred along the Sturgeon River in the Sturgeon River Sloughs (AW).

Habitat. Restricted to cattail marsh. May require marsh edge, making many Peninsula cattail marshes too clogged for this species.

Migration Dates. **SEAD**: 8 May 2004 (Arnheim, H, LM); 16 May 98 (Arnheim, H, JY). **FLDD**: 27 Sep 75 (Sturgeon River Sloughs, AW); 25 Jul 99 (Arnheim, H, JY).

High Counts. **Summer**: 25 Jun 2000 (**6**) Arnheim, B (1) and H (5), JY.

Breeding (**B** 3 pr; **H** 15 pr, 1 po); first three entries counted as one probable each year.

May-Jul 72-78 (birds on territory) Sturgeon River Sloughs, AW.

May-Jul, 95-2000, 2002, 2004 (birds on territory) Arnheim, Units 2, 3, 4, 5, H, LM, JY.

May-Jun 98, 2000, 2005 (birds on territory) Arnheim, Unit 7, B, LM, JY.

9 Jul 89 (1) Boston Pond, H, LM; possible breeding.

Note: the spot for probable breeding on the MBBA map (1991) in extreme northern H (Swedetown marsh, 5-11 Jul 88, LB, LM, AW) should be reduced to "observed," as no female was seen, and the singing male soon

disappeared.

NAMC: *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004; 8 May 2004, Arnheim, Unit 5, H, LM.

Historical Changes. None of the early writers (Kneeland, 1857; Cahn, 1918; Wood, 1933; Wing, 1939) mention the Marsh Wren for the Peninsula, but they might not have visited its restricted habitat. The species might simply be too rare to have occupied the other cattail marshes in the Keweenaw, but clogging by vegetation probably makes marshes unsuitable.

Golden-crowned Kinglet *Regulus satrapa*

Status and Range (B, H, K). **Permanent** resident, detectability varying seasonally. **Summer**: fairly common resident throughout, except in coastal northwest half of H (MBBA map 1991), where farmland and unsuitable deciduous forest prevail. **Spring**: more numerous than in summer due to transient individuals, but still within fairly common range. Transients begin arriving in last week of Mar, peak in third week of Apr, and decrease into May (latest transient, 28 May 2003 in town of Copper Harbor, LB). In both spring and fall, more widespread than in summer, because transients are more tolerant of non-coniferous habitats. **Fall**: most years common, irregularly very common (some days abundant), and hence considered irruptive. Transients begin arriving in last week of Aug, peak sharply in last week of Sep, and decrease through Oct into mid Nov, after which I consider all birds potential winterers. A translake migrant (see Remarks), and hence sometimes becomes concentrated on the north shore of K (see High Counts). **Winter**: very rare winter resident; recorded on the HCCBC in only 7 of 26 years, but this scarcity in part due to inaccessibility of spruce habitat in this count circle; found on 4 of 6 Eagle Harbor Christmas Bird Counts, where spruce is more abundant.

Habitat. Breeds and winters most commonly in mesic (balsam fir-white spruce) and wet (black spruce forest bogs) coniferous forests and spruce patches within mesic mixed forest; neither the forests nor patches need be extensive. During migration, may be found also in deciduous forests, shrublands, and residential and rural settings.

Migration Dates. See Status and Range.

High Counts. **Spring**: multi-party, 9 May 98 (**19**) B, NAMC; 7 Apr 2000 (**14**) 6 mi SE Chassell, H, LM. **Summer**: 27 May 2001 (**10**) southeast of Vermilac Lake, B, JY; 27 Jul 89 (**10**) Rabbit Bay, H, LB. **Fall**: 24 Sep 91 (**49** in one flock) Copper Harbor, LB; 25 Sep 90 (**40** in one flock) Agate Harbor, LB; 16 Oct 2000 (**36** in one flock) Agate Harbor, LB. **Early winter**: multi-party, 16 Dec 84 (**12**) and 16 Dec 2000 (**12**) HCCBC; 16 Dec 2001 (**8**) Lac La Belle area, JY only, Eagle Harbor Christmas Bird Count.

Breeding (**B** 3 co, 5 pr, 13 po; **H** 4 co, 3 pr, 12 po; **K** 7 co, 3 pr, 6 po).

*9 Jun 86 (carrying food) Bete Grise, K, LB.

*11 Jun 89 (carrying food) Union Creek, K, LB.

*14 Jun 87 (nest with young) Agate Harbor, LB.

18 Jun 99 (carrying food) Agate Harbor, LB.

19 Jun 2005 (carrying food) near Gay, T56N, R31W, Sec. 36, K, LB.

Sometime between 28 Jun-6 Jul 49 (adults feeding fledged young) Gratiot Lake, K, Wallace (1949).

*10 Jun 88 (carrying food) T47N, R33W, SW quarter, B, LB.

Summary: said to be double-brooded (Baicich & Harrison, 1997), but all Keweenaw data are early in the season.

BBS. *Bootjack* 92-2005: 11 on 9 of 14 counts (64.3%); mean .79; range 0-2. *Herman*: 3 on 1 of 7 counts (14.3%); mean .43; range 0-3.

NAMC. *Baraga Co.*: 63 on 6 of 6 counts (100%); mean 10.50; range 4-19; ind/PH .24. *Houghton Co.*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1; ind/PH .01.

HCCBC. 51 on 7 of 26 counts (26.9%); mean 1.96; range 0-12; ind/PH .04.

Historical Changes. The increase on the Bootjack BBS from the period 67-73 (none) to .79 per count in 92-2005 probably reflects the maturation of the few patches of spruce available along this route and not a general trend for the Peninsula.

Remarks. This species is a fall trans-Lake Superior transient. I have seen birds arrive off the lake at Agate Harbor (unless otherwise stated) as follows:

14 Sep 87 (2 birds) 0851 and 0856 EDT.

17 Sep 87 (1) 1012; caught over Lake by a Merlin but escaped when the perched falcon shifted its feet!

28 Sep 2002 (3) 0847, 0855, 0858, Hebard Park, K.

12 Oct 87 (1) 0946.

13 Oct 90 (1) 1001.

17 Oct 86 (1) 0950.

In addition, B. Johnson and JY saw 1 kinglet sp. reach the east end of Manitou Is. from the north at 0914 on 8 Oct 2003, and I have seen kinglets of uncertain species arrive at Agate Harbor as follows:

17 Sep 94 (2) 0833, 0900, the latter caught by a Merlin.

24 Sep 91 (3) 0839, 0840, 0841 (loose flock?).

2 Oct 92 (2) 0926, 0957.

13 Oct 90 (4) 0953, 1051, 1056, 1059.

16 Oct 2000 (1) 0947.

Ruby-crowned Kinglet *Regulus calendula*

Status and Range (B, H, K). **Spring**: fairly common transient throughout. Very lengthy migration period, 6

Apr-5 Jun. **Summer**: uncommon resident, widely but sparsely distributed, as is its habitat, largely avoiding farming and highland hardwood districts of coastal northwest H, western half of B, and western K (MBBA map 1991). **Fall**: fairly common transient throughout. Prolonged migration period, 26 (perhaps 12) Aug-24 Oct, and one of the latest remaining insectivorous passerines.

Habitat. Breeding nearly restricted to wet coniferous forest (closed black spruce bogs, usually mixed with tamarack and northern white-cedar); rarely inhabits mesic coniferous forest and speckled alder-black spruce thickets near water. On migration has a wide foraging niche, feeding in almost any trees or shrubs, deciduous and coniferous, searching pine needle clusters, gleaning branches and trunks, and descending to the ground when insects scarce. It often hovers and can find the tiniest insects. Although mostly insectivorous, said to eat seeds, berries, and sap (Terres, 1980).

Migration Dates. **SEAD**: 6 Apr 2001 (Sturgeon River Road, H, TA, JM); 7 Apr 88 (Liminga, AW); 16 Apr 85 (Liminga, D. Weaver). **SMAD**: 26 Apr (n=26). **SP**: second week of May. **SMDD**: 21 May (n=22). **SLDD**: 5 Jun 98 (Copper Harbor, LB). **FEAD**: 12 Aug 78 (Liminga, AW, local wanderer?); 26 Aug 97 (Agate Harbor, LB). **FMAD**: 12 Sep (n=15). **FP**: last week of Sep. **FMDD**: 15 Oct (n=15). **FLDD**: 24 Oct 99 (T48N, R32W, Sec. 18, B, LM, JM).

High Counts. **Spring**: multi-party, 11 May 96 (**17**) H, NAMC; 11 May 98 (**12**) Copper Harbor plus Agate Harbor, LB. **Fall**: 27 Sep 96 (**10**) Agate Harbor, LB.

Breeding (**B** 1 co, 2 pr, 9 po; **H** 2 co, 1 pr, 4 po; **K** 2 co, 1 pr, 5 po).

*15 Jun 87 (carrying food) T47N, R37W, SW quarter, H, LB.

*24 Jun 88 (carrying food) R52N, R30W, NE quarter, B, LB.

*2 Jul 88 (carrying food) T57N, R30W, SE quarter, K, LB.

*11 Jul 86 (male feeding prejuvenile) 1 mi SW Delaware, K, LB.

Note: the two easternmost confirmations for K on the MBBA map (1991) should be reduced to possible.

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1. *Herman*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1.

NAMC. Baraga Co.: 34 on 6 of 6 counts (100%); mean 5.67; range 4-12; ind/PH .13. *Houghton Co.*: 36 on 7 of 7 counts (100%); mean 5.14; range 1-17; ind/PH .13.

Remarks. See Golden-crowned Kinglet.

Blue-gray Gnatcatcher *Polioptila caerulea*

Status and Range (B, H, K). Currently an occasional vagrant in **spring** (9 records, 28 Apr-31 May) and **fall** (7 records, 28 Aug-28 Oct), presumably as a spring overshoot and fall misoriented migrant, as it is not known to breed farther north. A similar pattern emerges at Whitefish Point, although there the species seems more common in fall than spring (Granlund & Byrne, 1996). Eight of the 9 spring and 5 of the 7 fall records are for the north coast of K (12 records) and H (1 record), illustrating the concentrating effect of Lake Superior. Accidental vagrant in **summer** (1 record, 26 Jun), presumably as a holdover from spring. A potential breeder, nesting as close as Menominee Co., MI (MBBA 1991). See Historical Changes.

Habitat. Vagrants found in broad-leaved shrub upland and forest edge. The Jun bird was in good breeding habitat—jack pine-red oak scrub in an old clearcut.

Significant Records (all; all single birds except as noted).

28 Apr 86, Liminga, D. Weaver.

2 May 2001 (2 females together) Copper Harbor, LB, R. Brigham, JK.

6 May 98 (male) Copper Harbor, LB.

6 May 2000 (female) Copper Harbor, LB, JM.

8 May 2001 (female) Copper Harbor, LB.

19 May 99 (female) Copper Harbor, LB.

23 May 2003 (male and female) Copper Harbor, LB.

26 May 2002 (female) Copper Harbor, LB, K. Overman.

31 May 97, Bear Lake Trail near McLain State Park, H, RH.

26 Jun 99 (silent male) 300 yards north of north end of Big Lake, B, LB; see Habitat.

Aug 1914, Kenton, H, Cahn (1918).

28 Aug 2000, Agate Harbor, LB.

3 Sep 2004, Agate Harbor, LB.

16 Sep 92, Michigan Audubon Society Parcel #1, above Agate Harbor, B. Rogers, D. Tiller (Whitewater Associates Report, Amasa, MI).

28 Sep 96, Agate Harbor, LB.

28 Sep 2003, Copper Harbor, JY.

28 Oct 2002, Sand Point, Baraga, RH, S. Palmore.

Historical Changes (Table 17). Better coverage, especially on the north coast, where 13 of the 17 records have occurred, might account for 15 of the 17 records being since 92. More likely, however, this trend is part of the general northward expansion of the species in the eastern United States (see R. J. Adams in Brewer *et al.*, 1991), including MN (AB 46: 1138) and WI (Temple *et al.*, 1997); I saw none on the north coast from 86 to 95, but 12 from 96 to 2004.

Eastern Bluebird *Sialia sialis*

Status and Range (B, H, K). **Spring**: fairly common transient throughout; irregularly common on north coast of K, where perhaps concentrated, even trapped, by Lake Superior, as some other diurnal migrants seem to be (see Discussions: Effects of Lake Superior on Migration). Has one of the longest periods of spring arrival of any species, appearing as early as the last week of Mar (see Breeding) and still migrating regularly in late May and rarely mid Jun; perhaps more than one population is involved, those birds that nested here in previous years arriving earlier than either transients or those breeders that must search for territories; also, late arrival would favor those transients continuing northward into a progressively harsher environment. **Summer**: fairly common resident throughout open regions; scarce or absent in dense forests of southeastern half of B and most of K. **Fall**: remains fairly common, with no apparent influx of transients despite some breeding north of Lake Superior. Flocking of presumed local birds begins as early as the end of Jul.

Habitat. Usually nests in old woodpecker holes or nest boxes, but see Breeding. In summer, most abundant in open and semi-open areas where there is ample short grass or bare ground for foraging but also scattered dead trees, old fence posts, or boxes for perching and nesting. Breeds in open, dry coniferous forest (jack pine and red pine clearcuts and grassland), open mixed forest (pine-red oak), forest edge, sparsely vegetated old fields, pastures, golf courses, grassy dikes at sewage ponds (in boxes), orchards, rural and residential settings with large yards, and grassy bogs with snags.

Migration Dates. **SEAD**: 28 Mar 95 (Liminga, D. Weaver). **SMAD**: 22 Apr (n=16). **SLDD**: 12 Jun 93 (flock of 16, Copper Harbor, LB); 6 Jun 98 (flock of 5 flying past Agate Harbor, LB). **FMDD**: 5 Oct (n=19). **FLDD**: 20 Nov 96 (Liminga, D. Weaver); 7 Nov 99 (Brockway Mt., JY); 20 Oct 74 (Oskar, H, AW).

High Counts. **Spring**: 12 Jun 93 (**16** in migrant flock) Copper Harbor, LB. **Summer**: 31 Jul 90 (**20**) T53N, R34W, NE quarter, H, LB, perhaps should be listed under fall. **Fall**: 20 Sep 99 (**23**) Calumet Golf Course, LB; 2 Sep 88 (**12**) Liminga, AW.

Breeding (**B** 7 co, 2 pr, 7 po; **H** 15 co, 4 pr, 8 po; **K** 4 co, 3 pr, 5 po).

28 Mar 95, 29 Mar 87, 31 Mar 90 (occupying nest boxes) Liminga, D. Weaver.

30 May 2005 (nest under construction in box) Copper Harbor, LB.

9 Jun 2002 (occupied nest) near Arnheim, B, JY.

11 Jun 89 (using nest box) Copper Harbor, LB.

*17 Jun 87 (nest with 3 one-day-old young) at Pori, T49N, R37W, NW quarter, H, LB; an unusual nest in a completely open (exposed), shallow (only 1 inch at high edge) hollow on top of an old fence post (5 ft tall, 12 in DBH); nestlings still present 26 Jun.

21 Jun 99 (nest in box) Copper Harbor, LB; later abandoned.

26 Jun 2000 (carrying food) 1 mi NW Big Lake, B, LB, JY.

*26 Jun 88 (occupied nest) T52N, R32W, SE quarter, B, LB.

8 Jul 2002 (nest box with young) S. Klingville Road, T53N, R33W, Sec. 35, H, LM.

Note: species said to be double- or even triple-brooded (Baicich & Harrison, 1997), but data are needed to determine the number of broods by a single pair this far north; in the Keweenaw, March breeders might represent a different population than Jun nesters.

BBS. *Bootjack* 67-73: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1. *Bootjack* 92-2005: 36 on 13 of 14 counts (92.9%); mean 2.57; range 1-7. *Herman*: 14 on 6 of 7 counts (85.7%); mean 2.00; range 0-6.

NAMC. *Baraga Co.*: 9 on 4 of 6 counts (66.7%); mean 1.50; range 0-4; ind/PH .03. *Houghton Co.*: 28 on 6 of 7 counts (85.7%); mean 4.00; range 0-12; ind/PH .10.

Historical Changes (Table 17). The original large Michigan population of the Eastern Bluebird was gradually decimated by various factors during the first three-quarters of the 20th century, reaching a nadir in the late 70s (B. Pinkowski in Brewer *et al.*, 1991). Recovery, due largely to nest box programs, has been swift, as illustrated by the Bootjack BBS, with means of only .14 birds per count in the period 67-73 but 2.57 in 92-2005, a 1736% increase.

Townsend's Solitaire *Myadestes townsendi*

Status and Range (H, K). **Fall**, **winter**, and **spring** vagrant, casual in each season; 13 records, 9 Oct-2 Jun, with 9 of these on or near the north coast of K, where apparently concentrated by Lake Superior. No individual has been proven to remain all winter. Irruptive.

Significant Records (all; all single birds).

9 Oct (seen), 16 Oct (found dead under window) 83, Liminga, D. Weaver, AW; given to MTU, but no specimen found later by LB (JPW 62: 30; Weaver, 2000; not "Minn." as said by AB 38: 206).

17 Oct 2002, 1 mi E Agate Harbor on highway M 26, LB.

5 Nov 83, Copper Harbor, fide A. Weaver (2000).

5-6 Nov 2004, Phoenix, K, N. Auer, JK.

27 Nov 2004 (N. Auer, TA) to 1 Jan (B. Murphy; A. Byrne photos, one on cover of MBNH 12 [3]) 2005, Copper Harbor, J. Rooks.

1-8 Jan 2003, in Copper Harbor, TA, Z. Gayk, RH, S. Hickman, JK, JM.
24-31 Jan 2005, 6 mi SE Chassell, H, LM, JY.
4-17 Feb 90, Coburntown region on Quincy Hill in Hancock, B. Bouton (photos), RH, LM, AW (photos) (Weaver, 2000; AB 44: 272).
6 Feb 2005, Eagle Harbor, S. Santner.
23 Mar 97, Great Sand Bay, K, RH.
23 Mar 2000, top of Mt. Lookout, K, JY (Eagle Harbor, as given inaccurately in MBNH 7: 228, is the closest town); perhaps same bird as 26 Mar 2000.
26 Mar 2000, Brockway Mt., JK; perhaps same bird as 23 Mar 2000.
2 Jun 97, .5 mi E Agate Harbor, LB. Accepted by the MBRC (Internet).

Veery *Catharus fuscescens*

Status and Range (B, H, K). A transition forest species that at this longitude reaches the northern extent of its range in the Keweenaw and hence has no transient population to bolster abundance in **spring** or **fall**. **Summer** resident, recorded in almost all townships (MBBA map 1991). My personal field data accumulated during MBBA censusing, 86-88, indicate a detectability of very common and make it the eighth commonest species in the Keweenaw.

Habitat. Breeds most abundantly in shrub wetland, primarily with speckled alders but also sandbar willow and red-osier dogwood, wet deciduous swamp, and short, dense second growth with shrubs in moist shaded parts of dry deciduous, mesic deciduous, mesic/wet mixed, and wet coniferous forests. See Breeding for nest sites; all three nests were where the sun would have hit them were it not for the low vegetation concealing the nest cup. See Swainson's Thrush.

Migration Dates. **SEAD**: 8 May 2001 (Agate Harbor, LB). **SMAD**: 19 May (n=28). **FMDD**: 4 Sep (n=12). **FLDD**: 19 Sep 90 (Liminga, AW).

High Counts. **Spring**: 16 May 98 (**8**) Arnheim, B or H, JY. **Summer**: 1 Jul 69 (**33**) H and K, B. and D. Wolck, Bootjack BBS; 1 Jul 84 (**22**) B, S. Patti, Herman BBS; 17 Jun 2001 (**17**) H and K, LB, JM, Bootjack BBS.

Breeding (**B** 3 co, 15 pr, 9 po; **H** 7 co, 14 pr, 9 po; **K** 6 co, 5 pr, 3 po).

7 (nest with 3 eggs), 11 and 19 (4 eggs), 27 (adult carrying food, nest empty) Jun 90, Hubbell, T55N, R33W, Sec. 12, H, LB; nest on ground in tuft of grass between dirt road and mesic deciduous forest containing a nearby stream.
18 Jun 99 (nest with 1 egg) road from Gratiot Lake to Brunette Park K, LB, JM; on ground in tuft of grass between dirt road and mesic deciduous forest.
*26 Jun 88 (carrying food) T52N, R32W, SE quarter, B, LB.
*27 Jun 88 (carrying food) T50N, R35W, NE quarter, B, LB.
27 Jun 2001 (nest with 4 eggs) T56N, R31W, Sec. 33, K, LB, JM; nest on ground in tuft of grass on old logging road through wet coniferous forest.
*3 Jul 86 (carrying food) Farmer's Block Road near Ahmeek, K, LB; mesic mixed forest.
*11 Jul 86 (carrying food) near Delaware, T58N, R30W, SW quarter, LB.
[16 Aug 96 (1 "fledgling") H, (MBNH 4: 105); without further details, and in view of the late date, I suspect this was a full-sized flying bird.]

BBS. *Bootjack* 67-73: 150 on 7 of 7 counts (100%); mean 21.43; range 14-33. *Bootjack* 92-2005: 107 on 14 of 14 counts (100%); mean 7.64; range 2-17. *Herman*: 96 on 7 of 7 counts (100%); mean 13.71; range 8-22.

NAMC. *Baraga Co.*: 3 on 1 of 6 counts (16.7%); mean .50; range 0-3; ind/PH .01. *Houghton Co.*: 4 on 1 of 7 counts (14.3%); mean .57; range 0-4; ind/PH .01.

Historical Changes. On the Boojack BBS, the Veery has declined 64.3%, from a mean of 21.43 per count in the period 67-73 to 7.64 in 1992-2005; the 1986 total (21 birds) matched earlier counts, so any change was later. I cannot attribute this to any difference in the Keweenaw, and therefore must suggest mortality on the wintering grounds or migration route.

Gray-cheeked Thrush *Catharus minimus*

Status and Range (H, K). No record for B, where obviously overlooked. Occasional **spring** transient (7 records, 19-27 May; see Migration Dates). Rare **fall** transient (only 24 records through 2003, 31 Aug-1 Oct). Of the 31 total records, 6 were inland in central H (Liminga, Winona, Hancock) and the rest on the immediate north coast of H and K; although I suspect that Lake Superior concentrates migrants, this distribution probably is mostly a reflection of my birding range, which favors the latter area. The puzzling rarity of this species I attribute partly to its rather small migration windows, but mostly to the inability of even experienced observers to identify it. Nevertheless, estimates by R. J. Adams (in McPeek & Adams, 1994) that Gray-cheeks are outnumbered by the Swainson's Thrush 5 to 1 in spring and 4 to 1 in fall seem too conservative for the Keweenaw, where, in the period 86-2004, I found it only 17 times and missed it completely in 7 of the 19 years; more data needed.

Habitat. On migration, similar to the Swainson's Thrush, with which it may be found foraging on the ground in underbrush and openings within forests. My

records are for mesic mixed forest, except two in broad-leaved shrub upland and one in open mesic deciduous forest.

Migration Dates. **SEAD** and **SLDD**: only 7 spring records: 19 May 96, 20 May 99, and 22 May 2002 (all Copper Harbor, LB), 23 May 2002 (Agate Harbor, LB), 23 May 2005 (McLain State Park, H, JK, 27 May 31 (male, UMMZ 67462, Copper Harbor, N. A. Wood; Wood, 1933), and 27 May 97 (Calumet Township Waterworks Park, H, LB). **FEAD**: 31 Aug 97 (Agate Harbor, LB). **FMDD**: 13 Sep (n=9). **FLDD**: 1 Oct 2000 (Hancock, RH).

Swainson's Thrush *Catharus ustulatus*

Status and Range (B, H, K). Fairly common **summer** resident throughout forested districts; most numerous, but still only fairly common in K, except common on Manitou Is. (Youngman, 2002). Generally avoids farm districts of northern and extreme southern H and northwestern third of B. Although transients must pass in **spring**, they are not abundant enough to separate from arriving summer residents, nor do they seem to appear regularly where the species does not breed (see Fall). I, for instance, bird non-breeding localities in K at least four days per week in spring and often miss Swainson's during the entire season. This scarcity is very puzzling; more data needed. **Fall**: transient. Averages fairly common, but highly irregular in detectability, some years very common for short periods (*e.g.*, when concentrated on the north shore of K) and other years very uncommon. Part of this variation may be due to the very short migration window in any given year, in which most transients pass in a week or so. Combining all fall data, of course, widens the window, but also discloses that transients arrive *abruptly in numbers* about 4 Sep, remain fairly common, and then very suddenly leave about 21 Sep, with only a few later stragglers.

Habitat. Breeds in heavily shaded, dense forest undergrowth near water, especially moving streams (which it may require), in mesic/wet mixed forest, mesic deciduous forest (with numerous small balsam firs in the understory), and mesic and wet coniferous forest. Breeds secondarily in shrub wetland with speckled alders or sandbar willows. Prefers drier situations than most Veeries, but wetter, denser sites than the Hermit Thrush, and more canopy shade than either.

Migration Dates. **SEAD**: 22 Apr 90 (Copper Harbor, AW); 2 May 96 (Liminga, D. Weaver); 10 May 2005 (above Ripley, H, RH, JK). **SMAD**: 20 May (n=9). **SLDD**: migrants have been seen as late as 2 Jun 97 (Agate Harbor, LB). **FEAD**: migrants have been seen as early as 28 Aug 2001 (Copper Harbor, LB). **FMAD**: 4 Sep (n=8, Liminga only, where it does not breed). **FMDD**: 21 Sep (n=15). **FLDD**: 18 Oct 95 (Copper Harbor, LB).

High Counts. **Summer**: 14 Jun 88 (**5** males) T50N, R32W, NE quarter, B, LB. **Fall**: 7 Sep 95 (**25**) along roads from Agate Harbor to Lake Linden, LB; 11 Sep 2000 (**16**) Agate Harbor, LB; both records exceptional.

Breeding (**B** 1 co, 2 pr, 10 po; **H**, 3 co, 11 po; **K** 2 co, 4 pr, 8 po).

25 May 1887 (nest with 3 eggs) Groverton, H, Gibbs (Barrows, 1912). I cannot find Groverton on maps; it may have been a now abandoned mining town.

25 Jun 99 (agitated adult) old highway US 41 between Alberta and Bovine, B, LB, probable breeding.

27 Jun 33 (nest with 3 eggs) near Three Lakes, B, L. H. Walkinshaw (Wood, 1951).

30 Jun 2003 (nest with 3 eggs) Manitou Is., B. Johnson (MBNH 11: 39).

15 Jul 2002 (1 prejuvenile) Manitou Is., Sec. 21, JY.

Note: the confirmed breeding record shown on the MBBA map (1991) for K should be reduced to possible.

BBS. [*Bootjack* 67-73: 7 on 2 of 7 counts (28.6%); mean 1.00; range 0-6; B. Wolck (pers. comm.) informs me that 6 birds in 68 and 1 in 69 were misidentified and were Hermit Thrushes.] *Bootjack* 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1. *Herman*: 8 on 5 of 7 counts (71.4%); mean 1.14; range 0-2.

Hermit Thrush *Catharus guttatus*

Status and Range (B, H, K). Common **summer** resident throughout forested regions, probably occurring in all townships. Earliest thrush to arrive in **spring**, when the common roadside thrush in K; latest to leave in **fall**, possibly because of its ability to survive on fruit (LB). Common transient in both seasons, when habitat range broader and numbers greater than in summer, but not enough to exceed common detectability. **Winter**: accidental lingerer; 2 records, early Jan-24 Jan 2002 (in Houghton, D. Bach, RH, JK, not "most of Feb" as in MBNH 9: 166), and 4 Jan 2003 (in Copper Harbor, RH).

Habitat. In summer, widespread where there are conifers, occurring primarily in dry mixed forest and dry coniferous forest (jack pine and red pine, including plantations), secondarily in mesic coniferous and mesic mixed forests, and rarely in mesic deciduous forest with a balsam fir component in the understory. I have not found Hermit Thrushes in wet forests, where standing water would restrict ground foraging. See Swainson's Thrush.

Migration Dates. **SEAD**: 11 Apr 2005 (Prickett Dam, B, JY). **SMAD**: 28 Apr (n=16). **FP**: last week of Sep. **FMDD**: 2 Oct (n=18). **FLDD**: 4 Nov 2000 (L'Anse Bay, RH); 26 Oct 97 (Calumet, JY) and 75 (3 mi NW Boston, H, F. B. Isaacs).

High Counts. **Spring**: multi-party, 12 May 2001 (**37**) B, NAMC; same census (**16**) LB and JM only; 19 May 97 (**13**) B, LB. **Summer**: 6 Jul 91 (**19**) B, S. Patti, Herman BBS; 20 Jun 2005 (**15**) LB, Z. Gayk, Bootjack BBS.. **Fall**: 15 Sep 93 (**9**) Agate Harbor, LB; 5 Oct 34 (**9**) Covington, B, M. B. Trautman (Wood, 1951).

Breeding (**B** 9 co, 8 pr, 16 po; **H** 2 co, 9 pr, 20 po; **K** 4 co, 3 pr, 8 po).

6 Jun 2004 (nest with 3 eggs) Baraga Plains, T49N, R34W, Sec. 19, JY.

9 Jun 2003 (nest with eggs) T50N, R34W, Sec. 32, B, JY.

9 Jun 2004 (nest with 4 eggs) Baraga Plains, T49N, R34W, Sec. 23, JY.

11 Jun 2004 (nest with 1 egg and 3 young) T50N, R34W, Sec. 7, B, JY.

13 Jun 98 (carrying food) Agate Harbor, LB.

16 Jun 93 (carrying food) 3.3 mi E Mohawk, K. LB.

19 Jun 2000 (nest with 4 eggs) near Anderson Lake, T50N, R34W, Sec. 28, B, LM, JY.

4 Jul 2002 (nest with 4 eggs) T47N, R34W, Sec. 13, B, JY.

5 Jul 2001 (carrying food) Gratiot Lake, T57N, R30W, NW quarter, K, M. Scheiwe.

Date unknown ("nests" with eggs) B, E. O. Doolittle (Barrows, 1912).

Summary: egg dates support its normal double-broodedness (Baicich & Harrison, 1997).

BBS. Bootjack 67-73: 28 on 6 of 7 counts (85.7%); mean 4.00; range 0-8. *Bootjack* 92-2005: 86 on 14 of 14 counts (100%); mean 6.14; range 2-15. *Herman*: 63 on 7 of 7 counts (100%); mean 9.00; range 2-19.

NAMC. Baraga Co: 114 on 6 of 6 counts (100%); mean 19.00; range 8-37; ind/PH .44. *Houghton Co*: 57 on 7 of 7 counts (100%); mean 8.14; range 1-18; ind/PH .20. The difference between the two counts lies with the greater abundance of coniferous and mixed forests in B.

Banding Recoveries. One adult banded as a presumed breeder 9 Jul 67 in B was found dead in the first 10 days of Apr 70 in Cass Co., MI, suggesting migration along a northwest-southeast line.

Wood Thrush *Hylocichla mustelina*

Status and Range (B, H, K). Very uncommon, widely but sparsely distributed, **summer** resident in B and H. Numbers not augmented by transients in spring or fall, as befits a species at the northern extent of its range. One summer record for K (3 Jul 49, Gratiot Lake; Wallace, 1949), a bird heard only and therefore perhaps questionable; not "common" as stated by Payne (1986). One **spring** record for K, a migrant that did not remain (1 Jun 99, about 4 mi NE Mohawk, T57N, R31W, Sec. 17, JY). Only 2 **fall** records (3 and 6 Sep).

Habitat. Noted in summer in dark, dense, mesic deciduous forest (northern hardwoods and nearly solid sugar maple) and edge of wet deciduous swamp.

Migration Dates. **SEAD**: 12 May 2001, 6.5 mi E L'Anse, B, JY, NAMC. **FLDD**: only two fall dates, 3 Sep 76 (Liminga, AW) and 6 Sep 76 (3 mi NW Boston, H, F. B. Isaacs).

Breeding (**B** 1 co, 9 po; **H** 1 co, 10 po).

4 Jul (nest with 4 nestlings, 4 ft up in balsam fir), 20 Jul 94 (2 prejuveniles near nest) Youngman's property, B, LM, JY (Youngman, 1997).

[*Note*: the two possible breeding records for K on the MBBA map (1991) should be deleted.]

BBS. Bootjack 67-73: 4 on 2 of 7 counts (28.6%); mean .57; range 0-2; identity perhaps questionable. *Herman*: 7 on 4 of 7 counts (57.1%) mean 1.00; range 1-2.

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004. *Houghton Co.*: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

Historical Changes. Kneeland (1857) listed this species without comment; however, he may have been mistaken, because he did not list the common Hermit Thrush. In Aug 1914, Cahn (1918) considered it "not common" around Kenton, H. Wood (1933) found none in K in 1931 (but he also missed Veery). Thus its past history is uncertain. The slight decrease suggested by Bootjack BBS data, .57 per count in 67-73 but none in 92-2005, could be attributed to the loss of only one or two pairs.

American Robin *Turdus migratorius*

Status and Range (B, H, K). **Spring**: very common transient. Flocking not as frequent compared to fall. **Summer**: very common, in many areas abundant, resident throughout. The third most detectable (LB data) and most ubiquitous land bird on the Peninsula, recorded in 73 of 77 censused townships (MBBA map 1991). Very common **fall** transient. Flocking at major food sources begins in Aug and continues into late Oct (see High Counts) and irregularly mid Nov, when the normal summer's berry crop is nearing exhaustion. At the east end of Manitou Is., JY saw 1 bird arrive off Lake Superior on 6 Oct 2003 (0748 EDT) and 3 on 8 Oct (2, 0752; 1, 0754). Occasional **early winter** lingerer from mid Nov to 2 Jan, and casual **late winter** resident. Even in heavy crop years, I doubt there is enough fruit to support more than a few birds all winter. Small nomadic flocks pause at temporary food sources, then move to another. Most records are for H, where most winter observers live. Twenty-four winter sightings through 2001-02 are given under Significant Records, summarized as follows: Nov, 2 records; Dec, 12; Jan, 6; and Feb, 4. Since AW became active in 72-73, these embrace 15 of 30 years (50.0%), 12 of 30 early winters (40.0% or 1 out of every 2.5 years), and

9 of 30 late winters (23.3% or 1 out of every 4.3 years). Winter 94-95 was especially good for robins (Richter & Andres, 1995).

Habitat. Nests in deciduous or coniferous trees in every forest habitat (including second-growth), as well as orchards and residential and rural settings, provided moist clearings (especially lawns) or open forest floor are available for foraging for earthworms. Often occurs near water, which provides the mud usually used in nest construction. In fall and winter, forms flocks that wander between patches of fruit, including American mountain-ash and ground juniper (LB).

Migration Dates. **SEAD**: 7 Mar 99 (Eagle River, K, LM, JY) and 2000 (Sturgeon River Sloughs, LM). **SMAD**: 26 Mar (n=27). **FMDD**: 19 Oct (n=24; dates after 8 Nov not used in calculation). **FLDD**: 2 Jan 97 (Liminga, D. Weaver), but see Status and Range and Significant Records. See Migration in Discussions.

Significant Records (all Nov-Feb, presented chronologically by winter).

1962-63: 12 Dec (2, H, J. Weber; JPW 41: 165); 24 Dec (1, Copper Harbor, LB).
76-77: 3 Dec (Liminga, AW).
77-78: 3 Dec (Liminga, AW).
78-79: 16 Dec (1, Houghton, HCCBC, AW).
80-81: 20 Dec (1, HCCBC).
84-85: 25 Nov (Liminga, D. Weaver).
87-88: 19 Dec (1, HCCBC).
89-90: 14 Jan (1, L'Anse, LM); 15 Jan (6, Redridge, H, LM).
92-93: 19 Dec (1, HCCBC).
94-95: 19 Feb (30, Calumet Waterworks Township Park, H) and 21 Feb (40, Copper Harbor; both Richter & Andres, 1995).
96-97: 3 Dec (7 in flock, South Superior Road near Liminga, AW); 2 Jan (1, Liminga, D. Weaver); 1 and 10 Feb (6 each, Liminga, D. Weaver).
97-98: 20 Dec (1, HCCBC); 28 Feb (1, Liminga, D. Weaver).
98-99: 3 Dec and 17 Jan (1 each, Hancock, RH).
99-2000: 18 Dec 99 (1, HCCBC); 30 Jan (1, near Hebard Park, K, RH).
2000-2001: 18 Nov (1, Rabbit Bay, LM).
2001-2002: 21 (1)-23 (2) Jan (Houghton, RH, JK, not 22-23 Feb through period as in MBNH 9: 166).

High Counts. **Spring**: multi-party, 11 May 96 (**280**) H, NAMC; 29 Apr 90 (**100**) Liminga, AW; 8 Apr 98 (**48**) B, JY; 15 Apr 2003 (**45**) in field in Covington, B, JY.. **Summer**: 3 Jul 83 (**73**) B, S. Patti, Herman BBS. **Fall**: 22 Oct 2000 (**173**) Lakeview Cemetery, Calumet, LB, JM; 20 Aug 92 (**92**) Agate Harbor, LB. **Winter**: 21 Feb 95 (**40**) Copper Harbor, Richter & Andres (1995).

Breeding (**B** 12 co, 14 pr, 4 po; **H** 19 co, 12 pr, 4 po; **K** 12 co, 6 pr, 1 po).

1 May 76 (adult on nest 7 ft, 6 in up in white spruce) Watton, B, N. J. Ilnicky (CLO).
2 May 2001 (building nest in pine in town) Copper Harbor, LB.
16 May 2001 (nest with 4 eggs) Sturgeon River Sloughs area, T53N, R33W, Sec. 9, H, JY.
19 May 2001 (carrying nest material) Copper Harbor, LB.
24 May 97 (nest with 4 eggs) Arnheim, B or H, JY; not in above totals.
24 May 2005 (female on nest, presumably incubating) 3 mi N Oskar, H, LB, P. Muller; nest on rafter at highest peak *inside* large old horse barn.
5 Jun 98 (adult on nest) Sturgeon River Road, H, LM.
6 Jun 98 (2 prejuveniles) Eagle River, K, LB.
10 Jun 2000 (nest nearly complete) road from Gratiot Lake to Brunette Park, K, LB, JM; bottom of nest adorned profusely with hanging *Usnea* lichen.
*23 Jun 86 (carrying food) Copper City, K, LB.
*28 Jun 87 (carrying food) T50N, R36W, NW quarter, H, LB.
29 Jun 87 (carrying food) T51N, R36W, SE quarter, H, LB.
19 Jul 2002 (carrying food) L'Anse, LM.
*9 Jul 87 (carrying food) T55N, R35W, SW quarter, H, LB.
14 Jul 56 (carrying food) Ft. Wilkins State Park, K, LB.
21 Jul 56 (carrying food) Eagle Harbor, K, LB.
Summary: Length of breeding season, with nests spread from 1 May to 10 Jun, indicates double-broodedness, which is normal (Baicich & Harrison, 1997).

BBS. *Bootjack* 67-73: 181 on 7 of 7 counts (100%); mean 25.86; range 9-40. *Bootjack* 92-2005: 470 on 14 of 14 counts (100%); mean 33.57; range 22-47. *Herman*: 343 on 7 of 7 counts (100%); mean 49.00; range 35-73.

NAMC. *Baraga Co.*: 495 on 6 of 6 counts (100%); mean 82.50; range 56-118; ind/PH 1.92. *Houghton Co.*: 1185 on 7 of 7 counts (100%); mean 169.29; range 117-280; ind/PH 4.25.

HCCBC. 7 on 7 of 26 counts (26.9%); mean .27; range 0-1; ind/PH .006.

Banding Recoveries. Four hatching-year birds banded on the Peninsula in Jun, Jul, and early Aug, recovered as probable transients in WI (2 birds, Oct), as a probable winterer in MS (26 Jan), and as a winterer or transient in TX (Mar), demonstrating a north-south migration pathway.

Historical Changes. This species benefitted greatly from forest clearing and human settlement in the last two centuries. Its Michigan population declined temporarily from the effects of pesticides in the 1950s-60s, then increased again. The 30% increase along the Bootjack BBS route from the period 67-73 (mean 25.86 birds per count) to 92-2005 (33.57) mirrors the national rise for the period 66-99 noted by Pardieck & Sauer (2000) and the state increase for 66-85 shown by Adams *et al.* (1988). Factors possibly responsible for this result are reduction in the use of pesticides (see D. C. Ruhl in Brewer *et al.*, 1991) and the addition of a number of rural homes with lawns along the BBS route (LB) and elsewhere on the Peninsula. In addition, I have noted more robins inhabiting forest, perhaps as it matures, opening the forest floor for foraging.

Varied Thrush *Ixoreus naevius*

Status and Range (B, H, K). Casual **fall** and **winter** vagrant; 8 records, 3 Nov-16 Feb. At least 4 birds were at feeders. The 3 Nov date is the earliest fall record for Michigan (AB 38: 206; JPW 62: 30; R. J. Adams in McPeek & Adams, 1994; Weaver, 2000).

Significant Records (all; all single birds).

3 Nov 83, Brockway Mt. Drive east of West Bluff, K, M. Macdonald, see above.

10 Dec 89, 14 Jan 90, Feb 90, L'Anse, feeder in yard of M. Auger; M. L. Wercinski (Jan photo seen by LB), RH, LM.

18 (N. Auer, TA; HCCBC), 19 (S. Haas) Dec 2004, in forest near Jacobsville, H.

18 Dec 2002-8 Jan 2003, Eagle Harbor feeder, K, TA, RH, JK, JM.

22 Dec 98 (seen by yard owner) to at least 1 Jan 99 (LM, JY), adult male at feeder in Toivola, H.

22 Dec 2002, feeder on Chassell-Painesdale Road near Chassell, H, B. Deephouse, photo by J. Sweeting (Brockway Lookout 10 [1]: 2).

[26 Dec 87-22 Jan 88, "Baraga Co.," N. J. Ilnicky (JPW 66: 128); according to Ilnicky (in litt.), this record pertains to Marquette Co.]

31 Dec 2000-7 Feb 2001, Swedetown Creek, Hancock, TA, R. Filer (finder), RH, JK, JM, K. Tischler.

16 Feb 93, L'Anse, K. Thomas (JPW 70 [4]: 21; AB 47: 260).

Gray Catbird *Dumetella carolinensis*

Status and Range (B, H, K). **Summer** resident, overall uncommon and widely but rather sparsely distributed; most common in northern third of H and northwestern B, rare in K, its distribution favoring agricultural regions, where shrub habitat is extensive (MBBA map 1991). As expected for a species at the northern edge of its range, no movement of transients noted in **spring** or **fall**, and much unoccupied habitat in summer. Vast majority of individuals depart by 20 Sep, but every few years a few birds take advantage of the berry crop to remain as late as 20 Oct.

Habitat. During both migration and summer, found primarily in relatively non-forested regions in shrub wetland and to a lesser extent broad-leaved shrub upland. Prefers wetter sites than the Brown Thrasher.

Migration Dates. **SEAD**: 5 May 2001 (Chassell, H, LM). **SMAD**: 21 May (n=25). **FMDD**: 20 Sep (n=14). **FLDD**: 20 Oct 97 (Copper Harbor, LB).

High Counts. **Fall**: 12 Aug 80 (**5**) Ahmeek (K) plus Calumet, LB.

Breeding (**B** 2 co, 2 pr, 12 po; **H** 2 co, 1 pr, 14 po; **K** 2 co, 2 pr, 1 po).

22 Jun 81 (nest with 4 eggs) Youngman's property, B, JY.

*25 Jun 88 (carrying food) T51N, R32W, SW quarter, B, LB.

23 Jul 68 (carrying food) Agate Harbor, LB.

BBS. *Bootjack* 67-73: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1. *Bootjack* 92-2005: 6 on 5 of 14 counts (35.7%); mean .43; range 0-2. *Herman*: 11 on 6 of 7 counts (85.7%); mean 1.57; range 0-4.

NAMC. *Baraga Co.*: 4 on 2 of 6 counts (33.3%); mean .67; range 0-3; ind/PH .02. *Houghton Co.*: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

Historical Changes (Table 17). State data demonstrate a gradual northward spread (J. Eastman in Brewer *et al.*, 1991), paralleling other southeastern birds such as the Northern Cardinal. In the Keweenaw, Kneeland (1857) noted it did not occur around Portage Lake (then too heavily wooded) but was said to occur in the "more settled parts" of the Peninsula. In 1914, Cahn (1918) found several birds and what he considered an old nest "about Kenton" (H). Wood (1933) called it rare in the Copper Harbor area in 1931, as it is today. These older data are insufficient for comparison with current status.; probably there has been little change.

Northern Mockingbird *Mimus polyglottos*

Status and Range (B, H, K). **Spring**: vagrant overshoot from the south, 25 Apr-5 Jun, formerly occasional, recently very rare. Forty-four spring records, distributed as follows: B 5, H 21, and K 18; all but 2 records were for single individuals. The most reliable locality has been Copper Harbor, where Lake Superior probably stops birds. Since 92, it has been recorded every year and with the abundance, regularity, and timing of a transient, but it has no regular population farther north and thus must be called a vagrant. This increase appears to be real (see Historical Changes). Spring timing (see Migration

Dates) mirrors that of many insectivorous migrants in the Keweenaw and at Whitefish Point (Granlund & Byrne, 1996); *e.g.*, the 25 regular Keweenaw species of warblers have a median arrival date of 16 May (Table 3), whereas the mockingbird's median is 14 May. One seen flying back to the mainland from Manitou Is. suggests it prefers not to cross Lake Superior. **Summer**: casual breeding vagrant; 6 records, 12 Jun-8 Aug, 5 for H and 1 for K. The two 12 Jun birds might have been late spring rather than summer vagrants. The few summer birds were presumably holdovers from spring, but where the other spring birds go is a mystery. Of the 15 spring and summer birds I have seen, none was singing, a fact that might hinder pairing and nesting; however, other observers have occasionally noted singing. One breeding record, Aug 2005, the northernmost for Michigan; the closest previous breeding was in Marquette Co. (summer 84 near Harvey, first Upper Peninsula nest; Ilnicky 1984). The 27 Jul record was of two birds together; no one searched for breeding evidence. **Fall**: casual vagrant; 3 records, 16 Oct-17 Nov. Where fall birds originate is puzzling; they might be lingerers from the spring and summer (but the Agate Harbor bird certainly did not summer there), returnees from somewhere unknown, or, as favored here, misoriented vagrants from the south, as proposed for the Blue-gray Gnatcatcher and others (see Vagrancy in Discussions). **Early winter**: accidental lingerer; 1 record, 1-14 Dec.

Habitat. During spring, found in open areas, primarily rural and residential settings, especially in villages on the north coast of K, where shrubs are available for roosting (and potential nesting) and lawns and other openings for ground foraging. Berries, which ripen in mid summer and fall, may be of consequence to the few birds present then, and persistent berries (*e.g.*, ground juniper) may be needed during harsh spring and fall weather, but I know of no birds actually seen eating berries. The one breeding record was in a rural setting at a house with lawn, scattered shrubs, and a patch of large spruce.

Migration Dates (see Significant Records for data). **SEAD**: 25 Apr 90. **SMAD**: 14 May (n=17). **SP**: third week of May. **SLDD**: 5 Jun 2004 (but see Summer). **FEAD**: 16 Oct 79. **FLDD**: 14 Dec; 17 Nov 84; 17 Oct 98.

Significant Records (all; all single birds except as noted).

25 Apr 90, Brockway Mt., 1 mi E West Bluff lookout, AW.
27 Apr 85, Liminga, AW, D. Weaver.
27 Apr 2002, 1.3 mi E of end of highway US 41, near Horseshoe Harbor, K, LB, JM.
27, 28 Apr 98, Copper Harbor, LB.
29 Apr 2001, Cat Harbor, K, JK.
1 May 2002, Liminga, W. Sharp.
3 May 62, Chassell, H, J. Weber (JPW 41: 34).
4 May 88, Liminga, D. Weaver.
4 May 90 (2) Liminga, AW.
5 May 2002, Manitou Is., JY; flew past west end and over water toward mainland.
7 May 2004, Chassell, H, LB.
10 May 2002, Baraga State Park, J. DeFoe, LM.
10, 11 May 2001, Schmidt Corner, H, RH.
11 May 97, Eagle Harbor, K, LM, JY.
12 May 2001, H, HCCBC.
14 May 2005, Sand Point, Baraga, J. DeFoe.
14 (LB), 17 (J. Hewitt), 19 (LB) May 98, Copper Harbor.
14, 28, 29 May 94, Liminga, AW, D. Weaver.
16 May 82, B, M. Harrison (JPW 60: 128).
18 May 88, 4 mi W Copper Harbor on Lake Superior coast, LB.
18 May 99, Baraga marina, TA, O. Mills.
18 May 2004, Copper Harbor, JM.
19, 27 May 96, Copper Harbor, LB.
20 May 2003, Sturgeon River Sloughs, Unit 1, S. Santner.
20 May 2004 (2) Agate Harbor, A. and D. Slagle.
21 (B. Brown), 24 May (AW, D. Weaver) 83, south Superior Road near Liminga.
21 May 92, Liminga, AW.
21 May 95, L'Anse, JY.
21 May 2002, Copper Harbor, LB, JM.
22 May 98, Eagle Harbor marina, K, L. Dombroski.
22 May 99, Copper Harbor, LB.
23-28 May 2003, Copper Harbor, LB, J. Rooks.
27 May 98, Sturgeon River Sloughs, JY.
28 May 93, Liminga, AW.
28, 29 May 94, 1 mi S Oskar, H, AW.
28, 29 May (J. Sweeting fide S. Andres), 1 Jun (AW, D. Weaver) 98, Chassell, H.
29 May (LB)-2 Jun (TA) 2002, Copper Harbor.
30 May 98, in Houghton, fide S. Andres.
30 May 2000, Copper Harbor, LB.
May 98, 4 mi NW Boston, local observer fide LB.
1 Jun 93, Lake Linden sewage ponds, LB.
1 Jun 2005, Agate Harbor, LB.
2 Jun 2004, Hancock, N. Auer.
5 Jun 2004, Hancock, B. Quenzi, J. Sliven.
12 Jun 68, H, B. and D. Wolck (JPW 46: 135).
12 Jun 92, 1 mi SE Copper City, T56N, R32W, Sec. 4, H, LB, LM, Bootjack BBS. This bird was said (JPW 70 [1]: 29; AB 46: 1138) to have "nested;" although I reported this bird on a BBS, I never said it nested, which it did not; in fact it left. I have since requested that it be deleted from BBS data.

23 Jun 96, Liminga, D. Weaver.

1 Jul 2003, at Perch Lake, Manitou Is., Z. Gayk (finder), JY.

23 Jul (2 adults)-8 Aug (1 adult feeding 2 prejuveniles) 2005, 1 mi W Chassell, H, T54N, R33W, Sec. 31, home of M. and M. Beiring (finders), LB, RH, JK, LM, JM, JY (Binford ms., MBNH). Each begging prejuvenile had a three-quarters length tail, gray spotting on the throat and breast, and swollen, bright yellow ricti (photos by JK). A second adult was seen on 23 Jul, but in 1+ hr on 8 Aug only one non-singing bird was present, leading us to suspect the male was dead.

27 Jul 88 (2) Freda, H, AW, D. Weaver, M. Weaver.

16 Oct 79, Chassell, H, T. A. Allan (JPW 58: 91).

17 Oct 98, Agate Harbor, LB.

17 Nov 84, Liminga, AW, D. Weaver; hit window and survived.

1-14 Dec 2004, Atlantic Mine feeder, H, P. Bell (2004; photo verified by D. Richter, pers. comm.).

Breeding (**H** 1 co); see Significant Records.

BBS. *Bootjack* 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1; a late spring vagrant; see 12 Jun 92 above.

NAMC. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Historical Changes (Table 17). The Northern Mockingbird is spreading northward in Michigan (P. Dziepak in Brewer *et al.*, 1991). The first breeding record for the Upper Peninsula was in Marquette Co. in 84 (Ilnicky 1984). No early author mentions it for the Keweenaw Peninsula, where it was first recorded in 62 and remained scarce (12 records) through 91. Since then it has been recorded every year. Only 8 spring records were forthcoming in 79-91 compared to 36 in 92-2005, this last year including the only breeding record. This increase might be attributable to better coverage. However, 18 of the 44 spring records (40.9%) were on the north coast of Keweenaw Co., where I have birded intensively 1986-2005. During this period, only 2 records were in the first 10 years, 86-95, but 16 in the second 10 years, 96-2005, so the increase seems real. Wisconsin seems to have experienced no change in the period 83-96 (Temple *et al.*, 1997).

Brown Thrasher *Toxostoma rufum*

Status and Range (B, H, K). S**summer** resident, uncommon in B and H, very rare in K (no confirmed breeding for K). Distribution largely parallels that of farming districts, *i.e.*, the northern third, central, and extreme southern H, and the Watton area of B, but also encompasses the pine barrens of the Baraga Plains. Virtually absent from the southeastern half of B and all but extreme southern K (MBBA map 1991; BBS). No apparent movement of transients in **spring** or **fall**, as expected for a species on the northern border of its range, except for a few transient or vagrant overshoots (*e.g.*, 15 May 90, 2 mi E Agate Harbor, LB; 28 May 2002,14 May 2003, and 25 May 2005, all Copper Harbor, LB). **Winter**: casual lingerer and resident. Four records of single birds at feeders in H: early Nov-30 Jan 98, Calumet, S. Andres (in litt.), RH, LM (MBNH 5: 133); 18 Dec 99, 1 mi N Oskar, P. Friar (fide AW); and 7 Jan to 11 Feb 2003, 1.25 mi W Mason, eating suet, B. and K. Forsman, D. Richter; and 24 Nov 2003-16 Feb 2004, 4 mi NW Hancock, feeder, RH, N. and B. Kendall (pers. comm., photo on 29 Dec 2003) (Brockway Lookout 11 [1]: 4).

Habitat. Breeds and forages almost exclusively in shrub upland, either needle-leaved (jack pine), broad-leaved (red oak), or a mixture, these common after clearcutting on the Baraga Plains. Also occurs in edge, extensive hedgerows, and dense old fields. Nests placed in dense shrubs several feet off ground. Prefers drier sites that the Gray Catbird and hence avoids shrub wetland. Has visited feeders in winter.

Migration Dates. **SEAD**: 11 Apr 97 and 27 Apr 95 (both Liminga, D. Weaver). **SMAD**: 8 May (n=26). **SLDD**: transients or overshoots have been seen as late as 28 May 2002 (Copper Harbor, LB). **FMDD**: 19 Sep (n=8). **FLDD**: 9 Nov (1, near Obenhoff, T54N, R35W, Sec. 11, H, JK); 8 Oct 95 (2, Copper Harbor and Agate Harbor, LB).

High Counts. **Spring**: multi-party, 8 May 99 (**11**) B, NAMC; 18 May 99 (**7**) north of Big Lake, B, JY, probably summer residents.

Breeding (**B** 4 co, 1 pr, 5 po; **H** 2 co, 1 pr, 16 po; **K** 1 pr, 1 po).

25 May 2000 (nest with 1 egg) Baraga Plains, T49N, R34W, Sec. 29, JY.

13 Jun 2000 (nest) Baraga Plains, T49N, R34W, Sec. 24, JY.

20 Jun 2000 (nest) Baraga Plains, T49N, R34W, Sec. 21, JY.

26 Jun 99 (carrying food) Big Lake, B, LB.

12 Aug 80 (carrying food) Calumet, LB.

[*Note*: I doubt the probable breeding shown on the MBBA map (1991) at the eastern tip of K.]

BBS. *Bootjack* 67-73: 14 on 6 of 7 counts (85.7%); mean 2.00; range 0-4. *Bootjack* 92-2005: 17 on 9 of 14 counts (64.3%); mean 1.21; range 0-3. *Herman*: 2 on 1 of 8 counts (12.5%); mean .25; range 0-2.

NAMC. *Baraga Co.*: 32 on 6 of 6 counts (100%); mean 5.33; range 2-11; ind/PH .12. *Houghton Co.*: 7 on 4 of 7

counts (57.1%); mean 1.00; range 0-3; ind/PH .03.

Banding Recoveries. An adult banded in WI 4 Oct 64 and caught by a cat in H in 69 (no date) indicates a north-south migration pathway for Peninsula birds.

European Starling *Sturnus vulgaris*

Status and Range (B, H, K). More data needed, especially regarding migration. **Permanent** resident. Very common in **summer** in agricultural, rural, residential, and urban settings from northern half of H southeast through northwestern half of B, thence through central H, and, somewhat disjunctly in extreme southern H and B. In K villages, fairly common in southwest and rare along north coast. Although overall abundance seems about the same all year on the Peninsula as a whole, there is good evidence of **spring** migration in K, where Lake Superior may be a barrier (*e.g.*, flocks of 6 on 1 Jun 91, 2 and 5 on 12 May 98, and 3 flocks totalling 43 on 16 May 2004, LB, flying east over Brockway Mt.; 6 on 28 May 2005, Manitou Is.) and annual May flocks in Copper Harbor (*e.g.*, 55 on 20 May 99, LB). **Fall** flocking begins by the first week of Jul (see High Counts) and continues into winter, perhaps with a peak in late Aug (but if so, do some leave?); flocking may give the impression of an increase, but all birds could be locals congregating for winter. **Early winter** numbers on the HCCBC vary considerably from year to year, with a high of 543 in 2003 (abundant) and a low of 11 in 86 (fairly common); whether this is the result of irregular emigration (see Spring and Banding Recoveries) or fluctuation in population size (or both) is unknown, but I suspect the former. Abandons some hamlets (*e.g.*, Copper Harbor), perhaps to flock in cities, but may still be found in others in early winter (*e.g.*, 17 Dec 2000, 1, Eagle Harbor, K, TA, JM, J. Ongie). **Late winter**: present all winter; exact detectability unknown but probably similar to early winter. Occurrence dependent on feeders.

Habitat. Breeds primarily in rural, residential, and urban settings. Nests recorded in gutters and under eaves of occupied buildings and inside an abandoned mine lift. However, also known to nest "naturally" on a cliff face on the shore of Keweenaw Bay, and seen carrying nest material into a tree cavity at the Calumet sewage ponds. Forages on the ground, primarily in short grass, including lawns, farm yards, pastures, and hayfields. In cold weather, commonly roosts inside man-made structures and during the day perches next to warm chimney tops (LB). Visits feeders in winter.

High Counts. **Spring**: multi-party, 11 May 96 (**169**) H, NAMC; 20 May 99 (**55**) Copper Harbor, LB. **Summer**: (before flocking starts): 14 Jun 98 (**36**) H and K, LB, Bootjack BBS; (after flocking starts): 3 Jul 68 (**86**) H and K, B. and D. Wolck, Bootjack BBS; 12 Jul 85 (**75**) Liminga, AW; 3 Jul 83 (**67**) B, S. Patti, Herman BBS; 3 Jul 2000 (**60**) Tamarack City, LB, 1 flock. **Fall**: 25 Aug 94 (**1000**) Liminga, AW, exceptional; 23 Sep 73 (**500**) North Portage Entry, H, AW, exceptional; 9 Sep 99 (**130**) Calumet, LB; 8 Sep 95 (**100**) Liminga, AW. **Early winter**: multi-party, 20 Dec 2003 (**543**) HCCBC; 17 Dec 94 (**53**) Rabbit Bay to Jacobsville, H, LM only, HCCBC; 15 Dec 79 (**50**) Liminga, AW. **Late winter**: no data.

Breeding (**B** 6 co, 1 pr, 8 po; **H** 13 co, 1 pr, 9 po; **K** 4 co, 1 pr, 2 po).

26 May 2001 (nest with young) Chassell, H, LM.

3 Jun 2004 (carrying nest material into a sugar maple cavity) Calumet sewage ponds, LB.

3 Jun 99 (carrying nest material inland toward forest) Copper Harbor, LB.

5 Jun 2000 (adults feeding young on cliff face) shore of Keweenaw Bay, T53N, R33W, Sec. 35, H, JY.

6 Jun 78 (nest with 4 young under building eaves) Kenton, H, N. J. Ilnicky (CLO).

6 Jun 98 (carrying food) Eagle River, K, LB.

13 Jun 2002 (nest with young in woodpecker cavity in power pole) Centennial Heights, H, LB.

*14 Jun 86 (nest with young in abandoned mine building) Ahmeek marsh, K, LB.

*23 Jun 88 (carrying food) T51N, R31W, NW quarter, B, LB.

*24 Jun 87 (nest with young) in town of Kenton, H, LB.

*28 Jun 87 (carrying food) T50N, R36W, NW quarter, H, LB.

*29 Jun 87 (nest with young) T51N, R36W, SE quarter, H, LB.

*6 Jul 88 (carrying food) T55N, R32W, NE quarter, H, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

17 Jul 2001 (nest with young in house gutter) Fulton, K, LB, JM.

Summary: spread of dates of nests with young (26 May-17 Jul) suggests double-broodedness.

BBS. *Bootjack* 67-73: 294 on 7 of 7 counts (100%); mean 42.00; range 26-86. *Bootjack* 92-2005: 338 on 14 of 14 counts (100%); mean 24.14; range 12-36. *Herman*: 201 on 7 of 7 counts (100%); mean 28.71; range 5-67.

NAMC. *Baraga Co.*: 301 on 5 of 6 counts (83.3%); mean 50.17; range 0-91; ind/PH 1.17. *Houghton Co.*: 663 on 7 of 7 counts (100%); mean 94.71; range 18-169; ind/PH 2.38. Difference between counts reflects greater human population in H.

HCCBC. 3922 on 26 of 26 counts (100%); mean 150.85; range 11-336; ind/PH 3.33.

Banding Recoveries. One adult banded in IN 26 Jan 75 found in H or Ontonagon Co., MI, in 75.

Historical Changes (Table 17). None of the early workers (Kneeland, 1857; Cahn, 1918; Wood, 1933; Wing, 1939) listed this species for the Keweenaw, although Wing saw it as close as Bruce's Crossing, Ontonagon Co., in 1932. McPeek & Pitcher (in Brewer *et al.*, 1991) said it had been seen in widely scattered points in the Upper Peninsula by 31. The earliest Peninsula record I can find was 5 Jul 49 (Central, K, 1 seen; Wallace, 1949), but since he was only a one-time visitor, the starling probably occurred earlier. By 62 it was well established as far out on the Peninsula as Ahmeek, K (27 Dec 62, 15 birds, LB) and Houghton, Hancock, and Calumet, (22 Dec 62, 1, 1, 2 birds, respectively, LB). Thus the exact timing of early occupation of the Peninsula is clouded by insufficient data. Farther out in K, I saw 5 at Eagle Harbor on 11 Aug 64 and 1 at Bete Grise on 18 Jun 86, and it bred in Eagle River in 98. At Copper Harbor, after fall records in 87, my first summer sighting was 1 Jun 88 and first breeding record on 3 Jun 99; however, this species is still irregular there in summer, as none was seen in summers 2001 or 2002 (LB). In spring, however, it continues to increase as a transient. There is weak evidence for a recent decrease in summer numbers in rural areas. The high fall counts noted by AW in 73 and 74, representing flocking of breeding birds, have not been duplicated since (but has anyone looked?). On the Bootjack BBS the mean per count of 42.00 in the period 67-73 declined 43% to 24.14 in 92-2005; however, the 67-73 counts were taken between 24 Jun and 3 Jul, by which time young of the year may have swelled the totals.. Also, the HCCBC (76-2001) shows no such decrease, and I consider the overall population stable.

White Wagtail *Motacilla alba*

Status and Range (H). Accidental **spring** vagrant; 1 record, 27-28 Apr 2004, near the Pilgrim River mouth, H, A. Byrne, RH, JK (photo in MBNH 11: 200), G. Soehnel (finder), *et al.* (Kaplan, 2004). Second Michigan record.

American Pipit *Anthus rubescens*

Status and Range (B, H, K). **Spring**: uncommon transient, but at times in flocks of up to 75, once 250. **Fall**: fairly common transient, sometimes in flocks up to 60, once 175. Singles and small flocks often seen migrating east to west over water along north shore of K (LB), perhaps having just crossed Lake Superior.

Habitat. Forages on bare earth of newly plowed fields, sewage ponds, in short-grass situations such as roadsides, stubble fields, open portions of marshes, and, coastally, beaches , rocks, and small town lawns.

Migration Dates. **SEAD**: 30 Apr 98 (Calumet, LB) and 2000 (Brockway Mt., LB). **SMAD**: 7 May (n=10). **SP**: about 16 May. **SMDD**: 27 May (n=9). **SLDD**: 2 Jun 90 (Brockway Mt., LB) and 96 (Copper Harbor, R. Weeks; MBNH 4: 30). **FEAD**: 26 Aug 63 (Eagle Harbor, K, LB) and 2001 (L'Anse, JY). **FMAD**: 20 Sep (n=16). **FP**: about 1 Oct. **FMDD**: 10 Oct (n=11). **FLDD**: 4 Nov 97 (Pequaming, B, JY); 27 Oct 2002 (1, Arnheim, B or H, JY); 18 Oct 2000 (4, Sturgeon River Sloughs, RH).

High Counts. **Spring**: 17 May 2004 (**250**) Atlantic Mine sewage ponds, H, TA, RH, JK, JM; 10 May 2003 (**75**) 3 mi W town of Keweenaw Bay, B, LB, Z. Gayk; 16 May 99 (**50**) L'Anse Bay, LB; 10 May 2000 (**45**) Calumet sewage ponds, LB. **Fall**: 1 Oct 2002 (**195**) Lake Linden (175) and Calumet (20) sewage ponds, LB; 18 Sep 96 (**60**) Arnheim, B or H, JY.

NAMC. Baraga Co.: 59 on 5 of 6 counts (83.3%); mean 9.83; range 0-41; ind/PH .23. *Houghton Co.*: 18 on 2 of 7 counts (28.6%); mean 2.57; range 0-13; ind/PH .06.

Bohemian Waxwing *Bombycilla garrulus*

Status and Range (B, H, K). May occur almost anywhere, especially near berries. **Winter** visitant, annual in occurrence but not resident, this status unique. Irruptive, highly erratic in timing and detectability. Although frequency of occurrence is only 53.8% (14 of 26 years) on the HCCBC, I have found records for 8 additional winter periods since 76, raising the known freqency to 84.6%, and consider it regular. Detectability ranges from abundant to very rare, averaging common; usually most numerous in early winter, numbers decreasing thereafter as the berry crop is depleted and nomadic flocks depart. Numbers on the HCCBC reached 646 in 98 (7.53 ind/PH) and averaged 46.81 (1.03 ind/PH). **Fall** arrival period greatly extended, normally from Oct to late Dec, with the earliest 27 Aug (an invasion year; at the time the earliest for the state); occurrence too irregular to discern a median or peak. Some years, birds are not discovered until **spring** (late Mar-May), suggesting a spring flight (more data needed), for which the latest date is 4 May.

Habitat. Found wherever small fruit is available, usually in openings within deciduous or mixed forests or in residential and urban settings. Forages primarily on a variety of berries (*e.g.*, American mountain-ash), but does some flycatching in fall (LB).

Migration Dates. **FEAD**: 27 Aug 97 (1, Copper Harbor, LB); 12 Sep 87 (4, Copper Harbor, J. Rooks; JPW 66: 33); 9 Oct 88 (Lake Eliza near Eagle Harbor, K, LB). **SLDD**: 4 May 99 (see below).

High Counts. **Fall**: 7 Nov 2001 (**90**) Sturgeon River Sloughs, JY; 23 Oct 87 (**50** or **60**) Mohawk, K, J. Rooks (JPW 66: 33); 22 Oct 97 (**40**) Copper Harbor, LB. **Early winter**: multi-party, 19 Dec 98 (**646**) HCCBC; 19 Dec 2004 (**300**+) Sturgeon River Sloughs, S. Haas; 25 Nov 98 (**260**) Hancock, RH; 26 Dec 2001 (**60**) B, RH. **Late winter**: 4 Mar 98 (**100**) 1 mi S Oskar, H, AW; 1 Feb 84 (**70**) Liminga, AW. **Spring**: 3 May 96 (**67**) B or H, JY; 4 May 99 (**19**) Copper Harbor, LB, R. and M. Planck.

HCCBC. 1217 on 14 of 26 counts (53.8%), mean 46.81; range 0-646; ind/PH 1.03; see Status and Range.

Cedar Waxwing *Bombycilla cedrorum*

Status and Range (B, H, K). **Spring**: abundant transient throughout, but perhaps most visible in flocks on north coast of K. A very late arrival. I find no evidence for the two spring flights suggested for more southern regions; without insects or fruit, early birds might not survive in the Keweenaw. Do spring flocks disperse for breeding, or do they leave, perhaps crossing Lake Superior? I suspect most are "trapped" on the Peninsula (like some raptors, blackbirds) and eventually fly west to skirt the Lake at Duluth, MN (see High Counts for records of westbound birds in spring). **Summer**: very common resident, recorded in almost all townships (MBBA map 1991); detectability inflated because of its extreme conspicuousness. Breeds later than most passerines, probably to take advantage of maximum berry production in late summer and early fall. **Fall**: very common. Nomadic flocks begin forming in second week of Jul and may be seen through early Oct, with a very few lingering to 6 Nov; the near hiatus in records between then and 8 Dec here treated tentatively as an artifact of coverage. What is the status of fall flocks—all summer residents, or transients crossing Lake Superior or passing through Duluth and then northeast to the Keweenaw (see High Counts for a record of fall birds flying east)? **Early winter**: occasional lingerer into late Dec; recorded during 11 winters since 72, sometimes in flocks up to 75. **Late winter**: casual visitant; 4 records.

Habitat. Most often seen flying. Breeds near patches of fruit-bearing shrubs and small trees in mesic/wet mixed and wet deciduous forest edge, shrub wetland, broad-leaved shrub upland, and residential and rural settings. Forages on berries (*e.g.*, American mountain-ash, serviceberry) and in spring on common apple blossoms (LB); flycatches in any open area, such as ponds, bogs, roadsides, farms, residential yards, forest clearings, and shrubby old fields. In late summer and early fall, gathers in flocks to flycatch over the waters of some sewage ponds.

Migration Dates. **SEAD**: 11 May 2002 (12, H, NAMC). **SMAD**: 26 May (n=16, 84-99 only). **SLDD**: migrants seen as late as 5 Jun 98 (see below) and apparently 10 Jun 31 (Wood, 1933). **FMDD**: 14 Sep (n=27; Dec dates not used in calculation). **FLDD**: 24 Dec 62 (30, Eagle Harbor, K, LB); see Status and Range and Significant Records.

Significant Records (all Dec-Mar).

8 Dec 96 (8) Liminga, D. Weaver.
17 Dec 89 (65) HCCBC.
18 Dec 99 (1) HCCBC.
19 Dec 87 (5) HCCBC.
14 (7, LM), 19 (9, HCCBC) Dec 98.
20 Dec 97 (24) HCCBC.
21 Dec 96 (75) HCCBC.
24 Dec 62 (30) Eagle Harbor, LB.
Dec 91, HCCBC, count week.
18 Feb 2003 (30) Chassell, H, JY.
21 Feb 2001, Houghton, JK.
28 Feb (50 birds)-2 Mar (60) 97, L'Anse, JY.
25 Mar 83, H, RH.

High Counts. **Spring** (all LB): 29 May 99 (**355**) Copper Harbor; 28 May 2003 (**271** flying west) Agate Harbor and Copper Harbor, first of spring; 30 May 2000 (**265** in 7 flocks flying west) Copper Harbor; 5 Jun 98 (**230**) Copper Harbor . **Summer**: 15 Jun 97 (**86**) H and K, LB, Bootjack BBS; 17 Jun 96 (**60**) B or H, JY; these two records might include some late migrants. **Fall**: 21 Sep 2002 (**110**) Copper Harbor, LB, Z. Gayk, RH; 6 Sep 98 (**100**) Copper Harbor, LB; 16 Aug 2001 (**90** in several flocks flying east) Copper Harbor, LB, JM; 21 Aug 97 (**65** flycatching) Calumet sewage ponds, LB. **Early winter**: multi-party, 21 Dec 96 (**75**) HCCBC; 24 Dec 62 (**30**) Eagle Harbor Christmas Bird Count, LB only. **Late winter**: 2 Mar 97 (**60**) L'Anse, JY.

Breeding (**B** 3 co, 18 pr, 9 po; **H** 9 co, 14 pr, 8 po; **K** 9 co, 9 pr).

*14 Jun 86 (occupied nest, adults making frequent visits) Ahmeek, K, LB.
17 Jun 98 (nest with lining being added) Ahmeek marsh, K, LB.
*18, 20 Jun 85 (building nest 17 ft up in maple in residential setting) Dollar Bay, H, R. E. Emmons (CLO).
*20 Jun 87 (courtship feeding) T52N, R36W, NW quarter, LB, possible breeding.
30 Jun 86 (recently made nest) Youngman's property, B, JY.
4 Jul 2003 (occupied nest) T48N, R34W, Sec. 33, B, JY.
7 Jul 2001 (building nest) Gratiot Lake, T57N, R30W, NE quarter, K, JM, M. Scheiwe.
14 Jul 2002 (building nest) Manitou Is., Sec. 20, JY.
15 Jul 2004 (nest under construction by pair) near Ahmeek, T57N, R32W, Sec. 20, K, LB, Z. Gayk.
17 Jul 2001 (both adults adding lining to nest 4 ft up in 12 ft isolated Colorado blue spruce on lawn) Dollar Bay, H, LB, JM.
16 Sep 2000 (prejuvenile perched in willow tree for an hour) Copper Harbor, LB, JM, late.

Summary: data indicate this species' normal double-broodedness (Baicich & Harrison, 1997).

BBS. *Bootjack* 67-73: 68 on 7 of 7 counts (100%); mean 9.71; range 3-23. *Bootjack* 92-2005: 421 on 14 of 14 counts

(100%); mean 30.07; range 3-86. *Herman* (Jul dates): 155 on 7 of 7 counts (100%); mean 22.14; range 10-29.

NAMC. Houghton Co.: 12 on 1 of 7 counts (14.3%); mean 1.71; range 0-12; ind/PH .04.

HCCBC. 179 on 6 of 26 counts (23.1%); mean 6.88; range 0-75; ind/PH .15.

Historical Changes (Table 17). Seemingly increasing as a winter visitant, judging from the HCCBC (all in Dec; Table 15), on which none were seen in the 11-year period 76-86, but then 179 in 6 of 15 years (40.0%; .22 ind/PH) 87-2001 (5 in 87, 65 in 89, 75 in 96, 24 in 97, 9 in 98, and 1 in 99). However, this might be correlated with mild winters or exceptional berry crops. Summer abundance seems also to have increased, judging from the Bootjack BBS, on which means jumped 210% from 9.71 in the period 67-73 to 30.07 in 92-2005. I can think of no cause for a summer increase. Eastman's statement (in Brewer *et al.*, 1991) that Wood (1951) called it "rare" in summer in the Upper Peninsula is a misquote; Wood (1951) said it was rare only *in winter*.

Remarks. Why do migrating flocks at Copper Harbor seem to fly west in spring and east in fall, as the meagre data suggest? These directions might be best for movement along what I consider its basic northwest-southeast pathway and for avoiding crossing Lake Superior; spring birds may skirt the Lake to the west, with some fall birds retracing their spring route.

Blue-winged Warbler *Vermivora pinus*

Status and Range (H). Accidental **spring** vagrant, presumably as a southern overshoot. One record, 18 May 98, a singing male seen closely in a Golden-winged Warbler colony at Arnheim, west of Unit 3, H, JY (MBNH 5: 195; Youngman & Murphy, 1999; JY, orig. notes and pers. comm.). See mention of a hybrid under Golden-winged Warbler.

Golden-winged Warbler *Vermivora chrysoptera*

Status and Range (B, H, K). Very uncommon and local **summer** resident in B and H. The longest standing colony (96-2002) is at Arnheim (B and H). No confirmed breeding for B or K. Many summer records may have involved unmated singing males. One singing male in H (15 Jun 87, T47N, R37W, SW quarter, LB) was a hybrid, being exactly like Golden-winged but with a bright yellow crescent on the breast below the black bib. **Spring** and **fall**: very rare migrant, 13-25 May, in H and K (and presumably B) outside summer localities; some of these probably are not transients (or even migrants on their way to Peninsula breeding sites), but vagrants, misoriented in fall and overshoots in spring, as K includes the northernmost points in the summer range of the species. Departs early; migrants seen 4-28 Aug.

Habitat. Breeds in scrub between open-canopied, dry deciduous forest (aspen) and edges of shrub wetland (speckled alders, sandbar willows) along open-country streams, beaver ponds, some open bogs, and wet deciduous swamp (with red maple, ash); aspens and water seem to be the constants. I have not found birds in dry shrub upland, the preferred habitat in New York (Confer *et al.*, 2003).

Migration Dates (see Significant Records for data). **SEAD**: 13 May 86 and 2000 (H, NAMC). **SMAD**: 19 May (n=9). **SLDD**: 25 May 96. **FMDD**: 17 Aug (n=6). **FLDD**: 28 Aug 98 (Arnheim, H, JY) and 2001.

Significant Records (all spring and fall migrants thought to be outside breeding localities, although those in the vicinity of the Sturgeon River Sloughs might not have been; all single birds).

13 May 86, Liminga, AW.
15 May 82, Liminga, AW.
18 May 93, Sturgeon River Sloughs, AW.
19 May 2001, near Copper Harbor, LB, JM, J. Rooks.
20 May 99 (singing male) Copper Harbor, LB.
22 May 84, Liminga, AW.
25 May 96 (female) Copper Harbor, LB.
4 Aug 77 (male) 2 mi W Eagle Harbor, K, LB.
5 Aug 75, Redridge, H, AW.
12 Aug 91, Sturgeon River Sloughs, AW.
13 Aug 98 (1) deVriendt Nature Trail, Unit 1, Sturgeon River Sloughs, AW.
17 Aug 89, North Portage Entry, H, AW.
20 Aug 84, Liminga, D. Weaver.
28 Aug 2001 (female) Dan's Point, K, LB.

Breeding (**B** 2 pr, 3 po; **H** 3 co, 6 pr, 8 po; **K** 2 po).

B, Youngman's property, 19 May-16 Jun 83 (on territory) JY; probable breeding.
B, Ford Farm Road, T51N, R32W, Sec. 23, 5 Jun 2002 (2 singing males) LB, JM, found previously by JY; probable breeding.
B, T51N, R32W, Sec. 14, 29 May 2002 (2 birds) JY; possible breeding.
B, T52N, R33W, Sec. 9, 9 Jun 2002 (singing male) JY; possible breeding.
B, T50N, R35W, Sec. 10, 29 May 2005 (singing male) LB, JM; possible breeding.
H, T50N, R35W, Sec. 9, 29 May 2005 (singing male) LB, JM; same wetland as above entry; possible breeding.
H, Arnheim, west of Unit 3, summers 96-97, 99-2001 (up to 6 on territory in colony) JY; probable breeding for five years.
H, Arnheim, 21 Jul 98 (prejuvenile begging from two adults) JY; same colony as next above.
H, west of Chassell, T53N, R34W, NE quarter, 31 Jul 90 (female) LB; possible breeding.
H, T53N, R33W, E half Sec. 16 (1), W half Sec. 16

(1) 19 Jun 2005 (both singing males) JY; both possible breeding.

H, T53N, R33W, Sec. 28, 10 Jul 2002 (carrying food) JY.

H, .5 mi N Oskar, 19 Jun 99 (singing male) LB, JM; possible breeding.

H, near Boston, T55N, R34W, Sec. 23, 3 Jul 2000 (singing male) LB, JM; possible breeding.

H, near Boston, T55N, R33W, Sec. 6, 17 Jun 88 (2 singing males) LB; possible breeding.

*H, near Boston, T55N, R33W, Sec. 7, 20 Jun 88 (male carrying food) LB.

H, Sturgeon River Sloughs, 22 Jun 2001, TA; possible breeding.

*H, T47N, R37W, SW quarter, 15, 25 Jun 87 (2 males on territory, plus male "Lawrence's"), LB; probable breeding.

K, near Ahmeek, Cliff Drive 1 mi E Seneca Lake (1 singing male each day): 6 Jun 99, LB; 13 Jun 87, LB; 16 Jun 98, D. McWhirter; 19 Jun 86, LB; not counted as breeding. These records for 86 and 87 resulted in a spot for probable on the MBBA map (1991); however, no females were ever seen, and the males soon disappeared (LB), so the records should be reduced to "observed"; records for 98 and 99 were also unmated singing males and are thus also considered simply "observed."

K, near Ahmeek, T57N, R32W, Sec. 18 (1 singing male each day): 11 Jun 95, LB; 23 Jun 96, LB; both possible breeding.

High Counts. **Summer** (at breeding colony): 19 May 99 (**6**) Arnheim, west of Unit 3, H, JY.

BBS. *Bootjack* 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1. *Herman*: 1 on 1 (5 Jul 97) of 7 counts (14.3%); mean .14; range 0-1.

NAMC. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Historical Changes (Table 17). In Michigan this species was formerly restricted to the southern half of the Lower Peninsula (Barrows, 1912). Zimmerman & Van Tyne (1959) listed only 6 records for the Upper Peninsula. None of the early authors mentioned it for the Keweenaw, where the earliest records (see Significant Records) were of seeming migrants (spring overshoots?) in 1973-77. The first summer record was in 81. This is a typical pattern for an invading species, with vagrancy preceding residency. Summering has increased slowly since 86 and shows no sign of abating. Theoretically, Golden-wings have been displaced northward as a result of competition with the northward expanding Blue-winged Warbler, and it has been suggested that the former may lose its identity (and become extinct) in 50 or 60 years due to swamping by introgression of Blue-wing genes (see R. B. Payne in Brewer *et al.*, 1991); forebodingly, a hybrid was recorded in the Keweenaw in 87 and the first "pure" Blue-wing in 98. Payne further suggested a cause-effect relationship between the clearing of northern virgin forests, with subsequent deciduous regrowth, and the northward spread of the Golden-wing. Rather, I suggest that suitable natural habitats, such as aspens at the edges of bogs, beaver ponds, and deciduous swamps, existed, at least in the Keweenaw, long before logging commenced, and that the warbler spread north because of other, more recent, factors, perhaps competition with the Blue-wing or global warming (both suggested by Payne). If the latter, we can be more optimistic, because Golden-wings have already proven to be better adapted to a more northerly environment, and even if displaced may simply respond to the same climatic warming that has allowed expansion of the Blue-wing and continue indefinitely to move northwestward along the transition forest belt, where suitable habitat is available. Also, in some localities in the US, the two species coexist without interbreeding, and perhaps this will happen in the Keweenaw; continual monitoring is needed.

Tennessee Warbler *Vermivora peregrina*

Status and Range (B, H, K). **Spring**: uncommon transient throughout. The extremely narrow migration window during individual years can easily cause an observer to miss this species in spring. **Summer** occurrence appears to be correlated with cyclic outbreaks of the spruce budworm (see L. C. Binford in Brewer *et al.*, 1991). From 86 to 90, during the height of a widespread Keweenaw infestation, the Tennessee was very sparsely scattered throughout the Peninsula and considered (LB) very uncommon. Since then (through 2005), however, it has been only occasional. Because the former period included the last three years (86-88) of the MBBA (1991) surveys, the Atlas map gives a false picture of today's status. There is no confirmed breeding record for the Peninsula; most birds seem to have been unmated singing males. The picture is further confused by movements of local wanderers or early fall transients (most were singing as they moved) into non-breeding localities and habitats as early as the first week of Jul (*e.g.*, 1 Jul 87, 7 Jul 89, 10 Jul 90, all Agate Harbor, LB) and occasionally even the last week of Jun (28 Jun 87, T50N, R36W, NW quarter, singing male along a farmland fencerow, LB). In the more recent period, 4 singing males that capitalized on a local infestation of *Tortrix* caterpillars .5 mi W Esrey Park (K) on 11 Jul 98 were gone by 17 Jul (LB); see High Counts, 10 Jul 2003. **Fall**: see Summer. Common, irregularly and locally very common, transient throughout. Migration period much more prolonged than in spring, with singles occasionally to mid Oct. Some Jul birds probably

are transients (see above), as this species may occur even in southern MI during that month.

Habitat. In summer, prefers wet coniferous forest bogs dominated by black spruce but with some tamarack and northern white-cedar, and sometimes white birch, quaking aspen, and speckled alder; the ground is covered by sphagnum moss, grass hummocks, and scattered shrubs. Rarely, Tennessees occur in boggy shrub wetland composed of speckled alders and sandbar willows. Singing males, probably unmated, have been seen in dry and wet mixed forests. Found in a variety of habitats during migration, foraging from ground to tree tops, and may become concentrated at caterpillar infestations.

Migration Dates. **SEAD**: 10 May 2001 (Farmer's Block Road near Ahmeek, K, RH). **SMAD**: 20 May (n=21). **SP**: about 22 May. **FEAD**: see Status and Range. **FP**: numbers escalate in mid Aug to a peak in the last week of Aug and first week of Sep (see High Counts). **FMDD**: 23 Sep (n=16). **FLDD**: 18 Oct 95 (Copper Harbor, LB).

High Counts. **Spring**: 20 May 99 (**10**) Copper Harbor, LB. **Summer**: 10 Jul 2002 (**5** singing males) T53N, R33W, Sec. 28, H, JY; apparently wanderers, see Status and Range. See Summer. **Fall**: 4 Sep 2001 (**22**) Agate Harbor to Devil's Washtub, K, LB; 30 Aug 2005 (**15**) Copper Harbor, T. Auer, LB; 31 Aug 80 (**15**) Agate Harbor, LB.

Breeding (**B** 3 po; **H** 1 pr, 6 po; **K** 1 pr, 2 po).

*3, 16 Jul 86 (singing male on territory) Cliff Drive west of Phoenix, T57N, R32W, Sec. 1 or 2, K, LB, probable breeding.

*11 Jul 87 (pair) T54N, R33W, NW quarter, H, LB, probable breeding.

BBS. *Bootjack* 67-73: 4 on 1 of 7 counts (14.3%); mean .57; range 0-4. *Bootjack* 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1. *Herman*: 2 on 2 of 7 counts (25.6%); mean .29; range 0-1; 3 Jul 93 and 5 Jul 97, so could have been wanderers or transients.

NAMC. *Baraga Co.*: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004.

Historical Changes. See Status and Range above and Historical Changes in Discussions, including Table 17.

Orange-crowned Warbler *Vermivora celata*

Status and Range (B, H, K). Uncommon **spring** and **fall** transient, presumably throughout, but most records are for north coast of K. Does not linger in spring, and in fall is the latest warbler to arrive and one of the the latest to leave; the only warbler with no Jun or Aug records. Probably overlooked by many observers as an unidentifiable "confusing fall warbler."

Habitat. Forages on ground and in weeds, shrubs, and short trees in forest clearings and edge. In spring, especially attracted to flowers of trees and shrubs.

Migration Dates. **SEAD**: 1 May 2001 (Brockway Mt., K, JK, L. Dombroski). **SMAD**: 16 May (n=11). **SP**: about 22 May. **SMDD**: 25 May (n=7). **SLDD**: 30 May 97 (Copper Harbor, LB). **FEAD**: 1 Sep 63 and 13 Sep 88 (both Agate Harbor, LB). **FMAD**: 18 Sep (n=8). **FP**: last week of Sep. **FMDD**: 13 Oct (n=8). **FLDD**: 23 Oct 2002 (Copper Harbor, D. Lovitch, MBNH 10: 82).

High Counts. **Spring**: 24 May 97 (**12**) Copper Harbor plus Agate Harbor, LB, exceptional.

NAMC. *Baraga Co.*: 3 on 2 of 6 counts (33.3%); mean .50; range 0-2; ind/PH .01. *Houghton Co.*: 2 on 2 of 7 counts (28.6%); mean .29; range 0-1; ind/PH .01.

Nashville Warbler *Vermivora ruficapilla*

Status and Range (B, H, K). **Spring**: very common, some days abundant, transient throughout. Whether transients extend into early Jun, as with many other warblers, is unknown because of confusion with summer residents. **Summer**: very common resident throughout. Because of its loud persistent song, is the second most detectable warbler next to Ovenbird and in reality probably the most abundant. Recorded in 68 of the 77 censused townships (MBBA map 1991) but certainly occurs in all because of its broad habitat tolerance. Most abundant breeding species on Manitou Is., with 33 recorded on 19 of 22 point counts in 2002 (Youngman, 2002) and 19 singing males in Secs. 16 and 21 in 2003 (JY); see also High Counts. **Fall**: very common transient throughout.

Habitat. Breeds in a wider variety of forests than any other warbler, but prefers conifers. Most abundant in closed canopy, wet coniferous forest (black spruce-tamarack, northern white cedar), but common also in wet/mesic mixed forest and regular in dry coniferous forest (red pine, jack pine) and dry mixed forests (red pine-red oak). Requires dense undergrowth for ground nest, but forages in middle canopy. Commonly forages in weeds and shrubs near ground when food scarce in early spring and late fall. Both nests I have seen were small cups well concealed on the sides of one-foot hummocks, one overhung by a tuft of live grass and the other by ferns.

Migration Dates. **SEAD**: 30 Apr 2001 (Copper Harbor, LB). **SMAD**: 14 May (n=27). **SP**: about 17 May. **FP**: last week of Aug and first week of Sep. **FMDD**: 15 Sep (n=21). **FLDD**: 23 Oct 99 (6 mi SE Chassell, H, LM, JY); 10 Oct 93 (Copper Harbor, LB).

High Counts. **Spring**: multi-party, 12 May 2001 (**87**) B, NAMC; same census (**53**) LB and JM only. **Summer**: 18 Jun 91 (**40**, all singing males) K, LB; 15 Jun 2003 (**35**) H and K, LB, JM, Bootjack BBS; 30 Jun 2003 (**31**) Manitou Is., B. Johnson, L. Usyk, JY. **Fall**: 4 Sep 2001 (**24**) Agate Harbor to Devil's Washtub, K, LB.

Breeding (**B** 8 co, 11 pr, 12 po; **H** 9 co, 8 pr, 12 po; **K** 6 co, 5 pr, 2 po).

8 Jun 98 (carrying food) Arnheim, B or H, LM, not in above summary.
*13 Jun 88 (carrying food) T49N, R32W, NW quarter, B, LB.
*19 Jun 86 (flushed female giving distraction display) Seneca Lake, K, LB.
20 Jun 56 (carrying food) T50N, R34W, Sec. 20 or 29, B, LB.
20 Jun 56 (nest with 5 young all hatched today) T50N, R34W, Sec. 9, B, LB.
*23 Jun 88 (distraction display) T51N, R31W, NW quarter, B, LB.
*25 Jun 86 (distraction display) 2 mi W Eagle Harbor, K, LB.
*28 Jun 86 (nest with 5 eggs) Agate Harbor, LB.
4 Jul 2003 (carrying food) T48N, R34W, Sec. 33, B, JY.
5 Jul 2004 (carrying food) T49N, R34W, Sec. 10, B, JY.
10 Jul 2002 (carrying food) T53N, R33W, Sec. 28, H, JY.
*11 Jul 86 (carrying food) SW of Delaware, T58N, R30W, SW quarter, K, LB.

BBS. *Bootjack* 67-73: 75 seen on 7 of 7 counts (100%); mean 10.71; range 6-16. *Bootjack* 92-2005: 335 on 14 of 14 counts (100%); mean 23.93; range 12-35. *Herman*: 67 on 7 of 7 counts (100%); mean 9.57; range 1-18.

NAMC. *Baraga Co.*: 242 on 6 of 6 counts (100%); mean 40.33; range 1-87; ind/PH .94. *Houghton Co.*: 33 on 6 of 7 counts (85.7%); mean 4.71; range 0-15; ind/PH .12. The difference between these two counts reflects the greater abundance of conifers in B.

Historical Changes (Table 17). The 123% increase in mean birds per count on the Bootjack BBS between the period 67-73 (10.71) and 92-2005 (23.93) probably reflects normal succession from shrublands to forest and the maturation of second growth forest, especially conifers, after the mining era.

Northern Parula *Parula americana*

Status and Range (B, H, K). Fairly common **summer** resident, numbers only slightly augmented by **spring** and **fall** transients. In summer avoids much of northern H, where upland deciduous forest and farmland prevail (MBBA map 1991); otherwise widespread, but perhaps most abundant where summer fog contributes to the lushness of *Usnea* lichen, such as on the coast of K and in low-lying interior valleys.

Habitat. Restricted to habitats with the hanging lichen *Usnea* sp. in which it builds its nest. As this lichen is mostly associated with humid environments and conifers, so is the warbler, which prefers wet/mesic mixed forest (including those in which the primary conifer is eastern hemlock), and secondarily mesic coniferous forest and dense wet coniferous forest with northern white-cedar, black spruce, and tamarack.

Migration Dates. **SEAD**: 2 May 2001 (Copper Harbor, R. Brigham). **SMAD**: 17 May (n=12). **SP**: low peak about 18 May. **SLDD**: migrants have been seen as late as 7 Jun 96 (Copper Harbor, LB). **FMDD**: 15 Sep (n=10). **FLDD**: 7 Oct 2001 (tip of Pt. Abbaye, B, JY); 27 Sep 2002 (Agate Harbor, LB); 25 Sep 96 (Agate Harbor, LB).

High Counts. **Spring**: multi-party, 12 May 2001 (**12**) B, NAMC; 29 May 99 (**10**) Huron Bay, B, LM. **Summer**: 18 Jun 99 (**8**) K, LB. **Fall**: 11 Sep 2001 (**6**) Pt. Abbaye, B, B. St.Clair (pers. comm.).

Breeding (**B** 1 co, 7 pr, 13 po; **H** 2 co, 2 pr, 14 po; **K** 5 co, 5 pr, 7 po).

17 Jun 86 (carrying food) near Lac La Belle, K, LB.
1 Jul 99 (nest with young) Ft. Wilkins State Park, Copper Harbor, LB, A. and N. Craig.
17 Aug 2002 (female feeding prejuveniles) Agate Harbor, K, LB; see below.
21 Aug 2003 (female twice fed full-sized juvenile) Copper Harbor, LB, considered confirmed breeding.
Note: confirmation at Rabbit Bay, H (MBBA map 1991) was an adult feeding a prejuvenile Brown-headed Cowbird in Jul 87 or 88 (LB). Said to be "probably" single-brooded (Baicich & Harrison, 1997), so the 17 and 21 Aug records were probably a renestings.

BBS. *Bootjack* 67-73: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2. *Bootjack* 92-2005: 14 on 9 of 14 counts (64.3%); mean 1.00; range 0-4. *Herman*: 17 on 5 of 7 counts (71.4%); mean 2.43; range 0-4.

NAMC. *Baraga Co.*: 9 on 2 of 3 counts; mean 3.00; range 0-8; ind/PH .06.

Historical Changes. The Bootjack BBS suggests a 245% increase from the period 67-73 to 92-2005, presumably because of the maturation of forests (in this case conifers), as with several other warblers.

Yellow Warbler *Dendroica petechia*

Status and Range (B, H, K). **Summer**: fairly common resident, its range and abundance, like most species, tied to its uncommon habitat—shrub wetland with willows, which is scarce in heavily forested regions such as southeastern K, western H, and much of southern B (MBBA map 1991), but more common in open agricultural lands of northern H and B. **Fall**: very rare after mid Aug. Breeding birds leave in Jul and early Aug, and transients, if any, presumably pass through undetected at the same time (more data needed). Latest record 10 Sep, except for one surprise on 19 Oct; the latter might have been the race *amnicola*, said to migrate much later than the breeding *aestiva* (Dunn & Garrett, 1997). Why

this particular warbler should be the earliest to leave is a mystery, particularly when it arrives at a normal time in spring.

Habitat. In my Keweenaw experience, the Yellow Warbler in summer is restricted to sandbar willows at the edges of creeks, marshes, and shallow ponds, although it occupies other habitats elsewhere in its range.

Migration Dates. **SEAD**: 2 May 2001 (Copper Harbor, R. Brigham). **SMAD**: 18 May (n=27). **SP**: about 25 May. **SLDD**: migrants have been seen as late as 7 Jun 96 (Copper Harbor, LB). **FEAD**: probable transients (or local wanderers) have been seen as early as 8 Aug 98 (Agate Harbor, LB). **FLDD**: 19 Oct 98 (3 mi W Copper Harbor, LB, see above); 10 Sep 90 (Liminga, AW).

High Counts. **Spring**: multi-party, 13 May 2000 (**10**) B, NAMC; 19 May 2001 (**9**) Copper Harbor, LB, JM. **Summer**: 25 Jun 2000 (**14**) Arnheim, B and H, LM, JY.

Breeding (**B** 3 pr, 12 po; **H** 5 co, 1 pr, 5 po; **K** 2 co, 2 pr, 4 po).

*9 Jul 88 (carrying food) Cat Harbor, K, LB.

17 Jul 2002 (carrying food) Ahmeek marsh, K, LB, JM.

*21 Jul 88 (feeding large prejuvenile) .5 mi N Oskar, T55N, R34W, Sec. 8, H, LB.

BBS. *Bootjack* 67-73: 5 on 2 of 7 counts (28.6%); mean .71; range 0-3. *Bootjack* 92-2005: 7 on 7 of 14 counts (50.0%); mean .50; range 0-1. *Herman*: 32 on 7 of 7 counts (100%); mean 4.57; range 1-10; Jul dates of counts explain greater abundance than Bootjack.

NAMC. *Baraga Co.*: 19 on 2 of 6 counts (33.3%); mean 3.17; range 0-10; ind/PH .07. *Houghton Co.*: 12 on 3 of 7 counts (42.9%); mean 1.71; range 0-8; ind/PH .04.

Chestnut-sided Warbler *Dendroica pensylvanica*

Status and Range (B, H, K). **Summer**: common resident throughout, recorded in 69 of 77 censused townships (MBBA map 1991) and probably occurs in all 83. **Fall**: here termed fairly common, but some years uncommon, from Jul into first week of Sep, transients apparently being scarce; only casual thereafter. Peninsula data indicate early departure, with a median date of 24 Aug, the fourth earliest of all warblers, and a normal extreme departure date of 11 Sep, the seventh earliest. In these regards, somewhat similar to Yellow Warbler, except Chestnut-sided remains a bit later. More data needed.

Habitat. Prefers broad-leaved, deciduous shrub upland and dense, brushy forest edge, including clearings, wide roadcuts, and large thimbleberry patches. In my opinion, the forest type adjacent to the brushy opening is unimportant except as it affects the characteristics of the edge. I do not consider it a regular inhabitant of shrub wetland, which is more the province of the Yellow Warbler (if willows present), but it does occur occasionally in drier parts.

Migration Dates. **SEAD**: 6 May 2000 (Copper Harbor, LB, JM). **SMAD**: 18 May (n=28). **SP**: about 24 May. **SLDD**: migrants have been seen as late as 7 Jun 96 (Copper Harbor, LB). **FMDD**: 24 Aug (n=11). **FLDD**: 29 Sep 96 (Agate Harbor, LB); 11 Sep 77 (Liminga, AW).

High Counts. **Summer**: 2 Jul 1971 (**37**) H and K, B. and D. Wolck, Bootjack BBS; 23 Jun 96 (**17**) H and K, LB, Bootjack BBS.

Breeding (**B** 6 co, 16 pr, 8 po; **H** 10 co, 10 pr, 9 po; **K** 11 co, 2 pr, 3 po).

*10 Jun 88 (carrying food) T47N, R33W, SW quarter, B, LB.

11 Jun 96 (nest under construction) Phoenix, K, LB, nest 1 ft up in dense deciduous shrub in mowed edge between forest and road track.

*16 Jun 86 (carrying food) Copper Falls, K, LB.

*23 Jun 86 (carrying food) near Ahmeek, K, LB.

*27 Jun 88 (carrying food) T50N, R35W, NE quarter, B, LB.

*28 Jun 87 (carrying food) T50N, R36W, NW quarter, H, LB.

4 Jul 96 (carrying food) east end of highway US 41 near Copper Harbor, LB.

*7 Jul 86 (carrying food) Central Lake, near Central, K, LB.

*9 Jul 87 (carrying food) T55N, R35W, SW quarter, H, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

12 Jul 82 (adult feeding prejuvenile Brown-headed Cowbird) Youngman's property, B, JY.

28 Jul 97 (carrying food) Lake Manganese, near Copper Harbor, LB.

31 Jul 90 (carrying food) T53N, R34W, NE quarter, H, LB.

1 Aug 2002 (carrying food) T51N, R32W, Sec. 22, B, LM.

Summary: dependent young (either in or out of nest) normally present 10 Jun-12 Jul; dates of 28 Jul, 31 Jul, and 1 Aug probably represent renestings rather than second broods.

BBS. *Bootjack* 67-73: 178 on 7 of 7 counts (100%); mean 25.43; range 14-37. *Bootjack* 92-2005: 126 on 14 of 14 counts (100%); mean 9.00; range 5-17. *Herman*: 55 on 7 of 7 counts (100%); mean 7.86; range 2-14.

NAMC. *Baraga Co.*: 8 on 3 of 6 counts (50.0%); mean 1.33; range 0-4; ind/PH .03. *Houghton Co.*: 5 on 1 of 7 counts (14.3%); mean .71; range 0-5; ind/PH .02.

Historical Changes (Table 17). J. Reinoehl (in Brewer *et al.*, 1991) suggested that "the maturation of forests could lead to a decline in numbers" for this broad-leaved shrub upland species. This appears to be the case

in the Keweenaw, where numbers on the Bootjack BBS declined 65% from 25.43 birds per count in 67-73 to 9.00 in 92-2005.

Magnolia Warbler *Dendroica magnolia*

Status and Range (B, H, K). Common **summer** resident throughout, numbers augmented by **spring** and **fall** transients, but not enough to raise average detectability.

Habitat. Breeds in the densest, darkest habitat of any Keweenaw warbler except perhaps Bay-breasted Warbler. Confined largely to mesic/wet mixed forest and mesic and wet coniferous forests that have very dark, dense clumps of young (regenerating) black spruce and especially balsam fir in the understory, where foraging and nesting take place. Also, secondarily, in dense balsam fir patches within dry deciduous forest. The understory of undisturbed mature forests is too sparse (see Historical Changes).

Migration Dates. **SEAD**: 8 May 99 (Covington, B, LB). **SMAD**: 17 May (n=27). **SP**: about 22 May. **SLDD**: migrants have been seen as late as 7 Jun (Copper Harbor, LB). **FP**: protracted, embracing first half of Sep. **FMDD**: 23 Sep (n=10, K only). **FLDD**: 28 Sep 86 and 96 (both Agate Harbor, LB).

High Counts. **Spring**: 22 May 2002 (**20**) Agate Harbor to Copper Harbor, LB, JM; 19 May 2001 (**11**) Copper Harbor, LB, JM. **Summer**: 18 Jun 91 (**20** singing males), Pt. Isabelle area, K, LB. **Fall**: 4 Sep 96 (**8**) Agate Harbor, LB.

Breeding (**B** 1 co, 5 pr, 15 po; **H** 2 co, 1 pr, 19 po; **K** 4 co, 6 pr, 5 po).

*23 Jun 88 (carrying food) T51N, R31W, NW quarter, B, LB.

*15 Jul 86 (carrying food) 2 mi SE Central, K, LB.

16 Jul 2002 (carrying food) Manitou Is., JY.

BBS. *Bootjack* 92-2005: 54 on 14 of 14 counts (100%); mean 3.86; range 1-7. *Herman*: 21 seen on 7 of 7 counts (100%); mean 3.00; range 1-5.

NAMC. *Baraga Co.*: 11 on 4 of 6 counts (66.7%); mean 1.83; range 0-4; ind/PH .04. *Houghton Co.*: 4 on 3 of 7 counts (42.9%); mean .57; range 0-2; ind/PH .01.

Historical Changes (Table 17). The increase in birds per count on the Bootjack BBS from the period 67-73 (none seen) to 92-2005 (mean 3.86) I attribute to forest maturation. Peterjohn *et al.* (1996) demonstrated a 1.7% per year national increase 66-95. Many Keweenaw forests today are in the perfect stage for Magnolias—not too young as to be unshaded and not too mature as to have an open understory. Its preferred dense patches of young fir and spruce is undesired by the logging industry.

Remarks. My record for a late migrant at Copper Harbor on 5 Jun 98 was mistakenly attributed to Mackinac Co., MI, in MBNH 6: 46.

Cape May Warbler *Dendroica tigrina*

Status and Range (B, H, K). **Spring**: fairly common transient. **Summer**: very uncommon and local resident, occupying little of its spruce habitat. Largely absent from farming and urbanized districts of H and northwestern half of B, and most numerous in K. The Cape May is somewhat of a spruce budworm specialist, being more abundant during outbreaks of this caterpillar. However, during one such episode—the late 80s and early 90s—it became only slightly more numerous in the Keweenaw and never bred at heavily infested Agate Harbor. Also, today it inhabits some localities that have no such infestations. Nevertheless, temporary periodic increases in both worms and birds may be expected. **Fall**: common transient. Birds that frequently appear outside breeding localities as early as 19 Jul probably are local unmated males or failed breeders, whereas probable transients arrive as early as mid Aug. Lingers later than most warblers. **Early winter**: accidental; 2 records of single lingerers at feeders, 11 Nov 93 (Traprock Valley, H, D. Hennessy, photo of male seen by AW and LB); 15-16 Dec 2001 to mid Jan 2002 (near Baltic, H, B. Deephouse, RH, photos by JK in LB files, HCCBC; MBNH 9: 167).

Habitat (L. C. Binford in Brewer *et al.*, 1991). In breeding season, nearly restricted to wet coniferous forest bogs with stands of mature (*i.e.*, over 30 ft) black spruce, in which it sings, feeds, and nests. Other trees, such as tamarack, balsam fir, and northern white-cedar, even some hardwoods, may be intermixed, but probably are not a requisite. Occasionally breeds in mesic mixed forest containing isolated mature white spruce. Although migrants may be found in deciduous trees, especially flowering ones, they favor tall spruce and balsam fir if available (LB).

Migration Dates. **SEAD**: 3 May 62 (Houghton, J. Weber; JPW 41: 36). **SMAD**: 14 May (n=20). **SP**: low peak about 19-26 May. **SLDD**: migrants have been seen as late as 7 Jun 96 (Copper Harbor, LB). **FEAD**: migrants or local wanderers occur as early as 19 Jul 88 (2 mi NNE L'Anse, LB). **FMDD**: 23 Sep (n=8). **FLDD**: 28 Oct 2002 (1, Sand Point, Baraga, RH); 17 Oct 2000 (2, Copper Harbor, LB); 14 Oct 95 (Copper Harbor, LB); see Status and Range.

High Counts. **Spring**: 24 May 97 (**22**) Copper Harbor plus Agate Harbor, LB; 22 May 2002 (**15**) Agate Harbor to Copper Harbor, LB, JM. **Summer**: 22 Jun 95 (**6**) near Phoenix, K, LB. **Fall**: 4 Sep 96 (**12**) Agate Harbor, LB.

Breeding (**B** 5 po; **H** 1 co, 3 po; **K** 2 co, 5 po).

17 Jun 91 (carrying food) Sotola Road, south of Delaware, K, LB.

Note: the easternmost confirmation in K on the MBBA map (1991) should be reduced to

possible.

BBS. *Bootjack* 92-2005: 19 on 8 of 14 counts (57.1%); mean 1.36; range 0-6; unrecorded 2001-2005.

NAMC. *Baraga Co.*: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004. *Houghton Co.*: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Historical Changes (Table 17). The increase on the Bootjack BBS from the period 67-73 (no birds) to 92-2005 (mean 1.36) probably reflects the maturation of black spruce at the few stops where it grows, plus a temporary increase in spruce budworm abundance; however, unrecorded 2001-2005.

Black-throated Blue Warbler *Dendroica caerulescens*

Status and Range (B, H, K). Fairly common, very locally common, **summer** resident in heavily forested regions of K and southeastern half of B; in H, very scarce in farming districts of entire northern third and uncommon elsewhere, because of habitat scarcity. In places seems almost "colonial" (but pairs are well-spaced) because of the current scarcity of suitable mature maple forest due to "selective" overlogging of the big canopy trees. One of the least often encountered warblers on migration, very rare in **spring** and very uncommon, irregularly fairly common, in **fall**; that this is the opposite of relative detectabilities at Whitefish Point (Granlund & Byrne, 1996), I attribute to Whitefish being closer to the species' primary southern and northeastern breeding range, but iin the Keweenaw even breeding birds seem to appear on territory without being detected in transit. Fall 2001 produced more birds than normal.

Habitat. Breeds most abundantly in mature (trees 1-3 ft DBH) mesic deciduous forest heavily shaded by a high closed canopy and with an open understory of short trees and at least scattered (sometimes dense) patches of shrubs and seedling trees. Sugar maple is the dominate tree and may be in pure stands or mixed with other northern hardwoods such as yellow birch and red oak. Less numerous in mesic mixed forest, where northern hardwoods are interspersed with eastern hemlock, balsam fir, and eastern white pine. May feed in adjacent tiny clearings. Essentially absent from woodlots, which are either too small or too immature.

Migration Dates. **SEAD**: 8 May 2004 (male) 2 mi NE Covington, B, LB, Z. Gayk. **SMAD**: 21 May (n=11). **SLDD**: 29 May 2003 (singing male that left) Agate Harbor, LB. **FLDD**: 27 Sep 99 (6 mi SE Chassell, H, LM; MBNH 7: 117).

High Counts. **Spring**: multi-party, 12 May 2001 (**6**) B, NAMC. **Summer**: 18 Jun 99 (**11**, all singing males) road from Gratiot Lake to Brunette Park, K, LB, JM. **Fall**: 21 Aug 65 (**4**) in town of Lac La Belle, LB.

Breeding (**B** 3 pr, 13 po; **H** 6 po; **K** 2 co, 3 pr, 5 po).

9 Jul 2001 (nest with 4 eggs) south side of Gratiot Lake, T57N, R30W, NE quarter, K, shown to LB by JM and M. Scheiwe (Musser, 2001).

10 Jul 95 (male carrying food) 2 mi W Gratiot Lake, T 57N, R31W, Sec. 12, K, LB.

14 Jul 2004 (1 begging prejuvenile) T53N, R35W, Sec. 2, H, JY.

Note: the confirmed breeding for K on the MBBA map (1991) should be reduced to probable.

BBS. *Herman*: 17 on 6 of 7 counts (85.7%); mean 2.43; range 0-7.

NAMC. *Baraga Co.*: 6 on 1 of 6 counts (16.7%); mean 1.00; range 0-6; ind/PH .02. *Houghton Co.*: 3 on 1 of 7 counts (14.3%); mean .43; range 0-3; ind/PH .01.

Historical Changes. The Black-throated Blue Warbler may be reaching its modern nadir in the Keweenaw, as the extensive mesic deciduous and mesic mixed forests have been logged repeatedly over a long period of years to selectively remove the largest canopy trees available at the time, leaving unsuitable open-canopied forest or even second growth, but older data are insufficient to show any trend.

Yellow-rumped Warbler *Dendroica coronata*

Status and Range (B, H, K). **Spring**: very common transient. Each year a few arrive in the first three weeks of Apr, but normal arrival is not until the last week; remains very common through the third week of May, an interesting finding given it is the earliest warbler to arrive. **Summer**: common resident throughout. Because of its abundance on migration, one might expect it to be the commonest breeding warbler, but my data indicate it is about the seventh, at least partly because of its *relative* inconspicuousness and its restriction to forests with conifers. Very common **fall** transient, some days abundant. A trans-lake migrant (see Remarks). **Winter**: casual visitant, apparently attempting to overwinter. Two records: 14 and 18 Dec 2000 (1) MTU campus, Houghton, LM, HCCBC count week; 20 Jan 80 (1 at feeder) B, M. Hanson (JPW 58: 90).

Habitat. In summer, requires forest with conifers. Although probably most abundant in mesic mixed forest, occurs in all types of mixed and conifer forests. One of the few warblers to tolerate dry mixed and dry coniferous forests. During migration, forages in most any forest or shrub habitat. Flycatches and often feeds on berries, behaviors which may allow it to survive the harsh climates of early spring, when ground juniper fruit is still available and certain flying insects emerge, and late fall, when berries are plentiful.

Migration Dates (see also Status and Range). **SEAD**: 6 Apr 97 (Hancock, RH). **SMAD**: 26 Apr (n=28).

FEAD: migration begins by at least mid Aug, with some evidence of movement in late Jul (more data needed). **FP**: protracted, from late Aug through early Oct, after which numbers drop quickly to an abrupt end about 12 Oct. **FMDD**: 12 Oct (n=25). **FLDD**: 11 Nov 99 (1, MTU campus, Houghton, LM; MBNH 7: 17); 5 Nov 2001 (1, Hancock campground, RH); see Winter.

High Counts. **Spring**: 9 May 2005 (**150**) Calumet sewage ponds, JK; 22 May 2002 (**100**) Agate Harbor to Copper Harbor, LB, JM; 24 May 97, Arnheim, B and H, JY (**89**), and Agate Harbor plus Copper Harbor, LB (**80**); note same date, which if combined, produces an exceptional multi-party total of **169**. **Summer**: 23 Jun 96 (**11**) H and K, LB, Bootjack BBS. **Fall**: 8 Oct 96 (**130**) Arnheim, B, LB, exceptional; 2 Sep 2000 (**48**) Agate Harbor to Copper Harbor, LB, JM; 27 Sep 95 (**40**) Calumet sewage ponds, LB; 14 Sep 2001 (**34**) Dan's Point to end of highway US 41, K, LB.

Breeding (**B** 12 co, 8 pr, 11 po; **H** 9 co, 8 pr, 11 po; **K** 15 co, 5 pr).

17 May 88 (carrying nest material) Lake Bailey, K, LB.

24 May (carrying nest material), 9 Jun (adult flushed from completed nest) 2004, T49N, R34W, Sec. 23, B, JY

*9 Jun 88 (carrying food) T48N, R33W, SW quarter, B, LB.

*13 Jun 88 (carrying food) T49N, R32W, NW quarter, B, LB.

*14 Jun 88 (carrying food) T50N, R32W, NE quarter, B, LB.

17 Jun 86 (carrying food) near Lac La Belle town, K, LB.

*17 Jun 86 (carrying food) Pt. Isabelle, K, LB.

18 Jun 95 (nest) Baraga Plains, T49N, R34W, Sec. 10, JY.

*22 Jun 88 (carrying food) T52N, R30W, NE quarter, B, LB.

*23 Jun 88 (adult feeding prejuvenile Brown-headed Cowbird)) T51N, R31W, NW quarter, B, LB.

2 Jul 99 (carrying food) near Delaware, K, LB.

8 Jul 2001 (carrying food) Gratiot Lake, T57N, R30W, NW quarter, K, JM, M. Scheiwe.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

16 Jul 56 (carrying food) Agate Harbor, LB.

*18 or 19 Jul 88 (carrying food) Sand Point, Baraga, LB.

19 Jul 94 (carrying food) 2 mi E Copper Harbor, LB.

25 Jul 2001 (carrying food) Agate Harbor, JM.

30 Jul 89 (adult feeding prejuvenile) Rabbit Bay, H, LM.

24 Aug 97 (adults feeding prejuvenile) Bear Lake Trail , McLain State Park, H, LM.

Summary: normal breeding cycle, about 17 May (nest building) to 30 Jul (prejuvenile), plus Aug record suggest double-broodedness, which it sometimes is (Baicich & Harrison, 1997).

BBS. *Bootjack* 67-73: 9 on 4 of 7 counts (57.1%); mean 1.29; range 0-4. *Bootjack* 92-2005: 74 on 14 of 14 counts (100%); mean 5.29; range 2-11. *Herman*: 22 on 6 of 7 counts (85.7%); mean 3.14; range 0-5.

NAMC. *Baraga Co.*: 392 on 6 of 6 counts (100%); mean 65.33; range 34-110; ind/PH 1.52. *Houghton Co.*: 335 on 7 of 7 counts (100%); mean 47.86; range 19-85; ind/PH 1.20.

HCCBC. None on count, but 1 seen during count week, Dec 2000.

Banding Recoveries. Three hatching-year birds banded and recovered, respectively, as follows, indicate a southeastward fall migration: PA 1 Oct 72, B 9 Jun 75; B 8 Aug 74, OH 7 Oct 74; and B 26 Aug 74, central Lower Peninsula, MI, 5 Oct 74. Another hatching-year bird, banded in B 1 Aug 73 and recovered in WI 20 Oct 73, demonstrates southward fall migration.

Historical Changes (Table 17). Pardieck & Sauer (2000) found a .6% per year national increase, 66-99. Data from the Bootjack BBS are even more striking, demonstrating an increase of 310% between the periods 67-73 (1.29 birds per count) and 92-2005 (5.29). I attribute this to forest maturation, especially of the required scattered conifers within mesic mixed forest.

Remarks. One migrated in off Lake Superior at 0829 EDT on 11 Sep 2002 and another at 0852 on 28 Sep 2002, both at Hebard Park, K, LB; the first was attacked but missed by a Merlin. At the east end of Manitou Is., JY saw 2 arrive from the north-northeast on 7 Oct 2003 (0959, 1037 EDT) and 4 from the east and northeast on 8 Oct 2003 (1, 0857; 3, 0928).

Black-throated Green Warbler *Dendroica virens*

Status and Range (B, H, K). Common **summer** resident throughout, except uncommon in farming and urban districts of northern H, where woodlots are too immature and large conifers less numerous. Numbers augmented by transients in **spring** and **fall**, but not enough to raise detectability rating.

Habitat. Requires at least sparse conifers. In summer, most abundant in mature mesic/wet mixed forests, but also breeds in mesic deciduous forest with eastern hemlocks. Much less numerous in wet coniferous forest (northern white-cedar, black spruce). Occurs in drier forests during migration and does not seem to seek out conifers.

Migration Dates. **SEAD**: 28 Apr 2001 (1, Hancock,

JK). [Record for 29 Mar 98 near Hancock (MBNH 5: 195) seems too early to believe.] **SMAD**: 15 May (n=22). **SP**: third week of May. **FP**: main part of migration is last three weeks of Aug and first two of Sep. **FMDD**: 21 Sep (n=12). **FLDD**: 30 Sep 96 (Arnheim, B or H, JY).

High Counts. **Spring**: multi-party, 12 May 2001 (**19**) H, NAMC; 18 May 91 (**8**) H and K, LB. **Summer**: 15 Jun 2003 (**12**) H and K, LB, JM, Bootjack BBS; 18 Jun 99 (**8**) Gratiot Lake to Brunette Park, K, LB. **Fall**: 15 Sep 93 (**19**) Agate Harbor, LB, exceptional for one locality; 1 Sep 2001 (**13**) Agate Harbor to Copper Harbor, LB, JM.

Breeding (**B** 1 co, 20 pr, 7 po; **H** 1 co, 4 pr, 20 po; **K** 8 co, 6 pr, 2 po).

9 Jun 98 (nest lining being added) Agate Harbor, LB; nest 15 ft up in a 30 ft, 8 in DBH, northern white-cedar next to a gravel road.

*27 Jun 88 (carrying food) T50N, R35W, NE quarter, B, LB.

10 Jul 56 (carrying food) Agate Harbor, LB.

*11 Jul 86 (carrying food) near Delaware, T58N, R30W, SW quarter, K, LB.

3 Sep 97 (adult feeding 2, full-sized, begging juveniles) Agate Harbor, LB; probable breeding; probably a renesting, as said to be usually single-brooded (Baicich & Harrison, 1997).

BBS. *Bootjack* 67-73: 18 on 6 of 7 counts (85.7%); mean 2.57; range 0-4. *Bootjack* 92-2005: 56 on 13 of 14 counts (92.9%); mean 4.00; range 0-12.

NAMC. *Baraga Co.*: 43 on 6 of 6 counts (100%); mean 7.17; range 1-12; ind/PH .17; *Houghton Co.*: 32 on 4 of 7 counts (57.1%); mean 4.57; range 0-19; ind/PH .11.

Blackburnian Warbler *Dendroica fusca*

Status and Range (B, H, K). Fairly common **summer** resident throughout, except uncommon in farming and urbanized districts of northern H, where most woodlot conifers are too sparse and young. Rarely seen as migrants, breeding birds simply "materializing " on territory in **spring** and disappearing in early **fall**, when one of the earliest warblers to leave.

Habitat. Feeds in upper canopy of conifers, primarily in mature mesic/wet mixed forest, but also occasionally in primarily mesic deciduous forest with scattered large eastern white pines or eastern hemlocks; the former tree seems to be an important constituent of most inhabited forests.

Migration Dates. **SEAD**: 7 May 92 (Liminga, AW) and 2000 (North Portage Entry, H, JY). **SMAD**: 19 May (n=18). **SP**: last week of May. **SLDD**: migrants have been seen as late as 7 Jun 96 (Copper Harbor, LB). **FMDD**: apparently most depart in Aug and first week of Sep; only two records after 5 Sep. **FLDD**: 27 Sep 93 (Liminga, AW); 18 Sep 97 (Agate Harbor, LB); 5 Sep 96 (Agate Harbor, LB).

High Counts. **Spring**: multi-party, 12 May 2001 (**7**) B, NAMC; 15 Jun 97 (**5**) H and K, LB, Bootjack BBS. **Summer**: 14 Jun 2000 (**6**) 2 mi NE Arnheim in B and H, JY.

Breeding (**B** 1 co, 8 pr, 16 po; **H** 1 co, 5 pr, 13 po; **K** 5 co, 6 pr, 4 po).

4 Jul 96 (carrying food) east end of highway US 41 near Copper Harbor, LB.

5 Jul 2004 (1 prejuvenile) T48N, R33W, Sec. 12, B, JY.

*11 Jul 86 (adult feeding nearly full-sized prejuvenile) T58N, R30W, SW quarter, K, LB.

14 Aug 99 (adult feeding prejuvenile) Agate Harbor, LB, unusually late; probably from a renesting, as said to be probably single-brooded (Baicich & Harrison, 1997).

BBS. *Bootjack* 67-73: 8 on 2 of 7 counts (28.6%); mean 1.14; range 0-5. *Bootjack* 92-2005: 26 on 12 of 14 counts (85.7%); mean 1.86; range 0-5. *Herman*: 9 on 3 of 7 counts (42.9%); mean 1.29; range 0-4.

NAMC. *Baraga Co.*: 16 on 4 of 6 counts (66.7%); mean 2.67; range 0-7; ind/PH .06. *Houghton Co.*: 8 on 3 of 7 counts (42.9%); mean 1.14; range 0-6; ind/PH .03.

Historical Changes. Current logging practices on the Peninsula, which involve selective cutting of all mature trees for lumber and promote even-growth deciduous forest for pulp, bode ill for this species.

Yellow-throated Warbler *Dendroica dominica*

Status and Range (K). Accidental **spring** vagrant, presumably as a spring overshoot; 1 seen for 10 min at close range, 13 May 2002, Fort Wilkins State Park, near Copper Harbor, J. Peacock; excellent description in LB files.

Pine Warbler *Dendroica pinus*

Status and Range (B, H, K). Uncommon, very locally common, **summer** resident, nearly restricted to red pine forest (often with red oaks) and hence widely but very sparsely distributed. Apparently absent from southeastern K, southeastern half of B, and all of central H (MBBA map 1991), as is its habitat. As would be expected for a species at the northern extent of its range, casual during migration except on the north coast of K, where very rare in **spring** (*e.g.*, 21 May 2000, Copper Harbor, LB; 3 and 18 May 98, Agate Harbor, LB) and uncommon in **fall** (when an exceptional 6 single birds seen 1-10 Sep 2000 from Agate Harbor to Copper Harbor, LB), presumably because of concentration against Lake Superior by misoriented migrants from the south. Spring migration rather early (median arrival 5 May). Singing males, probably unmated, may begin wandering as early

as 28 Jun 96 (Agate Harbor, LB). **Early winter**: accidental lingerer; 1 record, 27 Nov 2002, Hancock, S. Robinson (MBNH 10: 82).

Habitat. Most abundant in natural dry coniferous and dry mixed forests composed of red pine or red pine-red oak. Also found sparingly in red pine plantations, which, however, are usually too young and dense, and very rarely in jack pine forests. On migration, often seeks out pines, but is much more generalized in foraging habits, using deciduous trees, bark, and the ground. RH saw one eating sunflower hearts on the ground under a feeder, a behavior I have noted several times in Louisiana.

Migration Dates. **SEAD**: 29 Apr 98 (Eagle River, K, LB, a migrant). **SMAD**: 5 May (n=6). **SLDD**: migrants have been seen as late as 26 May 2002 (Agate Harbor, LB). **FMDD**: 15 Sep (n=8). **FLDD**: 9 Oct 88 (Lake Eliza near Eagle Harbor, K, LB); 27 Sep 98 (Copper Harbor, LB) and 2002 (Agate Harbor, LB); see Early Winter.

High Counts. **Spring**: multi-party, 14 May 94 (**15**) H, NAMC; 8 May 99 (**5**) Big Lake, B, LB. **Summer**: 22 Jun 88 (**7**, all singing males) T52N, R30W, Secs. 11 and 12, B, LB.

Breeding (**B** 1 co, 2 pr, 2 po; **H** 9 po; **K** 1 co, 3 pr, 2 po).

*15 Jun 86 (female sitting on nest 30 ft high in 35 ft red pine) Great Sand Bay, K, LB.

*22 Jun 88 (occupied nest in jack pine) T52N, R30W, Sec. 11 or 12, B, LB.

BBS. *Bootjack* 67-73: 3 on 1 of 7 counts (14.3%); mean .43; range 0-3. *Bootjack* 92-2005: 3 on 3 of 14 counts (21.4%); mean .21; range 0-1. *Herman*: 7 on 3 of 7 counts (42.6%); mean 1.00; range 0-5.

NAMC. *Baraga Co.*: 24 on 6 of 6 counts (100%); mean 4.00; range 1-8; ind/PH .09. *Houghton Co.*: 16 on 4 of 7 counts (57.1%); mean 2.29; range 0-6; ind/PH .06.

Kirtland's Warbler *Dendroica kirtlandii*

Status and Range (B). Casual breeding **summer** vagrant on Baraga Plains, recorded in 7 of last 12 years, 94, 95, 96, 2000, 2002, 2003, and 2005, during a period when Kirtland's "invaded" the Upper Peninsula. These birds obviously arrived as spring vagrants, a term I apply to the species as a whole. Two breeding records, including a nest with young. The Baraga Plains are managed for jack pine harvesting and today (2005) support extensive habitat suitable for this species; the jack pines of southern H should be searched. Establishment of a viable population is possible, but will be difficult, because at first it will require additional vagrant recruits. This incipient population should be monitored more closely than simply a once-a-year road census.

Habitat. All birds have been seen in extensive tracts of 10-15 ft tall, needle-leaved shrub upland composed of scattered jack pines.

Significant Records (all; chronological order by year).

Summer 94 (unmated singing male) T49N, R34W, Sec. 30, 1 mi W Big Lake, B, R. Aho (MDNR; pers. comm.; MBNH 2: 78).

Summer 95 (1 male and 1 female carrying food) same locality and presumably same male as in 94, R. Aho (MDNR; pers. comm.; MBNH 3: 30); a specific date for the male is 18 Jun (LM, JY).

12 (JY) and 30 (LB, JY) Jun 96 (singing male, apparently unmated) same locality and presumably same male as in 94 and 95.

18 (JY; not 19 as in MBNH 8: 40), 23 (JY), and 27 (LB) Jun 2000 (adult female, apparently unmated) NE side Big Burn Field, Baraga Plains, T49N, R34W, Sec. 10.

Summer 2000 (2 males) B, Wayne Gleiber (MBNH 8: 40).

18 Jun 2002 (1 singing male) T49N, R34W, Sec. 9, north of Little Lake, B, R. Aho (MDNR; pers. comm.).

Summer 2003 (1 male) B (MBNH 11: 42).

Summer 2005 (2 males) B (annual report, fide R. Russell), including the following nest record.

15 and 24 Jul 2005 (nest with several young fed by both parents) N of Little Lake near Big Burn Field, T49N, R34W, SE quarter of Sec. 10, B, JY (photos of both adults carrying food in LB files). Only nest for the Peninsula.

[Reference to one on the Baraga Plains in the "early '80s?" (Weaver, 1991, but deleted in Weaver, 2000) pertains to the first Upper Peninsula record in Marquette Co. (JPW 60: 148; Payne, 1983).]

Breeding (**B** 2 co, 7 po; see above).

Historical Changes. See above and Historical Changes in Discussions, including Table 17.

Prairie Warbler *Dendroica discolor*

Status and Range (K). Accidental **fall** vagrant; 1 record for K, probably a misoriented migrant from the south.

Significant Records (all).

19, 21 Sep 2000 (1) Agate Harbor, T59N, R29W, Sec. 30, LB (details in field notes). Responding to my pishing, it approached to within 2 ft of my face! Found with a mixed flock in a small red pine at edge of a clearing in mesic mixed forest.

[The late N. F. Sloan, formerly of the School of Forestry, MTU, is said to have banded 80 Prairie Warblers at Little Lake, Baraga

Plains, 18 Jul-23 Aug, 4 of these in 1973, 29 in 74, 42 in 75, and 5 in 76, with an incredible 14 on 11 Aug 75 and 12 on 6 Aug 75. Of the 80, 14 were said to be adults and 66 hatching year birds (Bird Banding Laboratory, K. Klimkiewicz, pers. comm., and computer printout; Payne, 1983, 1986). The habitat at Little Lake, short scattered jack pine, is suitable for this species. However, I seriously doubt these records and do not accept them. I am informed by Sloan's student at the time, T. A. Allan (pers. comm.), that this certainly is some error of transcription and that he himself, during two years of field work at Little Lake, never saw a Prairie Warbler. I visited Little Lake and environs in summers 56 and 57 without seeing this species. Allan further remarked that Sloan rarely did the banding, instead leaving it to students poorly trained in banding techniques. That 14 could be caught in one day, even with concerted effort, exceeds the bounds of credibility. Probably, these bandings were of some flocking species, such as Dark-eyed Junco or Chipping Sparrow, both common at Little Lake, and the wrong AOU number was given to them. R. B. Payne (in litt.) informs me that he cannot now find the notes or correspondence dealing with these records. Nolan (1978), in his monograph on the Prairie Warbler, does not mention Baraga Co. Finally, by the 1970s, this species had suffered a serious decline throughout Michigan (L. H. Walkinshaw in Brewer *et al.*, 1991).]

Palm Warbler *Dendroica palmarum*

Status and Range (B, H, K). **Spring**: common transient throughout. Third earliest warbler, arriving on average in first week of May. **Summer**: very local resident; rare on the Baraga Plains (vicinity of Big Lake and Big Burn Field); casual at Arnheim (H) in T47N, R34W, Sec. 13 (B, JY) and in extreme southeastern H (but this last locality, shown on the MBBA map 1991, needs verification), and at Delene Lake (B, 3 Jun 2002, 3 singing males, JY). In the Big Lake area, recorded each year 88-2002, but may have occurred since at least 56 (see Breeding). **Fall**: very common transient, some days abundant, throughout. Departs on average 8 Oct, lingering to 21 Oct, making it the second latest warbler next to Yellow-rumped. A trans-lake migrant (see Remarks).

Habitat. In summer, occurs primarily in broad-leaved shrub upland of regenerating, scattered jack pines about 5-10 ft tall (Baraga Plains); also found in open spruce-tamarack bog (Arnheim, Delene Lake). On migration, frequents areas with open upland scrub or short scattered trees, including rural and residential situations, forest clearings, and edge, especially if near water.

Migration Dates (non-breeding localities only). **SEAD**: 27 Apr 86 (Liminga, D. Weaver). **SMAD**: 6 May (n=24). **SP**: about 18 May. **SMDD**: 22 May (n=24). **SLDD**: 15 Jun 86 (Cat Harbor, K, LB; singing male that did not remain); 11 Jun 89 (Copper Harbor, LB); 7 Jun 2000 (Copper Harbor, LB). **FEAD**: 26 Aug 90 (Liminga, AW). **FMAD**: 3 Sep (n=27). **FP**: protracted, centered on 22 Sep. **FMDD**: 8 Oct (n=27). **FLDD**: 17 Nov 2001 (near Big Lake, B, TA); 21 Oct 97 (Arnheim, B or H, JY).

High Counts. **Spring**: 9 May 2005 (**54**) Calumet sewage ponds, JK; 24 May 97 (**37**) Agate Harbor (12) and Copper Harbor (25) LB. **Summer**: 26 Jun 99 (**4**) Big Lake, B, LB. **Fall**: 25 Sep 95 (**100**) H, AW; 28 Sep 2002 (**39**) Copper Harbor, LB.

Breeding (**B** 3 pr, 2 po; **H** 2 co; **K** 1 po); chronological order by year.

24 Jul 56 (full-sized juvenile, UMMZ 152272) T49N, R34W, Sec. 20, B, L. C. Binford no. 102 (LB orig. notes); probable breeding.

Sometime between 83 and 88 (adults attending young) T47N, R35W, W half, H, first confirmed breeding in the western Upper Peninsula (D. C. Evers in Brewer *et al.*, 1991).

23 May-6 Jul 98 (2 apparently unmated singing males) north end of Big Lake, T49N, R34W, Sec. 29, B, LB, JY; possible breeding.

5 and 10 Jul 98 (2 adults, both carrying food) Arnheim, near Unit 6, H, JY.

2 Aug 98 (full-sized juvenile) Agate Harbor, LB; possible breeding.

13 May-26 Jun 99 (pair on 26 Jun, male singing, female foraging then disappearing, possibly to a nest, LB) north end of Big Lake, T49N, R34W, Sec. 29, B, LB, JY; probable breeding.

27 Jun-4 Jul 2000 (at least 4 birds, including 1 female on 4 Jul, LM) vicinity of Big Lake, T49N, R34W, B, LB, LM, JY; probable breeding.

[*Note*: the possible breeding record (LB) for K shown on the MBBA map (1991) should be deleted, as the singing male, although in proper habitat, did not remain (see SLDD above).]

NAMC. Baraga Co.: 28 on 5 of 6 counts (83.3%); mean 4.67; range 4-8; ind/PH .11. *Houghton* Co.: 77 on 7 of 7 counts (100%); mean 11.00; range 4-20; ind/PH .28.

Remarks. Observed migrating in off Lake Superior at Agate Harbor on 17 Sep 94 (1 bird, arrived at 0946 EDT, LB) and 23 Sep 87 (2 birds together, 0914, LB), at Dan's

Point, K, on 11 Sep 2001 (1, 0731, LB), near Hebard Park, K, on 11 Sep 2001 (1, 1029, JY), and at east end of Manitou Is. on 8 Oct 2003 (1, 1002, B. Johnson, JY).

Bay-breasted Warbler *Dendroica castanea*

Status and Range (B, H, K). **Spring**: rare transient. That the Bay-breasted Warbler is seen less often in spring, when I sometimes miss it completely, than in fall is puzzling, because most spring migration is said to be through the Midwest (Dunn & Garrett, 1997); however, data from Whitefish Point (Granlund & Byrne, 1996) support the Keweenaw pattern. **Summer**: resident; formerly, very uncommon and local in late 1980s and early 90s; but has decreased since 95, apparently as a result of an observed low in the cycle of the spruce budworm (LB), on which it specializes, and today probably occasional or casual. Almost restricted to K and northern third of H (see MBBA map 1991); only one B record (see Breeding). In K, most birds have been found on the Keweenaw Bay Border Plains, where boreal habitat is *relatively* widespread. Most records have been of unmated singing males, but some have involved what might be termed loose "colonies," with several males or pairs in a very restricted area (see Breeding), probably in response to local outbreaks of the budworm. In my opinion, the rarity of the Bay-breast in Michigan is the combined result of the state's southern position, the scarcity of dense, mesic boreal forest, and the relative rarity of the spruce budworm. Outbreaks of this larva may stimulate local breeding in the future. **Fall**: uncommon transient. Most fall migration is said to be along the east coast (Dunn & Garrett, 1997)), but at least the southern edge of the migration pathway for northwestern birds encompasses the Keweenaw.

Habitat. Breeds in mesic coniferous forest (white spruce, balsam fir), especially where firs form dense dark clumps of regenerating trees, a habitat most common on the sandy ridges (old beach lines) along the coast of Keweenaw Bay. Darkness seems to be a prerequisite, and, I theorize, correlates with the dark plumage of this species.

Migration Dates. **SEAD**: 10 May 2001 (Agate Harbor, LB, and near Ahmeek, K, RH). **SMAD**: 21 May (n=13). **SLDD**: probable migrants have been seen as late as 5 Jun 90 (Eagle Harbor, K, LB) and 98 (Copper Harbor, LB). **FEAD**: birds (perhaps local post-breeding dispersants) begin to appear in nonbreeding localities in mid Jul (e.g., 12 Jul 2001, Agate Harbor, LB), with the earliest probable transient on 15 Aug 86 (Agate Harbor, LB). **FP**: numbers remain low through Sep, with no obvious peak. **FLDD**: 29 Sep 92, 27 Sep 93, 15 Sep 94 (all Agate Harbor, LB).

High Counts. **Summer**: 22 Jun 95 (**7**) near Phoenix, K, LB. **Fall**: 15 Sep 94 (**5**) Agate Harbor, LB.

Breeding (**B** 1 po; **H** 1 co, 2 pr, 5 po; **K** 2 co, 4 pr, 2 po).

*3 Jun (pair and 2 singing males on territory), 2 Jul 88 (the pair feeding 1 prejuvenile so underdeveloped that it must have left the nest prematurely) near Brunette Park, K, T57N, R30W, Sec. 35, K, LB (L. C. Binford in Brewer *et al.*, 1991).

10 (pair on territory), 16 (2 males), 22 (same two males) Jun 95, Cliff Mine Cemetery on highway US 41, near Phoenix, K, LB; probable breeding.

11 Jun 95 (singing male) 3 mi E Lake Linden, T55N, R32W, Sec. 2, H, LB, Bootjack BBS; possible breeding.

20 Jun 95 (singing male) along road just west of Camp 10 Lake, T50N, R31W, Sec. 35, B, JY; possible breeding.

22 Jun 95 (scolding pair on territory, plus 3 other males) near Phoenix, T57N, R31W, Sec. 31, K, LB; probable breeding.

22 Jun 87 (2 pairs) Rabbit Bay, T54N, R32W, Sec. 32, H, LB; probable breeding.

1 Jul 49 (adult male feeding 1 unidentified prejuvenile, plus 2 other singing males) Gratiot Lake, K, Wallace (1949). Said to be the first summer record for Michigan. Here considered confirmed breeding.

*3 (2 pairs, 1 with nest with young), (empty nest collected, UMMZ) Jul 87, Rabbit Bay, T54N, R32W, Sec. 15, H, LB; nest near the trunk 29 ft up in a spindly 34 ft balsam fir, 5 in DBH; composed entirely of brown, eastern white pine needles (L. C. Binford in Brewer *et al.*, 1991).

BBS. *Bootjack* 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1; 11 Jun 95.

Historical Changes. See Status and Range above and Historical Changes in Discussions, including Table 17.

Blackpoll Warbler *Dendroica striata*

Status and Range (B, H, K). **Spring**: rare transient. Most records are from the north coast of K, where perhaps concentrated by Lake Superior; very few B records. **Summer**: Blackpolls are occasionally reported in "summer," but records lack documentation or are here considered transients. Cahn (l918) said that in 1914, near Kenton, H, it was "apparently a summer resident, but there are no breeding data." However, his sightings were sometime in Aug and therefore could have been transients; also, he saw several "diligently investigating the bark of the second growth pines," a behavior more suited to the Pine Warbler, a similar species (in basic plumage) that he did not list but is known to occur there (LB). Nevertheless, breeding is not impossible. See SLDD. **Fall**: common transient, arriving normally

in late Aug, with the peak coinciding closely with the median arrival date of 1 Sep; 11 of the 16 arrival dates are within three days of that date, a remarkable consistency; a similar pattern has been noted at Whitefish Point (Granlund & Byrne, 1996).

Habitat. Possible in any forest habitat on migration, but most of my records are for mesic mixed forest, where it shows no preference for evergreens despite its conifer breeding habitat.

Migration Dates. **SEAD**: 14 May 95 (Liminga, D. Weaver). **SMAD**: 19 May (n=12). **SP**: about 24 May. **SMDD**: 29 May (n=9). **SLDD**: 19 Jun 2002 (2 singing males, Manitou Is., JK, JM, JY; a very late spring; not found here in mid Jul 2002); 5 Jun 93 (Redridge, H, AW). **FEAD**: 14 Aug 99, 23 Aug 2001 (both Agate Harbor, LB). **FMAD**: 1 Sep (n=16, K only). **FP**: last week of Aug and first week of Sep. **FMDD**: 23 Sep (n=12, K only). **FLDD**: 30 Sep 97 (Copper Harbor, LB).

High Counts. **Spring**: 24 May 97 (**7**) Agate Harbor and Copper Harbor, LB. **Fall**: 31 Aug 80 (**20**) Agate Harbor, LB, exceptional; 11 Sep 2001 (**11**) Pt. Abbaye, B, B. St.Clair.

[*NAMC. Houghton Co.*: 1 on 11 May 2002 is early and lacks documentation.]

Black-and-white Warbler *Mniotilta varia*

Status and Range (B, H, K). Common **summer** resident, occurring in virtually every township, but numbers rather low, approaching fairly common and ranking about ninth among breeding warblers (LB). Summer numbers augmented only slightly by **spring** and **fall** transients, not enough to raise detectability rating. One of the earliest spring warblers, perhaps because of its bark-gleaning foraging technique, which may allow it to survive on insect eggs and larvae before most adult insects emerge, much like wintering Golden-crowned Kinglets and Brown Creepers..

Habitat. In summer, prefers mature or second-growth, wet/mesic mixed forest and to a lesser extent wet coniferous, mesic deciduous, and wet deciduous forests. See Breeding for nest site.

Migration Dates. **SEAD**: 24 Apr 31 (Copper Harbor; Wood, 1951). **SMAD**: 14 May (n=28). **SP**: about 20 May. **FMDD**: 15 Sep (n=9, K only). **FLDD**: 28 Sep 86 (Agate Harbor, LB).

High Counts. **Spring**: multi-party, 12 May 2001 (**25**) B, NAMC; same census (**13**) LB and JM only. **Summer**: 18 Jun 91 (**10**) Pt. Isabelle area, K, LB. **Fall**: 11 Sep 2001 (**7**) Pt. Abbaye, B, B. St.Clair.

Breeding (**B** 4 co, 7 pr, 17 po; **H** 7 co, 3 pr, 16 po; **K** 3 co, 5 pr, 6 po).

2 Jun 97 (female building nest) Agate Harbor, LB, nest just above ground level in multi-trunk crotch of white birch.

*9 Jun 88 (carrying food) T48N, R33W, SW quarter, B, LB.

*19 Jun 86 (carrying food) 1 mi E Seneca Lake, K, LB.

*23 Jun 88 (carrying food) T51N, R31W, NW quarter, B, LB.

*26 Jun 88 (carrying food) T52N, R32W, SE quarter, B, LB.

*29 Jun 87 (carrying food) T51N, R36W, SE quarter, H, LB.

29 Jun 2002 (carrying food) Chassell, H, JY.

30 Jun 2002 (carrying food) northwest corner Little King Lake, B, JY.

BBS. *Bootjack* 67-73: 5 on 3 of 7 counts (42.9%); mean .71; range 0-2. *Bootjack* 92-2005: 52 on 13 of 14 counts (92.9%); mean 3.71; range 0-5. *Herman*: 26 on 7 of 7 counts (100%); mean 3.71; range 2-5.

NAMC. *Baraga Co.*: 52 on 5 of 6 counts (83.3%); mean 8.67; range 0-25; ind/PH .20. *Houghton Co.*: 28 on 5 of 7 counts (71.4%); mean 4.00; range 0-19; ind/PH .10.

Historical Changes (Table 17). The 423% increase in the Bootjack BBS between the periods 67-73 (mean .71 birds per count) and 92-2005 (3.71) I attribute to forest maturation. Adams *et al.* (1988) reported a nearly identical statewide increase (.57 to 2.83, or 396%) between 66 and 85.

American Redstart *Setophaga ruticilla*

Status and Range (B, H, K). Common **summer** resident throughout, detectability increased only slightly by **spring** and **fall** transients. Timing of fall migration uncertain; migration probably begins in mid Aug, but possibly even Jul, and seemingly peaks in last week of Aug and first week of Sep; more data needed.

Habitat. In my experience, most individuals occur in shrub wetland composed primarily of speckled alders, sometimes mixed with sandbar willows, and in wet deciduous forest, but dry deciduous forest composed of quaking aspen and white birch is also used. Also found along open creeks at edge of mesic/wet mixed forest and mesic deciduous forest, the attraction being the creek vegetation, not the forest. If it occurs in coniferous bogs, as stated in the MBBA (1991), it must be elsewhere. In the Keweenaw, contra the MBBA (1991), the Least Flycatcher and American Redstart usually inhabit very different habitats. although minimal mixing may occur in dry deciduous forest.

Migration Dates. **SEAD**: 11 May 92 (Liminga, D. Weaver) and 93 (Youngman's property, B, JY). **SMAD**: 18 May (n=29). **SP**: about 25 May. **SLDD**: migrants have been seen as late as 7 Jun 96 (Copper Harbor, LB). **FMDD**: 15 Sep (n=20). **FLDD**: 28 Oct 84 (Liminga, D. Weaver); 12 Oct 2001 (Agate Harbor, LB); 6 Oct 2001 (6 mi SE Chassell, H, JY); 28 Sep 96 (Agate Harbor, LB).

High Counts. **Spring**: 25 May 98 (**15**) Arnheim, B or H, JY. **Summer**: 5 Jul 97 (**17**), B, S. Patti, Herman BBS; 3 Jul 70 (**16**) H and K, B. and D. Wolck, Bootjack BBS. **Fall**: 31 Aug 80 (**7**) Agate Harbor, LB.

Breeding (**B** 3 co, 13 pr, 9 po; **H** 8 co, 11 pr, 9 pr; **K** 9 co, 7 pr, 1 po).

20 Jun 83 (female on nest) Youngman's property, B, JY.

25 Jun 2002 (adult on nest) Chassell, H, LM.

*9 Jul 86 (2 adults feeding tiny prejuvenile that probably fledged prematurely) Agate Harbor, LB.

11 Jul 95 (male feeding tiny prejuvenile) T57N, R31W, Sec. 12, K, LB.

*15 Jul 86 (adults attending nearly full-sized prejuvenile) 2 mi SE Central, K. LB.

*16 Jul 86 (male feeding prejuvenile Brown-headed Cowbird) 4 mi NW Calumet on Lake Shore Road, H, LB.

16 Jul 2002 (female carrying food) Manitou Is., Sec. 16, JY.

17 Jul 2002 (adult feeding prejuvenile) Ahmeek, K, LB, JM.

14 Aug 74 (adult feeding full-sized juvenile) Agate Harbor, LB; considered confirmed breeding.

BBS. *Bootjack* 67-73: 58 on 7 of 7 counts (100%); mean 8.29; range 1-16. *Bootjack* 92-2005: 86 on 14 of 14 counts (100%); mean 6.14; range 2-11. *Herman*: 51 on 7 of 7 counts (100%); mean 7.29; range 3.17.

NAMC. *Baraga Co.*: 7 on 2 of 6 counts (33.3%); mean 1.17; range 0-6; ind/PH .03.
Houghton Co.: 8 on 2 of 7 counts (28.6%); mean 1.14; range 0-7; ind/PH .03.

[**Worm-eating Warbler** *Helmitheros vermivorum*]

Status and Range (B). Accidental **spring** vagrant, presumably as an overshoot. One seen 23 May 75, 6 mi W Baraga where highway M 28 crosses the Sturgeon River, T51N, R34W, Sec. 28, AW (Weaver, 1991, 2000, pers. comm.). Although there is no written documentation for this record, conversations with the observer convince me of its validity.

Ovenbird *Seiurus aurocapilla*

Status and Range (B, H, K). **Spring**: despite populations to the north, the Ovenbird seems only slightly more common in spring than in summer. Very common **summer** resident, the most detectable landbird in the Keweenaw (LB), in part because of its loud persistent song and wide habitat tolerance; recorded in 71 of the 77 censused townships (MBBA map 1991) but doubtless occurs in all. The most abundant species on two NAS Breeding Bird Censuses (Rakstad & Probst, 1981a, 1981b), one in dry mixed forest (jack pine, red oak) and the other in mesic mixed forest (northern hardwoods, hemlock). Becomes uncommon to locally fairly common (north coast of K) in **fall**, as song ceases, breeders leave, and transients are scarce.

Habitat. Breeds primarily in mature, mesic deciduous forest (northern hardwoods or only sugar maple) and mesic mixed forest, secondarily in dry mixed, mesic coniferous, and dry deciduous forests. Requires at least a partial, preferably moderate to heavy, shrub layer for ground foraging. The two nests I have found (2 Jun 88) were in ground hollows overhung by tufts of grass along a path in a forest with only scattered underbrush.

Migration Dates. **SEAD**: 4 May 2001 (Youngman's property, B, JY; same day, 1 mi ME Boston, H, JK). **SMAD**: 16 May (n=28). **SP**: about 20 May at non-breeding localities. **FMDD**: 15 Sep (n=14). **FLDD**: 5 Oct 90 (Liminga, AW).

High Counts. **Spring**: multi-party, 13 May 2000 (**36**) B, NAMC; 12 May 2001 (**15**) B, LB and JM in one party, NAMC. **Summer**: 15 Jun 2003 (**39**) H and K, LB, JM, Bootjack BBS. **Fall**: 31 Aug 80 (**5**) Agate Harbor, LB.

Breeding (**B** 5 co, 21 pr, 3 po; **H** 10 co, 17 pr, 7 po; **K** 5 co, 7 pr, 2 po).

2 Jun 2002 (carrying nest material) T53N, R33W, Sec. 31, H, JY.

10 Jun 98 (nest with young) Arnheim, H, JY.

*12 Jun 88 (nest with newborn young; another nest empty, adult flushed) T47N, R32W, Sec. 2, B, LB.

21 Jun 2000 (2 or 3 prejuveniles) 6 mi SE Chassell, H, JY.

*24 Jun 88 (carrying food) T51N, R30W, SW quarter, B, LB.

*25 Jun 86 (carrying food) 2 mi W Eagle Harbor, K, LB.

*26 Jun 88 (carrying food) T52N, R32W, SE quarter, B, LB.

2 Jul 90 (carrying food, distraction display) Hubbell, H, LB.

2 Jul 99 (carrying food) road from Gratiot Lake to Brunette Park, K, LB.

*3 Jul 86 (carrying food) near Ahmeek, T57N, R32W, SW quarter, K, LB.

*9 Jul 87 (carrying food) T55N, R35W, SW quarter, H, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

*11 Jul 86 (distraction display) SW of Delaware, T58N, R30W, SW quarter, K, LB.

Summary: Single-brooded; 4 nests, 2-12 Jun; attended young, in or out of nest, 21 Jun-10 Jul (and probably 11 Jul).

BBS. *Bootjack* 67-73: 160 on 7 of 7 counts (100%);

mean 22.86; range 15-34. *Bootjack* 92-2005: 318 on 14 of 14 counts (100%); mean 22.71; range 9-39. *Herman*: 133 on 7 of 7 counts (100%); mean 19.00; range 10-28. The great similarity in the three means here is a reflection of the Ovenbird's broad habitat tolerance.

NAMC. Baraga Co.: 82 on 4 of 6 counts (66.7%); mean 13.67; range 0-36; ind/PH .32. *Houghton Co.*: 39 on 4 of 7 counts (57.1%); mean 5.57; range 0-23; ind/PH .14.

Northern Waterthrush *Seiurus noveboracensis*

Status and Range (B, H, K). Uncommon **summer** resident, widely but sparsely distributed; seeming scarcity in southern half of H (MBBA map 1991) perhaps due to inadequate coverage. No confirmed breeding for B. Summer numbers augmented by **spring** transients, but not enough to raise detectability. In **fall** breeders quietly disappear in Aug and are replaced then and later by only a few transients, so the species becomes very uncommon**.** A trans-Lake Superior migrant in fall; one seen arriving at Agate Harbor at 1025 EDT on 7 Oct 86 (LB) landed on the first exposed coastal rocks and immediately tucked its head under its wing and slept.

Habitat. An "aquatic passerine," the Northern Waterthrush prefers mature wet coniferous forest (northern white-cedar), wet deciduous forest, and shrub wetland (speckled alder and/or sandbar willow) with a low forest canopy and meandering streamlets or small pools. In all cases, exposed root systems, logs, hummocks, ferns, sphagnum and other mosses, and a forest canopy seem to be important; marsh marigolds are often present in the sunny edge. Seeks out similar habitats on migration.

Migration Dates. **SEAD**: 1 May 2000 (Arnheim, H, JY). **SMAD**: 18 May (n=13). **FMDD**: 27 Aug (n=8). **FLDD**: 7 Oct 86 (Agate Harbor, LB); 29 Sep 99 (Copper Harbor, LB); 4 Sep 84 (Agate Harbor, LB). More data needed.

High Counts. **Spring**: 19 May 96 (**13**) Copper Harbor, LB, exceptional; 14 May 2005 (**10**) B, LB, Z. Gayk; 29 May 99 (**7**) Silver River mouth, T51N, R31W, Sec. 18, B, LM, JY. **Summer**: 10 Jun 2002 (**5** singing birds) T53N, R33W, Sec. 17, H, JY.

Breeding (**B** 6 pr, 8 po; **H** 3 co, 1 pr, 7 po; **K** 1 co, 3 pr, 4 po).

19 Jun 2005 (distraction display) T53N, R33W, Sec. 16, JY.

12 Jul 98 (2 adults feeding 3 full-sized juveniles obviously at their natal site) .4 mi W Copper Harbor, LB; confirmed breeding; this wetland was destroyed by development in summer 2001.

15 Jul 89 (carrying food) Oskar, H, LM.

BBS. *Bootjack* 67-73: 4 on 2 of 7 counts (28.6%); mean .57; range 0-2. *Herman*: 4 on 4 of 7 counts (57.1%); mean .57; range 0-1.

NAMC. Baraga Co.: 16 on 5 of 6 counts (100%); mean 2.67; range 0-5; ind/PH .06.

Houghton Co.: 2 on 1 of 7 counts (14.3%); mean .29; range 0-2; ind/PH .01.

Connecticut Warbler *Oporornis agilis*

Status and Range (B, H, K). Very rare **summer** resident, widely but extremely sparsely distributed; recorded in all three counties, but without a confirmed breeding record, all birds apparently being unmated singing males. Apparent **spring** migrants seen only on 26 May, 3 and 4 Jun; migrants sometimes sing. The latest warbler to arrive. **Fall** migrants recorded 5 times, 16 Aug-25 Sep.

Habitat. In summer, recorded in mesic/wet mixed forest and wet coniferous forest (jack pine bog, black spruce-tamarack bog); not noted in dry deciduous or dry coniferous forests, the latter a major habitat in the northern Lower Peninsula. On migration, seen also in mesic deciduous and mesic mixed forests.

Migration Dates (see Significant Records for data). **SEAD**: 21 May 2001. **FLDD**: 25 Sep 83.

Significant Records (all).

21 May (singing male, JY), 27 May 2001 (3 singing males, TA, JM), Big Lake Field edge, Baraga Plains, possible breeding.

26 May 2002 (singing male) Chassell sewage ponds, H, JY, migrant.

3 Jun 98 (singing male) W of North Portage Entry, T56N, R34W, Secs. 29 and 30, H, S. Andres, migrant.

3, 5, 13, 15 Jun 96 (singing male) Arnheim, 100 yards NE of SE corner of Unit 6, H, LM, JY, probable breeding.

4 Jun 31 ("migrant" seen singing) Copper Harbor, N. A. Wood (Wood, 1933).

6 Jun 2004 (singing male) near Big Lake, NE of Honker's Pond, B, JY.

30 May-5 Jun 2002 (singing male seen) Baraga Plains, Big Lake Field edge (same place as 21 May 2001) JM, LB, possible breeding.

*8, 26 Jun 86 (singing male) Mandan Road, T58N, R29W, Sec. 22, K, LB, probable breeding.

*10 Jun 88 (singing male) T47N, R33W, Secs. 19, 20 *or* 21, B, LB, possible breeding.

11 Jun 89 (singing male) Union Creek, T58N, R27W, Sec. 16, K, LB, J. Rooks, possible breeding.

20, 26 Jun, 4 Jul 99 (singing male) Big Lake Field edge, T49N, R34W, Secs. 21 and 22, B, LB, LM, JY; probable breeding; conceivably 2 males involved.

1 Jul 84 (singing male) T50N, R34W, Sec. 4, B,

S. Patti, Herman BBS Stop 35, possible breeding.

4 Jul 2001 (singing male) Little Lake, T49N, R34W, Sec. 22, B, LM, JY (MBNH 9: 43), possible breeding.

16 Aug 95 (1) Hancock, S. Andres (MBNH 3: 98).

31 Aug 80 (1) Agate Harbor, LB.

15 Sep 95 (immature) Agate Harbor, LB.

18 Sep 87 (immature) Calumet, old sewage ponds, LB.

25 Sep 83 (immature) Liminga, AW.

Breeding (**B** 1 pr, 5 po; **H** 2 pr, 2 po; **K** 2 pr, 4 po); see Significant Records.

[*Note*: both confirmations for K on the MBBA map (1991) should be deleted, pending discovery of documentation, but the easternmost has been replaced by possible breeding in 89.]

BBS. Herman: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; see above.

Mourning Warbler *Oporornis philadelphia*

Status and Range (B, H, K). **Summer** resident throughout. Because its habitat is abundant, it is common, probably much more so today than before the virgin forests were cut. Seldom seen on migration, probably because of its secretive habits, narrow migration window, and early fall departure. In **spring**, one of the latest warblers to arrive. In **fall**, after a short, single-brood, breeding season, leaves early, with most gone by 27 Aug, thereafter very uncommon to 8 Sep.

Habitat. An edge species, preferring short, dense but sunny, mesic, broad-leaved, shrub upland (*e.g.*, vine tangles, tall dense weeds, speckled alders, red-osier dogwoods) between openings (*e.g.*, forest clearings, small forest roads) and wet and mesic deciduous and mixed forests, especially young second-growth.

Migration Dates. **SEAD**: 16 May 98 (Arnheim, H, JY). **SMAD**: 28 May (n=18). **FMDD**: 27 Aug (n=10). **FLDD**: 8 Sep 95 (Liminga, AW).

High Counts. **Spring**: 6 Jun 99 (**5**) Cliff Drive between Phoenix and Ahmeek, K, LB. **Summer**: 1 Jul 84 and 3 Jul 93 (**16** each) B, S. Patti, Herman BBS; 10 Jun 88 (**14** singing males) T47N, R33W, Secs. 19, 20, 21, B, LB; 14 Jun 88 (**14** singing males) T50N, R32W, NE quarter, B, LB.

Breeding (**B** 3 co, 13 pr, 10 po; **H** 10 co, 7 pr, 13 po; **K** 4 co, 8 pr, 1 po).

*27 Jun 88 (carrying food) T50N, R35W, NE quarter, B, LB.

*3 Jul 86 (carrying food) near Fulton, K, LB.

3 Jul 86 (carrying food) Farmer's Block Road near Ahmeek, K, LB.

7 Jul 2002 (male carrying food) near Chassell, H, JY.

*9 Jul 87 (carrying food) near Redridge, T55N, R35W, SW quarter, H, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

11 Jul 2004 (male giving distraction display) Youngman's property, B, JY.

BBS. Bootjack 67-73: 28 on 7 of 7 counts (100%); mean 4.00; range 1-8. *Bootjack* 92-2005: 60 on 14 of 14 counts (100%); mean 4.29; range 1-8. *Herman*: 91 on 7 of 7 counts (100%); mean 13.00; range 8-16.

[*NAMC. Houghton Co.*: 1 on 11 May 2002 seems too early and lacks documentation.]

Common Yellowthroat *Geothlypis trichas*

Status and Range (B, H, K). Common, locally very common (*e.g.*, Arnheim), **summer** resident throughout. Numbers augmented by transients in **spring** and **fall** but not enough to exceed common; however, more general in habitat use and therefore more widespread. Individuals linger later in fall than most warblers.

Habitat. Breeds primarily in open wetland (sedge-grass, open bog, cattails, all with scattered shrubs) and shrub wetland (speckled alder and/or sandbar willow). Both cattails and sedge-grass marsh used for nest sites. During migration, occurs also in shrub upland, forest edge, and old fields.

Migration Dates. **SEAD**: 6 May 2000 (Copper Harbor, LM). **SMAD**: 20 May (n=27). **SP**: last week of May. **FMDD**: 17 Sep (n=22). **FLDD**: 12 Nov 2000 (2, Copper Harbor, JM, M. Scheiwe); 21 Oct 2004 (1, Copper Harbor, S. Santner); 10 Oct 92 (Eagle Harbor, K, LB) and 93 (Copper Harbor, LB).

High Counts. **Spring**: 19 May 95 (**26**) Copper Harbor, LB, exceptional; 31 May 96 (**11**) Copper Harbor, LB. **Summer**: 27 Jun 98 (**27**) Arnheim, B or H, LM. **Fall**: 10 Sep 2000 (**14**) Arnheim, H, JM, P. Musser.

Breeding (**B** 6 co, 13 pr, 7 po; **H** 9 co, 6 pr, 12 po; **K** 5 co, 7 pr, 2 po).

19 Jun 2003 (nest with 4 eggs in sedge and grass) Sturgeon River Road 1 mi S Chassell, T53N, R33W, Sec. 8, H, JY (photo in LB files).

*27 Jun 88 (carrying food) T50N, R35W, NE quarter, B, LB.

27 Jun 98 (carrying food) Arnheim, B or H, LM, not in above totals.

*2 Jul 88 (carrying food) T56N, R31W, SW quarter, K, LB.

*3 Jul 86 (carrying food) Farmer's Block Road near Ahmeek, K, LB.

8 Jul 2001 (carrying food) Arnheim, Unit 7, B, LM, JY.

10 Jul 99 (carrying food) Arnheim, B or H, not in above totals.

13 Jul 2001 (carrying food) Sturgeon River Road, H, LM.

*16 Jul 86 (carrying food) 1 mi NW Calumet, LB.

16 Jul 95 (agitated female carrying food) Ahmeek marsh, K, LB.

17 Jul 2002 (carrying food) Ahmeek marsh, K, LB, JM.

19 Jul 96 ("fledgling") Arnheim, B or H, JY, not in above totals.

21 Jul 84 (3 eggs in nest 1.4 ft up in cattails) Central, K, B. L. Hay (COL).

Summary: 21 Jul nest suggests second brood; species said to be double-brooded (Baicich & Harrison, 1997).

BBS. Bootjack 67-73: 52 on 7 of 7 counts (100%); mean 7.43; range 2-13. *Bootjack* 92-2005: 133 on 14 of 14 counts (100%); mean 9.50; range 5-15. *Herman*: 97 on 7 of 7 counts (100%); mean 13.86; range 8-21.

NAMC. Baraga Co.: 19 on 2 of 6 counts (33.3%); mean 3.17; range 0-13; ind/PH .07.
Houghton Co.: 13 on 3 of 7 counts (42.9%); mean 1.86; range 0-10; ind/PH .04.

Wilson's Warbler *Wilsonia pusilla*

Status and Range (B, H, K). **Spring**: common transient throughout. High counts at Copper Harbor probably represent birds concentrated by Lake Superior. **Summer**: accidental visitant. Singing males frequently, but temporarily, occupy good breeding habitat as late as 14 Jun, giving rise to hopes for eventual breeding. However, none has remained. Listed by Wood (1933) as a "rare summer resident" at Copper Harbor in 31, but without data and based probably on late transients. No nest for entire state (D. C. Evers in Brewer *et al.*, 1991). Nevertheless, I predict that breeding will be confirmed in the Keweenaw eventually. **Fall**: rare transient, 22 Aug-8 Oct.

Habitat. Elsewhere in its range, breeding occurs in habitat similar to that occupied by May-Jun singing males in the Keweenaw—dense, boggy clumps of shrub wetland (sandbar willows and speckled alders, with a floor of sphagnum moss) sometimes associated with black spruce and tamarack. However, something may be unacceptable, at least to females, which arrive after males, because no pairs have remained to breed.

Migration Dates. **SEAD**: 6 May 2000 (Chassell, H, JY). **SMAD**: 19 May (n=27). **SP**: about 25 May. **SMDD**: 30 May (n=20). **SLDD**: 14 Jun 88 (3 mi N Ahmeek, K, LB); 10 Jun 98 (Agate Harbor, LB). **FEAD**: 22 Aug 2002 (Agate Harbor, LB, JM); 1 Sep 2001 (Dan's Point, K, JM, B. St.Clair). **FLDD**: 8 Oct 95 and 22 Sep 89 (both Copper Harbor, LB).

High Counts. **Spring**: 27 May 96 (**14**) Copper Harbor, LB; 19 May 2001 (**13**) Copper Harbor area, LB, JM.

BBS. One seen on Bootjack count 3 mi N Ahmeek, K, 14 Jun 98 (LB) did not remain and thus should be considered a non-breeder, leaving no breeding record for the BBS.

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004.

Canada Warbler *Wilsonia canadensis*

Status and Range (B, H, K). Fairly common **summer** resident throughout. Seems to be less numerous on migration; uncommon in **spring**, when it arrives late, and rare in **fall**, when it departs very early; probably, summer residents leave before the meagre influx of transients.

Habitat. Although the Canada Warbler seems to occupy wet mixed and mesic and wet deciduous forests, its habitat requirements are more restricted, because it prefers dense, dark, cool, humid deciduous thickets beneath a heavy (but not necessarily tall) canopy and associated with open water, especially small permanent streams. Less often found in dense shrub wetland supporting speckled alders adjacent to ponds, streams, swamps, and bogs.

Migration Dates. **SEAD**: 19 May 82 (Youngman's property, B, JY). **SMAD**: 25 May (n=19). **SLDD**: migrants have been noted as late as 13 Jun 98 (Copper Harbor, LB). **FEAD**: migrants or local post-breeding wanderers have been recorded as early as 31 Jul 98 (Agate Harbor, LB). **FMDD**: 23 Aug (n=7). **FLDD**: 3 Sep 97 (Agate Harbor, LB).

High Counts. **Spring**: 31 May 96 (**7**) Copper Harbor, LB.

Breeding (**B** 3 pr, 13 po; **H** 2 co, 7 pr, 7 po; **K** 5 co, 1 pr, 7 po).

*7 Jul 86 (2 pairs, each carrying food) Central Lake, near Central, K, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

28 Jul 97 (carrying food) Lake Manganese, K, LB.

BBS. Bootjack 92-2005: 3 on 3 of 14 counts (21.4%); mean .21; range 0-1. *Herman*: 9 on 5 of 7 counts (71.4%); mean 1.29; range 0-4.

Yellow-breasted Chat *Icteria virens*

Status and Range (B, H, K). Accidental vagrant in **spring** (2 records, 2 May-7 Jun, H, K), **summer** (26 Jun, B), and **fall** (25 Sep, K). The spring and summer birds probably arrived as spring overshoots, and the fall bird as a misoriented migrant, a pattern like that at Whitefish Point (Granlund & Byrne, 1996). Breeds as close as west-central WI about 220 miles from the B record. These vagrants might be the first indication of northward

expansion of the breeding range.

Significant Records (all).

2 May 2001 (1) in Copper Harbor, JK (pers. comm.; MBNH 8: 214).

19, 23 May, 2, 6, 7 Jun 98 (singing male seen) Sturgeon River Sloughs, Unit 1, deVriendt Nature Trail, H, LB, B. Johnson, LM, JY (finder).

26 Jun 88 (singing male seen) near Aura, T52N, R32W, Sec. 25, B, LB (G. A. McPeek in McPeek & Adams, 1994; JPW 67: 32, 36, where erroneously attributed to Houghton Co. on p. 32). I spent considerable time chasing this bird and believe it was unmated; it repeatedly responded to a tape by *fleeing* to another patch of its shrub wetland habitat.

25 Sep 99 (1 seen) Agate Harbor, LB, JM. This was one of the strangest encounters in my birding experience. We were watching a University of Michigan football game on TV in a summer cabin that had been closed for the winter except for one uncovered window a measured 9 ft from my face. The bird suddenly appeared on the windowsill, where it spent 30 seconds peering in! After Michigan won, we refound it in dense shrubs next to the cabin.

Habitat. Both singing Jun birds were in shrub wetland (sandbar willows).

Summer Tanager *Piranga rubra*

Status and Range (B, K). Accidental **spring** vagrant, presumably as an overshoot. Two records, both piebald, first summer males at seed feeders: 18 and 19 May 97, Eagle River, K, LB *et al.* (FN 51: 874); 16-19 May 2002, Skanee, B, M. Cela, JM, photos by feeder owner (MBNH 9: 233). The 97 bird would mash a black oil sunflower seed for several minutes before swallowing it whole (LB).

Scarlet Tanager *Piranga olivacea*

Status and Range (B, H, K). Uncommon **summer** resident, widely and evenly, but rather sparsely, distributed in deciduous forests. Migrants are very rarely encountered, as the Keweenaw is near the northern border of this species' range.

Habitat. Forages primarily in the dense canopy of rather extensive, mature, mesic deciduous forest (northern hardwoods), less often in dry mixed (pine with large red oaks), dry deciduous (red oak; aspen), and wet deciduous forests. Said also to inhabit mesic mixed forest (MBBA 1991), but I suspect this is where patches of red oak (dry deciduous forest) occur on dry hilltops surrounded by mesic mixed forest. In late summer, may descend to eat berries.

Migration Dates. **SEAD**: 12 May 2001 (B, H, NAMC). **SMAD**: 24 May (n=15). **FMDD**: 23 Aug (n=10). **FLDD** (includes all Sep dates): 17 Sep 89 (Liminga, D. Weaver); 15 Sep 2001 (1, Pilgrim River mouth, H, RH); 13 Sep 90 (Calumet, LB); 9 Sep 2001 (Dan's Point, K, TA, JM); 29 Aug 97 (Eagle River, K, LB).

Breeding (**B** 5 pr, 14 po; **H** 3 pr, 13 po; **K** 4 co, 2 pr, 4 po).

10 Jul 95 (carrying food) near Gratiot Lake, T57N, R31W, Sec. 1, K, LB.

BBS. Bootjack 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1. *Herman*: 13 on 6 of 7 counts (85.7%); mean 1.86; range 0-4.

NAMC. Baraga Co.: 2 on 2 of 6 counts (33.3%); mean .33; range 0-1; ind/PH .01. *Houghton Co.*: 3 on 1 of 7 counts (14.3%); mean .43; range 0-3; ind/PH .01.

Western Tanager *Piranga ludoviciana*

Status and Range (H). Accidental **spring** vagrant; male seen, 22 May 2002, 3 mi NW Boston, RH (good description in LB files), D. Richter (finder). Accepted by the MBRC (Byrne, 2004).

Eastern Towhee *Pipilo erythrophthalmus*

Status and Range (B, H, K). **Spring**: occasional vagrant; 6 records (18 Apr-12 May) for K and northern H were presumably overshoots from the south, because Baraga Co. is the northernmost point in the towhee's breeding range at this longitude. **Summer**: rare resident in B and southern H; recorded at north end of Big Lake (a "colony" discovered in 1997 and still present in 2005) and five other localities on the Baraga Plains. Elsewhere, recorded in summer near Bovine (B), in L'Anse, at Kenton (H), and near Plantation Lakes (H). Clearly very local, but probably more widespread than the data indicate. **Fall**: latest dates are in Aug, probably much too early for actual departure. **Early winter**: accidental vagrant at a Liminga feeder (AW).

Habitat. On the Baraga Plains, breeds in dry mixed shrub upland where jack pine and red oaks have been clearcut and the oaks are regenerating from stumps to form dense brush. As a spring and winter vagrant, sometimes found at feeders.

Migration Dates (see Significant Records for data). **SEAD**: 18 Apr 98; 30 Apr 2000. **FLDD**: Aug 1914, 2 Aug 97; both probably much too early.

Significant Records (vagrants; all records not listed under Breeding).

18 Apr 98 (male at feeder) Eagle River, K, RH, L. Pierce (finder).

30 Apr 2000 (male near feeder) near Hebard Park, K, S. Brimm (pers. comm.), J. Rooks (pers. comm.).

4 May 88 (1) Liminga, M. Weaver, E. Weaver (Weaver, 2000).

11 May 90 (female at feeder) Mohawk, K, RH (Weaver, 2000).

12 May 99 (male at feeder) 3 mi NW Boston, H, D. Richter.

May 81 (1) Cole's Creek mouth, B. Brown (Weaver, 2000).

19, 23, 27, 28, 30 Dec 82, 1, 2 Jan 83 (1 at feeder) Liminga, B. Brown, RH, AW (photos by AW on 19 Dec) (Weaver, 2000, orig. notes; JPW 61: 67; AB 17: 305).

Breeding (**B** 1 co, 7 pr, 8 po; **H** 3 po).

8 May-6 Aug, 97-2005 (up to 4 birds seen on one day; male and female with juvenile on 28 Jul 97, JY; pair seen 14 May 2005, LB, Z. Gayk) .5 mi N Big Lake, T49N, R34W, Sec. 29, B, LB, JM, LM, JY (finder); here treated as 1 confirmed and 5 probable breeding records.

17 May 99 (singing male) T49N, R34W, SW quarter of Sec. 3, B, JY, possible breeding.

*26 Jun 87 (singing male) near Plantation Lakes, T48N, R36W, NW quarter, H, LB, possible breeding.

*1 Jul 84 (1) near Bovine, T50N, R33W, Sec. 22, mailbox 803, B, S. Patti, Herman BBS Stop 16, possible breeding.

*1 Jul 84 (1) and 7 Jul 85 (1) .5 mi W Kelly Lake, T50N, R34W, Sec. 20, B, S. Patti, Herman BBS Stop 43, both possible breeding.

3 Jul 93 (1) junction Clear Lake Road and Plains Cutoff Road, T50N, R34W, Sec. 9, B, S. Patti, Herman BBS Stop 39, possible breeding.

3 Jul 93 (1) L'Anse, junction highway US 41 and Lambert Road, T50N, R33W, Sec. 8, B, S. Patti, Herman BBS Stop 24, possible breeding.

5 Jul 97 (3) 2 mi W Little Lake, T49N, R34W, SW corner Sec. 8, B, S. Patti, Herman BBS Stop 50, possible breeding.

Aug 1914 (male seen) backyard of a house in Kenton, H, A. R. Cahn (1918), possible breeding.

Summer 2000 (seen) T49N, R34W, Sec. 10, B, JY, possible breeding.

BBS. Herman: 8 on 4 of 7 counts (57.1%); mean 1.14; range 0-3.

NAMC. Baraga Co.: 7 on 4 of 6 counts (66.7%); mean 1.17; range 0-3; ind/PH .03.

Cassin's Sparrow *Aimophila cassinii*

Status and Range (K). Accidental **fall** vagrant; 1 record, 16 Sep 85 (adult female, UMMZ 227670, received from Kalamazoo Nature Center) found dead on side of highway US 41 near Central, T58N, R31W, SE quarter, K, J. Rooks. Only MI record (UMMZ, in litt.; J. Granlund in McPeek & Adams, 1994). Accepted by the MBRC (Chu, 1991).

American Tree Sparrow *Spizella arborea*

Status and Range (B, H, K). Common transient throughout. Because of its flocking behavior, may be encountered infrequently inland, but then in numbers. **Spring**: common, but without the large flocks encountered in fall; no concentration along Lake Superior shore. Prolonged migration, annually about a month (see median dates), but considering all years, about two months (see extreme dates). **Fall**: generally common, but very common on north coast of K, where regularly seen in flocks of over 20 and exceptionally to 360, as a result of concentration by Lake Superior. A trans-Lake Superior migrant; flock of 3 arrived at Agate Harbor at 1025 EDT on 13 Oct 90 (LB). **Early winter**: occasional lingerer, recorded as late as 8 Jan in years when not known to winter. Increase from 98 to 2004 (HCCBC) probably a result of a period of warm, snowless early winters. **Late winter**: normally, by Jan heavy snows have flattened and covered most weeds, and this sparrow becomes a casual resident restricted to feeders. Wintering documented only for H and only in five consecutive winters, 73-74 through 77-78, all at a Liminga feeder (AW), but in only four winters since: 96-97 (22 Jan 97, Laurium, H, fide S. Andres); 98-99 (Hancock feeder, RH); 2000-01 (1 Jan, 2 birds, to 4 Feb, 1 bird, Hancock feeder, RH); and Dec 2002 to Feb 2003 (3, feeder,3 mi NW Boston, D. Richter, Brockway Lookout 10 [1]: 2). Part of this rarity might be due to observer coverage—many feeder-watchers do not know how to identify or report this species.

Habitat. Found in any grass-weed habitat, such as poorly kept residential lawns, roadsides, and old fields. Sometimes, but not often, attends seed feeders.

Migration Dates. **SEAD**: 11 Mar 90 (Liminga, D. Weaver, probable winterer); 24 Mar 95 (Liminga, AW). **SMAD**: 9 Apr (n=21). **SP**: third week of Apr. **SMDD**: 4 May (n=23). **SLDD**: 21 May 2002 (Agate Harbor, LB, A. and D. Slagle). **FEAD**: 16 Sep 98 (Copper Harbor, LB). **FMAD**: 28 Sep (n=10, K only, where species seems to arrive first). **FP**: third week of Oct. **FLDD**: 8 Jan 2000 (1) Calumet, RH; declines slowly until most gone by first week of Nov; see Status and Range.

High Counts. **Spring**: 9 Apr 98 (**32**) Arnheim, B or H, JY. **Fall**: 15 Oct 2002 (**360**) Eagle Harbor to Copper Harbor along coast, LB, exceptional; 24 Oct 97 (**130**) and 13 Oct 95 (**120**), both Copper Harbor, LB; 17 Oct 2003 (**75**) Dollar Bay, H, LB. **Early winter**: multi-party, 16 Dec 2000 (**11**) HCCBC.

NAMC. Baraga Co.: 16 on 1 of 6 counts (16.7%); mean 2.67; range 0-16; ind/PH .06. *Houghton Co.*: 21 on 4 of 7 counts (57.1%); mean 3.00; range 0-8; ind/PH .08.

HCCBC. 23 on 5 of 26 counts (15.4%); mean .88; range 0-11; ind/PH .02.

Chipping Sparrow *Spizella passerina*

Status and Range (B, H, K). Very common **summer** resident throughout, recorded in almost every township (MBBA map 1991). **Spring**: summer numbers augmented by transients, but not enough to exceed the very common range, except irregularly on the north coast of K, where Lake Superior concentrates birds into flocks of 10-60, occasionally 100. **Fall** (more data needed): no apparent influx of transients and no fall peak. Seemingly, both occur in late Jul and Aug (when data are few), because during all of Sep the species is only fairly common, and most are gone by the first week of Oct, a situation contrary to that at Whitefish Point, where it is said to be common in both Aug and Sep (Granlund & Byrne, 1994). **Winter**: accidental lingerer; 1 record, 11 Dec 2004 to 20 Feb 2005, at Hancock feeder, JK (photos), HCCBC.

Habitat. Most common in grassy openings within dry coniferous, dry mixed (red oak-pine), and mesic mixed forests. Also frequents residential and rural settings, roadcuts, old fields, and forest edge, provided these have both open grassy areas for foraging and scattered shrubs or small conifers for nests. Ground juniper provides a favorite nest site, and one Keweenaw nest (1 Jul 99) was 6 ft up in a live balsam fir. Commonly visits seed feeders.

Migration Dates. **SEAD**: 13 Apr 2001 (Hancock, RH). **SMAD**: 6 May (n=30). **FMDD**: 6 Oct (n=14). **FLDD**: 4-12 Nov 2000 (Copper Harbor feeder, JM, M. Scheiwe); 22 Oct 2002 (2 at feeder) L'Anse, D. Lovitch; see Winter.

High Counts. **Spring**: 22 May 97 (**100** in one flock), 25 May 96 (**65**) both Copper Harbor, LB. **Summer**: 26 Jun 99 (**30**) Baraga Plains, LB; 15 Jun 2004 (**30**) H and K, LB, JM, Bootjack BBS. **Fall**: 29 Aug 97 (**25**) Eagle River, LB.

Breeding (**B** 11 co, 11 pr, 7 po; **H** 18 co, 11 pr, 2 po; **K** 13 co, 4 pr, 1 po).

21 May 98 (nest under construction) Eagle River, K, LB.

29 May 2000 (carrying nest material) Copper Harbor, LB, JM.

6 Jun 98 (carrying nest material) Agate Harbor, LB.

9 Jun (nest) near Ravine River, T51N, R31W, Sec. 4, B, JY.

29 Jun 2002 (carrying food) Chassell, H, JY.

1 Jul 99 (nest with 1 tiny young and 2 eggs) Ft. Wilkins State Park, near Copper Harbor, LB; see Habitat.

19 Jul 2001 (prejuvenile) Klingville Road, H, LM.

Summary: 5 nests, 21 May-1 Jul; adults carrying food (n=15) 15 Jun-11 Jul.

BBS. Bootjack 67-73: 132 on 7 of 7 counts (100%); mean 18.86; range 12-29. *Bootjack* 92-2005: 269 on 14 of 14 counts (100%); mean 19.21; range 12-30. *Herman*: 129 on 7 of 7 counts (100%); mean 18.42; range 13-24. Note the remarkable similarity in means, a reflection of its broad habitat tolerance and even distribution.

NAMC. Baraga Co.: 263 on 6 of 6 counts (100%); mean 43.83; range 14-102; ind/PH 1.02. *Houghton Co.*: 316 on 7 of 7 counts (100%); mean 45.14; range 16-74; ind/PH 1.13.

Banding Recoveries. One juvenile banded 13 Aug 67 in B trapped and released 2 Jun 68 in WI, where it could have been a breeder or late transient.

Remarks. Simmons & Sloan (1974) and Sloan & Simmons (1973) detailed Chipping Sparrow consumption of jack pine budworms on the Baraga Plains.

Clay-colored Sparrow *Spizella pallida*

Status and Range (B, H, K). Uncommon and very local **summer** resident in B and H, most common in the farm districts of northern H. Very rare in K, where only colony today is in extreme western corner (27 May 2001, 3 singing males, T57N, R33W, Sec. 34, LB, JM), although non-breeding singing birds are occasionally found at Copper Harbor (LB). Maturation of old fields into dense shrub upland forces Clay-colors to move periodically, as in the case of an Ahmeek (K) colony that existed in the late 80s but disappeared in the early 90s (LB). Very uncommon **spring** and **fall** transient or near-western vagrant, especially on north coast of K. Timing of fall departure of breeders unknown; seemingly very uncommon Aug-Oct, with stragglers as late as 27 Oct.

Habitat. Very restricted in breeding habitat. Breeds in mesic, upland old fields with lush grass and scattered deciduous (normal) or coniferous (rare; young pine plantations; tamarack) shrubs or bush-sized trees, a transitory habitat; absent from sparse-grass old fields and dry pine barrens. Visits seed feeders.

Migration Dates. **SEAD**: 4 May 88 (Liminga, D. Weaver); date of 24 Apr 83 (JPW 61: 89) should have been 24 May 83 (Liminga, AW, orig. notes). **SMAD**: 10 May (n=18, H and K only). **SLDD**: migrants have been seen as late as 1 Jun 96 (Copper Harbor, LB). **FLDD**: 27 Oct 97 and 98 (both Copper Harbor, LB).

High Counts. **Spring**: 26 May 99 (**10**) Arnheim, B or H, JY, probably mostly breeders. **Summer**: 26 Jun 88 (**7** singing males) vicinity of Aura, T52N, R32W, SW quarter, B, LB.

Breeding (**B** 2 co, 2 pr, 4 po; **H** 3 co, 2 pr, 10 po; **K** 2 pr, 2 po).

1 Jun 34 (nest with 4 eggs in colony estimated at 15 pairs) L'Anse Township, B, G. B. Saunders (Wood, 1951).

5 Jun 2000 (nest with 3 eggs) T49N, R34W, Sec. 10, B, JY.

*6 Jul 87 (carrying food) T55N, R34W, SE quarter, H, LB.

6 Jul 2003 (carrying food) north of Sturgeon River Sloughs, T53N, R33W, Sec. 3, H, JY.

BBS. Bootjack 67-73: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1. *Bootjack* 92-2005: 24 on 11 of 14 counts (78.6%); mean 1.71; range 0-3. *Herman*: 3 on 2 of 7 counts (28.6%); mean .43; range 0-2.

NAMC. Baraga Co.: 17 on 6 of 6 counts (100%); mean 2.83; range 1-7; ind/PH .07. *Houghton Co.*: 3 on 3 of 7 counts (42.9%); mean .43; range 0-1; ind/PH .01.

Historical Changes (Table 17). This species probably did not occur in the Keweenaw before the major logging era in the mid 1800s to early 1900s; it was not listed by Kneeland (1857) or by Cahn (1918) for 1914. It apparently spread eastward into newly man-made habitats from its primary Great Plains range. The 1121% increase on the Bootjack BBS since the period 67-73 is attributable to succession of recently abandoned farmland into old fields; however, some of these same fields are quickly becoming shrub upland (LB), a process that eventually will leave no habitat for this species (assuming farms remain the same) and cause extirpation throughout the Peninsula.

Field Sparrow *Spizella pusilla*

Status and Range (B, H, K). Casual **spring** vagrant, presumably as a southern overshoot (4 records for K, 4 May-2 Jun). **Summer**: casual non-breeding vagrant at north end of Big Lake, B, where up to 2 unmated singing males, perhaps the same birds in all years, were found in 97, 98, 99, 2001, and 2003 from 6 May to 2 Aug. Also recorded at Kenton (H) in Aug 1914 and near Elo (H) on 29 Jun 2002. I do not consider any of these records to constitute even possible breeding, because no female has been found, but they might represent an early stage of invasion (see Discussions: Vagrancy). Accidental **fall** vagrant, presumably as a misoriented migrant; 1 record for K, 14 Sep. Accidental **winter** resident; 1 record for K, 4 Dec-16 Apr.

Habitat. The Big Lake birds were in a jack pine clearcut covered by grass, bracken fern, scattered shrubs, and small regenerating jack pines and red oaks, a habitat similar to old fields used elsewhere.

Significant Records (all).

4 May 2002 (1) Copper Harbor, LB, transient.

6 (1), 12 (1, NAMC), 27 (2) May 2001, about 200 yards from north end of Big Lake, T49N, R34W, Sec. 20, B, TA, LB, JM, JY, singing males, apparently unmated.

8 May (1, NAMC), 18 May (1), 13 Jun (2) 99, same locality as 6 May 2001, JY, singing males, apparently unmated.

11 May 2005 (1) Agate Harbor, LB.

17 May (1) to 6 Jul (2) 98, same locality as 6 May 2001, JY, singing males, apparently unmated.

19 May 97 (1) in Eagle River, K, LB, did not remain.

2 Jun 90 (1) West Bluff, Brockway Mt., LB, singing male that did not remain.

15 Jun 2003 (singing male) Baraga Plains on Prison Camp Road .8 mi E junction with Plains Road, RH, Z. Gayk, JK.

29 Jun 2002 (singing male) near Elo, T52N, R34W, Sec. 28, H, TA, JM.

1, 2 Aug 97 (1) same locality as 6 May 2001, LM, JY, singing male, apparently unmated.

Aug 1914 (3 seen, another heard) around Kenton, H, in open cultivated fields, A. R. Cahn (1918).

14 Sep 76 (1) Agate Harbor, LB.

In summer sometime during the period 83-88. The MBBA map (1991) shows a spot for probable breeding in the same township as Big Lake, B; I do not consider this a breeding record.

4 Dec 2004-16 Apr 2005 (1) at Ahmeek feeder, K, N. Auer, TA.

[12 May 2001 (2) H, NAMC; without documentation, I worry that these were American Tree Sparrows.]

NAMC. Baraga Co.: 2 on 2 of 6 counts (33.3%); mean .33; range 0-1; ind/PH .01. [*Houghton Co.*: see Significant Records.]

Historical Changes. Although the Field Sparrow is said to be decreasing in MI and elsewhere (L. H. Walkinshaw & R. Brown in Brewer *et al.*, 1991), it breeds as close as Dickinson and Marquette Cos. and might be spreading northward like certain other southern species; hence, future breeding is a distinct possibility. At the same time, however, old fields are succumbing to succession (see Clay-colored Sparrow), so the preferred habitat might not be available very far into the future.

Vesper Sparrow *Pooecetes gramineus*

Status and Range (B, H, K). Fairly common **summer** resident, widely but sparsely distributed in farm country of northern and southern H and the jack pine clearcuts of western B; largely absent where forests predominate (MBBA map 1991) in K, central H, and the eastern two-thirds of B. Formerly bred in K (Ahmeek, LB), but that field is now dense shrub upland; similar maturation is taking place throughout the Keweenaw, further restricting this species. Wood (1933) considered it a common summer resident at Copper Harbor in 1931,

when fields were more extensive, but today, despite the presence of one small field, it is only a casual spring migrant. **Spring** and **fall**: transients outside breeding localities are uncommon in spring and very uncommon in fall, with no apparent peaks.

Habitat. Breeds in drier old fields and grassy jack pine clearcuts, provided they have scattered shrubs and small trees for singing perches and ground nest concealment. Prefers drier fields with sparser grass than inhabited by the Savannah Sparrow. Once recorded at a seed feeder.

Migration Dates. **SEAD**: 10 Apr 2005 (2, Pilgrim River mouth, H, RH, JK). **SMAD**: 29 Apr (n=16). **SLDD**: transients recorded as late as 24 May 88 (Copper Harbor, LB). **FMDD**: 24 Sep (n=18). **FLDD**: 16 Nov 2002 (Hancock feeder, RH); 16 Oct 2003 (Hancock feeder, RH).

High Counts. **Spring**: multi-party, 8 May 99 (**15**) B, NAMC. **Summer**: 3 Jul 68 (**19**) H and K, B. and D. Wolck, Bootjack BBS; 24 Jul 56 (**18**) Big Lake and Little Lake, Baraga Plains, LB. **Fall**: 20 Sep 97 (**34**) Baraga Plains, LM.

Breeding (**B** 3 co, 2 pr; **H** 4 co, 2 pr, 8 po; **K** 1 pr).

*17 Jun 86 (nest with 4 eggs) Baraga Plains, 3 mi W Alberta, D. C. Evers (CLO).

*17 Jun 87 (2 prejuveniles) near Pori, T49N, R37W, NW quarter, H, LB.

27 Jun 2000 (carrying food) T49N, R34W, Sec. 11, B, LB.

24 Jul 56 (nest with 4 young with feather tips just emerging) Little Lake, T49N, R34W, Sec. 16, B, LB.

[*Note*: I do not accept the one confirmed and two easternmost probable spots for K on the MBBA map (1991); I know of no habitat there.]

BBS. Bootjack 67-73: 62 on 7 of 7 counts (100%); mean 8.86; range 3-19. *Bootjack* 92-2005: 35 on 13 of 14 counts (92.9%); mean 2.50; range 0-7. *Herman*: 12 on 5 of 7 counts (71.4%); mean 1.71; range 0-4.

NAMC. Baraga Co.: 57 on 6 of 6 counts (100%); mean 9.50; range 4-16; ind/PH .22. *Houghton Co.*: 3 on 2 of 7 counts (28.6%); mean .43; range 0-2; ind/PH .01.

Historical Changes (Table 17). The 72% decrease on the Bootjack BBS from a mean of 8.86 per count in 67-73 to 2.50 in 92-2005 I think is attributable to maturation of old fields into dense shrub upland and second growth forest. This change may eventually limit the Vesper Sparrow to the Baraga Plains, where it is dependent on clearcutting.

Lark Sparrow *Chondestes grammacus*

Status and Range (B, H, K). Vagrant, probably from the near west. Accidental in **spring** (3 records, 5-7, 8, and 28 May) and casual in **fall** (8 records, 18, 29 Aug and 2-16 Oct). Eight of the 11 records are for the north coast of K (7 in and near Copper Harbor, see Habitat) and 1 each from inland and coastal H and inland B.

Habitat. Both H records were at seed feeders. Most K sightings were on streets and highway shoulders in or near villages, and thus are examples of the "oasis effect"—a small patch of acceptable habitat (open village) within a dense expanse of unacceptable habitat (forest).

Significant Records (all).

5, 6, 7 May 2002 (1) Rabbit Bay feeder, H, B. and M. Wercinski (finders), LB, Z. Gayk, JM. Accepted by the MBRC (Byrne, 2004).

8 May 2004 (1) Alberta, T49N, R33W, Sec. 18, B, LB, Z. Gayk., feeding in short dry grass with Chipping Sparrows. Accepted by the MBRC (Internet).

28 May 31 (adult male, UMMZ 67395) Copper Harbor, N. A. Wood no. 100; first specimen for the Upper Peninsula (Wood, 1931).

18 Aug 64, in town of Eagle River, K, LB.

29 Aug 2004 (immature) grass field in Copper Harbor, TA (finder), LB. Accepted by the MBRC (Internet).

2 Oct 87 (1) in Copper Harbor, LB.

4 Oct 88 (immature) in Copper Harbor, LB.

7 Oct 90 (adult) 1.5 mi W Copper Harbor on roadside, LB (JPW 68 [2]: 22; G. A. McPeek in McPeek & Adams, 1994).

7, 8 Oct 90 (immature) feeder in Hancock, RH (finder), AW, D. Weaver (Weaver, 2000).

11 Oct 94 (immature) in Copper Harbor, LB.

16 Oct 86 (adult) in Copper Harbor, LB.

Historical Changes. There is no indication that the Lark Sparrow ever bred on the Peninsula; it was not mentioned by Kneeland (1857), Cahn (1918), or Wing (1939). Prime breeding habitats (savannas, prairies, dry sandy fields) probably did not exist before logging, nor do they today. Only clearcuts on the Baraga Plains might provide marginal habitat.

Lark Bunting *Calamospiza melanocorys*

Status and Range (K). Accidental vagrant in **spring** (1 record, 6 Jun) and **fall** (2 records, 27 Aug, 10 Oct) on north coast of K.

Significant Records (all).

6 Jun 79 (female) Copper Harbor, M. Macdonald (JPW 58: 119; Payne, 1986); I have seen no documentation for the record.

27 Aug 99 (female) on dirt road 3 mi E Copper Harbor near Horseshoe Harbor, LB, J. Rooks, JY (finder). Accepted by the MBRC (Byrne, 2001a).

10 Oct 93 (piebald adult male) on street shoulder in Copper Harbor, LB, LM, R. Metsaranta

(photos by, one published in MBNH 1:,44; AB 48:,113). Accepted by the MBRC (Chu, 1995).

[15 Sep 99 (female) Arnheim, on dike separating B and H; although probably identified correctly, the documentation was deemed insufficient for acceptance by the MBRC (Byrne, 2001a).

Savannah Sparrow *Passerculus sandwichensis*

Status and Range (B, H, K). **Summer** resident, very common throughout farmlands of H and the northwestern half of B and absent or very local in the largely forested regions of northwestern and south-central H, the southeastern half of B, and most of K; in K, breeds only in extreme western corner (27 May 2001, 7 singing males, T57N, R33W, Sec. 34, LB, JM) and irregularly at Copper Harbor. Summer numbers augmented by **spring** and **fall** transients, which are very common, sometimes abundant, outside breeding localities, such as on the north coast of K, where concentrated by Lake Superior (see High Counts). In fall, transients are evident by mid Aug, appear in irregular major flights during Sep and the first week of Oct, thus producing a prolonged peak, and disappear suddenly at the end of the second week of Oct, with stragglers to 21 Oct.

Habitat. Breeds primarily in hayfields, but also old fields (which can have scattered short shrubs), undergrazed pastures, dense-grass dikes around sewage ponds (especially Calumet), goose grassland (Baraga Plains), and the drier portions of sedge-grass marshes. Prefers moister fields and denser grass than does the Vesper Sparrow. During migration, found in similar habitats, but also grassy roadsides, small patches of grass along the Lake Superior shore, seed feeders, and elsewhere. Nest placed in a ground scrape at the base of a clump of vegetation and concealed with grass.

Migration Dates. **SEAD**: 2 Apr 86 (Liminga, AW). **SMAD**: 25 Apr (n=28). **SP**: middle two weeks of May. **SLDD**: migrants seen as late as 31 May 96 (Copper Harbor, LB). **FMDD**: 15 Oct (n=7, K only). **FLDD**: 21 Oct 89 (Liminga, AW) and 2000 (Copper Harbor, LB).

High Counts. **Spring**: 25 May 96 (**40**) Copper Harbor, LB, exceptional. **Summer**: 3 Jul 68 (**50**) H and K, B. and D. Wolck, Bootjack BBS; 31 Jul 90 (**30**) SW of Chassell, T53N, R34W, NE quarter, H, LB. **Fall**: 8 Sep 91 (**40**) Agate Harbor, LB; 3 Sep 96 (**40**) Calumet sewage ponds, LB.

Breeding (**B** 6 co, 4 pr, 7 po; **H** 19 co, 6 pr, 4 po; **K** 2 co, 2 pr).

26 May 99 (nest with 2 eggs) Arnheim, Unit. 4, H, JY.

2 Jun 96 (nest with 3 eggs) Arnheim, B or H, JY; not in above totals.

8 Jun 98 (carrying food) Arnheim, Unit 7, B, JY.

*14 Jun 86 (nest with 4 eggs) Lake Linden sewage ponds, H, LB.

17 Jun 99 (nest with 4 eggs) Lake Linden sewage ponds, H, LB, JM.

19 Jun 2000 (carrying food) Arnheim, B, LM.

22 Jun 2003 (carrying food) T51N, R34W, Sec. 19, B, JY.

*29 Jun 87 (carrying food) T51N, R36W, SE quarter, H, LB.

3 Jul 2002 (prejuvenile) Sturgeon River Sloughs, T53N, R33W, Sec. 4, JY.

*7 Jul 88 (carrying food) T56N, R34W, SW quarter, H, LB.

9 Jul 2002 (adult feeding prejuvenile) Calumet sewage ponds, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

15 Jul 98 (carrying food) Arnheim, Unit 6, H, LM.

17 Jul 2002 (carrying food) Ahmeek sewage ponds, K, LB, JM.

31 Jul 90 (carrying food) Tamarack City sewage ponds, H, LB.

Summary: nests with eggs 26 May-17 Jun; attending young (in or out of nest) 8 Jun-31 Jul; data indicate two broods, as elsewhere (Baicich & Harrison, 1997).

BBS. Bootjack 67-73: 295 on 7 of 7 counts (100%); mean 42.14; range 24-50. *Bootjack* 92-2005: 282 on 14 of 14 counts (100%); mean 20.14; range 11-30. *Herman*: 86 on 7 of 7 counts (100%); mean 12.29; range 2-22.

NAMC. Baraga Co.: 176 on 6 of 6 counts (100%); mean 29.33; range 19-44; ind/PH .68. *Houghton Co.*: 122 on 7 of 7 counts (100%); mean 17.43; range 3-34; ind/PH .44.

Historical Changes (Table 17). Not listed for the Keweenaw by Kneeland (1857) or Cahn (1918) for 1914, but seen in Ontonagon Co. by Wing (1939) in 1931. Thus it probably invaded sometime between 1914 and 1931. The Bootjack BBS indicates a 52% decline between the periods 67-73 (42.14 birds per count) and 92-2005 (20.14), which I attribute to a decrease in the quantity and quality of hayfields.

Grasshopper Sparrow *Ammodramus savannarum*

Status and Range (B, H, K). **Spring**: casual vagrant; 4 records, 10-31 May. **Summer**: since 87, occasional vagrant in northern H (6 records, 12 Jun-13 Jul), B (1 record, 3 Jul), and K (1 record, 29 Jun); all except last were singing males, apparently unmated. Given that this species is beyond the northernmost extent of its range at this longitude, all birds probably were spring overshoots, some of which remained to advertise fruitlessly for mates; these birds might represent an early

stage of invasion (see Discussions: Vagrancy).

Habitat. In summer, found singing in old fields and hayfields, except Manitou Is. bird in small patch of grass.

Significant Records (all).

[26 Apr 68 (1) H, N. F. Sloan (AFN 22: 531). The early date makes this record questionable, suggesting Le Conte's Sparrow, and I therefore reject it.]

18 May 88 (1) 4 mi W Copper Harbor in grass along Lake Superior shore, LB.

10 May 2003 (1) Pequaming, B, JY, NAMC, migrant in grass along shore.

28 May 2002 (1) Wescoat's field, Copper Harbor, LB.

31 May 96 (1) Wescoat's field, Copper Harbor, LB.

12 Jun 94 (singing male) T56N, R32W, Sec. 16, H, LB, Bootjack BBS.

14 Jun 98 (singing male) 4 mi ENE Lake Linden, T56N, R32W, Sec. 34, H, LB,Bootjack BBS.

*15 Jun 87 (singing male) T47N, R37W, SW quarter, H, LB.

15 Jun 2004 (singing male) T56N, R32W, Sec. 16, H, LB, JM, Bootjack BBS, same field as 12 Jun 94.

29 Jun 2003 (1) Manitou Is., B. Johnson (MBNH 11: 45).

3 Jul 93 (singing male) Baraga Plains, T49N, R34W, Sec. 8, S. Patti, Herman BBS Stop 50.

*7 Jul 88 (singing male) 1 mi N Oskar, T55N, R34W, Sec. 5, H, LB.

12 and 13 Jul 2003 (singing male, no female seen in two hours of observation) Tamarack City sewage ponds field, H, Z. Gayk (finder), RH.

BBS (see Significant Records). *Bootjack* 92-2005: 3 on 3 of 14 counts (21.4%); mean .21; range 0-1. *Herman*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

Historical Changes. This species breeds as close as Marquette, Menominee, and Delta Cos., MI (MBBA 1991) and might be another southern species moving north. Based on this proximity and the recent summer records, I predict it will breed in the Keweenaw in the future if new farming practices do not destroy its habitat (see Discussions: Conservation).

Henslow's Sparrow *Ammodramus henslowii*

Status and Range (K). Accidental **spring** vagrant, presumably as an overshoot; 1 record, a single bird studied at length (description in LB notes) on 6 May 98 in an old field (broad-leaved shrubs and ground juniper) at Copper Harbor, LB. Regular breeding of this species in Menominee Co. (MBBA 1991) suggests that Henslow's, like the Grasshopper Sparrow, might become more regular in the Keweenaw in the future. However, its preferred habitat, moist depressions in dense grassland with scattered shrubs, is very scarce, and the species is declining drastically in the Midwest.

Le Conte's Sparrow *Ammodramus leconteii*

Status and Range (B, H, K). Rare and local **summer** resident, breeding regularly, in small numbers, only at Arnheim (B and H) and the Sturgeon River Sloughs, Unit 1. Elsewhere irregular, appearing especially when its Great Plains breeding grounds are unusually dry (as in 88) but also at other times, only to disappear after one season. Accidental in K; 1 summer record, the only Peninsula breeding confirmation . The latest fall record at a breeding locality (but not certainly a breeder) is 18 Oct. Local, very uncommon, **spring** and **fall** transient, recorded 29 Apr-22 May and 15 Sep-16 Oct. Six of the 8 spring transients and all 12 for fall are from the north coast of K (where observers look), 1 of these at Agate Harbor (Sep), 1 on Manitou Is., and the rest at Copper Harbor, where probably annually regular in spring and fall in Wescoat's field.

Habitat. Found in summer in sedge-grass marsh and occasionally low wet spots with patches of sedges in hayfields. On migration, found also in old fields.

Migration Dates (transient individuals; see Significant Records for data). **SEAD**: 29 Apr 2004. **SLDD**: 22 May 92. **FEAD**: 15 Sep 93. **FLDD**: 18 Oct 2000.

Significant Records.

Spring transients (all).

29 Apr 2004 (1) Pilgrim River mouth, H, R. Brigham (pers. comm.; MBNH 11: 203).

29 Apr 2004 (1) Manitou Is., Z. Gayk, JY.

30 Apr 2000 (2) Copper Harbor, LB, JM.

2 May 2001 (3) Copper Harbor, LB, R. Brigham, JK.

6 May 98 (1) Copper Harbor, LB.

7 May 2000 (1) mouth Pilgrim River, H, LB, JM.

14 May 2003 (3) Copper Harbor, LB.

22 May 92 (1) Copper Harbor, J. Peacock (JPW 69 [6]: 30).

Breeding localities, in spring , summer, and fall (all).

2 May 2001 (1) T53N, R33W, Sec. 9, H, JY.

9 May 98 (2 singing males) Big Lake Field, 1 mi NE Big Lake, T49N, R34W, Baraga Plains, JY, NAMC.

13 May 2000 (singing male) S end Opal Road, near Watton, B, NAMC, LB, JM; not found in this marsh previously or in 2001-03.

*17 Jun, 7, 11, 14 Jul 88 (singing male; 1 carrying food 11 Jul) power pole no. 956, E of Ahmeek, T57N, R32W, Sec. 22, , K, LB, RH, LM, AW (photos by; Weaver, 2000), D. Weaver, et. al.;

only confirmed breeding for the Peninsula.

20 Jun 99 (singing male) Big Lake Field, Baraga Plains, LM, JY.

21 Jun 96 (1 or 2) N end Peterson Road, T52N, R31W, Sec. 13, B, JY, Michigan Nature Association land.

3 Jul 68 (6 singing males), 3 Jul 70 (2), and 2 Jul 71 (2) near Bootjack, H, B. and D. Wolck, Bootjack BBS (JPW 46: 133); included as 3 possibles in Breeding totals; see BBS. This wet hayfield is today (2005) second-growth forest.

5 Jul 97 (1) marsh at south edge of Baraga, T51N, R33W, Sec. 33, S. Patti, Herman BBS.

*16 (RH), 21 (LB) Jul 88 (not 90 as in Weaver, 2000) (2 singing males and 1 probable female) wet hayfield with sedges, .5 mi N Oskar, T55N, R34W, Sec. 8, H.

*19 Jul 88 (seen, not singing) T51N, R34W, Sec. 22, B, LB.

18 Oct 2000 (1) Sturgeon River Sloughs, Unit 1, RH; possibly a migrant.

Fall transients (all).

15 Sep 93 (1) Agate Harbor, LB.

16 Sep 98 (1) Copper Harbor, LB.

20-21 Sep 2002 (1) Copper Harbor, LB, K. Gayk, RH.

22 Sep 2001 (1) Copper Harbor, LB, JM.

27 Sep 88 (1) Copper Harbor, D. Ewert (JPW 67: 159).

28 Sep 95 (1 in juvenile plumage) Copper Harbor, LB. Thus juveniles do migrate, contra the *National Geographic Guide to the Birds of North America*, 1st ed.; see 13 Oct 95 record.

2 Oct 99 (adult) Copper Harbor, LB, JM.

4 Oct 97 (adult) Copper Harbor, LB.

8 Oct 95 (adult) Copper Harbor, LB; see 13 Oct 95 record.

13 Oct 95 (1) Copper Harbor, LB; this and the 8 Oct 95 and 28 Sep 95 records erroneously attributed to Houghton Co. in MBNH 3: 99.

15 Oct 2000 (1) beach at Lake Manganese, near Copper Harbor, LB, LM, JM, JY.

16 Oct 98 (juvenile) Copper Harbor, LB; see 28 Sep 95 record.

High Counts. **Summer**: 23 Jun 98 (**8**) Arnheim, Unit 3, H, JY; 3 Jul 68 (**6**) near Lake Linden, H, B. and D. Wolck, Bootjack BBS; 25 May 96 (**5**) Sturgeon River Sloughs, JY.

Breeding (**B** 8 po; **H** 5 po; **K** 1 co; see Significant Records).

BBS. Bootjack 67-73: 10 on 3 of 7 counts (42.9%); mean 1.43; range 0-6; see Significant Records. *Herman*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

NAMC. Baraga Co.: 3 on 2 of 6 counts (33.3%); mean .50; range 0-2; ind/PH .01. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Nelson's Sharp-tailed Sparrow *Ammodramus nelsoni*

Status and Range (K). Accidental **fall** transient; 1 record, 1 seen on 10 Oct 93 in Wescoat's old field at Copper Harbor, LB (description), LM, R. Metsaranta (AB 48: 113). Accepted by the MBRC (Chu, 1995).

Fox Sparrow *Passerella iliaca*

Status and Range (B, H, K). Uncommon early **spring** and late **fall** transient throughout. Accidental **early winter** lingerer (17 Dec 2000, 1, Copper Harbor, TA, JM, J. Ongie, Eagle Harbor Christmas Bird Count).

Habitat. Prefers forests with closed canopy, dense underbrush, and heavy leaf litter, as found in mesic deciduous forest, mesic mixed forest, and drier edges of shrub wetland. Occasionally visits seed feeders.

Migration Dates. **SEAD**: 4 Apr 82 (Youngman's property, B, JY) and 88 (Liminga, D. Weaver). **SMAD**: 15 Apr (n=20). **SP**: low peak about 18 Apr. **SMDD**: 3 May (n=13). **SLDD**: 22 May 77 (Vermilac Lake, B; N. J. Ilnicky, in litt.). **FEAD**: 22 Sep 2001 (Hancock, RH). **FMAD**: 29 Sep (n=10). **FP**: low peak in first week of Oct. **FMDD**: 16 Oct (n=15). **FLDD**: 17 Dec 2000; 5 Nov 97 (Hancock, RH).

High Counts. **Spring**: 10 Apr 2005 (**6**) Hancock, JK; 19 Apr 82 (**5**) Youngman's property, B, JY. **Fall**: 7 Oct 2001 (**9**) Copper Harbor, LB, JM.

NAMC. Houghton Co.: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

Song Sparrow *Melospiza melodia*

Status and Range (B, H, K). Very common **summer** resident throughout, numbers slightly augmented by transients in **spring** but seemingly not in **fall**, and never enough to exceed very common. In fall, little variation in numbers through Aug and Sep, with no transient peak; almost all leave by mid Oct, a few remaining regularly through the third week, with casual stragglers to 4 Nov. **Early winter**: accidental lingerer; 1 record, 16 Dec 95, at a feeder in Rabbit Bay, H, B. (photo) and M. L. Wercinski, HCCBC.

Habitat. The most ubiquitous of our sparrows. Prefers shrub wetland (speckled alder, sandbar willow, red-osier dogwood), but found also in rural and sometimes residential settings, shrub upland, dry fence rows, dense old fields, and brushy forest edge and clearings, especially where these adjoin water. Visits seed feeders.

Migration Dates. **SEAD**: 27 Mar 87 (Youngman's property, B, JY). **SMAD**: 8 Apr (n=27). **SP**: extended over last three weeks of Apr, but centered about 20 Apr. **FMDD**: 13 Oct (n=25). **FLDD**: 16 Dec 95 (HCCBC); 4 Nov 84 and 85 (both Liminga, D. Weaver).

High Counts. **Spring**: multi-party, 11 May 96 (**83**) H, NAMC; 19 May 96 (**13**) Copper Harbor, LB. **Summer**: 24 Jun 67 (**54**) H and K, B. and D. Wolck, Bootjack BBS.

Breeding (**B** 14 co, 12 pr, 4 po; **H** 20 co, 11 pr, 4 po; **K** 7 co, 4 pr, 2 po).

11 May 99 (carrying nest material) Huron Bay, T51N, R31W, Sec. 7, B, JY.

25 May 2004 (nest with 5 eggs) Baraga Plains, T49N, R34W, Sec. 13, JY.

31 May 98 (nest with 3 young) Sturgeon River Sloughs, JY.

*13 Jun 88 (distraction display) T49N, R32W, NW quarter, B, LB.

18 Jun 2003 (prejuvenile) T53N, R33W, Sec. 20, H, JY.

Aug 1914 (nest with 3 young Song Sparrows and 1 Brown-headed Cowbird) near Kenton, H, Cahn (1918).

Summary: 4 nests, 11 May-Aug; 12 records of adults carrying food (not given above) 28 May-18 Jul. Date span suggests two broods, as elsewhere (Baicich & Harrison, 1997). Considering its early Apr arrival, it might be expected to breed much earlier, or does it wait?

BBS. Bootjack 67-73: 265 on 7 of 7 counts (100%); mean 37.86; range 24-54. *Bootjack* 92-2005: 222 on 14 of 14 counts (100%); mean 15.86; range 8-34. *Herman*: 180 on 7 of 7 counts (100%); mean 25.71; range 18-32.

NAMC. Baraga Co.: 180 on 6 of 6 counts (100%); mean 30.00; range 20-47; ind/PH .70. *Houghton Co.*: 324 on 7 of 7 counts (100%); mean 46.29; range 20-83; ind/PH 1.16.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Historical Changes (Table 17). The Bootjack BBS indicates a 58% decrease from a mean of 37.86 per count in 67-73 to 15.86 in 92-2005. National BBS data demonstrate a .5% per year national decrease, 66-99 (Pardieck & Sauer, 2000). The most likely explanation for the Keweenaw decrease is maturation of shrub wetland and shrub upland into forest and perhaps the current practice of removing shrubs at the edges of hayfields and roads.

Lincoln's Sparrow *Melospiza lincolnii*

Status and Range (B, H, K). Uncommon **summer** resident, widely but sparsely distributed (as is its habitat) throughout the three counties. Fairly common, locally and irregularly common, and more widespread in **spring** and **fall**.

Habitat. Breeds primarily in bogs, which are usually open but may support scattered tamarack and black spruce. Rarely, occupies upland, dry coniferous (pine) forests that have slashings from logging. On migration, found in most any open brushy habitat, including dense-weed old fields, brush piles, forest edge, and patches of ground juniper. On migration occasionally visits seed feeders.

Migration Dates. **SEAD**: 1 May 2001 (Hancock, RH). **SMAD**: 10 May (n=14). **SP**: about 19 May. **SMDD**: 25 May (n=9). **SLDD**: 5 Jun 98 (Copper Harbor, LB). **FEAD**: 31 Aug 80 (Agate Harbor, LB) and 88 (Liminga, D. Weaver). **FMAD**: 8 Sep (n=18). **FMDD**: 13 Oct (n=20). **FLDD**: 29 Oct 62 (Houghton, J. Weber; JPW 41: 131) and 96 (North Portage Entry, H, S. Andres; MBNH 4: 107).

High Counts. **Spring**: multi-party, 12 May 2001 (**14**) B, NAMC; same census (**9**) LB, JM only. **Summer**: 9 Jul 86 (**6** singing males) Pt. Isabelle, K, LB. **Fall**: 22 Sep 2001 (**8**) Copper Harbor, LB, JM.

Breeding (**B** 2 pr, 7 po; **H** 2 co, 2 pr, 7 po; **K** 1 co, 3 pr, 4 po).

*9 Jul 86 (carrying food) Pt. Isabelle, K, LB.

BBS. Bootjack 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1; this singing bird was out of habitat (Stop 2). *Herman*: 3 on 3 of 7 counts (42.9%); mean .43; range 0-1.

NAMC. Baraga Co.: 27 on 5 of 6 counts (83.3%); mean 4.50; range 0-14; ind/PH .10. *Houghton Co.*: 4 on 3 of 7 counts (42.9%); mean .57; range 0-2; ind/PH .01.

Swamp Sparrow *Melospiza georgiana*

Status and Range (B, H, K). Fairly common **summer** resident throughout Peninsula, locally very common at Arnheim and Sturgeon River Sloughs. Summer abundance augmented by **spring** and **fall** transients, raising detectability to common in first three weeks of Oct, when cold fronts cause the last remaining populations of hardy birds to flee southward en masse. Accidental **early winter** lingerer; 1 record, a single bird, 25 Nov-18 Dec 2000, at a feeder in Rabbit Bay, H, JK, LM, M. L. Wercinski (finder) and B. Wercinski (photos seen by LB), HCCBC, accepted by the MBRC (MBNH 8: 155).

Habitat. In summer, nearly restricted to open wetland with cattails, even a very small patch of which can support a pair, although extensive habitat is preferred. Much less often found in sedge-grass marsh and open bog, both with scattered shrubs. Adjacent shrub wetland may be used for foraging. On migration, occurs in a greater variety of habitats, including shrub wetland (speckled alder, sandbar willow, red-osier dogwood), old fields, dense grass or weeds, and occasionally seed feeders.

Migration Dates. **SEAD**: 15 Apr 98 (Sturgeon River Sloughs, JY). **SMAD**: 25 Apr (n=4). **FMDD**: 13 Oct (n=12, K only, LB). **FLDD**: 30 Oct 98 (Sturgeon River Sloughs, JY); see Winter.

High Counts. **Spring**: multi-party, 9 May 98 (**38**) H,

NAMC; 9 May 2001 (**20**) Sturgeon River Sloughs, JY; 19 May 96 (**16**) Copper Harbor, LB; 2 May 2001 (**16**) T53N, R33W, Sec. 9, B, JY. **Summer**: 25 Jun 2000 (**21**) Arnheim, B and H, LM, JY; 28 Jun 98 (**14**) Sturgeon River Sloughs, JY. **Fall**: 22 Sep 2001 (**15**) Copper Harbor, LB, JM; 10 Oct 93 (**12**) Copper Harbor, LB.

Breeding (**B** 3 co, 15 pr, 7 po; **H** 8 co, 4 pr, 9 po; **K** 5 co, 3 pr, 6 po).

*13 Jun 86 (carrying food) Agate Harbor, LB.
*14 Jun 86 (carrying food) Ahmeek marsh, K, LB.
19 Jun 2003 (carrying food) T53N, R33W, Sec. 8, H, JY.
*27 Jun 88 (carrying food) T50N, R35W, NE quarter, B, LB.
*28 Jun 87 (carrying food) T50N, R36W, NW quarter, H, LB.
*30 Jun 87 (carrying food) T52N, R35W, SW quarter, H, LB.
4 Jul 2002 (prejuvenile) T47N, R34W, Sec. 13, B, JY.
4 Jul 2003 (carrying food) T53N, R33W, Sec. 32, H, JY.
20 Jul 2000 (prejuvenile) Sturgeon River mouth, JY.

BBS. Bootjack 67-73: 3 seen on 2 of 7 counts (28.6%); mean .43; range 0-2. *Bootjack* 92-2005: 11 seen on 9 of 14 counts (64.3%); mean .79; range 0-2. *Herman*: 28 seen on 7 of 7 counts (100%); mean 4.00; range 2-8.

NAMC. Baraga Co.: 111 on 6 of 6 counts (100%); mean 18.50; range 11-23; ind/PH .43. *Houghton Co.*: 87 on 5 of 7 counts (71.4%); mean 12.43; range 0-38; ind/PH .31.

HCCBC. 1 on 1 of 26 counts, (3.8%); mean .04; range 0-1; ind/PH .001.

White-throated Sparrow *Zonotrichia albicollis*

Status and Range (B, H, K). Very common **summer** resident, recorded in 73 of 77 censused townships (MBBA map 1991) and doubtless occurs in all 83; by my personal data, the fourth most detectable (and probably numerous) species in the Keweenaw. Numbers augmented by **spring** and **fall** transients, but detectability remains within the very common range except for occasional local flights (perhaps only in K, where concentrated by Lake Superior), when it is abundant. Spring migrants continue moving into last week of May. Start of fall migration uncertain; migration prolonged, extending throughout Sep and first three weeks of Oct, with no clear peak. One fall migrant arrived off Lake Superior at Hebard Park (K) at 0830 EDT on 28 Sep 2002 (LB). Occasional **early winter** lingerer (7 records) and accidental **late winter** resident (2 records).

Habitat. A forest edge species, nesting and foraging primarily in the dense shrub ecotone between clearings (including road cuts) and any wet or mesic forest. On migration, found almost anywhere there are openings with dense shrubs, including residential settings. Often very common at seed feeders near dense shrubs.

Migration Dates. **SEAD**: 28 Mar 97 (Ford Farm Road, B, JY, possibly a winterer); 11 Apr 98 (Hancock, RH). **SMAD**: 24 Apr (n=28). **SP**: about 8 May. **FMDD**: 17 Oct (n=18). **FLDD**: 23 Dec 95 (see Significant Records).

Significant Records (all winter; all single birds except as noted).

Fall 2003-23 Feb 2004, Calumet, G. Goode.
3 Nov 2001, Hancock feeder, RH.
10 Nov-20 Dec 97 (2) Hancock feeder, RH.
12 Nov 98, Liminga, D. Weaver.
24 Nov 93, Liminga, D. Weaver.
15 Dec 2001, HCCBC.
16-23 Dec 95, feeder in Houghton, HCCBC.
21 Dec 2002, feeder in Houghton, HCCBC, RH, JM.
28, 29, 30 Jan, 1 Feb 98, Calumet feeder, S. Andres, RH, LM (MBNH 5: 135).

High Counts. **Spring**: multi-party, 11 May 2002 (**98**) H, NAMC; 6 May 98 (**25**) Agate Harbor to Copper Harbor, LB. **Summer**: 5 Jul 97 (**42**) B, S. Patti, Herman BBS; 2 Jul 71 (**29**) H and K, B. and D. Wolck, Bootjack BBS. **Fall**: 6 Sep 98 (**35**) Copper Harbor, LB; 11 Sep 2001 (**35**) Pt. Abbaye, B, B. St.Clair; 4 Sep 84 (**29**) Agate Harbor, LB.

Breeding (**B** 4 co, 22 pr, 2 po; **H** 15 co, 9 pr, 7 po; **K** 12 co, 8 pr).

*10 Jun 88 (carrying food) T47N, R33W, SW quarter, B, LB.
*12 Jun 88 (carrying food) T47N, R32W, NE quarter, B, LB.
*19 Jun 86 (carrying food) 1 mi E Ahmeek, K, LB.
*23 Jun 86 (adults feeding 2 prejuveniles) near Ahmeek, K, LB.
23 Jun 86 (2 pairs carrying food) near Ahmeek, K, LB.
*23 Jun 88 (carrying food) T51N, R31W, NW quarter, B, LB.
*29 Jun 87 (carrying food) T51N, R36W, SE quarter, B, LB.
*9 Jul 87 (carrying food) T55N, R35W, SW quarter, H, LB.
*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.
14 Jul 2002 (prejuvenile) Manitou Is., Sec. 16, JY.
17 Aug 73 (nest with 4 large young) Lake Fanny Hooe, K, LB, nest empty on 22 Aug, probably after normal fledging.
18 Aug 82 (prejuvenile) Agate Harbor, LB.

26 Aug (nest with young), 4 Sep 96 (same pair feeding prejuvenile) Agate Harbor, LB.

Summary: said to be normally single-brooded, with failures followed by renesting (Baicich & Harrison, 1997), which may be the case with the Aug records above; however, the long gap between 10 Jul and 26 Aug suggests these were second broods; more data needed.

BBS. Bootjack 67-73: 165 on 7 of 7 counts (100%); mean 23.57; range 20-29. *Bootjack* 92-2005: 254 on 14 of 14 counts (100%); mean 18.14; range 7-35. *Herman*: 238 on 7 of 7 counts (100%); mean 34.00; range 26-42.

NAMC. Baraga Co.: 269 on 6 of 6 counts (100%); mean 44.83; range 26-64; ind/PH 1.05. *Houghton Co.*: 319 on 7 of 7 counts (100%); mean 45.57; range 16-98; ind/PH 1.15.

HCCBC. 3 on 3 of 26 counts (11.5%); mean .12; range 0-1; ind/PH .003.

Banding Recoveries. A bird banded in WI 4 May 63, presumably as a transient, and found dead in K 21 May 63, demonstrates a direct south to north migration route.

Historical Changes (Table 17). Bootjack BBS data indicate a slight 23% decline from a mean of 23.57 birds per count in the period 67-73 to 18.14 in 92-2005, paralleling a national BBS reduction of .7% per year, 66-99 (Pardieck & Sauer, 2000). If the small Keweenaw decline is real, I can easily attribute it to man's reduction of forest edge. Keweenaw farmers often remove the shrubs that would form a natural ecotone between hayfields and woodlots, presumably to maximize hay harvests. Also, federal, state, and county road commissions routinely mow young shrubs between road edge and adjacent forest. Finally, and most importantly, old fields that once supported brush edge, as well as some shrub wetlands, have succeeded naturally into unbroken second-growth forest.

Harris's Sparrow *Zonotrichia querula*

Status and Range (B, H, K). Transient, occasional in **spring** and very uncommon (some days fairly common) in **fall**. In spring 2004 an unprecedented 9 were reported, including 8 May 2004 (Baraga, 1; 1.5 mi E Watton, B, LB, Z. Gayk). In fall, most regularly seen on the north coast of K, especially in town of Copper Harbor, which is probably the best place in the state, especially during the peak period 27 Sep-8 Oct. The few records for B are listed above and below, except for 21 Sep 81 (Youngman's property, JY) and 10 Oct 98 (2 birds, Arnheim, JY). Most are immatures. Unlike others in its genus, rarely sings or gives its distinctive call. Accidental non-breeding **summer** resident; 1 record, an adult at a feeder in Eagle Harbor, K, 1 Jul to at least 26 Aug 97, LB, L. Pearce (finder), J. Rooks; on 15 Aug, already in definitive basic plumage (LB). Casual **early winter** lingerer (2 records) and **late winter** resident (3 records), all at feeders.

Habitat. Seen most often in towns at seed feeders or foraging on lawns, street shoulders, and driveways, usually near shrubs, to which it flies when disturbed. Also recorded occasionally in old fields, country roadside grass, and weeds along Lake Superior shore (northern K). Often associates with White-crowned Sparrows, but may be found alone.

Migration Dates. **SEAD**: 25 Apr 67 (Houghton, B. and D. Wolck; Schroeder, 1969); 6 May 85 and 86 (both Liminga, D. Weaver). **SMAD**: 13 May (n=11). **SLDD**: 1-2 Jun 2002 (Agate Harbor, LB, A. and D. Slagle, injured bird); 20 May 31 (Copper Harbor, adult female, UMMZ 67396, N. A. Wood no. 68; Wood, 1933), 90 (Liminga, AW), and 96 (Copper Harbor, LB). **FEAD**: 3 Sep 97 (Eagle Harbor, K, S. Andres); 12 Sep 76 (immature, Watton, B; N. J. Ilnicky, in litt.; JPW 55: 11). **FMAD**: 26 Sep (n=21). **FP**: about 1 Oct. **FMDD**: 13 Oct (n=19). **FLDD**: 28 Oct 84 (2, Liminga, D. Weaver); see Significant Records.

Significant Records (all winter; all single birds).

Oct 98-26 Apr 99, feeder in Rabbit Bay, H, M. L. Wercinski, B. Wercinski (photo seen by LB); dates include 19 Dec 98, RH, HCCBC.

11 Dec 98-13 Mar 99, feeder in Hancock, RH.

15 Dec 91 (1) HCCBC (JPW 69 [4]: 31).

17 Dec 2000, Copper Harbor, TA, JM, J. Ongie, Eagle Harbor Christmas Bird Count.

27 Jan through Feb (including 10, 14 Feb) 98 (immature) feeder in Pequaming, B, B. Szymanski, JY (MBNH 5: 135).

High Counts. **Fall**: 28 Sep 2002 (**6**) Agate Harbor (5) and Copper Harbor (1) LB; 24 Sep 66 (**5**) near Houghton, B. and D. Wolck (Schroeder, 1969); 27 Oct 84 (**5**) Liminga, D. Weaver (JPW 63: 66); 21 Sep 98 (**4**) Copper Harbor, LB.

HCCBC. 2 on 2 of 26 counts (7.7%); mean .08; range 0-1; ind/PH .002.

Remarks. One seen on 14 Oct 98 said to be from "Kearnsarge [sic], Chippewa" Co., LB (MBNH 6: 110) was actually at Kearsarge, H.

White-crowned Sparrow *Zonotrichia leucophrys*

Status and Range (B, H, K). **Spring** and **fall** transient, common throughout, except locally very common, some days abundant, in coastal K, where concentrated by Lake Superior, and seemingly uncommon in B. Most gone by mid Oct, almost all by first week of Nov. A report from H in **summer** 97 (MBNH 5: 36) I treat as some sort of error, although White-crowns have been reported elsewhere in the state during that season. **Early winter**: accidental lingerer, 11-28 Nov 95 and 19 Dec 98. "Gambel's Sparrow" (*Z. l. gambelii*), a western race easily

identified by its pale gray (not black) lores in adults and immatures and yellow mandible in adults, is a regular transient in at least K, recorded 16-23 May and 16 Sep-5 Oct (LB; Wood, 1931); its detectability is uncertain, but I would estimate uncommon if observers were to search for it.

Habitat. Open areas, foraging in weed patches and weedy old fields, on lawns, roadsides, driveways, and at rural and village seed feeders.

Migration Dates. **SEAD**: 28 Apr 86 (Liminga, D. Weaver). **SMAD**: 6 May (n=26). **SP**: about 12 May. **SMDD**: 20 May (n=24). **SLDD**: 5 Jun 2004 (Agate Harbor, LB, A. and D. Slagle). **FEAD**: 4 Sep 84 (Agate Harbor, LB) and 89 (Copper Harbor, LB). **FMAD**: 17 Sep (n=26). **FP**: about 30 Sep. **FMDD**: 13 Oct (n=27). **FLDD**: 19 Dec 98 (adult, HCCBC); 28 Nov 95 (Liminga, D. Weaver, immature at feeder since 11 Nov); 9 Nov 91 (Liminga, AW).

High Counts. **Spring**: 15 May 90 (**90**) Copper Harbor, LB, exceptional; 18 May 96 (**40**) Copper Harbor, LB. **Fall**: 28 Sep 95 (**175**) Agate Harbor to Copper Harbor, exceptional.

NAMC. Baraga Co.: 18 on 2 of 3 counts (66.7%); mean 6.00; range 0-10; ind/PH .13. *Houghton Co.*: 39 on 6 of 7 counts (85.7%); mean 5.57; range 0-10; ind/PH .14.

HCCBC. 1 on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001.

Dark-eyed Junco *Junco hyemalis*

Status and Range (B, H, K). **Spring**: very common transient throughout. Migration window very wide, whether measured by extreme or median dates. **Summer** resident, local because of habitat; generally uncommon, but fairly common in dry coniferous forest of Baraga Plains and southern quarter of H. **Fall**: very common transient, very irregularly abundant; usually, most numerous on north coast of K, where concentrated by Lake Superior, and where species usually arrives first. Two records of over 1000 birds in a day. Like spring, peak prolonged, length dependent on year. Fall population drops precipitously after 1 Nov, with almost all gone by mid Nov. A trans-lake migrant (see Remarks). **Early winter**: considering all years since 76, an occasional, locally fairly common lingerer after mid Nov, especially at feeders; recorded on the HCCBC in 13 of 26 years (50.0%), with a maximum of 25 on 21 Dec 96 (see Historical Changes). **Late winter**: considering all years since 76, a casual winter resident, but currently (94-2003) a very rare resident at feeders in larger towns. Without feeders, this ground-foraging species could not survive, its weed seed food being covered by several feet of snow.

Habitat. As a breeder, prefers open-canopied, dry coniferous forest (jack pine, red pine), because the structure provides ample openings for ground foraging; much less numerous in small openings or edge associated with red pine plantations, dry mixed forest (pine-red oak), and shrub upland supporting oak scrub and ground juniper. Widespread on migration in open habitats. Visits seed feeders commonly on migration, irregularly in winter.

Migration Dates. **SEAD**: 7 Mar 99 (3, Eagle River, K, LM). **SMAD**: 31 Mar (n=27). **SP**: extended over two weeks centered on 20 Apr. **SMDD**: 11 May (n=27). **SLDD**: 29 May 79 (Houghton, AW). **FEAD**: 18 Aug 75 (Liminga, AW) and 82 (Agate Harbor, LB). **FMAD**: 31 Aug (n=10, K only)). **FP**: prolonged, usually embracing all of Oct, centered on 14 Oct. **FMDD**: mid Nov; see Status and Range.

High Counts. **Spring**: 8 Apr 90 (**135**) B, JY, exceptional; 22 Apr 2002 (**90**) 1 mi NE Boston, H, JK. **Summer**: 10 Aug 52 (**50**) Little Lake, B, LB. **Fall**: 14 Oct 95 (**340**) Copper Harbor (LB), plus "**hundreds**" at Liminga (AW), plus "**hundreds**" in B (JY), plus "**thousands**" along road from Copper Harbor to Calumet (B. Bouton, pers. comm.), incredible; 28 Oct 67 (estimated **1000**) Houghton, B. and D. Wolck (JPW 46: 14), exceptional; 14 Oct 97 (**160**) Agate Harbor to Copper Harbor (LB). **Winter**: multi-party, 21 Dec 2002 (**27**) HCCBC; 21 Dec 96 (**13**) HCCBC, JY alone.

Breeding (**B** 2 co, 2 pr, 1 po; **H** 5 co, 1 pr, 7 po; **K** 2 co, 2 pr, 5 po).

*24 Jun 88 (prejuvenile) T51N, R30W, SW quarter, B, LB.

26 Jun 2000 (2 prejuveniles) 1 mi NW Big Lake, B, LB, JY.

10 Jul 56 (2 prejuveniles) Agate Harbor, LB.

BBS. Bootjack 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1. *Herman*: 3 on 1 of 7 counts (14.3%); mean .43; range 0-3.

NAMC. Baraga Co.: 64 on 6 of 6 counts (100%); mean 10.67; range 2-40; ind/PH .25. *Houghton Co.*: 119 on 6 of 7 counts (85.7%); mean 17.00; range 0-76; ind/PH .43.

HCCBC. 59 on 13 of 26 counts (50.0%); mean 2.27; range 0-25 (27 in 2002); ind/PH .05.

Banding Recoveries. One hatching-year bird banded in MD 21 Oct 66 and recovered in B 20 Jun 67 indicates that some Keweenaw breeders migrate far to the east in fall.

Historical Changes (Table 17). I find only one winter record prior to 76: E. Robinson (1942) had juncos all winter 40-41 in Houghton. HCCBC data (all counts in Dec) demonstrate an increase during early winter, as follows: not recorded 76-82; seen in 6 of 11 years, 83-93; seen every year 94-2000 (Table 15). Although recent early winters have been relatively mild, I suspect this apparent increase is due to the proliferation and better coverage of bird feeders.

Remarks. A trans-Lake Superior migrant in fall. At

Agate Harbor, during irregular censuses of migrating waterfowl, I recorded 18 incoming juncos as follows: 5 Oct 92 (1 bird, arrived 0935 EDT); 7 Oct 86 (1, 0820; 1, 0830; 1, 0850; flock of 3, 0908; 2 together, 0935; and 1, 0937); 9 Oct 88 (1, 0953); 13 Oct 90 (1, 1014); 15 Oct 88 (1, 0903, chased but missed by a Merlin); 21 Oct 94 (flock of 3, 1125); 24 Sep 98 (1 caught by a Merlin, 1033). Also, 1 arrived at 0917 on 28 Sep 2002 at Hebard Park, K, LB. On 8 Oct 2003, at the east end of Manitou Is., JY noted 43 arriving from the north and northeast, as follows: 2, 0820; 6, 0822; 1, 0852; 1, 0855; 1, 0906; flocks of 2, 3, 4, 0914; 2, 0919; 2 singles, 0923; groups of 1, 2, 4, 0928; 5, 0933; 4, 0959; 1 1002; 1, 1005; and 1, 1012. A bird closely resembling an adult male "Oregon Junco" (similar to *J. h. montanus*) was seen near Agate Harbor on 15 Oct 97 (LB); however, its sides had a very slight suffusion of grayish, and thus I suspect it to have been the race *cismontanus*, but on the Oregon end of the spectrum for this highly variable race. An apparent example of the "Pink-sided Junco" (probably *J. h. mearnsi*, which breeds as close as central Montana) seen at a feeder at Agate Harbor on 13 May 2001 and picked up dead on 14 May (adult male, UMMZ, LB) may be the only MI and eastern North American record for this race.

Lapland Longspur *Calcarius lapponicus*

Status and Range (B, H, K). Status uncertain because of annual variability in timing and numbers and because its presumed primary habitat—stubble fields (as used at Arnheim, B)—are poorly censused; more data needed. **Spring**: transient, probably very uncommon, but often in flocks when discovered, which increases detectability but decreases frequency. **Fall**: transient; detectability highly variable from year to year, from uncommon to abundant, some years concentrated by Lake Superior on north coast of K. During peak migration, small flocks often migrate westward along the Lake Superior shore (but over water) at Agate Harbor (*e.g.*, 28 Sep 91, 31 birds in flocks of 3, 3, 4, 8, and 13; 2 Oct 92, 49 in flocks of 1, 4, 5, 5, 5, 8, 9, and 12; LB); I suspect these arrived after dawn (see Dark-eyed Junco) between Agate Harbor and Keweenaw Point, or perhaps even east of the Point, and were correcting their heading toward their more southwesterly wintering grounds. **Winter**: accidental visitant; 1 record, a single bird at a Liminga feeder 21-24 Jan 95, AW (photo).

Habitat. Probably most common in cut hayfields, but these are poorly searched. Seen most frequently on dikes and dry beds of sewage ponds, bare spots and villages on north coast of K (especially Copper Harbor), roadsides, and Keweenaw Bay beaches. Noted twice at seed feeders.

Migration Dates. **SEAD**: 21 Mar 76 (Liminga, AW, one day at feeder); 7 Apr 98 (Arnheim, B, JY); 21 Apr 2005 (Lake Linden, JK). **SMAD**: 10 May (n=12). **SLDD**: 27 May 2000 (Copper Harbor, LB, JM). **FEAD**: 18 Aug 2001 (Lake Linden, TA, JM, B. St.Clair); 4 Sep 85 (between Obenhoff and Atlantic Mine, H, AW). **FMAD**: 23 Sep (n=21). **FP**: last week of Sep and first week of Oct. **FMDD**: 14 Oct (n=15). **FLDD**: 8 Nov 96 (B or H, JY); 7 Nov 97 (Arnheim, B, JY); see Winter.

High Counts. **Spring**: 14 Apr 98 (**50**) Arnheim, B, JY. **Fall**: 1, 2 Oct 1904 ("**thousands**") at Houghton, W. H. Grant (Barrows, 1912), highly exceptional if not exaggerated; 27 Sep 86 (**252**) K, LB; 2 Oct 99 (**225**) in Copper Harbor, LB, JM; 22 Sep 98 (**200**) Calumet sewage ponds (not Chippewa Co. as in MBNH 6: 111); 15 Oct 2002 (**160**) Eagle Harbor to Copper Harbor, LB; 2 Oct 97 (**150**) Arnheim, B, LB.

NAMC. Baraga Co.: 12 on 1 of 6 counts (16.7%); mean 2.00; range 0-12; ind/PH .05.

Smith's Longspur *Calcarius pictus*

Status and Range (B, H, K). Accidental **spring** (2 records) and **fall** (2 records) transient; all four birds were alone.

Significant Records (all).

19 May 95 (alternate plumage male) long grass on hillside at West Bluff lookout, Brockway Mt., LB. Michigan's third spring record. Accepted by the MBRC (Reinoehl, 1997).

20 May 97 (alternate plumage male) grassy dike in Sturgeon River Sloughs, Unit 1, JY; description in LB files. Accepted by the MBRC (MBNH 5: 199, where date erroneously given as 26 May).

1, 2 Sep 2005 (basic plumage) grassy dike at Arnheim, on ground in Unit 6 in H and flying over Unit 7 in B (S. Haas, JK), S. Santner (finder on 1 Sep), AB, LB, Z. Gayk, RH, S. Haas, JK (many excellent photos on 2 Sep), K. Tischler (all seven observers on 2 Sep). Accepted by the MBRC (A. Bryne in litt.)

18 Sep 98 (basic plumage, sex and age uncertain) pebbly street shoulder in town of Copper Harbor, LB. Accepted by the MBRC (MBNH 6: 11).

[**Chestnut-collared Longspur** *Calcarius ornatus*]

Status and Range (K). Accidental **spring** vagrant. One record, a female on 9 May 82 at West Bluff lookout on Brockway Mt., AW (orig. notes; Weaver, 2000), D. Weaver, R. and M. Krumm. Fourth Michigan record (AB 36: 856; JPW 60: 130; McPeek & Adams, 1994; listed as hypothetical by Payne [1983, 1986] only because of lack of hard evidence). Although there is no written description for this bird, conversations with AW convince me of its

validity; it was observed within 15 feet at length by four observers, and the tail pattern was well seen.

Snow Bunting *Plectrophenax nivalis*

Status and Range (B, H, K). Highly variable from year to year in abundance and timing. **Spring**: uncommon transient, rarely from late Feb, but normally mid Mar, to mid May, straggling into third week of May. Tends to winter just far enough south to avoid the amount of snow that would cover its ground food and return with the very first thaw, which can occur as early as late Feb. **Fall**: common transient, some years abundant (at least locally), arriving rather abruptly in mid Oct and departing usually by mid Nov. Most often seen on north coast of K (including villages), where concentrated between Lake Superior and inland forests; also occurs in large fields (*e.g.*, Arnheim, Baraga Plains), along perimeter shoreline, and at northern H sewage ponds. Water edge appears to attract Snow Buntings. **Early winter**: occasional lingerer to 2 Jan (1973, Liminga, AW), recorded in about 50% of years (HCCBC data), with these birds leaving when winter snows become heavy about 1 Jan. **Late winter**: casual visitant, with 6 records 20 Jan-5 Feb. The two late Feb records (see Migration Dates) were during exceptionally early springs, and I thus judge them to represent early spring migrants; there are no records 6-22 Feb. Regular winter residency prevented by deep snow that covers ground food.

Habitat. Most numerous in open areas such as clearcuts, farm fields, beaches, highway shoulders, and dry shores and beds of sewage ponds,. In K, frequent, sometimes abundant, on rocky coast and town streets (*e.g.*, Copper Harbor). I once found several, small fall flocks along a dirt road completely canopied by leafless deciduous forest. Casual at rural feeding stations (Liminga, AW; 24 Oct 2003, flock of 47, Hancock outskirts, RH).

Migration Dates (see also Status and Range). **SEAD**: 23 Feb 85 (1, Liminga, AW); 28 Feb 2000 (40, Arnheim, B, JY; a very early spring, as noted in MBNH 4: 211, 233); 17 Mar 77 (hundreds, H, F. B. Isaacs). **SMAD**: first week of Mar. **SMDD**: 28 Apr (n=15). **SLDD**: 25 May 90 (Agate Harbor, LB, not 27 May as in AB 44: 431). **FEAD**: 1 Oct 98 (Gay, K, AW). **FMAD**: 16 Oct (n=27). **FP**: last week of Oct and first week of Nov. **FLDD**: 2 Jan 73 (Liminga, AW); most gone by mid Nov in normal years, but see Early Winter; see also Significant Records.

Significant Records (all late winter; see also Feb dates under Migration Dates).

20, 21 Jan 95 (1) Liminga, AW.
22 Jan 78 (10) Liminga, AW.
25 Jan 75, Liminga, AW.
25, 26 Jan 97, Liminga, AW.
30 Jan 81, Youngman's property, B, JY.
5 Feb 2004 (1) Calumet sewage ponds, D. Richter (Brockway Lookout 12 [1]: 3).

High Counts. **Spring**: 17 Mar 77 (**hundreds**) H, F. B. Isaacs; 4 Apr 73 (**300**) H, N. C. Streiffert (JPW 51: 109); 3 May 96 (**56**) B or H, JY. **Fall**: 24 Oct 99 (**462**) B, LM, JM, JY; 20 Oct 98 (**180**) Calumet and Lake Linden sewage ponds, LB; 5 Nov 96 (**180**) B, JY. **Early winter**: multi-party, 19 Dec 98 (**95**) HCCBC; 29 Dec 96 (**20**) Liminga, AW. **Late winter**: 22 Jan 78 (**10**) Liminga, AW.

HCCBC: 364 on 13 of 26 counts (50.0%); mean 14.00; range 0-95; ind/PH .31.

Northern Cardinal *Cardinalis cardinalis*

Status and Range (B, H, K). Total of about 44 records through spring 2002, as follows: spring 10; summer 4; fall 4; early winter 15; late winter 7; Nov-Jun 1; fall to spring 2; Jan-Sep 1. This species has changed its status remarkably in the last decade, increasing in range and abundance (see Historical Changes). Formerly considered a vagrant, but today seemingly a rare **permanent** resident, recorded in all three counties. However, most birds found at feeders in fall, early winter, and spring disappear after a short time, as if on the move, so regular migration is probable, with only a few birds over-wintering. Nesting known only in Hancock and Chassell (H). Here I consider the breeding population viable, but it may prove not to be. Of the 40 birds of known sex, 25 were males, perhaps because of their conspicuous red color and ease of identification by non-birders. **Winter** survival dependent on feeders (see Habitat).

Habitat. Nearly all seen, even in the breeding season, at or near seed feeders in rural and residential situations that have tall shrubs. The only Keweenaw nests were in common lilacs next to a residential house. Although the Northern Cardinal's diet is quite varied (Austin, 1968), by winter, insects are unavailable to a non-gleaner, most tree seeds and fruits have rotted or been consumed, and weed seeds are covered by snow, leaving only feeder food, without which, I believe, the species could not survive the harsh winters. If it does not migrate south in fall, its very existence at any time of year may well depend on *winter* feeders.

Significant Records (all through spring 2002; listed chronologically by year for historical appraisal; RH and LM solicited many of these records).

17 Nov 74 (1) feeder in Houghton, Dalquist family (JPW 53: 71; Weaver, 2000).
19 Jan 75 (1) Houghton, D. Yerg (JPW 53: 71; Weaver, 2000).
23 Oct 83 (male) Copper Harbor, M. Macdonald, present four days (JPW 62: 31; Payne, 1986; Weaver, 2000).
19-20 Jan 85 (male) Allouez feeder, K, L. Macomber fide AW.

28 Jun 86 (female) Liminga, M. Weaver (AW orig. notes).
14 May 91 (female) Liminga, AW (Weaver, 2000).
17 (pair), 25 (pair, male singing) May, 29 Jun (female attending 2 wing-fluttering juveniles) 2002, Chassell ski trails at old school, H, LM, JY, here considered confirmed breeding.
21 May 91 (male) Liminga, D. Weaver, M. Weaver (AW orig. notes).
28 May 94 (male) Liminga, D. Weaver (AW orig. notes).
Dec 94 (male) feeder in Eagle River, K, S. Andres (pers. comm.), D. Richter.
Dec 94 (male) feeder on Farmer's Block Road near Ahmeek, K, fide S. Andres.
16 Dec 95 (1) feeder in Dreamland, HCCBC, LM, JY.
27 Dec 96-1 Jan 97 (female) feeder in Toivola, H, RH.
15-23 Mar 97 (1) Covered Road, H, fide S. Andres.
5 Jul 97 (1) B, S. Patti, Herman BBS, possible breeding.
22 Mar-late Apr 98 (male) Copper Harbor, LM, JY, *et al.*
29 Nov 99 (1, S. Britton, MBNH 7: 120), all winter 99-2000 (pair, local observers), 30 Apr (pair, LB, JM), 5 May (male, LB), 26 May (female, LB), 4 Jun (pair, LB) 2000, Copper Harbor. No birds seen thereafter until 15 Oct 2000 (which see), when possibly the same birds reappeared. Probable breeding.
18 Dec 99 (1) HCCBC.
12 Jan-Sep 2000 (male and female) feeders in Hancock, RH, O. Mills (2000), *et al.*; two nests built by same pair; one built in late Mar had at least 1 egg, with fledgling leaving nest about 15 Apr; second nest had 1 egg on 20 Apr; a prejuvenile being fed by a male on 27 Jun had to come from a third nest. See 12 Nov 2000-15 Feb 2001 record.
28 Apr 2000 (1) Covered Road, H, B. Brown (pers. comm.).
Early Oct 2000 (1 male and 2 females) Eagle River, K, C. Tregonowan (fide LM).
15 (male), 17 (male and female), 21 (male) Oct 2000, LB, LM, JM, JY; all winter 2000-2001 (2 males, 1 female) T. Boost; 17 Dec 2000 (male and female, Eagle Harbor Christmas Bird Count) TA, JM, J. Ongie; all Copper Harbor. See 29 Nov 99 record.
31 Oct 2000 (male) Pt. Abbaye, B, JY.
Early Nov 2000 (male) 3 mi. S Covington, B, J. Francis, fide LM.
12 Nov 2000-15 Feb 2001, virtually every day (up to 3 birds, as on 16 Dec, HCCBC) Hancock feeder, including HCCBC, RH, JM; quite likely the same birds as 12 Jan-Sep 2000, but not the same exact locality.
14 Nov 2000 (male) Paradise Road about 2 mi S Houghton, J. Etapa, fide LM.
14 Nov 2000 (male) Hurontown, H, C. Etapa, fide LM.
15, 18, 19, 20 Nov 2000 (male) Beaufort Lake, B, G. Stagliano, fide LM.
16 Nov 2000 (female) Dollar Bay, H, S. Fill, fide LM.
19 Nov 2000 (male) Rabbit Bay, H, local observer, fide LM.
21 Nov 2000 (male) Chassell, H, J. Waara, fide LM.
Early Dec 2000 (male) Hancock, D. Flaspohler, fide LM.
17 Jan 2001 (male) Houghton, JM, C. MacLennan, fide LM.
7 Mar 2001 (2 females) Houghton, G. Lewis, fide LM.
20 Mar 2001 (male) Atlantic Mine, H, D. Kilpela, fide LM.
17 Apr 2001 (singing male) Hancock, JK, perhaps same as early Dec 2000.
12 May 2001 (female) Pequaming, B, JY, NAMC.
20 May 2001 (male and female) Hubbell, H, S. Wilcox, fide LM.
1 Nov 2001-2 Mar 2002 (up to 2) Hancock campground, RH.
4 Dec 2001 (female) Chassell, H, JY.
16 Dec 2001 (1) Copper Harbor, TA, JM, J. Ongie, Eagle Harbor Christmas Bird Count.
20 Apr 2002 (1) Hancock campground, JK, probably same as 1 Nov 2001.
6 Jun 2002 (male) in Baraga, LB, JM, possible breeding.
18 Jun 2002 (female) Agate Harbor, A. and D. Slagle, stayed only one day at feeder.
[Payne (1983) lists a record for H in 81 or 82, but I cannot confirm it.]

Breeding (**B** 2 po; **H** 2 co; **K** 1 pr); see Significant Records starting 5 Jul 97 (B), 29 Nov 99 (K), 12 Jan 2000 (H), 17 May 2002 (H), and 6 Jun 2000 (B).

BBS. Herman: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1.

NAMC. Baraga Co.: 1 on 1 of 6 counts (16.7%); mean .17; range 0-1; ind/PH .004.

HCCBC. 6 on 4 of 26 counts, 76-2000 (15.4%); mean .23; range 0-3; ind/PH .005.

Historical Changes (Table 17). B. Durst (in Brewer

et al., 1991) summarized the northward spread of this species in the Lower Peninsula, where it nearly reached the northern tip by 1970. Further summer expansion is shown by the MBBA map, but non-breeding data are not included. Keweenaw data illustrate further expansion into the northernmost part of Michigan. The first Northern Cardinal record for the Keweenaw Peninsula was in 1974; then came one each in 75, 83, and 85. All four were in late fall or winter, causing me to hypothesize that birds were arriving in fall. Subsequent data, however, suggest a more plausible theory, that birds move northward in spring and go undetected until they are forced by cold, snowy fall weather to seek feeders (see also Red-bellied Woodpecker). The first summer record was in Jun 86. The year 91 provided the first multiple sightings—a male and a female near, but not with, each other in May. After a seeming hiatus in 92-93, probably due to poor coverage, 94 provided the first 3-record year and the beginning of a string of consecutive annual occurrences, as follows: 95 (1 record), 96 (1), 97 (2), 98 (1), 99 (2), this last year producing the first record of a pair. With this modest beginning, the "mini population explosion" in 2000 was unexpected; observers found three groups of 3 birds each and 10 singles (plus two pairs that might be different), for a total of 19, possibly 23, birds, as well as the first breeding records (Mills, 2000). If winter feeders continue to be reliable, the cardinal may develop a small population in Hancock and eventually elsewhere, but whether it becomes large enough to be viable permanently is questionable; whether or not the species migrates will affect the outcome.

Rose-breasted Grosbeak *Pheucticus ludovicianus*

Status and Range (B, H, K). Common **summer** resident, perhaps least widespread in K. Numbers augmented somewhat by **spring** transients, but not enough to raise detectability. A very small number of **fall** transients are seen outside breeding localities, especially in Copper Harbor (LB), but nevertheless the species is rare after Aug. **Winter**: accidental visitant; 1 record, 3 Jan 2003-7 Feb 2004, immature male at feeder in L'Anse, B. D'Agostino (pers. comm.; photos), MBNH 11: 143.

Habitat. Breeding essentially restricted to mesic deciduous forest (northern hardwoods and pure sugar maple), especially edge and second growth, secondarily in wet deciduous swamp. May be found in any deciduous trees on migration. Regular at sunflower seed feeders during spring migration.

Migration Dates. **SEAD**: 4 May 2000 (Hancock, S. Robinson). **SMAD**: 16 May (n=29). **SP**: about 25 May. **SLDD**: migrants have been seen as late as 30 May 2002 (2, Copper Harbor, LB, JM). **FMDD**: 6 Sep (n=13). **FLDD**: 4 Oct 92, 30 Sep 97, 19 Sep 93 (all Copper Harbor, LB); see Winter.

High Counts. **Spring**: 27 May 2001 (**12**) near Sturgeon River Sloughs, T53N, R33W, Sec. 9, H, JY; 19 May 99 (**10**) Arnheim, H, JY; 19 May 96 (**9**) Copper Harbor, LB. **Summer**: 13 Jun 98 (**8**) Arnheim, B or H, JY.

Breeding (**B** 1 co, 14 pr, 11 po; **H** 8 co, 8 pr, 13 po; **K** 2 co, 2 pr, 5 po).

*23 Jun 88 (carrying food) T51N, R31W, NW quarter, B, LB.

*29 Jun 87 (carrying food) T51N, R36W, SE quarter, H, LB.

17 Jul 76 (prejuvenile or juvenile begging food) MTU campus, Houghton, F. B. Isaacs, here considered confirmed breeding.

24 Jun 2001 (female with prejuvenile) Arnheim, H, JY.

BBS. Bootjack 67-73: 21 on 6 of 7 counts (85.7%); mean 3.00; range 0-7. *Bootjack* 92-2005: 1 on 1 of 14 counts (7.1%); mean .07; range 0-1. *Herman*: 22 on 5 of 7 counts (71.4%); mean 3.14; range 0-7.

NAMC. Baraga Co.: 17 on 3 of 6 counts (50.0%); mean 2.83; range 0-10; ind/PH .07. *Houghton Co.*: 18 on 2 of 7 counts (28.6%); mean 2.57; range 0-11; ind/PH .06.

Historical Changes (Table 17). The 98% decrease on the Bootjack BBS, if real, might be the result of maturation of second growth into more mature forest.

Indigo Bunting *Passerina cyanea*

Status and Range (B, H, K). Common **summer** resident throughout, except in the heavily forested southeastern half of B, where scarce. No apparent transients, and therefore no migration peaks, in **spring** or **fall**, as befits a species at the northern edge of its range. In fall, almost all quietly disappear by the last week of Aug, with stragglers to mid Sep, casually mid Oct. Accidental visitant in **winter**, 2 records: mid Dec 99-16 Feb 2000, 3.5 mi W Atlantic Mine, T54N, R35W, Sec. 1, H, B. and P. Quenzi feeders, JK (photos); 25 Oct 2003-7 Jan 2004, feeders in Hancock (not Atlantic Mine as said in MBNH 11: 116, 143), JK (photos), HCCBC on 20 Dec 2003.

Habitat. Restricted to broad-leaved shrub upland, old fields with low shrubs, and low scrub at forest edge, such as road and power line cuts. Occasionally visits seed feeders.

Migration Dates. **SEAD**: 2 May 2001 (male well described at feeder near Copper City, H, M. Schmidt, pers. comm.); 12 May 2001 (H, NAMC). **SMAD**: 25 May (n=22). **SLDD**: migrants have been seen as late as 7 Jun 98 (Copper Harbor, LB). **FLDD**: 16 Oct 97 and 14 Oct 93 (immature male) (both Copper Harbor, LB); 13 Sep 95 (Calumet, LB); see Winter.

High Counts. **Summer**: 3 Jul 93 (**16**) B, S. Patti, Herman BBS; 20 Jun 2005 (**12**) H and K, LB, Z. Gayk, Bootjack BBS. **Fall**: 12 Aug 2004 (**7**) Tamarack City, H, LB.

Breeding (**B** 1 co, 10 pr, 11 po; **H** 1 co, 13 pr, 13 po; **K** 3 co, 5 pr, 4 po).

*16 Jun 86 (female carrying nest material) Copper Falls, K, LB.

19 Jun 99 (female carrying food and fecal sac [=nest with young]) near Houghton, LB.

25 Jun 99 (female carrying food, male giving distraction display) Baraga sewage ponds, LB.

Summary: although double-brooded in southern Michigan, apparently single-brooded in the Keweenaw; more data needed.

BBS. Bootjack 67-73: 22 on 6 of 7 counts (85.7%); mean 3.14; range 0-11. *Bootjack* 92-2005: 51 on 13 of 14 counts (92.9%); mean 3.64; range 1-12. *Herman*: 65 on 7 of 7 counts (100%); mean 9.29; range 4-16.

NAMC. Houghton Co.: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

HCCBC. See Winter.

Painted Bunting *Passerina ciris*

Status and Range (B, H, K). Casual **spring** vagrant, 5 acceptable records, 9-21 May.

Significant Records (all).

9 May 2005 (adult male at seed feeder) Agate Beach Road near Misery Bay, T53N, R36W, Sec. 6, H, J. and D. Nakkula, photo by J. Nakkula in LB files, data obtained by D. Richter.

12-16 May 2002 (adult male at seed feeder) 1.25 mi W Mason, T55N, R33W, Sec. 21, H, LB, B. Deephouse, B. and K. Forsman (finders), JK (photo in LB files), JM, D. Richter, J. Rooks, B. and M. Wercinski, *et al.* Accepted by the MBRC (Byrne, 2004).

18-20 May 2003 (adult male at feeder) 6 mi N L'Anse on Pequaming Road, T. Auer, RH, JM, L. Sandberg (finder), L. Taccolini, JY (MBNH 10: 154). Accepted by the MBRC (Internet).

16-17 May 2004 (female at feeder) Eagle Harbor, K, LB, C. and T. Catoni (finders), J. Rooks. Accepted by the MBRC (Internet).

21 May 2004 (female at feeder) Hancock, TA, RH, JK (finder), B. Quenzi (2004), D. Richter, M. Shupe (photos). Accepted by the MBRC (Internet).

[Two were reported at Tapiola, H, in Apr 61 (Payne, 1983, 1986), but the documentation (UMMZ) provided little detail, and the record was rejected by the MBRC (Chu, 1996)].

Dickcissel *Spiza americana*

Status and Range (H). Accidental **spring** vagrant; 1 record. Accidental **summer** resident, presumably invading from the near west. In the summer of 88, unusually dry conditions on the Great Plains caused the Dickcissel, normally somewhat nomadic in its choice of breeding localities, to spread eastward into the Midwest, including the farmland of northern H, where small numbers bred at three localities in hayfields and dense-grass old fields. At this longitude, this species is at the northern extreme of its range and well separated from the nearest regular breeding localities in Menominee and Delta Cos., MI. Nonbreeding vagrants might be expected accidentally in spring and fall (as in 2005).

Significant Records (all).

22-23 May 2005 (1) at feeder 3 mi N Oskar, H, photographed by P. Muller (photos examined by LB and JK).

1 Jul 88 (singing male) about 2.5 mi N Oskar, T56N, R34W, Sec. 33, H, LB.

6 Jul 88 (4 pairs; female carried food to ground nest containing 2 immaculate blue eggs and 1 newborn) hayfield and old field about 3 mi ESE Lake Linden, T55N, R32W, H, birds in Secs. 10 and 15, nest in old field in Sec. 15, LB, C. Clark.

7 Jul (5 pairs, including female carrying nest material, LB), 9 Jul 88 (3 males, AW, D. and S. Weaver) in hayfield about 1 mi N Oskar, T55N, R34W, Sec. 5, H.

Breeding (**H** 2 co, 1 po); see Significant Records.

Bobolink *Dolichonyx oryzivorus*

Status and Range (B, H, K). Colonial **summer** resident, common in farmland of northern H and northwestern half of B; uncommon in southern H and southeastern half of B, where habitat scarce due to extensive forests; rare in K, where there is only one current breeding locality, a hayfield in the extreme western corner (27 May 2001, singing male, T57N, R33W, Sec. 34, LB, JM). At this longitude, the Bobolink is at the northern edge of its range, and hence migrants are rarely seen away from breeding sites; the exceptions are 23 May 2002 (female, LB), 30 May 88 (singing male, LB), and 5 Sep 99 (1, LB, JM), all in Copper Harbor, the latter the only fall K date; 18 Jun 86 (1 flying male, LB) at Bete Grise, K; and 20 Jun 2002 (1 perched female) on Manitou Is., JY. **Fall** flocking (such as at Arnheim) begins in mid Jul, about the time young fledge (JY), and escalates until an early departure, on average in the last week of Aug.

Habitat. Breeds primarily in lush hayfields but also in drier parts (or in drier years) of sedge-grass marsh; rare in dense-grass old fields.

Migration Dates. **SEAD**: 7 May 2000 (Arnheim, B or

H, JY). **SMAD**: 16 May (n=30). **SLDD**: see 18 and 20 Jun records above. **FMDD**: 24 Aug (n=22). **FLDD**: 21 Sep 97 (Arnheim, H, JY) and 2002 (2, Copper Harbor, LB, Z. Gayk, RH); 7 Sep 95 (Liminga, AW) and 98 (Arnheim, H, JY).

High Counts. **Spring** (probably breeding birds): 29 May 99 (**48**) Pelkie area, B, LM; 21 May 93 (**20**) Liminga, AW. **Summer**: 13 Jun 99 (**25**) near Covington, T48N, R34W, Secs. 8, 9, 17, 20, and 30, B, JY; 14 Jun 92 (**17**) H, LB, Bootjack BBS. **Fall**: 13 Aug 98 (**52**) Arnheim, B, LM, JY.

Breeding (**B** 2 co, 3 pr, 9 po; **H** 6 co, 8 pr, 3 po; **K** 1 pr, 2 po).

6 Jul 2003 (prejuvenile) T53N, R33W, Sec. 3, H, JY.

*7 Jul 88 (carrying food) near Oskar, T55N, R34W, NW quarter, H, LB.

*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.

*18 Jul 88 (carrying food) Arnheim, B, LB.

*19 Jul 88 (carrying food) near Baraga, T51N, R34W, SE quarter, LB.

*21 Jul 88 (carrying food) Bear Lake, T56N, R34W, SE quarter, H, LB.

BBS. Bootjack 67-73: 74 on 7 of 7 counts (100%); mean 10.57; range 8-16. *Bootjack* 92-2005: 118 on 14 of 14 counts (100%); mean 8.43; range 3-17. *Herman*: 21 on 6 of 7 counts (85.7%); mean 3.00; range 0-6.

NAMC. Baraga Co.: 28 on 2 of 6 counts (33.3%); mean 4.67; range 0-18; ind/PH .11. *Houghton Co.*: 5 on 1 of 4 counts (25.0%); mean 1.25; range 0-5; ind/PH .04.

Historical Changes (Table 17). Kneeland (1857) listed the Bobolink as "doubtful." Cahn (1918), Wood (1933), and Wing (1939) did not mention it for the Keweenaw, although Wood visited little of its habitat, and Wing noted it as close as Bruce's Crossing, Ontonagon Co., in 31. The earliest records I find for the Keweenaw were in 1962 (Chassell, H, J. Weber; JPW 41: 39) and 64 (1, between Sidnaw and Watton, B, R. Rafferty; JPW 43: 36), but I feel certain it arrived much earlier, probably in the mid 1920s and 30s. Today its population seems stable, but I predict decline with the gradual loss of hayfields. Hayfields are cut early on the Peninsula, in some years when Bobolinks (and other field birds) are still in vulnerable prejuvenile stage; farmers should be encouraged to wait until at least early Aug, if possible.

Red-winged Blackbird *Agelaius phoeniceus*

Status and Range (B, H, K). Very common **summer** resident, but scarce in heavily forested, southeastern portions of K and B. Although birds arrive in early Apr, they must await the growth of marsh and field vegetation before nesting in late May. Transient flocks in both **spring** and **fall** raise local detectability to abundant. Spring migrants in K, where recently increasing, may be trapped temporarily by Lake Superior (see Brown-headed Cowbird). Fall flocking begins with the emergence of young in late Jul, when birds may leave some breeding sites (*e.g.*, Arnheim) to feed in certain farm fields and roost in selected large marshes (*e.g.*, Sturgeon River Sloughs). Most leave by mid Oct, with lingerers regularly into Nov (exceptional were the 23 at Baraga, 1 Nov 2000, JY). **Early winter**: occasional lingerer in Dec and early Jan, usually at feeders. **Late winter**: accidental visitant (1 record, 13 Feb 77, possibly a very early spring arrival); heavy snows inundate ground food, precluding regular wintering.

Habitat. In summer, prefers open wetland of sedge-grass and especially cattails, but also common in wet dense hayfields; breeds rarely in shrub wetland and open bogs. Commonly visits seed feeders.

Migration Dates. **SEAD**: 10 Mar 83 (Liminga, AW). **SMAD**: 1 Apr (n=28). **SLDD**: a few are still migrating in third week of May, rarely the first few days of Jun (Copper Harbor, LB). **FMDD**: most birds gone by mid Oct. **FLDD**: 11 Jan; see Significant Records.

Significant Records (all Dec-Feb).

30 Nov, 1 Dec 89 (1) Liminga, AW.

1 Dec 96 (1) Swedetown Creek, Hancock, RH.

4-8 Dec 2004 (1 male) near Salo, 3 mi NW Boston, H, D. Richter.

8 Dec 96-3 Jan 97 (1) Liminga, D. Weaver.

16 Dec 2000 (2) Hancock, HCCBC.

17 Dec 88 (1) HCCBC.

17 Dec 2000 (1, TA, JM, J. Ongie, Eagle Harbor Christmas Bird Count) to 9 Jan 2001 (4, RH) Copper Harbor.

20 Dec 80 (3) HCCBC.

21 Dec 85 (2) HCCBC.

21 Dec 2002 (1) HCCBC.

22, 23 Dec 77 (1) Liminga, AW.

22 Dec 2002-8 Jan 2003 (1) Copper Harbor, TA, RH, S. Hickman.

24 Dec 76 (2) Liminga, AW.

Dec 96 (1) HCCBC, count week.

1 Jan 2005 (male) Copper Harbor, A. Byrne, B. Murphy (MBNH 12: 160-161).

11 Jan 2001 (male) L'Anse, JY.

13 Feb 77 (1) Liminga feeder, AW.

High Counts. **Spring**: multi-party, 11 May 2002 (**209**) H, NAMC; 22 Apr 74 (**100**) Liminga, AW; 11 May 96 (**78**) B, JY. **Summer**: 7 Jul 85 (**74**) B, S. Patti, Herman BBS; 25 Jun 2000 (**51**) Arnheim, B or H, JY. **Fall**: 10 Sep 96 (**121**) Sturgeon River Sloughs, JY; 25 Aug 92 (**100**) Liminga, AW; 31 Jul 2001 (**80** in flock) Calumet sewage ponds, LB.

Breeding (**B** 6 co, 10 pr, 10 po; **H** 15 co, 10 pr, 6 po; **K** 4 co, 3 pr, 7 po).

*23 May 88 (copulation) Tamarack City sewage ponds, H, LB, probable breeding.
13 Jun 98 (nest with young) Arnheim, Unit 7, B, JY.
*14 Jun 86 (2 females carrying food) Ahmeek marsh, K, LB.
15 Jun 2003 (nest with young) Arnheim, Unit 8, T52N, R33W, Sec. 4, B, JY.
17 Jun 98 (carrying food) Ahmeek marsh, K, LB.
19 Jun 2003 (prejuvenile) T53N, R33W, Sec. 8, H, JY.
22 Jun 90 (carrying food) Swedetown marsh, H, LM.
25 Jun 2000 (prejuveniles) Arnheim, B or H, LM, JY, not in above totals.
2 Jul 2002 (2 prejuveniles) Sturgeon River mouth, JY.
5 Jul 98 (carrying food) Arnheim, B, LM.
*10 Jul 87 (carrying food) T54N, R34W, SW quarter, H, LB.
14 Jul 2001 (carrying food) Arnheim, B or H, LM, not in above summary.
17 Jul 2002 (carrying food) Ahmeek marsh, K, LB, JM.
5 and again 13 Aug 2000 (young heard while being fed by male) Arnheim, B or H, LM, not in above totals.

BBS. Bootjack 67-73: 27 on 7 of 7 counts (100%); mean 3.86; range 1-7. *Bootjack* 92-2005: 229 on 14 of 14 counts (100%); mean 16.36; range 9-32. *Herman* (early Jul dates): 280 on 7 of 7 counts (100%); mean 40.00; range 13-74.

NAMC. Baraga Co.: 670 on 6 of 6 counts (100%); mean 111.67; range 64-171; ind/PH 2.60. *Houghton Co.*: 896 on 7 of 7 counts (100%); mean 128.00; range 91-209; ind/PH 3.22.

HCCBC. 8 on 4 of 26 counts (15.4%); mean .31; range 0-3; ind/PH .01.

Historical Changes (Table 17). The 324% increase on the Bootjack BBS between the periods 67-73 (mean 3.86 birds per count) and 92-2005 (16.36) I attribute to this species' rather recent occupation of habitats other than marsh, especially lush hayfields. In recent years it has also increased as a spring migrant on the north coast of K.

Eastern Meadowlark *Sturnella magna*

Status and Range (B, H, K). Very uncommon, highly local, **summer** resident in farmland of B and H; accidental in K, where it was seen in summer about 1.5 mi. N Ahmeek (LB), but this hayfield became overgrown with shrubs by 2001. Highly irregular in its use of specific fields; the Pelkie area (H) is perhaps the most reliable. **Spring**: transients few, as befits a species at the northern border of its range (at this longitude); singles noted in Copper Harbor 29 Apr 2001, 30 Apr 2000, 15 May 90, 25 May 2002, 1 Jun 97 (all LB), and 18 May 2004 (JK), and at Agate Harbor 28 May 90 (LB) might better be termed vagrant overshoots. **Fall** and **Winter**: see Migration Dates.

Habitat. Nearly restricted to dense lush hayfields, usually moister than those frequented by the Western Meadowlark; also found rarely in lush grass-herb old fields. Occasionally visits seed feeders.

Migration Dates. **SEAD**: 17 Mar 90 (Liminga, AW). **SLDD**: migrants have been seen as late as 1 Jun 97 (Copper Harbor, LB). **FLDD**: meadowlarks of uncertain species seen as late as 21 Dec 96 (HCCBC), 18 Nov 2000 (Rabbit Bay, LM, JY), and 22 Oct 78 (Liminga, AW).

High Counts. **Spring**: 8 Apr 98 (**4**) B, JY. **Summer**: 29 May 99 (**15**) Pelkie area, H, LM, exceptional for recent years. **Fall**: 5 Oct 34 (**12**) near Covington, B, M. Trautman (Wood, 1951).

Breeding (**B** 1 co, 1 pr, 4 po; **H** 3 pr, 3 po; **K** 1 po).

BBS. Bootjack 67-73: 14 on 6 of 7 counts (85.7%); mean 2.00; range 0-3. *Bootjack* 92-2005: 6 on 6 of 14 counts (42.9%); mean .43; range 0-1.

NAMC. Baraga Co.: 9 on 4 of 9 counts (66.7%); mean 1.50; range 0-4; ind/PH .03. *Houghton Co.*: 1 on 1 of 7 counts (14.3%); mean .14; range 0-1; ind/PH .004.

HCCBC. 1 meadowlark sp. on 1 of 26 counts (3.8%); mean .04; range 0-1; ind/PH .001; 21 Dec 96.

Historical Changes (Table 17). Kneeland (1857) did not list this species, probably because in his time logging of the virgin forests around Portage Lake had just begun. On the other hand, Cahn (1918) found it in practically all clearings around Kenton, H, in Aug 1914. It may have reached its zenith in the first half of the 20th century, when farmlands were most extensive. As mining declined, so did the supporting farms, which provided hay for the many horses and cows and produce for the large human population. The Bootjack BBS shows a decrease of 78.5%, from a mean of 2.00 per count in the period 67-73 to .62 in 92-2005, coincident with a national decline of 2.8% per year, 66-99 (Pardieck & Sauer, 2000). Currently, the number of hayfields has stabilized, but will this continue? I also suspect that the character of today's hayfields might not be suitable for nests; see Western Meadowlark; see Conservation in Discussions.

Western Meadowlark *Sturnella neglecta*

Status and Range (B, H, K). See Eastern Meadowlark. Currently an occasional, widely scattered, **summer** resident in farmland of B and H; formerly much more common (see High Counts, BBS, and Historical Changes). The only confirmed breeding for the Peninsula was at the only known summer locality for K (where accidental), 1.5 mi N Ahmeek; this was a hayfield in 1988 but became too shrubby by 2001 (LB). Considering that the Keweenaw

is at the eastern and northern extremes of this species' range at this longitude, I consider some records in **spring** and **fall** as near-western vagrants (see Migration Dates). **Winter**: accidental resident; 1 definite record, all winter, including 19, 20, and 27 Jan 2002, at A. and J. Boggio feeder, Eagle Harbor, K, TA, RH, JK (diagnostic photos in LB files).

Habitat. Breeds in hayfields and herb-grass old fields, but prefers fields that are larger, drier, and have sparser grass than used by the Eastern Meadowlark. Once found in dry grass on the Baraga Plains (see Breeding).

Migration Dates. **SEAD**: 27 Mar 73 (Liminga, AW); 19 Apr 62 (Chassell, H, J. Weber; JPW 41: 39) and 80 (Liminga, AW). **SLDD**: vagrants have been recorded as late as 18 May 96 (Copper Harbor, LB) and 29 May 2005 (Manitou Is., L. Dombroski, Z. Gayk, JK (photos). **FLDD**: 7 Oct 2000 (Copper Harbor, LB, JM), considered a vagrant.

High Counts. **Summer**: 1934 (colony of about **15** pairs) 8 mi NE L'Anse, G. B. Saunders (JPW 25: 4); 29 Jun 49 (**13** singing males) censused along 12 miles of road east of Redridge, T55N, R35W, Secs. 14, 15, 23, 24, 25, Messner & Messner (1950); 3 Jul 70 (**15**) H and K, B. and D. Wolck, Bootjack BBS; see Historical Changes. These totals would be highly exceptional today, but apparently were normal then.

Breeding (**B** 2 pr, 4 po; **H** 1 pr, 5 po; **K** 1 co; numbers include recent possibles not on the MBBA map (1991) and the two probables listed under High Counts, but not BBS data).

29 May 2005 (singing male) 1 mi S Pelkie, T51N, R34W, Sec. 21, LB, JM; possible breeding.

16, 27 Jun 2002 (singing male) T55N, R32W, Sec. 15, H, LB, JM; possible breeding.

22 Jun-2 Jul 2004 (1 singing male) 1 mi W Big Lake, Baraga Plains, T49N, R34W, Sec. 20, JY; possible breeding.

*9 Jul 88 (1 singing male and 1 carrying food) 1.5 mi N Ahmeek, K, LB.

BBS. Bootjack 67-73: 67 on 7 of 7 counts (100%); mean 9.57; range 2-15. *Bootjack* 92-2005: 2 on 2 of 14 counts (14.3%); mean .14; range 0-1.

Historical Changes (Table 17). Kneeland (1857) did not list either meadowlark for the days when fields were scarce around his home base at Portage Lake. The Western Meadowlark first appeared in Michigan in Marquette Co. in 1894 (Wood, 1951). Cahn (1918) saw no Westerns around Kenton, H, in Aug 1914, but did note Easterns. Westerns were found again in Marquette Co. in 1928 (JPW 25: 4) and in Gogebic and Iron Cos. in 32 (Wing, 1939). In the Keweenaw, the species apparently was common, at least locally, near L'Anse in 34, near Redridge (H) in 49 (see High Counts), and on the Bootjack BBS (probably H only) 67-71. This BBS, however, demonstrates a precipitous decline starting in 72. Numbers per count were as follows: 67 (10 birds), 68 (15), 69 (10), 70 (16), 71 (8), 72 (2), and 73 (3), with none in 86. This is a mean of 9.57, even including the poor years (but not 86), and contrasts with the 92-2005 mean of .14, a 98.5% decrease. Pardieck & Sauer (2000) noted a 0.6 per year national decline for 66-99. On the other hand, A. and D. Weaver found it regular in fields around Liminga 72-90, but not thereafter; their fields, which were fallow, continued to be suitable for a number of years before eventually becoming shrub upland. To me, this scenario implicates changes in farming practices. Instead of simply mowing fallow fields, as was the past practice, hay is planted; hence, it contains few "weeds," and when mowed produces rows of short sparse stubble with bare soil between, rather than leaving a deep dense base of grass and weeds for subsequent summers. The new grass does not seem adequate for making, supporting, and hiding the nest, which is a domed structure of dry grass woven into the surrounding herbage and set in a hollow (Baicich & Harrison, 1997). Also, there are many fewer hayfields today; most remaining fields either support this modern grass or now have too many shrubs. J. Granlund (in Brewer *et al.*, 1991) said that Westerns prefer large fields; perhaps abandonment of some Keweenaw fields adjacent to current farms has caused an overall reduction in size. Whatever the causes, the Western Meadowlark has become an occasional summer bird on the Peninsula, and if not for an occasional vagrant recruit from the west, would already have become extirpated.

Yellow-headed Blackbird *Xanthocephalus xanthocephalus*

Status and Range (B, H, K). I theorize that Keweenaw birds come from the large breeding populations to the near west, rather than the few small Michigan or Wisconsin colonies, and therefore are vagrants. Supporting this theory are the 2 records for 2002, an excellent spring for western strays, and the lack of sightings for 2003, a very poor year. Occasional **spring** vagrant, 14 Apr-19 Jun, in H and K. I find 26 records for 17 of the last 30 years (75-2004), have heard rumors of others, and suspect it occurs annually. I treat the four Jun occurrences as late spring vagrants, as there are no later dates, and many transient species have been seen as late as mid Jun. One record for B, 22 May. **Fall**: accidental vagrant; 2 records, 16, 21 Aug.

Habitat. Feeds on the ground in open areas, sometimes on lawns and at feeders (as at Liminga), once in fall at sewage pond. Does not always associate with other blackbirds.

Significant Records (all records; all singles unless otherwise noted; some "females" might have been immature males).

14 Apr 79 (adult male) Liminga, AW.
18 Apr 85 (adult male) Liminga, D. Weaver.
18 Apr 86 (adult male) Liminga, M. Weaver.
18 Apr-15 May 2004 (adult male) Atlantic Mine, H, P. Bell (2004; photo).
26 Apr 83 (female) Liminga, AW.
27 Apr 83 (adult male) Liminga, AW.
2 May 2001 (female) Copper Harbor, LB, R. Brigham, JK.
5 May 84 (female) Liminga, AW.
8 May 75 (2 females) Sturgeon River Road, H, F. B. Isaacs.
9 May 94, Hancock, S. Andres, RH.
10 May 84 (adult male) Sands, H, AW.
17 May 2000 (adult male) Eagle River, H, LB.
18 May 90 (adult male) Copper Harbor, J. Rooks.
20 May 99 (female) Ripley, H, LM, photo.
21 May 2002 (female) Copper Harbor, LB.
22 May 2000 (adult male) head L'Anse Bay, JY.
23 May 99 (adult male) Copper Harbor, J. Rooks.
29 May 95 (immature male) Copper Harbor, LB.
29 May 99, Oskar, H, RH.
1 Jun 2004 (adult male) Copper Harbor, LB, J. Rooks.
6 Jun 2002 (adult male) Atlantic Mine sewage ponds, H, JK.
10 Jun 98 (immature male) Brunette Park, north of Gay, K, AW.
17 Jun 88, Liminga, D. Weaver.
19 Jun 2000 (adult male) Oskar, H, RH.
Spring 97, Hancock, RH.
16 Aug 2005 (3 immature males) Lake Linden sewage ponds, LB; flock landed on mud edge of low pond.
21 Aug 98 (immature male) Copper Harbor, D. Johnson (pers. comm.).

Historical Changes. No dates prior to 75. The seeming increase from the late 70s (2 records) through the 80s (7) and 90s (9) into the 2000s (9 in only 6 years) may reflect a real increase or simply better coverage.

Rusty Blackbird *Euphagus carolinus*

Status and Range (B, H, K). **Spring**: uncommon transient throughout, essentially mid Apr-mid May. **Fall**: common transient throughout, irregularly and locally very common (*e.g.*, Calumet sewage ponds, LB). A trans-Lake Superior migrant, one arriving at Agate Harbor at 0921 EDT on 23 Sep 88 (LB).

Habitat. The Rusty is nearly restricted to wet situations, even in towns (such as Copper Harbor), where it seeks out drainage ditches; elsewhere frequents forest-edge streams, bogs, and shores of lakes, rivers, marshes, and ponds (including sewage ponds). Rarely attends feeders.

Migration Date. **SEAD**: 25 Mar 1906 (male, UMMZ 34216, Houghton, W. H. Grant); 6 Apr 2001 (1, Sturgeon River Road, TA, JM); 15 Apr 2001 (Hancock, RH). **SMAD**: 26 Apr (n=18). **SP**: probably last week of Apr. **SLDD**: 25 May 2002 (1 male, Copper Harbor, LB); 13 May 2004 (singing male, Copper Harbor, LB). **FEAD**: 6 Sep 88 (Sturgeon River Sloughs, AW) and 98 (Copper Harbor, LB). **FMAD**: 23 Sep (n=16). **FP**: first week of Oct. **FMDD**: 11 Oct (n=15). **FLDD**: 28 Nov 86 (Liminga, AW); 20 Nov 99 (Lac La Belle, K, S. Britton; MBNH 7: 121).

High Counts. **Spring**: 23 Apr 31 (over **100**) Copper Harbor, N. A. Wood (1951), exceptional, perhaps due to 1931 date (see Historical Changes); 24 Apr 2005 (**50**) and 12 May 2002 (**48**) both 1 mi NE Boston, H, JK; 26 Apr 97 (**17**) Arnheim, B or H, JY. **Fall**: 1 Oct 2002 (**480** in 1, single-species flock) Lake Linden, LB, exceptional; 30 Sep 96 (**200**), 20 Sep 98 (**110**), and 11 Oct 2001 (**101**) all Arnheim, B and H, JY.

NAMC. Houghton Co.: 24 on 2 of 7 counts (28.6%); mean 3.43; range 0-16; ind/PH .09.

Historical Changes. Kneeland (1857), referring to the Peninsula, said "Early in the spring these birds arrive in immense flocks, and exceedingly fat; they remain till about the last of September." Cahn (1918), for Aug 1914, said, "In the neighborhood of the towns [Kenton area, H], it is quite common, though they are seldom seen actually in the towns themselves" (but see Brewer's Blackbird). Note that today Aug is too early for returning transients. I do not know what to make of these assertions. I do notice that it is said to be particularly "fond of snags in swamps and backwaters" (J. Granlund in Brewer *et al.*, 1991), a description that fits many Keweenaw beaver ponds, which in 1857 and 1914 must have been far more numerous than today, when many ponds have been destroyed and beavers are relatively scarce. As for confusion with other species, Brewer's Blackbird did not enter the state until the 1930s, and the Common Grackle was also listed by Cahn (but not by Kneeland). If these authors are to be believed, I must conclude that the Rusty Blackbird really was a common breeder in the Keweenaw from 1857 to 1914. A mystery!

Brewer's Blackbird *Euphagus cyanocephalus*

Status and Range (B, H, K). **Summer** resident; usually colonial, but single pairs occur; common in farmland of northern H and the northwestern half of B, and especially on the Baraga Plains; fairly common elsewhere in open parts of B and H and around sewage ponds. Accidental in K, where the one former breeding locality near Ahmeek (1986) was deserted by 2001, having succeeded to shrub upland. Also seen occasionally as a **spring** migrant in K

(*e.g.*, 2, 4, 14, 27 May 99, 2 May 2001, and 23 May 2002, all Copper Harbor, LB; see Migration Dates); a female on 30 Jun 99 in Copper Harbor (LB) must have been lost! I suspect K birds are trapped by Lake Superior and may be migrants attempting to reach breeding grounds to the northwest. See 4 May 2005 below. **Fall**: status largely obscured by confusion with immature Common Grackles and transient Rusty Blackbirds. Flocking begins by at least 1 Aug; probably, some Brewer's linger into Oct; more data needed. [**Winter**: birds reported on the HCCBC (which see) I suspect were misidentified Common Grackles.]

Habitat. Breeds primarily in drier hayfields, in clearcuts in the dry coniferous forest (jack pine) of the Baraga Plains, along wide grassy roadsides (which are similar to hayfields in vegetation and in regular mowing), and in other grassy areas, including those associated with sewage ponds. Less common in open wetlands, when these desiccate in dry years, and in old fields. The bulky nest is usually placed on the ground but can be in a dense shrub. Unrecorded at feeders.

Migration Dates. **SEAD**: 16 Apr 87 (Liminga, AW). **SMAD**: 4 May (n=19). **SLDD**: migrants have been seen as late as 30 May 92 (Copper Harbor, LB).

High Counts. **Spring**: 11 May 96 (**58**) near Watton, B, LB only, NAMC; 4 May 2005 (**48**) Lake Linden sewage ponds, RH, JK, migrant flock. **Summer**: 23 Jun 86 (**18** in nest colony) 1.5 mi N Ahmeek, K, LB. **Fall**: 5 Aug 74 (about **100**) H, AW; 23 Sep 75 (**25**) Liminga, AW.

Breeding (**B** 8 co, 3 pr, 5 po; **H** 8 co, 2 pr, 4 po; **K** 1 co, see Note).

29 May 2003 (nest with 5 eggs) Calumet sewage ponds, LB.

31 May (nest with 1 egg), 2 Jun (3 eggs), 16 Jun (2 eggs, 2 young) 96, Arnheim, B, JY.

*16 Jun 87 (pair carrying food) Bob Lake, H, LB.

19 Jun 2000 (nest with 3 eggs and 1 young) T49N, R34W, Sec. 29, B, JY.

21 Jun 56 (8 adults and 1 nest) Kenton, H, L. H. Walkinshaw (Walkinshaw & Zimmerman, 1961).

21 Jun 56 (3 pairs and 1 nest) Covington, B, LB, L. H. Walkinshaw (Walkinshaw & Zimmerman, 1961).

*23 Jun 86 (about 9 pairs, 3 prejuveniles) 1.5 mi N Ahmeek, K, LB, here treated as one confirmed breeding.

29 Jun 2000 (carrying food) Arnheim, B, LM.

13 Jul 52 (5 adults) Little Lake, Baraga Plains, LB; probable breeding.

[*Note*: the two probable breeding records at the tip of K on the MBBA map (1991) should be deleted.]

BBS. Bootjack 67-73: 56 on 6 of 7 counts (85.7%); mean 8.00; range 0-16. *Bootjack* 92-2005: 81 on 14 of 14 counts (100%); mean 5.79; range 2-10. *Herman*: 37 on 6 of 7 counts (85.7%); mean 5.29; range 0-10.

NAMC. Baraga Co.: 109 on 6 of 6 counts; mean 18.17; range 7-53; ind/PH .42. *Houghton Co.*: 22 on 3 of 7 counts (42.9%); mean 3.14; range 0-15; ind/PH .08.

[*HCCBC.* Six reported on 4 of 26 counts (15.4%); mean .23; range 0-3; ind/PH .005. *Dates*: 19 Dec 81 (3); 17 Dec 89 (1); 15 Dec 91 (1); 15 Dec 2001 (1). I seriously doubt these records, believing they probably were Common Grackles or possibly Rusty Blackbirds; details in AB for the 91 bird were considered "marginal" by the editor.]

Banding Recoveries. An adult (after hatching year) female banded 6 Jun 74 in H and shot in Ogemaw Co., MI, 23 Apr 75, suggests southeastward fall migration of some Peninsula breeding birds.

Historical Changes (Table 17). None of the early writers mention the Brewer's Blackbird for the Keweenaw, although I wonder if Cahn's (1918) "Rusty Blackbirds" in Aug 1914 could have been among the first Brewer's to enter the state (see Rusty Blackbird). The first definite Upper Peninsula record was on 26 Jul 1932 in Gogebic Co. (Wing, 1939; Stepney & Power, 1973). The first known Peninsula record was a colony of 5 birds at Little Lake, Baraga Plains, on 13 Jul 52 (LB). This was followed by adults near Covington and Three Lakes (B) on 27 Jun 53 (D. A. Zimmerman) and nests at Kenton and Covington (both H) in 56 (see Breeding). J. Weber noted the species at Chassell (H) on 16 May 62 (JPW 41: 39), the Bootjack BBS recorded it from 67 on, and AW found it regularly at Liminga in the early 70s. With the current reduction in grassland and old fields, together with new farming practices (see Western Meadowlark and Discussions: Conservation), I predict a decrease in Brewer's Blackbirds in the near future, as perhaps foreshadowed by the small (28%) decline on the Bootjack BBS.

Common Grackle *Quiscalus quiscula*

Status and Range (B, H, K). **Summer** resident, overall fairly common, but locally common and increasing in abundance and range. Widely distributed in rural and residential areas outside heavily forested regions, and very rare and local in wetlands of forested areas. Today moving northward and becoming more abundant in K and northern H (and possibly B). The time lag between median arrival (6 Apr) and the first breeding data (23 May) is puzzling. **Spring**: very common transient in increasing numbers on north coast of K, including Manitou Is. (Youngman, 2002). I suspect that some grackles, like buteos and other diurnal migrants, move north to become "trapped" at the tip of the Peninsula, then return southwestward along the north coast; at

Agate Harbor and Copper Harbor, birds have been seen flying both east and west (*e.g.*, at Agate Harbor on 1 May 98, flocks of 1, 2, and 3 flying east and flock of 3 going west); 5 on 3 May 2003 ventured off the east end of Manitou Is. and then returned (JY). However, grackles do breed north of Lake Superior and on Isle Royale and may cross the Lake, as Rusty Blackbirds do in fall. **Fall**: most gone by 15 Oct, almost all by mid Nov, but exact timing uncertain; judging from other species, I would expect them to begin flocking in late Jul. No definite transients noted, even on north coast of K, suggesting they skirt Lake Superior, probably through Duluth (but see Brown-headed Cowbird). **Early winter**: occasional lingerer as late as 24 Dec. **Late winter**: accidental visitant, 25 Jan 77. Birds can survive in winter only at feeders, because deep snow covers their natural ground food.

Habitat. Under natural conditions, breeds in shrub wetlands around marshes, bogs, beaver ponds, and lakes; water seems necessary. But today most occur in residential and rural situations, nesting in spruce and probably other conifer plantings. Sometimes breeds in small loose "colonies." Visits seed feeders.

Migration Dates. **SEAD**: 7 Mar 2000 (Calumet, JY); 19 Mar 85 (Liminga, D. Weaver). **SMAD**: 6 Apr (n=28). **FMDD**: mid Oct. **FLDD**: 9 Jan 2001, see Significant Records.

Significant Records (all after 17 Nov; see also HCCBC).

18 Nov 2000 (2) Rabbit Bay, H, LM, JY.
26 Nov 77 (1) Liminga, AW.
28 Nov 86 (1) Liminga, AW.
29 Nov 86 (1) Liminga, AW.
16 Dec 78 (1) HCCBC, AW.
17 Dec 88 (1) HCCBC.
17 Dec 2000 (TA, JM, J. Ongie, Eagle Harbor Christmas Bird Count) to 9 Jan 2001 (RH) 4 birds, Copper Harbor.
18 Dec 99 (1) HCCBC.
20 Dec 80 (3) HCCBC.
20 Dec 97 (1) HCCBC, Atlantic Mine, H, S. Andres.
21 Dec 2002 (1) HCCBC.
22 Dec 2002 (1) Eagle Harbor, K, RH.
23 Dec (1), 24 Dec 62 (2, 1 of which collected, Louisiana State University 28791; Binford, 1965) Copper Harbor, LB.
24 Dec 2002 (2) South Portage Entry, H, TA, JM.
25 Jan 77 (1) Liminga feeder, AW.
Note: date of 23 Nov 79 (JPW 58: 25) should have been 3 Nov 79 (AW orig. notes).

High Counts. **Spring**: 6 May 2002 (**160**), 29 Apr 2001 (**75**), and 6 May 2004 (**60**) all Copper Harbor, LB. **Summer**: 2 Jul 85 (**51**) B, S. Patti, Herman BBS. **Fall**: 1 Oct 2000 (**30**) Hancock, RH; 4 Nov 2000 (**20**) Copper Harbor, JM; 28 Nov 86 (**18**) Liminga, AW.

Breeding (**B** 7 co, 4 pr, 15 po; **H** 14 co, 1 pr, 15 po; **K** 4 co, 1 pr, 3 po).

17 May 2004 (adult on nest) Chassell, H, JY.
18 May 2004 (nest under construction) Dollar Bay, H, LB, JM.
*23 May 88 (carrying food) Tamarack City, K, LB.
26 May 2001 (nest with young; see Remarks) Chassell, H, LM.
4 Jun 2003 (nest with young) Chassell, H, JY.
6 Jun 2002 (adults feeding prejuvenile) in Chassell, H, LM.
9 Jun 2002 (nest with young) in L'Anse, LM.
*19 Jun 86 (carrying food) 1 mi E Ahmeek, K, LB.
20 Jun 98 (carrying food) Arnheim, Unit 7, B, LM.
*24 Jun 87 (carrying food) Kenton, H, LB.
*25 Jun 88 (carrying food) T51N, R32W, SW quarter, B, LB.
*30 Jun 87 (carrying food) T52N, R35W, SW quarter, H, LB.
30 Jun 2002 (carrying food) near Little King Lake, B, JY.
*7 Jul 86 (carrying food) Central Lake, K, LB.
7 Jul 2001 (carrying food) Dollar Bay, H, LB, LM.
10 Jul 78 (2 prejuveniles) Lake Linden, F. B. Isaacs.
16 Jul 2001 (carrying food) 1 mi W Calumet, LB.
17 Jul 2002 (carrying food) Ahmeek marsh, K, LB, JM.
Summary: data indicate two broods; said to be sometimes double-brooded elsewhere (Baicich & Harrison, 1997).

BBS. Bootjack 67-73: 3 on 2 of 7 counts (28.6%); mean .43; range 0-2. *Bootjack*: 92-2005: 22 on 9 of 14 counts (64.3%); mean 1.57; range 0-5. *Herman* (early Jul dates): 129 on 7 of 7 counts (100%); mean 18.43; range 6-51.

NAMC. Baraga Co.: 229 on 6 of 6 counts (100%); mean 38.17; range 31-46; ind/PH .89. *Houghton Co.*: 331 on 7 of 7 counts (100%); mean 47.29; range 24-63; ind/PH 1.19.

HCCBC. 7 on 5 of 26 counts (19.2%); mean .27; range 0-3; ind/PH .01. *Note*: birds reported as Brewer's Blackbirds (which see) were more likely Common Grackles.

Banding Recoveries. Singles banded in IL on 4 Apr 30 and IA on 2 Apr 65 recovered in B, H, or K on, respectively, 9 Apr 31 and 15 Jun 65. One banded in H or K on 25 Sep 88 found in TN on 25 Feb 89. The IA bird demonstrates that some Keweenaw breeders either migrate through or

winter in IA. All three indicate migration along a north-south line.

Historical Changes (Table 17). The Common Grackle was not listed by Kneeland (1857) but was by Barrows (1912) for Houghton in 1904, Cahn (1918) for Kenton (H) in Aug 1914 ("not common"), Wing (1932) for the Sturgeon River (H) on 7 Jul 32, and Wood (1933) for Copper Harbor in spring 31. I assume it occurred during pre-settlement times, because it inhabits marsh around beaver ponds and lakes. Wood considered it a common migrant and summer resident, but nevertheless, I believe it has become more widespread and abundant in K and northern H in the last 19 years, primarily in towns, and especially during spring migration. The Bootjack BBS suggests a 265% increase between the periods 67-73 and 92-2005.

Remarks. On 26 May 2001 at Chassell (H), LM saw an American Crow, harassed by two Common Grackles, eat several grackle nestlings from a nest in a large spruce.

Brown-headed Cowbird *Molothrus ater*

Status and Range (B, H, K). Common **summer** resident in northwestern half of B, most of H, and southern K; virtually absent from extensive tracts of forest far from farmland, such as the southeastern half of B and most of K. The scarcity of parasitized nests suggests that today the cowbird is not a serious threat in the Keweenaw. Numbers augmented in **spring**, but seemingly not in **fall**, by transients, but only enough to raise *local* spring detectability to very common, such as on the north coast of K, where this species seems to be increasing as a migrant (LB). Spring transients apparently arrive from the south and then skirt Lake Superior by flying east or west (see Banding Recoveries). Fall status uncertain. Like other blackbirds, apparently flocks and leaves early, in late Jul and Aug (see Banding Recoveries). Casual **early winter** lingerer and accidental **late winter** visitant; only 4 sightings after 3 Sep. Restricted to feeders, which have the only suitable ground food not covered by snow.

Habitat. A brood parasite, laying its eggs in nests of other species, which raise its young, usually to the detriment of their own. Breeds in relatively open areas, most commonly in rural situations near farms or in small towns, but also in forest edge, especially if near habitation. Commonly visits feeders.

Migration Dates. **SEAD**: 23 Mar 80 (Liminga, AW). **SMAD**: 12 Apr (n=26, H only). **SP**: protracted, mid Apr to mid May, with maximum 27Apr-9 May. **FLDD**: normal timing of fall departure uncertain; only 4 sightings after 3 Sep 72 (Liminga, AW): 30 Nov 94-24 Jan 95 (female at feeder near Liminga, AW); 23 Nov 79 (L'Anse Bay, AW); 19 Dec 87 and 17 Dec 89 (both HCCBC).

High Counts. **Spring**: 5 May 74 (**100**) Liminga, AW; 29 Apr 2001 (**75**) Copper Harbor, LB, JM; 27 Apr 98 (**25**) and 9 May 95 (**25**) both Copper Harbor, LB. **Summer**: 3 Jul 70 (**42**) H and K, B. and D. Wolck, Bootjack BBS; 3 Jul 83 (**25**) B, S. Patti, Herman BBS; 20 Jun 56 (**10**) Little Lake, B, LB.

Breeding (**B** 4 co, 6 pr, 11 po; **H** 8 co, 4 pr, 16 po; **K** 1 co, 3 pr, 3 po).

*23 Jun 88 (prejuvenile fed by Yellow-rumped Warbler) T51N, R31W, NW quarter, B, LB.

10 Jul 89 (dead nestling on ground under Merlin nest) Agate Harbor, LB.

12 Jul 82 (juvenile or prejuvenile fed by Chestnut-sided Warbler) Youngman's property, B, JY; breeding considered confirmed.

*16 Jul 86 (prejuvenile fed by adult male American Redstart) 4 mi NW Calumet, LB.

*Jul 87 or 88 (prejuvenile fed by Northern Parula) Rabbit Bay, H, LB.

Aug 1914 (nest with 1 cowbird and 3 Song Sparrow nestlings) near Kenton, H, A. R. Cahn (1918).

Aug 1914 (fully grown young fed by White-throated Sparrow) Kenton, H, A. R. Cahn (1918), breeding considered confirmed.

BBS. *Bootjack* 67-73: 91 on 7 of 7 counts (100%); mean 13.00; range 3-42. *Bootjack* 92-2005: 59 on 14 of 14 counts (100%); mean 4.21; range 2-9. *Herman*: 70 on 7 of 7 counts (100%); mean 10.00; range 4-25.

NAMC. *Baraga Co.*: 121 on 6 of 6 counts (100%); mean 20.17; range 10-31; ind/PH .47. *Houghton Co.*: 188 on 7 of 7 counts (100%); mean 26.86; range 3-65; ind/PH .67.

HCCBC. 2 on 2 of 26 counts (7.7%); mean .08; range 0-1; ind/PH .002.

Banding Recoveries. Of the many Brown-headed Cowbirds banded or recovered on the Peninsula, the following may be said (all involve adults). (1) *Western or southwestern connection*: 2 banded in MN 26 Apr 65 and 21 May 69 recovered in H 25 Apr 70 and 4 May 70, respectively. Four banded 1 May 70, 2 May 71, 26 Apr 70*, and 21 Apr 71* in H found in MN northeast of Duluth on, respectively, 16 Jun 73, 24 Jun 72, 15 May 70*, and 14 May 71*. (2) *Northern connection*: 2 banded in H 25 Apr 67 and 17 Apr 67*, where presumably transients, recovered in ON north of central Lake Superior on, respectively, 16 Jun 68 and 18 May 67*. The 8 birds above indicate that some Keweenaw spring transients breed in central MN and southwestern ON, whereas others are transients or residents in these places (see also below). (3) *WI connection*: 5 banded in H 24 Apr 70, 25 Apr 70, 26 Apr 71, 12 May 66, and 9 May 67 recovered in WI on, respectively, Apr 71, 3 Apr 72, 10 Apr 72, 3 May 67, and 6 May 68. Also, one banded in WI 10 Apr 73* found in H 13 days later on 23 Apr 73*. Finally, 2 banded 4 May 67 and

21 Apr 71 in H recovered in WI in fall on, respectively, 30 Aug 71 and 23 Aug 71. Thus, spring and fall transients through, or winter residents in, WI have been recovered as spring transients or summer residents in the Keweenaw, demonstrating a due north-south migration pathway. (4) *Winter connections.* 17 birds banded or recovered in H in Apr and May, representing transients or breeders, recovered in winter in WI (8 birds, Dec, Feb, early Mar), AR (1, Dec), LA (1, Dec), MS (1, Feb), and TX (6, Feb, Mar). Some Feb and Mar birds could have been transients, as this species winters to southern Mexico (Binford, 1989). (5) *Early fall migration*: birds banded in H on 27 Apr 70, 4 May 67, and 18 Apr 66 as transients (or residents?) recovered in, respectively, Delta Co., MI, 22 Jul 70, WI 23 Jul 68, and TX 10 Jul 70; these demonstrate how early birds leave the Keweenaw and how early they can arrive far to the south. (6) *Others*: 2 banded 14 Apr 67* and 24 Apr 70* in H flew *south to WI* by 8 May 67* and 24 May 70*, respectively. Two banded in H 15 Apr 67* and 26 Apr 71* and recovered, respectively, in Alger Co., MI, 3 May 67 and eastern ON 3 May 71* (8 days later) demonstrate a *west to east pathway* during the same spring. Finally, 1 banded on the Peninsula 19 Apr 67 recovered in MO 8 Sep 68, suggesting one route that southern winterers take in fall. Recoveries during the same season as banding (marked by an asterisk, *) demonstrate the startling fact that spring birds migrating north into the Peninsula apparently are trapped by Lake Superior *and turn west to MN, east to the Sault, or back south to WI, obviously skirting or avoiding the Lake.* Other records, not marked with an asterisk, also suggest this pattern. Some raptors, other blackbirds, *etc.* apparently do the same (see Discussions: Effects of Lake Superior on Migration).

Historical Changes (Table 17). The Brown-headed Cowbird was recorded in the Keweenaw as early as 1856 (Kneeland, 1857) and 1914 (Cahn, 1918). The Bootjack BBS indicates a decline of 68% from 13.00 per count in 67-73 to 4.21 in 92-2005. This agrees with a state decrease noted by Adams *et al.* (1988) for the period 66-85. If real (let's hope so!), this may be due to fewer pastures, cleaner farmyards, and less livestock; certainly this is the case for the Keweenaw today compared to the mining period of the mid 19th to early 20th centuries, when milk cows were common and horses were the primary means of travel and hauling. Despite this decrease, the cowbird seems to be increasing as a spring transient, at least on the north coast of K.

Orchard Oriole *Icterus spurius*

Status and Range (H, K). Casual **spring** vagrant, presumably as an overshoot; 4 records, 20 May-3 Jun, all recent. These may represent a very early stage in northward population expansion (see Vagrancy in Discussions).

Significant Records.

20-26 May 2002 (adult male) at nectar feeders in two nearby yards in Hancock, TA, RH, B. and W. Hoy, JK, B. Quenzi (2004).

22 May 2002 (female) at nectar feeder in Eagle River, K, LB, JM.

27 May 98 (immature male) near Salo, 3 mi NW Boston, H, S. Andres, D. Richter (MBNH 5: 199).

3 Jun 99 (female) Copper Harbor, LB.

Baltimore Oriole *Icterus galbula*

Status and Range (B, H, K). **Summer** resident, very uncommon in northern third of H and northwestern corner of B; rare elsewhere in H and B; here considered absent in summer in K, where habitat is scarce (see Breeding). Slowly invading from the south. **Spring**: occasionally (29 Apr, 19 May-5 Jun), birds overshoot their Peninsula breeding range to appear in K, especially the north coast, where they do not remain (see Significant Records). I consider these vagrants that overflew their destinations, because this species does not breed north of the Keweenaw at this longitude, although conceivably they might proceed west over Lake Superior. **Fall**: apparently leaves by mid Aug, some birds probably even in Jul; no Sep record; date of 23 Sep 88 in Weaver (2000) was actually 23 Aug 88 (fide AW). See Remarks.

Habitat. Nests primarily in isolated or patchy tall deciduous trees, especially in rural and residential situations, but also found at edges of mesic deciduous forest away from habitation. Often visits nectar feeders.

Significant Records (all spring vagrants; all Copper Harbor, LB, unless otherwise noted).

29 Apr 2004 (adult male) Manitou Is., JY.

19 May 96 (flock of 4).

20 May 99 (1).

20 May 2001 (adult male).

22 May 2002, Eagle River feeder (6) and Copper Harbor (1) LB, JM.

23 May 2002 (male, female).

24 May 2003 (male).

25 May 2002 (1) Agate Harbor, LB, A. and D. Slagle.

25 May 2003 (male at nectar feeder) Agate Harbor, A. and D. Slagle.

27 May 31 (1) N. A. Wood (1933).

30 May 88 (2).

5 Jun 98 (2).

Migration Dates. **SEAD**: 29 Apr 2004 (adult male) Manitou Is., JY). **SMAD**: 18 May (n=24). **SLDD**: migrants have been noted as late as 8 Jun 98 (female at a bog on Sotola Road near Delaware, K, LB). **FMDD**: 15 Aug (n=7, H only). **FLDD**: 24 Aug 97 (Liminga, D.

Weaver).

High Counts. multi-party, 12 May 2001 (**8**) B, NAMC; 22 May 2002 (**7**) see above.

Breeding (**B** 4 co, 9 po; **H** 6 co, 4 pr, 7 po).

18 May 2004 (female beginning nest construction, male singing) Dollar Bay, H, LB, JM.

26 May 2003 (female building nest, male singing) in Dollar Bay, H, LB, nest 30 ft up in 35 ft quaking aspen.

28 May 2005 (nest under construction) Chassell, H, LB.

9 Jun 2002 (nest) near Arnheim, B, JY.

22 Jun 86 (prejuvenile) Youngman's property, B, JY.

8 Jul 2001 (prejuvenile) Arnheim, Unit 7, B, LM, JY.

17 Jul 2001 (adults feeding 2 prejuveniles) Dollar Bay, H, LB, JM.

[*Note*: in the absence of documentation, the MBBA (1991) map spot for possible breeding in K should be disregarded.]

BBS. *Bootjack* 67-73: none seen in these years, but 1 recorded in 86. *Bootjack* 92-2005: 2 on 1 of 14 counts (7.1%); mean .14; range 0-2. *Herman*: 5 on 4 of 7 counts (57.1%); mean .71; range 0-2.

NAMC. *Baraga Co.*: 10 on 2 of 6 counts (33.3%); mean 1.67; range 0-8; ind/PH .04. *Houghton Co.*: 8 on 2 of 7 counts (28.6%); mean 1.14; range 0-5; ind/PH .03.

Historical Changes (Table 17). The Baltimore Oriole was not listed by Kneeland (1857), Cahn (1918), or Wing (1939), but Wood (1933) saw one at Copper Harbor on 27 May 31. For the city of Houghton, Robinson (1935) said "it is only within the last three or four years that we have seen Baltimore Orioles here, but each year we see a few more and in different sections." This supports the theory of northward spread by this southeastern species proposed by G. McPeek (in Brewer *et al.*, 1991). Spring records on the north coast of K appear to be examples of today's slow expansion using the method of overshoot vagrancy.

[*Remarks*. A Baltimore Oriole in mid Dec 2001 attributed to Houghton Co. (MBNH 9: 169) was actually found on the Houghton-Higgins Lake Christmas Bird Count (in count week), Roscommon Co. (MBNH 9: 330).]

Bullock's Oriole *Icterus bullockii*

Status and Range (H). Accidental **spring** vagrant. One record, immature (first summer) male, 17 May 2005, at feeders at 807 West Franklin Street, Hancock, N. Auer, TA, LB, L. Dombroski, RH, J. Kaplan (description and many photos in LB files), LM, AW, B. and M. L. Wercinski, JY. Accepted by the MBRC (Internet).

Gray-crowned Rosy-Finch *Leucosticte tephrocotis*

Status and Range (H). Accidental early **spring** vagrant. One record, 30-31 Mar 2005, one bird at separate feeders 3 mi W (B. and P. Quenzi, 30 Mar) and 4 mi W (G. and M. Stockwell, 31 Mar, photos in LB files) Atlantic Mine, H; latter locality in T54N, R35W, Sec. 11. Accepted by the MBRC (Internet).

Pine Grosbeak *Pinicola enucleator*

Status and Range (B, H, K). Overall, a common, irregularly abundant, **winter** resident throughout the Peninsula, but irruptive and always nomadic; most abundant in early winter (see Discussions: Effects of Climate and Bird Feeders on the Wintering Avifauna). Although I find no actual records for winters 78-79, 79-80, and 82-83, it probably occurred then in low numbers. However, it can be missed by a single person birding sporadically during winter, as by AW in 11 winters between 72-73 and 99-2000, and probably is not resident throughout the winter every year. Perusal of the number of birds per party hour on the HCCBC since 76-77 shows no pattern (Table 15); highs were in Decembers of 77 (1.59), 89 (10.60), 95 (2.62), 97 (1.96), and 2001 (1.20). The winter of 46-47 also produced a major flight (JPW 25: 112). **Fall**: highly erratic in timing of arrival; of 21 arrival dates, 1 was on 15 Oct, 1 on 19 Oct, 5 in the last week of Oct, 9 in Nov, and 5 in Dec. **Spring**: no apparent flight (unless the few Mar records indicate one). **Summer**: accidental visitant; 3 records, 9 Jun-9 Jul.

Habitat. Species nomadic, so found anywhere flying or where there are large seeds or berries, including feeders.

Significant Records (all summer).

9 Jun 96 (female) Copper Harbor, D. Friedman, K. Overman, J. Vaughn (MBNH 4: 33).

29 Jun (singing male), 30 Jun (male and female), 5 Jul 49 (1 unsexed bird) at Gratiot Lake, K, G. J. Wallace (1949).

9 Jul 86 (female) bog at Pt. Isabelle, K, LB (J. Granlund in McPeek & Adams, 1994; R. J. Adams in Brewer *et al.*, 1991).

Migration Dates. **FEAD**: 15 Oct 92 (2, H, S. Andres; JPW 70 [2]: 26). **FMAD**: 14 Nov (n=20, but variable, see Fall). **SMDD**: 20 Mar (n=10, based solely on Mar-Apr records from H). **SLDD**: 6 Apr 75 (Jacobsville, H, AW).

High Counts. **Winter**: multi-party, 17 Dec 89 (**355**) HCCBC; 17 Jan 99 (**25**) Baraga Plains, T49N, R34W, Sec. 17, LM, JY.

HCCBC. 1233 on 23 of 26 counts (88.5%); mean 47.42; range 0-355; ind/PH 1.05.

Purple Finch *Carpodacus purpureus*

Status and Range (B, H, K). Detectability varies greatly between seasons. **Spring**: common transient, appearing

as early as late Mar, normally in mid Apr, some years not until May, reaching a peak in first three weeks of May. **Summer**: fairly common resident throughout forests with large spruce or balsam fir. **Fall**: common transient. Most leave by mid Sep, but some, probably including transients, remain through Oct into early winter. **Early winter**: occasional lingerer throughout, recorded on 14 of 26 HCCBCs (53.8%). During years when present, detectability ranges from very rare to abundant (Dec 96 only), averaging fairly common, this variation probably corresponding to berry crops (data needed) rather than to irruptions. **Late winter**: occasional resident in mild years. For instance, AW recorded it in Jan and Feb in 7 of 28 winters (72-99). When present, detectability may reach common. Largely restricted to feeders.

Habitat. In spring, often feeds in flowering deciduous trees. In summer, inhabits mesic/wet mixed forest, open wet coniferous bog, wet deciduous swamp, beaver ponds (especially with snags for singing perches), and occasionally dry deciduous forest and rural settings, all of which have spruce or balsam fir for nest sites and, in late summer and fall, adjacent, broad-leaved shrub upland or shrub wetland edge with berry-laden shrubs or small trees (*e.g.*, black cherry, serviceberry) for feeding. Common at feeders, especially in winter and during migration.

Migration Dates. See Status and Range.

High Counts. **Spring**: multi-party, 11 May 2002 (**40**) H, NAMC; 8 May 2004 (**26**) B, NAMC, LB, Z. Gayk in one party; 19 May 96 (**19**) Copper Harbor, LB. **Summer**: 23 Jul 93 (**19**) Ahmeek marsh, K, LB, including juveniles. **Fall**: 29 Aug 97 (**20**) Eagle River, K, LB; 21 Oct 98 (**11**) Gratiot Lake to Lac La Belle, K, LB. **Early winter**: multi-party, 21 Dec 96 (**376**) HCCBC; same count (**97**) JY only. **Late winter**: 16 Jan 97 (**30**) Liminga, AW; 3 Feb 85 (**12**) Liminga, AW.

Breeding (**B** 1 co, 15 pr, 9 po; **H** 5 co, 9 pr, 12 po; **K** 3 co, 5 pr, 5 po).

16 Jun 98 (male and female courting) Agate Harbor, LB, probable breeding.

*24 Jun 88 (female building nest 3 ft from top of tall balsam fir in mesic mixed forest) T51N, R30W, SW quarter, B, LB.

*28 Jun 87 (carrying food) T50N, R36W, NW quarter, H, LB.

*3 Jul 86 (adult feeding prejuvenile) Cliff Drive, T57N, R32W, NE quarter, K, LB.

*10 Jul 87 (prejuvenile) T54N, R34W, SW quarter, H, LB.

*15 Jul 86 (adult feeding nearly full-sized prejuvenile) 2 mi SE Central, K, LB.

BBS. *Bootjack* 67-73: 26 on 6 of 7 counts (85.7%); mean 3.71; range 0-7. *Bootjack* 92-2005: 38 on 13 of 14 counts (92.9%); mean 2.71; range 0-7. *Herman*: 21 on 7 of 7 counts (100%); mean 3.00; range 1-4.

NAMC. *Baraga Co.*: 57 on 6 of 6 counts (100%); mean 9.50; range 3-28; ind/PH .22. *Houghton Co.*: 116 on 7 of 7 counts (100%); mean 16.57; range 3-40; ind/PH .42.

HCCBC. 515 on 14 of 26 counts (53.8%); mean 19.81; range 0-376; ind/PH .44.

Banding Recoveries. (1) *Southward migration*: 3 birds banded in H 23 Apr 70, 19 Apr 72, and 17 May 70 recorded in subsequent years in, respectively, WI (4 Apr 71), IA (16 Apr 73), and TN (30 Jan 77, where presumably wintering); also, 1 banded in WI 24 Apr 62 found in B 27 Apr 67. (2) *Northwestern connection*: bird banded in H 23 Apr 72 hit by a car in AB in 74. (3) *Southwestern connection*: one banded in central MN 6 Apr 72 found in H 23 Apr of the same year. Non-Keweenaw records include one banded in ND 22 Jan 90 found in Ontonagon Co., MI, 29 Apr 92. Note that none has been found to the east of the Keweenaw (unlike Evening Grosbeak).

House Finch *Carpodacus mexicanus*

Status and Range (B, H, K). Rare and local **summer** resident. In the late 90s and early 2000s, restricted to cities and towns, specifically Baraga and L'Anse in B, Hancock, Calumet and Laurium in H, Ahmeek in K (once, 20 May 2000, pair, LB, JM), and once at a farm near Liminga (14 Jun-4 Jul 96, D. Weaver). However, apparently declining, as even more local today, being regular, in very low numbers, only in Baraga, L'Anse, and Hancock (NAMC). **Spring**: although more widespread than in summer, detectability remains about the same. That this species is mostly migratory is indicated by its greater abundance in summer than early winter, its apparent absence in late winter, and by the following records of migrants: 9 Apr 2005 (2, Eagle River, K, RH, P. Hurley, JK, K. Tischler), 29 Apr 98 (female in Eagle River, K, LB), 9-10 May 2001 (female, Copper Harbor, LB), 18 May 96 (singing male, Copper Harbor, LB), and 26 May 97 (singing male, Copper Harbor, LB). These same records indicate continued attempted expansion employing the method of spring vagrant overshooting. Also, found at Liminga feeders only on migration (26 Mar-5 May, 93-97; AW, D. Weaver). **Fall**: few data; most gone, or "invisibly" flocked, by mid Oct; one probable migrant, 8 Aug 2002, MTU campus, LM. **Early winter**: casual lingerer to 9 Jan at feeders in at least Hancock. No later records, thus demonstrating its summer resident status.

Habitat. Found exclusively in residential and rural areas with a combination of feeders for foraging and spruce or fir for nest sites. I find no evidence that the House Finch competes with the Purple Finch for food. See Breeding for nest sites.

Migration Dates. **SEAD**: 27 Feb 98 (Hancock, RH; here considered an arrival in a very early spring); 18 Mar 2000 (Hancock, RH). **SLDD**: vagrant overshoots seen as late

as 26 May 97 (singing male, Copper Harbor, LB). **FLDD**: 30 Oct 96 (Liminga, AW); 15 Oct 95 (male, Laurium, H, LM); for later dates see Significant Records.

Significant Records.

Selected historical records.

Sometime in period 1983-88. A spot for possible breeding is shown on the MBBA map (1991) near the town of Baraga, but the data, if any, are unavailable from the Kalamazoo Nature Center (fide R. J. Adams).

15 and 18 Apr 90 (1) farm of D. Weaver near Liminga, first definite Keweenaw Peninsula record.

Springs 93, 94, 95, 96, and 97 (migrants seen) Liminga, AW, D. Weaver.

14 Oct 93, Liminga, AW, first fall record for Peninsula.

11 May 96 (2) L'Anse, LB, first definite record for B.

18 May 96 (singing male) Copper Harbor, LB, first record for K.

14 Jun-4 Jul 96 (pair) farm of D. Weaver near Liminga, first summering record for Peninsula (but see next entry).

22 Jul 96 (nest) Hancock, RH, first confirmed breeding for the Peninsula.

29 Apr 98 (female) Eagle River, K, LB, first record for this town.

20 May 2000 (interacting pair) Ahmeek, K, LB, JM, first pair for K (but not found later).

Winter (all; see also HCCBC).

6 (5 birds)-25 Nov (3) 99, Hancock, RH.

7 Dec 98 (1)-9 Jan 99 (8) Hancock, RH.

8 Dec 2002 (2) Hancock feeder, RH.

16 Dec 2000 (8) HCCBC, JM, B. Soloman, AW.

20 Dec 2003 (10) HCCBC.

21 Dec 2002 (1) HCCBC.

High Counts. **Spring**: multi-party, 11 May 2002 (**15**) H, NAMC. **Winter**: see Significant Records.

Breeding (**B** 1 co, 3 po; **H** 1 co, 3 po; **K** 1 po).

14 Jul 2002 (female building nest, male nearby) in Baraga, LM; nest in Colorado blue spruce in residential yard.

22 Jul 96 (nest with 5 young that fledged when nest investigated) in Hancock, RH; nest 7 ft up in trimmed northern white-cedar in residential neighborhood.

Note: possible breeding records, listed in the above summary as one record per locality, are of adults seen in summer in towns of Baraga, L'Anse, Laurium (H), Calumet, and Ahmeek (K) and at D. Weaver's farm near Liminga.

NAMC. Baraga Co.: 7 on 5 of 6 counts (83.3%); mean 1.17; range 0-3; ind/PH .03. *Houghton Co.*: 23 on 7 of 7 counts (100%); mean 3.29; range 1-15; ind/PH .08.

HCCBC. 8 on 1 of 26 counts (3.8%); mean .31; range 0-8 (10 on 20 Dec 2003); ind/PH .007. [*Note*: the outlandish 65 birds reported on the 21 Dec 96 HCCBC probably exceeds the total Peninsula population at any time of year and were almost certainly misidentified Purple Finches, which numbered an all-time high 376 on that count.]

Historical Changes (Table 17). The House Finch was first noted in MI on 13 Feb 72 at Berrien Springs, Berrien Co., having invaded from the east. It was first recorded in the Upper Peninsula in Delta Co. in 88, either at Escanaba on 15 Mar (AB 42: 439) or Cornell on 2 Jan (J. Granlund in McPeek & Adams, 1994), and first nested at Marquette, Marquette Co., 27 Apr-17 May 91 (N. Ilnicky, JPW 68 [5]: 8). Thus this species apparently invaded the Keweenaw from Wisconsin, not the eastern Upper Peninsula. The history of the House Finch is detailed under Significant Records. Summarizing, it arrived in 90 or shortly before, increased to a peak in 96, and has since declined. Whether expansion continues probably depends on the bird's adaptation to the severe climate (especially snow cover) and the ability of individuals to either survive at feeders or migrate. Strong selective pressures are already shaping its behavior, apparently favoring migration.

Red Crossbill *Loxia curvirostra*

Status and Range (B, H, K). Primarily a visitant. Highly erratic in distribution, timing, and abundance, being both irruptive and nomadic. Most wandering birds simply pass through, flying overhead or pausing briefly. Invasions are rarely sustained and only where flocks encounter ample pine nut food. Because it has been recorded in all months, it might be considered a permanent resident; however, only on the Baraga Plains does it *seem* (data few) to occur annually throughout the year, and there it is very rare. Elsewhere it may be absent for several years at a time; *e.g.*, I find no certain record outside the Baraga Plains between 3 Aug 90 and 26 Jul 96, and as of 1 Sep 2005 I have yet to see one this millennium! **Spring**: least common, with no detected invasions at this season; casual everywhere but the Baraga Plains. **Summer**: no confirmed breeding for the Peninsula, but almost certainly a very rare summer resident, definitely a casual resident, on the Baraga Plains. Elsewhere occurs casually in local patches of mature red pine, such as near the mouth of the Huron River. **Fall**: most of the very erratic flights have been in early fall, starting in late Jul and Aug (see High Counts), rather than Oct or Nov as with Common Redpoll and Pine Grosbeak. Most flights end after a few days or weeks (*e.g.*, 1952, 90, 98), only casually blossoming into full-scale invasions, such

as in 1856-57 (Kneeland, 1857), 84 (4 Aug-16 Dec), and 96-97 (26 Jul-10 May), the last year including probable breeding. **Winter**: data few, because the inhospitable climate deters observers. Apparently, a casual resident (Baraga Plains) and visitant, recorded on the HCCBC in only 4 of 26 years. See White-winged Crossbill.

Habitat. Occurs, and probably breeds, primarily in mature red pine forest, less often in jack pine forest, using its crossed bill to extract nuts from the cones of both species (LB observations). During its wanderings, may be encountered in isolated pines, even in towns (*e.g.*, Copper Harbor). Casual at seed feeders.

High Counts. **Spring**: 17 May 99 (**15**) Engman Lake, T50N, R34W, Sec. 34, B, JY; 15 May 2001 (**13**) Baraga Plains, LM. **Summer**: 12 Aug 67 (**50**) K, D. D. Tessen (AFN 21: 577); 13 Jul 52 (**35**) in town of Baraga, LB; 4 Aug 84 (**18**) K, D. Runck (JPW 63: 67); 23 Jul 90 (**17**) Agate Harbor, LB. **Fall**: 8 Nov 96 (**19**) B or H, JY. **Winter**: multi-party, 16 Dec 84 (**15**) HCCBC; 23 Jan 84 (**10**) northwest of Alberta, B, JY.

Breeding (**B** 2 pr, 4 po; **H** 1 po; **K** 3 pr, 3 po).

10 May 97 (adult female feeding 3 full-sized juveniles with uncrossed bills) Menge Creek Road, T49N, R34W, Sec. 3, B, LB, probable breeding.

19 Jun 67 (independent juveniles banded) Baraga Plains (Payne, 1983), possible breeding.

*22 Jun 88 (adult male and female with 2 full-sized juveniles in red pine forest) near mouth of the Huron River, T52N, R30W, NE quarter, B, LB, probable breeding.

18 Jul 66 (independent juveniles banded) Baraga Plains (Payne, 1983), possible breeding.

Note: the three probable breeding records for K on the MBBA map (1991) should be reduced to possible in the absence of documentation.

BBS. *Bootjack* 67-73: 3 on 2 of 7 counts (28.6%); mean .43; range 0-2.

NAMC. *Baraga Co.*: 4 on 1 of 6 counts (16.6%); mean .67; range 0-4; ind/PH .02. *Houghton Co.*: 4 on 2 of 7 counts (28.6%); mean .57; range 0-2; ind/PH .01.

HCCBC. 39 on 4 of 26 counts (15.4%); mean 1.50; range 0-15; ind/PH .03.

White-winged Crossbill *Loxia leucoptera*

Status and Range (B, H, K). Primarily a visitant. A nomadic and irruptive species, therefore highly erratic in distribution, timing, and abundance, remaining to breed only when it encounters a great, although sometimes local, abundance of spruce cones. More widespread, frequent, and abundant than the Red Crossbill, perhaps because spruce bogs are much more numerous than red pine or jack pine forests. Most birds wander through briefly, and, like the Red Crossbill, years may pass with few records; *e.g.*, I find only one record (19 Dec 92, HCCBC, a major invasion winter for the state) between 31 May 90 and 21 Dec 96, and only in 76 and 77 has it been recorded in two consecutive years on the HCCBC (Table 15). Although White-wings have been noted in every month of the year, only casually does an invasion result in year-long residency to allow *individuals* (not the species) to be termed **permanent** residents; those that have (or nearly so) include the periods 27 Jul 89-31 May 90 (probable breeding) and 8 Jun 96-7 Jun 97 (the latter invasion period similar to that for Red Crossbill). Birds arrive sporadically at any time of year except (like Red Crossbill) in fall (see below) and **spring**, when flocks appear only accidentally (*e.g.*, 27 May 2001, 5 birds, B, JY, see High Counts), most spring birds being left over from a previous large invasion. **Summer**: despite this erratic timing, there does seem to be a pattern of arrival in summer (Jun, Jul, or Aug). For instance (see also above and High Counts), small to moderate flights, which lasted from only one day to six months and sometimes included breeding, producing a status of irregularly, locally, very common, were as follows: 14-15 Aug 57; 28 Jun-29 Sep 86 (up to 50 in a day, confirmed breeding); 27 Jun-22 Dec 87 (probable breeding); 23 Aug-4 Nov 97; 8 Jun 98-21 Feb 99 (up to 25, possible breeding); 4 Jul-31 Oct 99 (up to 13); 29 Jun 2000; 14 Jul 2002-30 Jun 2003 (Manitou Is., B. Johnson, JY), including 9 May 2003 (confirmed breeding in H); 12 Aug 2004 (flock or 12, Agate Harbor, LB). **Fall**: casual; nomadic flocks suddenly appear and pass through in fall, *e.g.*, 7 Oct 2003 (9, Hebard Park, K, LB; 3, Manitou Is., JY) and 18 Oct 88 (22, Agate Harbor, LB); see High Counts. **Winter**: occasional visitant, irregularly abundant, recorded on 34.6% of HCCBCs, with the highest total 474 in Dec 89, corresponding with the largest ever state invasion (J. Granlund in McPeek & Adams, 1994), and also with the maximum all-time Keweenaw count for Pine Grosbeak, and third highest count for Common Redpoll. Four of the five highest HCCBC totals for the Red-breasted Nuthatch, another spruce cone forager, correspond with White-wing irruptions (84, 87, 89, 96, not 94).

Habitat. Feeds mostly on cones of black and white spruces and to a much lesser extent northern white-cedar and (once, LB) eastern white pine. Breeds at localities where spruce are heavily laden with new cones, such as in black spruce bogs. Nests in spruce trees. In my opinion, the fledglings found by D. C. Evers (in Brewer *et al.*, 1991) in jack pine forest almost certainly came from a nest in a nearby black spruce bog. Casual at seed feeders.

High Counts. **Spring**: 10 May 97 (**20**) near Big Lake, B, LB only, NAMC. **Summer**: 28 Jul 96 (**100**) Copper Harbor, LB; 15 Aug 57 (**100**) Agate Harbor, LB; 29 Jun 2000 (**50** in a flock) Copper Harbor, LB. **Fall**: 20 Oct 97 (**80** in

flocks of 5, 15, 20, 40, all flying west) Copper Harbor, LB. **Early winter**: multi-party, 17 Dec 89 (**474**) HCCBC; 22 Dec 87 (**150**) B, G. Baldwin, N. Matthews (JPW 66: 129); 17 Dec 89 (**126**) LM only, HCCBC; 21 Dec 96 (**67**) JY only, HCCBC. **Late winter**: 1 Feb 97 (**64**) B, JY.

Breeding (**B** 2 co, 1 po; **H** 2 co, 2 pr, 3 po; **K** 1 pr, 6 po).

*Date unknown (physiological evidence) H (D. C. Evers in Brewer *et al.*, 1991).

2-15 Mar 2003 (nest in black spruce) T47N, R34W, center of Sec. 13, B, JY. First noted on 2 Mar, when pair seen, female went to nest; female on nest 15 Mar; no activity on or after 22 Mar; probably unsuccessful.

10 Apr-9 May 2003 (nest in white spruce) 1 mi E Klingville, T53N, R33W, south edge of Sec. 26, H, JY, LM. Activity noted 19 Apr; female building nest 12 Apr; female sitting 13-24 Apr, male feeding her; both adults feeding 3 or 4 visible nestlings on 9 May.

8 Jun 98 (3 adult males and a preening female with a bare abdomen [brood patch?]) Sotola Road near Delaware, K, LB, probable breeding.

*3 Jul 86 (2 flocks of 25 adults each; in both flocks, adults fed prejuveniles) in two blocks in one township, Baraga Plains, D. C. Evers (in Brewer *et al.*, 1991). Although the young could fly, they had short tails, were being fed, and could not have flown far. The MBBA (J. Granlund in McPeek & Adams, 1994) did not mention a B confirmation.

*3 Jul-14 Jul 87 (3 singing adult males, 1 singing immature, and 2 females) Rabbit Bay, H, LB; heavy cone crop in black spruce bog; probable breeding.

27 Jul 89 (15 adults, 12 of them singing, but no females seen [on nests?]) Rabbit Bay, H, LB; heavy cone crop in black spruce bog; probable breeding.

Note: the two spots on the MBBA map (1991) for probable breeding in K should be reduced to possible.

NAMC. *Baraga Co.*: 24 on 1 of 6 counts (16.7%); mean 4.00; range 0-24; ind/PH .09.

HCCBC. 821 on 9 of 26 counts (34.6%); mean 31.58; range 0-474; ind/PH .70.

Historical Changes (Table 17). Although I hesitate to accept historical trends in such an erratic species, I note that the White-winged Crossbill has been recorded on the HCCBC only twice in the 12-year period 90-2001 (16.7%) but 7 times in the previous 14 years (50.0%).

Remarks. The record of 2 birds on 19 Aug 98 at Rice Lake, LB (MBNH 6: 112) should have been attributed to Houghton Co., not Chippewa Co.

Common Redpoll *Carduelis flammea*

Status and Range (B, H, K). Highly irruptive **winter** resident. Although recorded on only 65.4% of HCCBCs, occurs annually, with detectability varying from very rare to abundant, averaging common. See White-winged Crossbill and Hoary Redpoll. Many of the larger flights correspond to lows in American Goldfinch numbers, and visa versa (Table 15). Because these species have similar foraging habits, I theorize that the same factor, probably a poor white birch and speckled alder cone crop, in the Keweenaw and the Arctic causes both species to move southward (and eastward?), the redpoll into (then through) and the goldfinch out of the Peninsula; both remain when the Keweenaw cone crop is adequate. In 99-2000 RH counted Common Redpolls at his feeders, finding an initial large number of 60 on 2 Nov, then a slow decrease to 3 on 12 Dec, followed by a sudden increase to 20 on 20 Dec and 40 on 1 Jan; subsequently, numbers dropped slowly to 30 on 5 Feb and eventually 3 on 31 Mar. Although this pattern might represent two flights, I suspect it reflects a foraging shift to feeders from natural weed and cone seeds when the former become snow-covered and the latter depleted in late Dec. **Fall**: during major invasion years, usually arrives earlier than in normal years and is more abundant in fall than winter. A trans-Lake Superior migrant, at least in fall, when sometimes concentrated on the north coast of K; seen (LB) coming in off the Lake at Agate Harbor at 0915 EDT (flock of 40) and 0945 (40) on 17 Oct 86, and 0832 (5) and 0833 (6) on 18 Oct 86 (a major invasion year). **Spring**: some years, more common during the return spring flight than in winter, this most evident when the winter population is small. Major migration period mid Mar to mid Apr, with lingerers to late May.

Habitat. Feeds primarily on white birch cones and weed seeds (when not covered with snow), and to a lesser extent speckled alder cones, and thus may be found most often in dry deciduous forest (especially isolated patches along the north coast of K), shrub wetland, and weedy fields and edge. Commonly visits feeders, preferring thistle seed and black oil sunflower seed.

Migration Dates. **FEAD**: 10 Oct 93 (Copper Harbor, LB). **FMAD**: 15 Nov (n=22). **SMDD**: 20 Apr (n=17, H only). **SLDD**: 24 May 2004 (1, Copper Harbor, TA); 13 May 2000 (H, NAMC).

High Counts. **Spring**: 31 Mar, 3 Apr, and 13 Apr 86 (**100** each day) all Liminga, AW. **Fall**: 17 Oct 86 (**80**) Agate Harbor, LB; 2 Nov 99 (**60**) Hancock, RH. **Early winter**: multi-party, 15 Dec 2001 (**330**) HCCBC; 29 Dec 63 (**161**) Eagle Harbor Christmas Bird Count, LB only; 27 Dec 2001 (**150**) Baraga, JK. **Late winter**: 30 Jan 49 (**200**) Lake Linden, G. H. Hesterberg (JPW 27: 72); 21 Feb 81

(**60**) Liminga, AW.

NAMC. *Baraga Co.*: none, but seen on an earlier NAMC not used here. *Houghton Co.*: 42 on 3 of 7 counts (42.9%); mean 6.00; range 0-33; ind/PH .15.

HCCBC. 1673 on 17 of 26 counts (65.4%); mean 64.35; range 0-330; ind/PH 1.42.

Banding Recoveries. One banded in QC 27 Mar 90 found dead in Marquette Co., MI, 20 Jan 92.

Hoary Redpoll *Carduelis hornemanni*

Status and Range (B, H). Occasional **winter** visitant in B and H, recorded in 8 of 25 winters (32.0%) during the period 73-74 to 97-98. The only report for K (MBNH 1: 55) lacks details. Influxes of Hoarys are strongly correlated with the larger irruptions of Common Redpolls, as shown by comparing HCCBC data for Commons with *all* Hoary records; hence, I consider both species irruptive. Hoarys appeared during five of the six largest Common Redpoll invasions (77-78, 86-87, 91-92, 93-94, and 2001-02; no Hoarys in 89-90) and two of 6 moderate irruptions (81-82, 97-98); no Hoarys were seen during years when few or no Commons occurred. Hoarys arrive later and leave earlier than Commons, the extreme dates being 17 Dec and 23 Apr *vs.* 10 Oct and 12 May for Commons, and seem most numerous from mid Feb through the first week of Apr (14 of 23 records), but more data needed. Although in 97-98 the species was seen from 3 Jan to 6 Apr, suggesting winter residency, there is no evidence that any particular individual remained that long. N. F. Sloan (in Payne, 1983) estimated that Common Redpolls outnumber Hoarys 100 to 1 in the Keweenaw; the HCCBC, which, however, is early for Hoarys, indicates a ratio of 159 to 1.

Habitat. The only recorded habitat for the Keweenaw is at seed feeders, but presumably the Hoary forages on the same natural food as the Common Redpoll.

Migration Dates. **FEAD**: 17 Dec 77 (HCCBC). **SLDD**: 11-23 Apr 92 (apparently the same single bird) and 8 Apr 78 (both Liminga, AW).

High Counts. **Early winter**: multi-party, 17 Dec 77 (**6**) HCCBC.

HCCBC. 8 on 3 of 26 counts (11.5%); mean .31; range 0-6; ind/PH .01.

Pine Siskin *Carduelis pinus*

Status and Range (B, H, K). Irruptive; at all seasons, highly variable in timing and abundance, with no discernible *regular* patterns. **Spring**: in years when scarce or absent in winter, spring birds frequently arrive in mid Mar, sometimes mid Feb or Apr, but most often in the last two weeks of May, when in some years the species is abundant, at least locally. These spring flocks either leave or disperse for breeding after about mid Jun. In years with big winter irruptions, most birds leave before May, and there is no obvious spring flight, presumably because the main population is already at the latitude of the Keweenaw, with few birds farther south to form a spring flight. **Summer**: fairly common resident throughout regions with coniferous and mixed forests. **Fall**: abundant transient in most but not all years, sometimes arriving in Aug but normally mid Sep through Oct, often peaking in first week of Oct. **Early winter**: occasional, but irregularly abundant, visitant, recorded on only 53.8% of HCCBCs, but with a high count of 632. **Late winter**: casual, irregularly common, resident; major irruptions noted in Jan-Feb of 76, 88, 90, and 97 (AW).

Habitat. Most often seen flying or at feeders. In summer, may be found in any mesic or wet, coniferous or mixed forest. At other times of year, occurs most anywhere, feeding primarily on grass and weed seeds and the cones of white birch and, to a lesser extent, tamarack, northern white-cedar, and speckled alder. Visits feeders at all seasons, preferring thistle and black oil sunflower seeds.

High Counts. **Spring**: 19 May 2001 (**280**) Copper Harbor, LB, JM; 9 Apr 90 (**200**) Liminga, AW; 6 Jun 2001 (**120**) Copper Harbor, LB. **Summer**: 15 Jun 97 (**30**) H and K, LB, Bootjack BBS, possibly migrants. **Fall**: 4 Oct 92 (**150**) and 98 (**115**) both Copper Harbor, LB. **Winter**: multi-party, 19 Dec 87 (**632**) HCCBC; 28 Jan 90 (**50**) Liminga, AW.

Breeding (**B** 3 pr, 10 po; **H** 1 co, 1 pr, 16 po; **K** 3 co, 3 pr, 7 po).

14 Jun 2000 (prejuvenile attended by adult) Copper Harbor, LB.

BBS. *Bootjack* 67-73: 6 on 3 of 7 counts (42.9%); mean .86; range 0-3. *Bootjack* 92-2005: 64 on 6 of 14 counts (42.9%); mean 4.57; range 0-30. *Herman*: 6 on 4 of 7 counts (57.1%); mean .86; range 0-2. The seeming increase between the periods 67-73 and 92-2005 on the Bootjack count is the result of several new houses, not present in 67-73, that have feeders.

NAMC. *Baraga Co.*: 109 on 4 of 6 counts (66.7%); mean 18.17; range 0-46; ind/PH .42. *Houghton Co.*: 180 on 7 of 7 counts (100%); mean 25.71; range 2-71; ind/PH .65.

HCCBC. 1029 on 14 of 26 counts (53.8%); mean 39.58; range 0-632; ind/PH .87.

Banding Recoveries. Records demonstrate movements to or from the south-southwest, south, and southeast, none of which involves a definite Keweenaw winterer. One banded to the southwest in IA 12 Feb 72 was found the same year in H on 24 Apr. Two banded to the south in WI 15 Feb 88 and 4 May 63 were recovered in the same years in the Keweenaw on, respectively, 17 Apr 88 and 21 May 63. Singles banded to the west-southwest in MN 13 May 82 and southeast in OH 1 Mar 70 were recovered

in H on, respectively, 30 Mar 85 and 22 May 70. Finally, one banded in PA 24 Apr 82 and one in H 8 Apr 84 were recovered, respectively, in opposite but correlated directions to the northwest in H 23 Mar 85 and southeast in PA 1 May 86.

American Goldfinch *Carduelis tristis*

Status and Range (B, H, K). Apparent seasonal status presents an intriguing picture, for which much more data are needed. **Spring**: very common transient during years when the species does not winter in large numbers. Transients and summer residents arrive from 4 to 28 May, averaging about 14 May; transients occur through the first week of Jun, rarely mid Jun, after which they leave quickly. During years with major winter irruptions, no spring flight of migrants (*i.e.*, transients or summer residents) is discernible, perhaps because the migrants arrive at the same time and rate as the winterers leave, or, more likely, the winterers are the very individuals that would have formed the spring flight if they had gone south; see Evening Grosbeak. **Summer**: common resident in non-forested regions throughout. Nests late, 20 Jun-24 Aug. **Fall**: summer residents leave over a period varying from mid Aug to late Sep, averaging about 3 Sep, after which a hiatus occurs until the large flights of early winter birds arrive (if they are going to). This period of usual absence (a few birds may be detected) suggests that there are two separate populations—summer residents do not simply remain but are replaced by early winter birds from elsewhere. **Early winter**: visitant; detectability varies annually from very rare to abundant, but normally very common. Recorded on 23 of 26 HCCBCs. Winter birds arrive, from places unknown, from 30 Oct to 27 Nov, median 11 Nov, some years remaining through Apr. **Late winter**: occasional resident, usually in small numbers but some years abundant, recorded (AW, H) in late winters 82-83, 84-85, 87-88, 89-90, 92-93, 94-95, 96-97, 98-99, 2000-01; note that in this series, one winter was skipped six times and two winters twice. These dates agree approximately with HCCBC data (Table15). See Historical Changes. See Common Redpoll, Winter, for comparisons.

Habitat. Nests primarily in old fields with shrubs to 6 ft, broad-leaved shrub upland, shrub wetland (sandbar willow and red-osier dogwood), and rural situations with bushes; feeds on nearby weed seeds and insects. In fall and early winter, forages on white birch cones and weed seeds. Frequents feeders throughout the year, preferring thistle seed and black oil sunflower seeds. Foraging and food habits similar to those of the Common Redpoll.

Migration Dates. **SEAD**: 4 May 96 (Liminga, AW). **SMAD**: 14 May (n=18, H only). **FEAD**: during winter influxes, 30 Oct 90 (Liminga, AW). **FMAD**: during winter influxes, 11 Nov (n=8).

High Counts. **Spring**: multi-party, 11 May 2002 (**72**) H, NAMC; 28 Mar 99 (**60**) Youngman's property, B, JY. **Summer**: 20 Jun 2005 (**23**) H and K, LB, Z. Gayk, Bootjack BBS. **Fall**: 29 Aug 97 (**20**) Eagle River, K, LB. **Early winter**: multi-party, 19 Dec 92 (**1455**) HCCBC, exceptional; 21 Dec 96 (**115**) HCCBC, JY only. **Late winter**: 15 Jan 95 and 7 Feb 93 (**100** each) both Liminga, AW.

Breeding (**B** 1 co, 9 pr, 13 po; **H** 5 co, 16 pr, 6 po; **K** 1 co, 7 pr, 5 po).

*20 Jun 87 (nest building) T51N, R36W, SE quarter, H, LB.

25 Jun 99 (female carrying plant down for nest) west of Chassell, H, LB.

*10 Jul 87 (nest building) T54N, R34W, SW quarter, H, LB.

24 Aug 97 (adults feeding full-sized juvenile) Eagle River, K, LB, probable breeding.

Aug 1914 (deserted nest with 5 eggs) near Kenton, H, A. R. Cahn (1918).

BBS. *Bootjack* 67-73: 66 on 7 of 7 counts (100%); mean 9.43; range 4-25. *Bootjack* 92-2005: 148 on 14 of 14 counts (100%); mean 10.57; range 5-23. *Herman*: 128 on 7 of 7 counts (100%); mean 18.29; range 10-22.

NAMC. *Baraga Co.*: 118 on 6 of 6 counts (100%); mean 19.67; range 8-36; ind/PH .46. *Houghton* Co.: 286 on 7 of 7 counts (100%); mean 40.86; range 2-78; ind/PH 1.03.

HCCBC. 4048 on 23 of 26 counts (88.5%); mean 155.69; range 0-1455; ind/PH 3.43.

Banding Recoveries. One banded on 15 Apr 81 in WI caught by a cat on 20 Aug 84 in B, where probably a breeding bird, based on date.

Historical Changes. All late winter influxes have occurred recently, from 82-83 to 2000-01. This I attribute mostly to a proliferation of feeders, which allows birds to remain even when heavy snows cover their weed seed food and the white birch cones of use in fall and early winter have deteriorated.

Evening Grosbeak *Coccothraustes vespertinus*

Status and Range (B, H. K). Occurs throughout forested regions with some conifers. Highly variable in timing and seasonal and annual detectability. Possibly, more than one population is involved, each with its own agenda. As a species, however, there are usually two major flights, one in May and the other Oct-Dec, with many fewer birds remaining to breed (May-Jul) or winter. **Permanent** resident, recorded in every month, but in some years, months may pass with no records. That any specific individual remains all year, every year, is unlikely; nevertheless, for convenience, I treat it as a permanent resident. **Summer**: fairly common resident throughout, usually in breeding pairs but occasionally in

small, probably non-breeding, flocks (see High Counts). After breeding, small flocks (rarely large, see High Counts) form in Jul and Aug. **Fall**: during all years, this species is virtually absent from late Aug through Sep until the fall flight commences, usually in Oct (median 9 Oct) but some years not until Nov or even mid Dec. **Early winter**: irruptive visitant, recorded on all 26 HCCBCs, but annual detectability varies greatly from uncommon (.02 ind/PH) to abundant (6.41), averaging common, with no apparent pattern (but see Historical Changes). **Late winter**: resident, but some years does not remain past Dec, and hence detectability only occasional; when present, detectability may reach common. **Spring**: transient, usually very common, irregularly uncommon to abundant. In many years, occurs from the last week of Apr to the last week of May (median 5 May) and occasionally into the second week of Jun; the main flight in 2002 was in the first week of Jun. Included in these flights are flocks actively migrating west to east along the north shore of K (*e.g.*, 10 birds on 19 May and two flocks totaling 19 on 23 May 88 at Brockway Mt., and 9 on 12 May 98 over Copper Harbor). One spring banding record indicates some move eastward to Chippewa Co., MI, presumably to avoid the Lake, like Brown-headed Cowbird and some raptors. Others might go west to Duluth. In some years no May flight is discernible, birds being noted sporadically Mar-Jun. This is especially true when it winters in numbers; the winter irruptions simply peter out, earlier or later, suggesting either that the birds forming the normal fall flight and remaining in some years to winter are the same ones than would have produced a spring movement, or that spring birds arrive at the same time and rate as winterers leave and thus go undetected; the former suggestion seems to be the case with the American Goldfinch, and probably with the grosbeak. In other years, there is a void in Mar, more often Apr, between winterers and May migrants.

Habitat. Occurs in mesic/wet mixed, mesic deciduous, and dry mixed forests. Commonly visits seed feeders in residential and rural settings, especially during migration and winter; sometimes feeds seeds to young at feeders (LB). Several times in summer, when I have returned to my car parked in a wild area, I have found grosbeaks under it, picking something off the ground!

Migration Dates. **SEAD**: 22 Apr 95 (Rice Lake, H, AW). **SMAD**: 5 May (n=24). **FEAD**: 2 Oct 73 (Liminga, AW). **FMAD**: 9 Oct (n=16) but highly variable.

High Counts. **Spring**: 7 Jun 2002 (**225**) Copper Harbor, LB; 27 May 2000 (**138**) Copper Harbor (118) and Lac La Belle (20) K, LB, JM; 14 May 98 (**55**) Copper Harbor, LB. **Summer**: 26 Jun 87 (**34**) T48N, R36W, NW quarter, H, LB; 25 Jul 99 (**23**) T51N, R32W, Sec. 14, B, LM. **Fall**: 12 and 21 Aug 80 (**200** each day) Calumet, LB. **Early winter**: multi-party, 15 Dec 79 (**282**) HCCBC; 15 Dec 79 (**40**) Liminga, AW only. **Late winter**: 9 Feb 85 (**25**) Liminga, AW.

Breeding (**B** 1 co, 9 pr, 15 po; **H** 3 co, 4 pr, 17 po; **K** 3 co, 6 pr, 7 po).

6 Jun and 9 Jun 31 (enlarged ova in specimens) Copper Harbor, N. A. Wood (1933), probable breeding.

*17 Jun 87 (unattended calling prejuvenile) T49N, R37W, NW quarter, H, LB.

19 Jun 30 (nest under construction) eastern B near Marquette Co. line, B, H. Christy (1930; Zimmerman & Van Tyne, 1959; Payne, 1983).

4 Jul 96 (male courting female) near Copper Harbor, LB, probable breeding.

*14 Jul 88 (adult female feeding full-sized juvenile) T56N, R33W, Sec. 14, H, LB.

3 Aug 97 (adult female feeding sunflower seeds to 2 full-sized juveniles at feeders) Lac La Belle, K, LB, probable breeding.

29 Aug 97 (adult feeding full-sized juvenile) Eagle River, K, LB, probable breeding.

BBS. *Bootjack* 67-73: 7 on 3 of 7 counts (42.6%); mean 1.00; range 0-3. *Bootjack* 92-2005: 43 on 8 of 14 counts (57.1%); mean 3.07; range 0-18. *Herman*: 33 on 6 of 7 counts (85.7%); mean 4.17; range 0-20. The seeming increase between 67-73 and 92-2005 on the Bootjack count is the result of several new houses, not present in 67-73, that have feeders.

NAMC. *Baraga Co.*: 127 on 6 of 6 counts (100%); mean 21.17; range 2-52; ind/PH .49. *Houghton Co.*: 93 on 5 of 7 counts (71.4%); mean 13.29; range 0-56; ind/PH .33.

HCCBC. 1292 on 26 of 26 counts (100%); mean 49.69; range 2-282; ind/PH 1.10.

Banding Recoveries (all adults or of unknown age). A strong *eastern and southeastern connection* with the Keweenaw is indicated by the following records: 1 banded in ME on 11 Apr 39 found in H 22 Nov 41; 1 banded in southeastern ON 31 Dec 61, recovered in H in May 62 (same winter); 3 banded in H 20 Mar 68, 13 Apr 72, and 6 Apr 85, found in, respectively, PA 25 Jan 69 and 3 Feb 76, and Chippewa Co., MI, 28 May 85 (same spring; note eastward flight; see Spring). A *western connection* (also, as above, indicates an east-west pathway) is demonstrated by 4 banded in central MN 29 Apr 62, 16 May 69, 10 Mar 73, and 12 Apr 73 recovered in H on, respectively, 15 Nov 66, 9 Dec 70, 27 Apr 74, and Feb 74. A *southern connection* is shown by 2 banded in H 12 May 72 and 18 Oct 72 recovered in WI on, respectively, 7 Dec 72 (same year) and 10 Apr 73 (same winter); also, 2 banded in WI 17 Feb 62 and 23 Dec 74 found in B or H on, respectively, 18 Feb 68 and 21 Jun 75 (the next summer;

presumably a breeder); the fact that an individual was in WI in Feb 62 but B or H in Feb 68 probably reflects a difference in annual timing. Thus, birds occurring in the Keweenaw as breeders or transients winter in the southeastern quadrant from WI to PA, and some spring birds migrate through central MN and the eastern Upper Peninsula, seemingly to skirt Lake Superior.

Historical Changes (Table 17). The Evening Grosbeak spread eastward in historical times (J. Granlund in McPeek & Adams, 1994), and such seems to be the case in the Keweenaw. Neither Kneeland (1857) nor Cahn (1918) found this species, but Wood (1933) and Wing (1939) did. After initial invasion, it does not seem to have changed its detectability in summer (or has it?), but has in winter. On the first 13 HCCBCs (76-88), it averaged 2.00 per party hour, but in the next 13 years, only .49, a 75.5% decline; perhaps, in winter, more birds now spread into the northeastern US at the expense of the Midwest (see Banding Recoveries).

House Sparrow *Passer domesticus*

Status and Range (B, H, K). Formerly, at least, a **permanent** resident in northern and extreme southern H and northwestern B; formerly bred in K (Ahmeek, 86) but now only a casual spring visitant. Has decreased noticeably during the 1990s, so that an observer actually has to search to find one during counts and even for a personal year list; note that most High Counts were prior to the 90s; see Historical Changes. Detectability varies periodically, annually, and seasonally, perhaps because of similarly timed climatic events. Detectability highest, fairly common, in **winter**, when birds are forced by deep snow to attend feeders, where they are readily counted. In **spring**, flocks break up and detectability therefore drops to very uncommon and remains so through **summer** and **fall**. Several summer records suggest that some birds spread out to farms with horses, *e.g.*, 29 Jun 2002 (see Breeding); near Schmidt Corner (H), birds appear about the time horses are returned to pasture (W. Sharp, pers. comm.). Evidence for migration is weak, but should not be ignored. First, the House Sparrow has gone unrecorded on some HCCBCs, only to reappear the next year. However, this seeming absence may simply reflect incomplete coverage, especially when numbers are low; for instance, J. Weber (JPW 41: 39) said that this species was "not present" at Chassell (H) "during winter" 62-63, but he later found 6 on 30 Nov 62 in Houghton (JPW 41: 128). Possible **spring** migrants have been noted as follows: 14 Mar 99 (feeder in Eagle River, K, first personal sighting by RH anywhere on the Peninsula for 2 or 3 years); 29 Apr 2000 (7 at feeder in L'Anse, not seen on three subsequent dates, LB); 27 May 99 (female that did not remain, Copper Harbor, LB). Also, extensive notes by AW in H, 72-99, demonstrate a weak pattern of late Apr into May occurrence and a stronger flight in early to mid Aug, sometimes including late Jul or mid Sep; both periods were well separated from earlier and later records; even in 97, when no other birds were seen by AW all year, one appeared on 26 Apr and another on 15 Aug. Given the harsh Keweenaw winters, where ground food is covered by snow except at feeders, strong selection favoring rapid evolution of migratory behavior would not seem impossible, especially in such a small population.

Habitat. Restricted to urban, residential, and rural settings, the last usually with horses and sometimes milk cows. Apparently dependent on seed feeders in winter. Nests in holes in man-made structures, such as under house eaves.

High Counts. **Spring**: multi-party, 12 May 2001 (**12**) H, NAMC. **Summer**: 29 Jun 2002 (**30**) see below; 7 Jul 85 (**27**) B, S. Patti, Herman BBS; 14 Jul 88 (**8**) Calumet, LB. **Early winter**: 24 Dec 65 (**153**), B. and D. Wolck, Houghton Christmas Bird Count; 24 Nov 87 (**30**) and 15 Dec 79 (**20**) both Houghton, AW.

Breeding (**B** 3 co, 1 pr, 6 po; **H** 3 co, 3 pr, 4 po; **K** 1 co).

22 Jun 2003 (carrying food; 7 birds seen) in Pelkie, B, JY.

*24 Jun 87 (carrying food) Kenton, H, LB.

*25 Jun 88 (carrying food) T51N, R32W, SW quarter, B, LB.

29 Jun 2002 (15 pairs, occupied nests in horse stable) horse-cow farm near Elo, T52N, R34W, Sec. 30, H, TA, JM.

*10 Jul 86 (female collecting food or nest material) Tamarack City, H, LB.

*16 Jul 86 (feeding young in nest under eaves of house) Ahmeek, K, LB.

BBS. *Bootjack* 67-73: 8 on 3 of 7 counts (42.9%); mean 1.14; range 0-4. *Bootjack* 92-2005: 18 on 8 of 14 counts (57.1%); mean 1.29; range 0-4. *Herman*: 75 on 5 of 7 counts (71.4%); mean 10.71; range 0-27.

NAMC. *Baraga Co.*: 25 on 5 of 6 counts (83.3%); mean 4.17; range 0-8; ind/PH .10. *Houghton Co.*: 16 on 4 of 7 counts (57.1%); mean 2.29; range 0-12; ind/PH .06.

HCCBC. 696 on 20 of 26 counts (76.9%); mean 26.77; range 0-122; ind/PH .59.

Historical Changes (Table 17). Not listed by Kneeland (1857) at a time when human habitation in the Keweenaw had just begun to expand with the copper mining and logging industries. Cahn (1918), however, found it "common" in the region of Kenton (H) in Aug 1914. Probably reached its zenith before mechanization replaced horses, as the House Sparrow fed largely on undigested seeds in horse manure. Wood (1933, 1951) considered it common in Hancock, Houghton, and Calumet, but saw none at Copper Harbor, where it was

rumored to occur occasionally; I saw my first for Copper Harbor, a visitant, on 27 May 99. In the late 1980s, it summered in Calumet, Tamarack City (H), and Ahmeek (K, bred in 86) and in 63 in Lake Linden (LB), but it has not since occurred at these localities. AW, in the city of Houghton, found it rather regularly in spring, fall, and winter (but not summer) until winter 89-90, when it suddenly disappeared; afterwards, it returned in summer 91, but then was virtually absent from Dec 92 through 99; LB and RH noticed a similar decline elsewhere on the Peninsula, including in Baraga and L'Anse. On the HCCBC, the House Sparrow was common 76-90, when recorded on 14 of 15 Dec counts, with an average of .94 ind/PH, but only fairly common in 6 of the next 11 years (91-2001), with an average of .28 ind/PH. This decrease probably is due to a variety of factors, *e.g.*, scarcity of livestock and old open barns, cleaner barnyards and towns, and fewer Cliff Swallow nests (which can be used by the sparrow); the harsh climate, especially the heavy snows, which cover its ground food, may be paramount, but I note that the number of feeders, which it frequents, has either remained stable or increased, so some other factors must be involved.

HYPOTHETICAL LIST

Included here are 22 species that have been published as occurring on the Keweenaw Peninsula but in my opinion without documentation sufficient to admit them to the main list. I follow all decisions of the Michigan Bird Records Committee.

Bar-headed Goose *Anser indicus*

One unbanded adult in Copper Harbor on 22 Jun 90 (LB) was very tame like the local nonbreeding flock of Canada Geese (race *maxima*) with which it was foraging. This or another individual appeared with Canadas on a Lake Superior beach near Dan's Point, K, on 18 Jun 91 (LB; JPW 69 [1]: 31). Perhaps pertinent to these records was one seen with three Canadas in Munising, Alger Co., 16-23 Jun 92 (JPW 69 [5]: 8; JPW 70 [1]: 31). The AOU (1998: 689) considers all records from North America as possible escapes, a conservative conclusion with which I tentatively agree. However, I do not recall seeing a thorough study of possible vagrancy in the Bar-headed Goose and have always wondered why such a large percentage of waterfowl "escapes" should be this species.

Barrow's Goldeneye *Bucephala islandica*

An adult male was reported by two observers on 19 Mar 98 at Hebard Park, K, foraging along Lake Superior rocky shore (Binford, 2004), but no documentation exists. Robinson (1942) said she identified Barrow's Goldeneyes "on Keweenaw Bay," but provided no details.

Ring-necked Pheasant *Phasianus colchicus*

This species has been recorded from time to time in H. I find no indication of purposeful MDNR releases and consider all as escapes from local game farms. The species has never established a feral population on the Keweenaw Peninsula, where snow covers the ground too deeply in winter; the nearest self-sustaining breeding population is in southern Menominee Co. (G. Belyea in Brewer *et al.*, 1991). Keweenaw records are as follows: (1) A female (MSU 101) taken by M. D. Pirnie at Calumet on 26 Oct 28 (MSU, in litt.). (2) Three seen by A. Weaver in H on 18 Dec 83 (JPW 62: 56). (3) One female first seen 20 Aug 91 near Liminga attended AW's feeder 23 Nov 91-21 Jan 92 (Weaver, 2000). (4) A single adult male viewed at 20 feet by JY on the HCCBC, 17 Dec 94, along the Sturgeon River 2 mi S Chassell (H); JY (in litt.) "checked with local people and they are quite sure it was an escape from a game farm type place down in Arnheim proper." (5) A female along Bay Shore Drive in the town of L'Anse, 14 Jan 2001, JY. (6) One seen 30 Aug 2001 at the Chassell sewage ponds, H, JY.

Willow Ptarmigan *Lagopus lagopus*

The first account of this species dates to Kneeland (1857: 237), who wrote "*Lagopus mutus*? Leach. There is a white grouse in this region, but whether it is the *L. mutus, albus,* or *leucurus,* I cannot say." Obviously, Kneeland never handled one, or he would have been more positive. Nevertheless, Barrows (1912: 229), although knowing of no Michigan specimens, accepted Kneeland's tentative report (and others in the state) as Willow Ptarmigans, citing also Rev. E. H. Day, who said "...Ptarmigan frequently appeared [on "Keweenaw Point"] in large numbers during severe weather and were often killed and used as food." Wood (1951), however, listed the species as hypothetical. Later, Zimmerman & Van Tyne (1959) and Payne (1983, 1986) included it in brackets to denote the absence of a specimen, photo, or tape recording. However, the MBRC (Chu 1992: 22) formally deleted this species from the state list, and the Birds of Michigan (McPeek & Adams, 1994) followed suit. Although these and other references suggest to me that ptarmigans did in fact occur this far south in the mid 1800s, there is no proof; perhaps the range has retracted northward since then. Also, I see no reason why such birds were not Rock Ptarmigans (*L. muta),* which breed only slightly farther north and are known to move south in winter.

Northern Bobwhite *Colinus virginianus*

Kneeland (1857: 237) stated that "this is another of the birds that follow man in his agricultural

movements. A few years since quails were unknown in the Upper Peninsula; now they are not uncommon on the [Keweenaw] Point [Keweenaw Peninsula plus Ontonagon Co.]; as yet they have not been seen on Portage Lake [where Kneeland resided and which was still forested]. As more attention is paid to agriculture for the support of the mining population, the quail will doubtless be common in the fields." Wood (1951: 141), however, said "...reports... from the Keweenaw Peninsula (Kneeland 1857: 237) lack confirmation." The MBBA (P. Dziepak in Brewer *et al.*, 1991) cited Kneeland but said "Most observations of UP birds are products of releases." In my opinion, Kneeland was probably correct, but the birds did not "follow" but were purposely brought by the settlers, and all free-flying birds were releases or escapes that never established more than a temporary feral population; the deep snow cover prevents colonization. In modern times, A. Weaver (1995; field notes) recorded birds in H on 25 and 27 May 1984 and 13 July 1984 that he found to be escapes. A bird at a feeder near Salo about 1997 proved to be an escape from a nearby farmer who raised them (fide RH).

Great Crested Grebe *Podiceps cristatus*

Kneeland (1857) listed this Eurasian species, without comment, as "Crested Grebe, *Podiceps cristatus* Linn." He also listed Horned and Pied-billed Grebes. Barrows (1912) relegated this record to his Hypothetical List under Western Grebe, but more likely it pertains to the Red-necked Grebe, an abundant species not mentioned by Kneeland. What ever was meant, it most certainly was not the Great Crested Grebe, and in any event Kneeland's area included Ontonagon Co.

Common Buzzard *Buteo buteo*

This Eurasian species is listed without details by Kneeland (1857) under "Common Buzard. *Buteo vulgaris*, Bechst." as occurring on "Keweenaw Point" (Keweenaw Peninsula plus Ontonagon Co.). Barrows (1912: 747) thought it pertained to Swainson's Hawk, but more likely it was a misidentification of some plumage of Red-tailed Hawk or the Broad-winged Hawk, the latter the most abundant raptor in the Keweenaw and one not mentioned by Kneeland.

Prairie Falcon *Falco mexicanus*

A female was found injured in Myllyla's farmyard, T57N, R33W, Sec. 9, B, on 17 Jul 90. It was reported to, and obtained by, Robert Aho (MDNR), who sent it to a rehabilitation center in Minnesota, where it died on 19 Jul (UMMZ, in litt.). The specimen was prepared by the Bell Museum of Natural History as a skin and skeleton and sent to the UMMZ (no. 233916). The unlikelihood of an injured bird being found in the yard of a family known for its interest in wildlife, especially in July, make me suspect this was a falconer's bird. This record was rejected by the MBRC (Internet).

Mountain Plover *Charadrius montanus*

One was reported from Watton, B, on 13 May 76 (AB 30: 845, where the locality was misspelled as "Walton"). It was observed for half an hour at close range, with careful elimination of Siberian and European species (fide the observer, pers. comm.). A description was sent to *American Birds* editor R. B. Janssen, who considered the bird "carefully described." This record was treated as hypothetical by Payne (1983, 1986) for lack of hard evidence and rejected without comment by the MBRC (Chu 1992: 22). Although this might be a case of ultra-conservatism in regard to a potential state record, the fact remains that no documentation appears to be extant.

Long-billed Curlew *Numenius americanus*

The record of three birds briefly described at the Lake Linden sewage ponds on 23 May 92 was rejected by the MBRC (Chu, 1993: 25). The Whimbrel could not be eliminated by the description.

Iceland Gull *Larus glaucoides*

Two birds were reported in early April 83 in Keweenaw Bay off B by A. Harger and J. McDonnell (JPW 61: 86; not Alan Marble, as published; Marble, pers. comm.). I would need to see documentation for such a difficult identification. R. Hanson, alerted by Harger, also saw these birds; he waded out to get a closer view and was convinced that both birds were larger than nearby Herring Gulls and were in fact Glaucous Gulls.

Eastern Screech-Owl *Megascops asio*

Kneeland (1857: 233) lists this species (as *Ephialtes asio* Linn., Mottled Owl) for "Keweenaw Point" (=Keweenaw Peninsula plus Ontonagon Co.) but without comment. Wood (1951: 231) did not accept this record and incorrectly restricted it to "Portage Lake," which he erroneously located in K. Cahn (1918: 493) claimed to have heard the species twice at "Lake 33" in Iron Co., and once at Kenton, H, in August 1914, but never saw one; perhaps significantly, he did not list the Northern Saw-whet Owl. In any event, no definite Keweenaw Peninsula record exists. In fact, one found dead 15 March 1989 in Delta Co. is the only confirmed record for the UP (AB 43: 483; T. W. Carpenter in McPeek & Adams, 1994).

White-throated Swift *Aeronautes saxatalis*

A record of two seen landing in a tree along Brockway Mt. Drive, near Copper Harbor on 31 Oct 83 (JPW 62: 30;

AB 38: 206; Weaver, 1995; Payne, 1986) was rejected by the MBRC (Chu, 1995: 36-37).

Willow Flycatcher *Empidonax traillii*

The statement in the Michigan Bird Survey for summer 1996 (MBNH 4: 28) that "Unusual were UP reports [of Willow Flycatcher] from Keweenaw [Co.] (LB)" is a mistake; the initials LB probably refer to me, but I made no such report. One seen singing on 31 May 2000 at the Sturgeon River Sloughs, Unit 1 (MBNH 7: 226) was likely correctly identified, but I would prefer to await hard evidence (*e.g.*, sound recording) before adding this semispecies to the Keweenaw list.

White-eyed Vireo *Vireo griseus*

Kneeland (1857: 234) listed this species (as "White-eyed Vireo. *Vireo Noveboracensis*, Gmel.") for "Keweenaw Point" [=Keweenaw Peninsula plus Ontonagon Co.] but without comment. Barrows (1912: 575) considered it as probably pertaining to the Yellow-throated or Blue-headed Vireo, most likely the latter. Kneeland listed only one other vireo, the Red-eyed, so to which normally occurring species his "White-eyed" pertains is equivocal. In any event, this record could have pertained to Ontonagon Co. Nevertheless, this species is to be expected as a spring overshoot.

Mountain Bluebird *Sialia currucoides*

Kneeland's (1857: 233) listing of this species as "*Sialia arctica* Swains." lacks comment, although he also mentioned Eastern Bluebird. A sighting of one near Lake Fanny Hooe, Copper Harbor, on 8 Nov 97 was likely correct, but the MBRC judged the description too incomplete to add this species to the state list (MBNH 6: 113, where Hooe misspelled "Hooey" and year implied to be 98).

Bendire's Thrasher *Toxostoma bendirei*

One reported on 12 Jun 84 at Copper Harbor was rejected by the MBRC (Chu, 1995: 37).

Prothonotary Warbler *Protonotaria citrea*

One reported on 24 May 84 at the Sands, H, was considered the first UP record (AB 38: 915; JPW 62: 84). However, no documentation is available, and the observer was then a beginner who could have been confused by a female Yellow or Wilson's Warbler. This species is possible as a spring overshoot.

McCown's Longspur *Calcarius mccownii*

One bird observed on 19 and 20 Oct 83 in Copper Harbor was rejected (3-4, second round) by the MBRC (Chu, 1991: 24).

Black-headed Grosbeak *Pheucticus melanocephalus*

Three records in the literature are deemed unacceptable because no documentation exists. (1) 26 Mar 72 (male) a few miles north of L'Anse along the east shore of Keweenaw Bay, B (Weaver, 2000). Although possibly correct, the combination of its association with a flock of Evening Grosbeaks on a road shoulder in Mar seems unlikely; the observer was at that time in his first year of birding. (2) 21 May 83 (2) at a feeder at Skanee, B, "Alan Marble" (AB 37: 874; editor D. Powell in JPW 61: 89; Payne, 1983). Alan Marble informs me (pers. comm.) that he knows nothing about these birds and definitely did not see them. I did discover the real observer, who says they were both adult males that stayed for one day and were seen only by him and his wife; he has no documentation of any kind. (3) 30 May 82 (male and female together) B (JPW 60: 129; AB 36: 856; Payne, 1983). Seen only briefly from a moving automobile and rejected by the MBRC (Chu, 1995).

Brown-capped Rosy-Finch *Leucosticte australis*

Payne (1983, 1986) considered hypothetical (because of no hard data) a bird reported at a feeder in Houghton on 23 Dec 66 (UMMZ files). This record was not mentioned in the Birds of Michigan (McPeek & Adams, 1994), and I have not seen the documentation.

European Godfinch *Carduelis carduelis*

One identified correctly on 2-22 Jan 2003 at an Atlantic Mine, H, feeder was rejected by the MBRC (Internet) as a probable escape.

DISCUSSIONS

Modes of occurrence

The 324 Keweenaw species may be divided into categories according to their primary mode of occurrence (see Plan of the Species Accounts for definitions). Most species, however, have more than one mode. For instance, the Cape May Warbler is a *resident* in summer, a *transient* in spring and fall, and a *visitant* (*lingerer*) in early winter. Ideally, each species should be assigned to that category with the greatest abundance, but data are usually insufficient. Therefore, it is necessary to establish an arbitrarily hierarchy of terms, applied with attention to abundance, as follows: permanent resident, summer resident (including irregular breeders), winter resident, transient, visitant, and vagrant. Extirpated and extinct species are included. Breeding vagrants are considered vagrants, not summer residents. For further discussion of this subject, including justification for some theory advanced here, see Effects of Climate and Bird Feeders on the Wintering Avifauna; and Vagrancy.

With this system, the 324 species assort as follows:

Summer resident: 144 species (44.4% of total avifauna of 324).
Transient: 80 (24.7%).
Vagrant: 62 (19.1%).
Permanent resident: 29 (9.0%).
Visitant: 6 (1.9%).
Winter resident: 3 (.9%)

Summer residents. That nearly half—144 species or 44.4%—of the total avifauna is composed of summer residents is because of two opposing factors. First, the numerous habitats of the Transition Zone provide an exceptional number of high-quality nesting and foraging niches. A measure of this richness is the list of 943 plant species recorded in Keweenaw Co. alone (Wells & Thompson, 1974); see also, Habitats under Plan of the Species Accounts. At the same time, however, the harsh winters assure that all 144 birds are summer, not permanent, residents. All waters freeze, insects die, most of the berry crops is depleted early, and all ground food is covered by deep snow except at feeders.

Transients. Among the 80 transients, 61 (76.3%) are waterbirds, including 16 waterfowl, 28 shorebirds, and 12 jaegers, gulls, and terns. Most of these breed far to the north in arctic, subarctic, or northern Great Plains aquatic habitats and tundra. A few that range the closest (some of them with Michigan breeding records) could find marginal habitat and breed casually in the Keweenaw (Trumpeter Swan, Redhead, Lesser Scaup, Bufflehead, Yellow Rail, Wilson's Phalarope, Caspian Tern). The Rough-legged Hawk and Snowy Owl are arctic tundra breeders.

Sixteen transients are passerines; this is only 20.0% of the 80, compared to 58.3% (84 passerine species) among summer residents and 48.3% (14 species) among permanent residents. That there not more transient passerines is because the Keweenaw already supports most transition forest birds as summer residents, and the more northerly boreal forest, tree-line scrub, and tundra habitats of the others provide few niches and therefore have depauperate avifaunas. Seven of the 16 nest in tree-line scrub or tundra, habitats not present in the Keweenaw. Three (Loggerhead Shrike, Lark Sparrow, and Nelson's Sharp-tailed Sparrow) have lost ground in the eastern US and today are more western in distribution; however, all have nested this far south or east in the past and theoretically (but not likely) could do so in the future. The other six passerines are boreal scrub or boreal forest inhabitants: Gray-cheeked Thrush, Orange-crowned Warbler, Blackpoll Warbler, Wilson's Warbler, Fox Sparrow, and Rusty Blackbird. Although Keweenaw's boreal habitats are limited in extent and probably quality, all these species should be sought as breeders, but only Wilson's Warbler and Rusty Blackbird are at all likely.

Vagrants (see also, Vagrancy). The 62 vagrant species make up 19.1% of the total avifauna. Compared to many areas of the US, this total is low for several reasons. Because the Keweenaw is part of the eastern US, most eastern species are already a part of the regular avifauna and therefore cannot be vagrants. Perhaps just as importantly, the Keweenaw has had few observers over the years, and only recently has the search for rarities been emphasized—there is a definite positive correlation between the numbers of vagrants and rarity-hunting observers. Distance is negatively correlated with vagrancy, so far-western strays are few. Also, most individuals of potential western vagrants breed south of the Peninsula's latitude, thus reducing the number that might be affected by wind drift, and some breeding to the northwest may be blocked by Lake Superior, *e.g.*, Swainson's Hawk (no fall record) and probably Yellow-headed Blackbird (only one fall record). Finally, some spring overshoots from the south, which form the largest group of Peninsula vagrants, might be deterred by distance and the increasingly inhospitable spring environment.

Permanent residents. That a mere 29 species (9.0% of the avifauna) are permanent residents is clearly attributable to winter food supplies. See Summer Residents above; and Effect of Climate and Bird Feeders on the Wintering Avifauna.

Visitants. This term is best applied to out-of-season *individual* birds. When applied to *species*, only 6 (1.9%) qualify, and these somewhat tentatively: Gyrfalcon, Northern Hawk Owl, Great Gray Owl, Boreal Owl, Bohemian Waxwing, and Hoary Redpoll. All are winter visitants from the north, somewhat irruptive, and approaching their southern geographical limits. All but the waxwing are irregular. As far as we know, none of the six has successfully wintered, probably because of the deep snow that hides mammalian prey (raptors) and the early depletion of the berry crop (the nomadic Bohemian Waxwing); the Hoary Redpoll, on the other hand, like the Common Redpoll, should be able to survive on arboreal and feeder seeds, and I suspect it has wintered without our knowledge. Most other birds moving down from the north in fall (*e.g.*, ducks, shorebirds) find no environment to support them in winter and must continue southward (but see Winter Residents below). A few species are irregular winter residents but are, for the purposes of this discussion, treated as summer residents (Purple Finch, Red and White-winged Crossbills, Pine Siskin, and American Goldfinch) or transients (Snow Bunting). All species appearing temporarily in spring or fall are either transients or vagrants. There are no summer visitant *species*, although some *individuals* are so termed. No species from a direction other than north is a

winter visitant in the Keweenaw, because evolution soon selects against those that try to move from a more to a less hospitable environment.

Winter residents. Only 3 species—only .9%—are purely winter residents: Northern Shrike, Pine Grosbeak, and Common Redpoll. I suspect Hoary Redpoll will prove to belong here. As with winter visitants, all are from the north, somewhat irruptive, and approaching their southern limits. These occur every winter, but might not reside all winter in some years. The shrike apparently can survive on the few small passerines present in winter. The other two eat arboreal and feeder seeds, neither of which is covered with snow. Other northern species, even those adapted to cold environments, are only visitants, their Keweenaw food supplies being insufficient to allow regular over-wintering. See Visitants above.

Vagrancy

Some 321 records of 62 species occurring in the Keweenaw are here termed vagrants (data through spring 2005). These 62 represent 19.1% of the Peninsula's 324 species. The biological functions, causes, and types of vagrancy have received little attention, in fact have been largely ignored by ornithologists as having little significance, and are therefore poorly understood. But just as "the exception proves the rule," this behavior might tell us much about migration and range expansion. What I say below is my opinion and is simplified and theoretical. Species listed as examples refer to the Peninsula unless otherwise stated. See also Modes of Occurrence; and Biogeography, Southern Affinities.

Non-vagrants. When applying the term vagrant, care must be exercised to avoid confusing mode of occurrence with detectability. For instance, some people might apply "vagrant" to such species as Long-tailed Jaeger and Red Phalarope, because these are accidental in the Keweenaw. However, accidental, casual, and occasional are *detectability* terms denoting irregularity and are unrelated to *mode of occurrence* terms such as "vagrant." Species with other modes of occurrence, *e.g.*, transients, visitants, and winter residents, may also be irregular and hence termed occasional, casual, or accidental. Nevertheless, application of the terms vagrant and transient to some species is problematical, because we cannot decide if the Keweenaw is within (=transients) or beyond (=vagrants) their normal migration routes. This is especially true of some waterbirds that migrate very sparingly but directly between their Arctic breeding grounds, through the interior United States, to their southern wintering grounds. Are these outside their normal pathway and hence vagrants, or are they within the marginal part of their overall route and thus transients? I have chosen the latter definition, but acceptance of the former would in no way compromise the theories expressed below.

Very scarce species that I do not term vagrants fall into the following three categories. (1) Eighteen are treated as irregular transients, for which the Keweenaw appears to me to be along their normal migration routes between summer and winter homes, even though marginally and with few individuals involved (Harlequin Duck, Pacific Loon, Piping Plover, Willet, Whimbrel, Marbled Godwit, Red Knot, all three phalaropes, all three jaegers, Sabine's Gull, Black-legged Kittiwake, Black Tern, Purple Martin [former summer resident], Nelson's Sharp-tailed Sparrow, and Smith's Longspur). (2) Four other species, previously treated as vagrants, seem now to have expanded their ranges, at least temporarily, to embrace a part of the Peninsula as summer residents (House Finch), permanent residents (Northern Cardinal), or transients (Greater White-fronted Goose, American White Pelican). (3) Finally, five visitants approach the southern borders of their normal ranges (Gyrfalcon, Northern Hawk Owl, Great Gray Owl, Boreal Owl, and Hoary Redpoll).

Irruptive species are not generally considered vagrants, because they invade the same regions periodically, often lowlands from highland breeding sites. But some species that are irruptive to the west of the Keweenaw cast off individual vagrants that travel eastward far beyond their normal irruptive ranges: Black-billed Magpie, Townsend's Solitaire, Varied Thrush, and Gray-crowned Rosy-Finch.

Definition (see also, Status and Range in Plan of the Species Accounts). Briefly defined, a vagrant is a species or individual outside its normal or newly established breeding, wintering, and migration ranges. By strict definition, vagrancy occurs only in individual birds and only during migration (DeSante & Pyle, 1986). However, vagrancy is not restricted to species that normally migrate, as demonstrated by the Tufted Titmouse and Northern Cardinal (formerly a vagrant); apparently even supposedly sedentary populations can occasionally cast off individuals to distant places. Also, in my opinion, an entire species or a defined portion of a species' population may be termed a vagrant—just as the terms transient or visitant are applied to a species—if *all* individuals occurring in a given region fit the definition. However, even if all migrants of a species are vagrants, what do we call individuals that linger into summer or winter? These might be termed summer residents (*e.g.*, breeding Kirtland's Warbler), winter residents (*e.g.*, Red-bellied Woodpecker), or summer visitants (*e.g.*, Blue-gray Gnatcatcher), but I prefer to treat such species and all their individuals as vagrants. By my definition, a species ceases to be a vagrant or have vagrant individuals when, in a given region, it has established a new, viable, summer, winter, or transient population, because at that point, any migrant, even a new recruit that formerly would have been termed a vagrant, would be moving

into its newly established range (*e.g.*, Northern Cardinal, House Finch). True, invading individuals could still be called vagrants, and by strict definition they are, but in distributional studies, a line must be drawn somewhere; in practice, distinguishing between such individuals and those already present in the newly established population would be impossible without banding data.

A few species that have regular breeding populations in the southern part of the Peninsula but are vagrants in the northern part are discussed in the Species Accounts but not here (Yellow-billed Cuckoo, Whip-poor-will, Wood Thrush, Golden-winged Warbler, Eastern Towhee, and Baltimore Oriole).

Function. The larger a species' overall range and population, the better its chances of surviving through time. Vagrancy affords a species a method for discovering new regions, which, if environmentally suitable, especially in relation to habitat (including food resources), can result in breeding, wintering, or migration range expansion. Although many vagrants may die or never return to the normal breeding grounds, the cost to the species is minimal, given the small percentage of the population involved, and well worth the risk, because the geographic gain can be immense (*e.g.*, Cattle Egret, House Finch). Vagrancy is even more important today as a way of coping with man's destruction of natural habitats.

Technically, all geographic expansion is accomplished through vagrancy, even in those species that spread only a few hundred yards per year or in a mosaic pattern, because the pioneers are entering new territory and are therefore out of range, making them, by definition, very short-distance vagrants. These, however, differ from true vagrants, and I do not consider them such, because their impetus for spreading is competition with conspecifics rather than genetic misprograming or other causes of vagrancy.

In order for breeding colonization to succeed, a species must form a viable population, *i.e.*, one that continues to expand until it reaches a threshold guaranteeing survival. This is difficult, as indicated by Keweenaw Red-headed Woodpeckers and Purple Martins, which once bred very locally but became extirpated, probably because their populations were not large enough to be viable (see also, Biogeography). Because many vagrants belong to small, short-lived species that are highly subject to predation and other mortality, especially in environments to which they are not adapted, most vagrants probably never return to their normal breeding grounds to pass on their errant vagrant genes to their offspring (but see below); thus, one important potential source of vagrant recruits is often lost. The fewer the number of vagrants in any one year, the less chance there is for establishment, because the few potential mates must first find each other and then produce progeny; even then, significant recruitment of additional vagrants may be required. Long-distance vagrants (*e.g.*, Say's Phoebe, Rock Wren, Townsend's Solitaire, Varied Thrush, Cassin's Sparrow) have the least chance of succeeding, because they are unlikely to find either mates or proper breeding habitat (many western habitats are quite unlike anything in the east), and have little chance for vagrant recruitment.

On the other hand, the chances for summer or winter expansion is enhanced by the behavior known as *philopatry*—the ability of an individual to imprint on its first summer or winter home and return to it in subsequent years. Winter philopatry among vagrants is unlikely in the Keweenaw because of the harsh climate, and no cases have been proven. Summer philopatry subsequent to spring vagrancy has occurred in the Kirtland's Warbler and House Finch, and probably Red-headed Woodpecker, Purple Martin, and Field Sparrow (see Species Accounts).

Ultra-rare vagrants, such as those from the far west, represent the first in a series of steps toward possible expansion, which occasionally can be successful, as in the case of the Northern Parula in central California (pers. obs.). In a more advanced stage, one or more unmated singing males occupy suitable habitat in summer (*e.g.*, Yellow-breasted Chat, Field and Grasshopper Sparrows). The Yellow-throated Vireo and Kirtland's Warbler, each with few vagrant records, would be in this early state but got lucky and produced breeding pairs (but as yet no viable populations). The Northern Cardinal is further along, with a small but still irregular breeding population. The Whip-poor-will, Wood Thrush, Golden-winged Warbler, Eastern Towhee, and House Finch are among a more advanced group, breeding regularly but still very locally and in small numbers. The Mourning Dove is widespread today but still expanding its range; such birds as Eastern Wood-Pewee and White-breasted Nuthatch may be at this stage, because they are rare in Keweenaw Co. (although this is in part, at least, due to habitat). The final stage embraces all other breeding species, which are numerous and widespread enough that we do not know exactly when or how they first appeared.

Although we usually consider range expansion in terms of breeding populations, establishment of a new wintering range or migration route is also important to a species, especially with man's destruction of habitats. Establishing a new migration route, at least a straight one, may be the most difficult, because either the breeding or wintering range must be expanded first. Extension of the winter range probably has the best chance of success, because individuals need not find mates (*e.g.*, western hummingbirds wintering in the southeastern US); however, the harsh climate of the Peninsula works

against winter occupancy.

Causes and types. I classify the types of vagrancy according to its several theoretical causes. In order to proceed from one geographic point to another, a normal migrant needs close control of direction and distance. Probably, both are genetically programmed, so that a genetic anomaly can cause vagrancy in the form of **misorientation**, *i.e.*, flight in the wrong direction, or **overshooting**, *i.e.*, the targeted destination is overflown. These phenomena can occur in spring or fall. Probably, misoriented birds never reorient, but fly in the programmed direction and in as straight a line as physiography and wind drift allow until they have reached at least the predetermined distance or have exhausted their migratory (physiological) capability. To assess whether or not overshooting might be occurring in a vagrant, one compares the distance between the farthest limits of its wintering and breeding grounds with the distance to the region under study. If the latter distance is greater, overshooting presumably is occurring. The degree of error in overshooting probably can be of any magnitude, depending on the species-specific period of migratory readiness (the spring White Ibis in Houghton Co. was some 1400 miles north of its nearest breeding grounds). That fall vagrants might be birds that overflew the Keweenaw in the spring and are returning is against all odds of discovery; I think they are much more likely to be overshooting dispersants (*e.g.*, Great Egret) or misoriented migrants (*e.g.*, Blue-gray Gnatcatcher), both of which may be aided by wind drift. Misoriented vagrants from the south are sometimes called "reverse migrants" (see Group 1 below). Vagrancy can also be caused by **disorientation**, whereby a properly programmed migrant (or non-migrant, see below) becomes completely confused, perhaps in a storm or through injury, and does not "know" which direction to fly; however, the distance covered usually would be short, because most such birds would soon reorient.

Superimposed on genetic control are environmental factors during migration, most importantly **wind drift**, *i.e.*, winds push birds off course or beyond normal distance limits. I do not believe that winds associated with synoptic weather patterns drift landbirds very far over land, because migrants must eventually alight to rest and feed, or rain will cause them to cease migration until flying conditions become favorable; in either case, birds will reorient to correct for displacement. Over water, however, birds may become entrapped in strong synoptic winds and be forced to continue in the wrong direction until landfall is reached. Such seems to be the case for European species appearing in the Maritimes (*etc.*); in my opinion, however, these are misoriented and only "aided" by the winds, as suggested by the fact that most of these species are strong flyers (*e.g.*, shorebirds, corvids) that can survive such a long flight. **Hurricanes** are known to entrap waterbirds in the eye and carry them far inland (this is not wind drift), but no Keweenaw vagrant has yet resulted from this phenomenon, and I doubt that landbirds are so displaced, because they need not, or would not, take flight. Occasionally, however, hurricanes may cause a *non-migrant* individual waterbird to become lost and wander aimlessly, sometimes long distances, *e.g.*, Magnificent Frigatebird (*Fregata magnificens*) and probably Sandwich Tern (*Sterna sandvicensus*) (Binford, 1993) in the Midwest. Thus overland drift causes only short-distance vagrancy, although it might also extend the long flight of a misoriented bird. In the Keweenaw, most polar fronts produce southwest winds, and September also features some strong, fair-weather west winds; such winds in both seasons, but especially in spring, are sufficient to drift northern Great Plains birds (*e.g.*, Franklin's Gull) the few hundred miles eastward needed to reach the Keweenaw (see Group 2 below). Although most southern overshoots in spring are probably genetically misprogrammed for distance, some may overfly their destinations due to the south winds that normally precede northern cold fronts.

Two other types of vagrancy are characterized by movements involving numerous individuals in one season. One takes the form of irregular fall **irruptions** (Black-billed Magpie, Varied Thrush, and Townsend's Solitaire). Similar fall irruptions occur in other Keweenaw species, but all are normal inhabitants during non-irruption years, most moving southward (*e.g.*, Snowy Owl, Bohemian Waxwing, Common Redpoll), and others wandering in a variety of directions until food is discovered (nomads like crossbills). The long-distance irruptive species, on the other hand, are presumably abnormal in both direction and distance. A second multi-individual phenomenon involves species that for some unknown reason undergo sudden, rapid **population explosions** over a period of years, resulting in many vagrants and extensive, breeding range expansion (*e.g.*, House Finch breeding in the Keweenaw and Cattle Egret and White-winged Dove breeding elsewhere and vagrating to the Peninsula). The Eurasian Collared-Dove (*Streptopelia decaocto)* is doing this now in the southeastern US and is therefore a good candidate for vagrancy to the Peninsula.

Keweenaw Peninsula vagrants. The 62 Keweenaw vagrant species fall into 9 groups according to their origins, which are here assumed to be the closest portions of their known breeding, wintering, or migration ranges. This assumption probably does not pertain to all individuals, and many species have broader ranges than those to which I assign them. We cannot be positive of the exact origin of any vagrant. I am playing the odds. Of the 62 species, 58 are migratory, 1 irruptive,

2 irruptive and migratory, and 1 supposedly sedentary. On the following lists, each species is annotated with the number of records (through spring 2005) for each season in which it has occurred in the Keweenaw (Sp = spring; Su = summer; F = fall; W = winter); actual arrival for summer and winter individuals presumably was in the immediately preceding migration period. Single occurrences involving more than one individual (*e.g.*, Eared Grebe) are treated as one record.

(1) Twenty-eight species (189 records), comprising the largest group (44.2% of the 62 vagrant species), breed in the southeastern US, many of them north into the southern Great Lakes region.

Great Egret (Sp 2, F 2).
Snowy Egret (Sp 3).
Little Blue Heron (F 1)
Cattle Egret (Sp 2, F 4).
Black-crowned Night-Heron (Sp 1, Su 1, F 1).
White Ibis (Sp 1).
Glossy Ibis (F 1).
Black Vulture (Sp 1, Su 1, F 1, W 1).
Common Moorhen (Sp 2, F 1).
Red-headed Woodpecker (Sp 14, Su 5, F 14); formerly bred, but all considered vagrants.
Red-bellied Woodpecker (Sp 5, F 4, W 8).
Bell's Vireo (Sp 1).
Yellow-throated Vireo (Su 3); both pairs bred.
Tufted Titmouse (W 1); usually considered sedentary.
Blue-gray Gnatcatcher (Sp 9, Su 1, F 6); expanding northward.
Northern Mockingbird (Sp 40, Su 5, F 3); the most frequent vagrant. [Bred in 2005, a record not included here.]
Blue-winged Warbler (Sp 1).
Yellow-throated Warbler (Sp 1).
Kirtland's Warbler (Su 5); the only pair bred. [Another pair, not included here, bred in 2005.]
Prairie Warbler (F 1).
Worm-eating Warbler (Sp 1).
Yellow-breasted Chat (Sp 2, Su 1, F 1).
Summer Tanager (Sp 2).
Field Sparrow (Sp 6, Su 1, F 2); possibly belongs with Group 2.
Grasshopper Sparrow (Sp 4, Su 7); possibly belongs with Group 2.
Henslow's Sparrow (Sp 1).
Painted Bunting (Sp 4).
Orchard Oriole (Sp 4).

That this group contains the most species and records is in part because it has the largest pool of migrant species from which to draw vagrants. Also, its geographic position—the closest to, and south of the Peninsula—makes it the most likely group to produce spring overshoots. All spring birds obviously overshot their goals as vagrants during spring migration, either through wind drift, abnormal programming for distance, or both; because genetic abnormalities are usually rare, the large numbers of Red-headed Woodpeckers (33 records) and Northern Mockingbirds (48) might implicate wind drift, although these species seem to have a greater propensity for vagrancy (like the House Finch). The summer birds simply lingered from spring. The fall egrets, Little Blue Heron, Glossy Ibis, and perhaps Black Vulture were overshooting, post-breeding dispersants. The other fall birds and lingering winterers I consider misoriented fall migrants. Some species not included on this list because they have a status other than vagrant, produce vagrant individuals from the south ("reverse migrants"), such as the Yellow-billed Cuckoo). Six species that have not been proven to breed in the Keweenaw have confirmed breeding in Marquette, Dickinson, Menominee, or Delta Cos., MI, as close as 15 to 85 miles south of the southeastern corner of Baraga Co. (Brewer *et al.*, 1991): Black-crowned Night-Heron, Blue-gray Gnatcatcher, Northern Mockingbird, and Field, Grasshopper, and Henslow's Sparrows. The Red-headed Woodpecker, a former breeder, also fits this pattern. Five of the 7 (not the night-heron or Henslow's Sparrow) are among the most frequent vagrants, indicating that vagrancy is negatively correlated with distance. Two species never recorded as wild birds in the Keweenaw come just as close, the Cerulean Warbler (*Dendroica cerulea*) and the sedentary Ring-necked Pheasant, the former a good candidate for future vagrancy (but see Habitat below).

(2) Thirteen species (83 records), comprising the second largest group (21.0%), breed as close as the northern Great Plains or (Ross's Goose only) migrate through the Great Plains from the Arctic to the Gulf Coast.

Ross's Goose (Sp 1, F 1).
Eared Grebe (Sp 4).
Western (and Western/Clark's) Grebe (F 2); perhaps from farther west.
Swainson's Hawk (Sp 15).
American Avocet (Sp 3, F 3).
Franklin's Gull (Sp 1, F 2).
Burrowing Owl (Sp 2).
Western Kingbird (Sp 3, Su 1, F 5).
Black-billed Magpie (Sp 1, Su 1); irruptive.
Lark Sparrow (Sp 3, F 7); might belong with Group 1, but rare there.
Lark Bunting (Sp 1, F 2).
Chestnut-collared Longspur (Sp 1).
Yellow-headed Blackbird (Sp 23, F 1); although spring birds could be overshoots from WI, and hence belong with Group 1, the large

number suggests western origin.

These need to have strayed less than 350 miles eastward from western Minnesota, where all but one (Ross's Goose) breed. That all but one nest in prairies or marshy ponds might seem somehow significant, but is merely because these are the only "western" habitats on the Great Plains that could produce what would be called vagrants in the Keweenaw. Eastward flight could have been the result of misorientation or drift. Probably, both situations pertain, but I suspect drift is much more prevalent, as suggested by the large number of Swainson's Hawks (15 records), Western Kingbirds (9), Lark Sparrows (10), and Yellow-headed Blackbirds (24), totals that seem too high for all to represent misoriented individuals (see next paragraph). The magpie stages irregular irruptions and presumably moved south in the previous falls (not necessarily directly to the Keweenaw). The American White Pelican would belong here had it not recently expanded its breeding and migration ranges. Ross's Goose is also expanding its range and eventually may be considered a transient rather than a vagrant. Only one species never recorded in the Keweenaw shares this range, Sprague's Pipit (*Anthus spragueii*), and the White-faced Ibis (*Plegadis chihi*) occurs not much farther west; thus both are likely future vagrants.

This "near-western phenomenon" extends also to non-vagrants, *i.e.*, transients that are more numerous during some years than others. Both are more common during springs with many west winds (*e.g.*, 2002) and less common when easterly winds predominate (*e.g.*, 2003). Transients that seem to fit this pattern are Greater White-fronted Goose, Ruddy Duck, American White Pelican, American Coot, American Golden-Plover, Willet, Hudsonian Godwit, Marbled Godwit, White-rumped Sandpiper, Baird's Sandpiper, Wilson's Phalarope, Forster's Tern, Black Tern, Loggerhead Shrike, Marsh Wren, Clay-colored Sparrow, Le Conte's Sparrow, Harris's Sparrow, Lapland Longspur, and Western Meadowlark.

(3) One species (4 records) breeds only as close as the southern Great Plains:

Scissor-tailed Flycatcher (Sp 3, F 1).

To arrive in the Keweenaw, the spring birds had to overshoot their destinations and also be drifted or misoriented slightly eastward; the fall bird had to be at least misoriented.

(4) Seven species (18 records) are widespread from the Rocky Mountains westward:

Lewis's Woodpecker (Sp 1)

Say's Phoebe (Sp 2).

Rock Wren (Su 1, F 2).

Townsend's Solitaire (F 3, W 5, Sp 1); both migratory and irruptive; all, even spring birds, probably arrived in fall.

Western Tanager (Sp 1).

Bullock's Oriole (Sp 1); occurs slightly closer than the others.

Gray-crowned Rosy-Finch (Sp 1).

If, as I believe, winds do not drift landbirds very far, these individuals had to be misoriented. Overshooting probably need not have been involved.

(5) Four species (7 records) are restricted in breeding range to the southwestern US and Mexico:

White-winged Dove (Sp 2, F 2); breeds east to LA, and it is this eastern nominate race that is expanding.

Broad-billed Hummingbird (Sp 1).

Tropical/Couch's Kingbird (Sp 1).

Cassin's Sparrow (F 1).

Displacement of these involved both misorientation and overshooting. The last three are among the rarest vagrant species in eastern North America (DeSante & Pyle, 1986).

(6) Two species (8 records) breed primarily in the northern Rocky Mts. and Pacific states and provinces:

Rufous Hummingbird (F 1).

Varied Thrush (F 6, W 1); migratory and irruptive.

Misorientation, perhaps bolstered by wind drift, is implicated for these long distance vagrants.

(7) Two species (3 records) have both eastern and western populations breeding in the Arctic and wintering on their respective coasts farther south:

Brant (W 1).

King Eider (F 2).

The Brant had to come from the eastern Arctic population, because it was the race *hrota*, and I suspect the eider did too; but see Harlequin Duck in the Species Accounts. That these occurred as early as they did—the eiders on 5 and 12 November and the Brant on 29 December—suggests they came overland directly from the Arctic rather than first going southeast along the Atlantic coast and then west, which would take considerably more time and be an unlikely shift in direction, especially in view of the coast's attractive habitat.

(8) One species (2 records) is from the Atlantic coast:

Great Black-backed Gull (Sp 1, W 1).

This is the only vagrant species with a definite eastern connection. It winters as close as Lake Huron, with individuals regular in the eastern Upper Peninsula. The winter bird needed only to overshoot its eastern Great Lakes wintering grounds a short distance to reach the Keweenaw, and, like fall egrets, may represent a post-breeding dispersant that went too far.

(9) Four species (7 records) have Eurasian connections:

Eurasian Wigeon (Sp 2); probably breeds in North America.
Ruff (F 1); breeds in Alaska.
Little Gull (Sp 2, W 1); has bred in the Great Lakes region.
White Wagtail (Sp 1).

These birds originally invaded North America from Eurasia but have been present long enough that some of today's birds probably are from breeding sites in North America, leaving their provenance and migration routes unknown. All have occurred within the migration periods. Both spring Little Gulls were traveling with flocks of Bonaparte's Gulls, which presumably were moving northeast, north, or northwest toward their breeding grounds.

With the current data, several hypotheses can be advanced concerning vagrancy on the Keweenaw Peninsula.

Geography. Vagrants have come from as far away as the Arctic, Gulf Coast, Southwest, Pacific Coast, and perhaps Eurasia. In general, the closer the presumed region of origin, the more vagrants, as follows: Group 1, Southeast, 28 species, 189 individuals; Group 2, northern Great Plains, 13, 83; Group 4, Rocky Mts., 7, 18; Group 5, Southwest, 4, 7; Group 6, Pacific Coast, 2, 9; Group 7, Arctic, 2, 3. Birds in Group 9 (4, 7) are of uncertain geographical affinities. Groups 3, the Southern Great Plains, and 8, the Atlantic Coast, are relatively close but have only one species each (4 and 2 records, respectively), because most species in those regions (excluding Atlantic seabirds) are part of the regular avifauna of the Keweenaw, so the species pools from which vagrants are drawn are quite small. The first two groups account for 66.1% of all vagrant species and 82.2% of all records. Most western vagrants involve species that frequently vagrate to the East; the only exceptions are all from the Southwest: Broad-billed Hummingbird, Tropical/Couch's Kingbird, and Cassin's Sparrow (DeSante & Pyle, 1986). That all three irruptive vagrants (Black-billed Magpie, Townsend's Solitaire, Varied Thrush) come from the west is coincidental, because all other recorded irruptives are eastern species that are normal inhabitants of the Keweenaw (see also, Irruptions).

Chronology, arrival dates. Here I use slightly different data than in the foregoing. Analysis of 127 spring arrival dates for 38 vagrant species revealed no differences in timing between landbirds and waterbirds (Fig. 3), the regional groups (although the three spring individuals in Group 5, from the distant Southwest, were all rather late—23 May to 13 June), or foraging guilds (except the maximum period for insectivores was, like non-vagrants, the third week of May). Spring arrival dates ranged from 14 April to 19 June, with a peak sometime between 2 and 18 May, in which period 54 (42.5%) were concentrated.

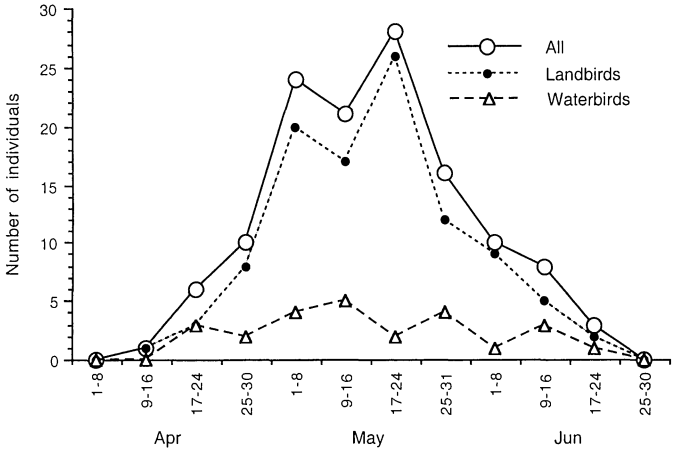

Fig. 3. Spring arrival of individual vagrant birds on the Keweenaw Peninsula, MI. Data, through 2001, from Species Accounts.

The spring median arrival date for individual vagrants was 17 May, 11 days later than the median of 6 May for species of non-vagrants (data from Table 3). Most of this difference can be attributed to the 20 vagrant records in early June, when there are no non-vagrant median arrivals, and by the 17 non-vagrant median arrivals in the last 10 days of March and first 10 days of April, when no vagrants arrived; recalculation after removal of these groups resulted in similar medians of 13 May for vagrants and 10 May for non-vagrants. That this is not an artifact of the data is suggested by scrutiny of the June vagrant dates, all of which involved birds in well-covered localities and therefore were likely to have been accurate.

In fall, as in spring, there was no difference in timing between the regional groups or foraging guilds, but landbirds arrived earlier than waterbirds (see below). The 60 fall vagrant records of 29 species occurred from 7 August to 31 December, with a rather even spread from the second week of August to the first week of November and a possible low peak in the second week of October, decreasing slowly thereafter (Fig. 4). The median date for vagrant arrival was 7 October, 19 days later than the median of 18 September for transients and winter residents (data from Table 3). As in spring, this difference was largely accounted for by the 20 vagrant individuals occurring from 26 November to 31 December, when only 3 non-vagrants arrived, and by the 9 non-vagrant species arriving in June-July, when no vagrants appeared; allowing for these, the medians become nearly identical, 19 September for vagrants and 20 September for non-vagrants.

Thus, vagrants appear to arrive later than non-vagrants in fall as well as spring. Spring and fall tardiness of vagrants might be an artifact of detectability. A common species is likely to arrive in numbers, increasing its chances of being discovered, whereas a lone vagrant might not be found until some days after its

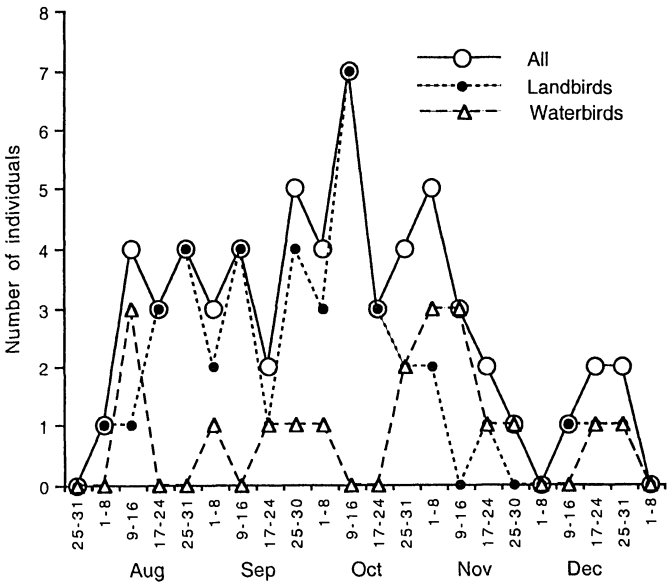

Fig. 4. Fall arrival of individual vagrant birds on the Keweenaw Peninsula, MI. Data, through 2001, from Species Accounts.

arrival. However, I think this unlikely in view of the time differences, 11 days in spring and 19 in fall. Also, many vagrants were seen on the north coast of Keweenaw Co., which I covered so thoroughly, especially in spring, that arrival dates were fairly accurate. Vagrant tardiness during both seasons has also been noted on the coast of northern California (Binford, 1971), where, for the Northern Waterthrush, it was attributed to distance, fall vagrants from northeastern populations taking about 16 days longer to arrive than regular migrants from northwestern regions. In spring, vagrant waterthrushes from the southeast arrived about two weeks later than normal migrants from western Mexico.

Unlike in spring, fall arrival dates for vagrants differed between landbirds and waterbirds, the medians being 4 October and 2 November, respectively. This is a reflection of the early arrival of most insectivorous landbirds (median for normal migrants, 19 September; data from Table 3), caused by the early reduction of insect prey from mid September through mid October. For many waterbirds, on the other hand, foraging habitat remains open into November or December, allowing them to migrate—and vagrate—later. There was no great surge in vagrant records during one of the most heavily censused times—the Christmas Bird Count period (mid December for the HCCBC). The fall arrival season for vagrants largely terminated in the third week of November for landbirds (except for three Varied Thrushes in December) and the end of December (when waters freeze) for waterbirds.

Chronology, seasonal comparisons. Here I use the same data given under Keweenaw Peninsula vagrants above. Spring was more productive than fall for vagrants. Because all vagrants presumably arrived originally during migration periods, the summer and winter records were allocated to the previous migration season (and the one spring Townsend's Solitaire to fall), resulting in 3 categories: 27 species in spring only, 12 in fall only, and 23 in both. Thus, the total species were 50 in spring and 35 in fall,or 42.9% more in spring. Concerning the number of records, again distributing the spring/fall birds, 217 were in spring and 104 in fall, or 108.7% more in spring. However, these figures were greatly affected by the 33 Red-headed Woodpeckers, 48 Northern Mockingbirds, and 24 Yellow-headed Blackbirds (it could be argued that these three are not actually vagrants). Removing these resulted in 130 spring and 86 fall records, a more realistic 51.2% difference. Much of this seasonal difference was due to spring overshooting being more common than fall misorientation in the birds from the Southeast (Group 1), all of which were overshoots in spring, but misoriented individuals in fall. In this Group, 24 species and 137 records occurred in spring but only 15 species and 52 records in fall, differences of 60.0% and 163.5%, respectively, spring over fall.

Spring was also slightly better than fall for the 27 western vagrant species (Groups 2-6), 22 of which arrived in spring and 15 in fall, or 46.7% more in spring. Considering the number of records, 74 arrived in spring and 45 in fall, a 64.4% difference. I attribute these differences primarily to wind drift of the 12 species (81 records) from the Great Plains (Group 2; the irruptive magpie here deleted). Because of the counter-clockwise winds associated with low pressure systems over the northern Rocky Mountains and Great Plains, migrating birds approaching a front from the south in spring would be drifted eastward by southwest winds. In fall, on the other hand, birds moving south would first be shunted southwestward by northeast winds and after frontal passage have north tail winds.

Whatever the exact percentages, the differences between fall and spring are owing in large part to overshooting of southeastern birds and wind drifting of Great Plains birds, these two Groups (excluding magpie) accounting for 40 species (64.5%) and 270 records (84.1%) of the total 62 species and 321 records in the Keweenaw.

Habitat. Of the 62 vagrant species, 43 are landbirds, and of these, only 8 normally inhabit dense forest or its edges: Red-bellied Woodpecker, Yellow-throated Vireo, Tufted Titmouse, Yellow-throated Warbler, Worm-eating Warbler, Summer Tanager, Western Tanager, and Varied Thrush. These 8 have yielded 33 records, but only about 11 individuals have actually been found in forest, the remainder at feeders. Feeder attendance probably has no biological significance, except that these birds occur when climatic conditions often do not allow normal foraging, as in early winter and mid spring. Without

some factor of concentration, such as feeders, forest birds are simply very difficult to find in the vast forests of the Keweenaw—the proverbial needle in a haystack. Diligent search should slowly reveal other species and individuals.

The other 35 landbird species breed in more open habitats, such as scrubby open woodlands and edge (*e.g.*, Lewis's Woodpecker, Red-headed Woodpecker, Blue-winged Warbler, Orchard Oriole), shrub upland (Bell's Vireo, Blue-gray Gnatcatcher, Kirtland's Warbler, and Prairie Warbler), shrub wetland (Yellow-breasted Chat), savanna-like fields (Western Kingbird), prairies and old fields (Grasshopper and Henslow's Sparrows), and cattail marsh (Yellow-headed Blackbird). Because vagrants tend to seek out familiar habitats, these open country birds are attracted to the few large openings amid the extensive forests of Keweenaw Co. (see below).

Twice as many landbird (43) as waterbird (19) species have been found, simply because the landbird pool from which vagrants are drawn is much larger, this despite the probability that a higher percentage of vagrant waterbirds would be discovered because of their large size and open foraging habitats.

Where to find vagrants. Vagrants may be found anywhere, even your own yard—10 species have been recorded at seed feeders and 4 at nectar feeders (see Effects of Climate and Bird Feeders on the Wintering Avifauna). The towns on the north coast of Keweenaw Co. are attractive oases, especially for open country vagrants, which are otherwise confronted by extensive forest: Eagle River (Varied Thrush, Summer Tanager, Field Sparrow, Lark Sparrow, Orchard Oriole, Yellow-headed Blackbird), Eagle Harbor (Tropical/Couch's Kingbird), and especially Copper Harbor (17 vagrant species). Copper Harbor also has Wescoat's field, the only old field near the tip of the Peninsula (Western Kingbird, Scissor-tailed Flycatcher, Grasshopper Sparrow, Henslow's Sparrow). Between these towns, the Lake Superior shore is both a leading line and barrier for vagrants (Black-crowned Night-Heron, Black Vulture, Red-headed Woodpecker, Blue-gray Gnatcatcher, Townsend's Solitaire, Northern Mockingbird, Prairie Warbler, Yellow-breasted Chat, Lark Sparrow). The bald tops of nearby mountains, such as Brockway Mt. (Black Vulture, Swainson's Hawk, Say's Phoebe, Chestnut-collared Longspur) and Mt. Lookout (Townsend's Solitaire), are open-country vagrant traps.

The head of L'Anse Bay between Baraga and L'Anse (plus the Baraga sewage ponds) has a variety of aquatic habitats and is the best single place for waterbirds of all kinds, both vagrants (Eared and Western Grebes, Great, Snowy, and Cattle Egrets, American Avocet, Franklin's Gull, Little Gull, Yellow-headed Blackbird) and irregular transients (*e.g.*, Pacific Loon, Red Phalarope, Long-tailed Jaeger, Sabine's Gull). It has the advantage of being the last large body of water that southbound migrants encounter, and birds are funneled into its narrow tip. It is also the first large body of water that spring birds find after a long, dry overland flight from the south or west. Shorebird habitat is scarce everywhere in the Keweenaw, so the few small bars and flats around the L'Anse Bay edge, especially at the extreme head and at the boat launch in L'Anse, can be profitable (American Avocet). The mouths of the Pilgrim and Sturgeon Rivers in Houghton Co. attract some vagrants; the latter may prove an exceptional locality, but its flats are subject to flooding, and it must be accessed by boat. In early winter, when most waters are frozen, South Portage Entry sometimes remains open, concentrating ducks, including an occasional vagrant (King Eider, Harlequin Duck). Unfortunately, there are no longer any garbage dumps for Lariphiles to enjoy. Pt. Abbaye (Baraga Co.), because of its northeastward projection into Lake Superior, needs to be investigated as a possible vagrant funnel trap, especially in spring.

Irruptions

Irruptions are unusually large migrations of a species into a region during some years but not others, caused apparently when insufficient food on the normal wintering grounds forces birds to search elsewhere. Magnitude varies not only by year but by species; the Boreal Owl, for instance, does not occur at all in the Keweenaw during most years, so that appearance of one or a few constitutes an irruption. Most Keweenaw irruptives arrive from the north or west in fall or early winter. Crossbills may irrupt at any time of year. Most irruptives are not vagrants; the four that are (Varied Thrush, Townsend's Solitaire, and Black-billed Magpie, Gray-crowned Rosy-Finch) are irruptive only in the West and are vagrants in the Keweenaw. Among the irruptive individuals, some may pass through as transients, while others may remain as winter visitants or residents. Separating irruptives from non-irruptive winter visitants and residents is difficult and therefore somewhat subjective, because we do not have readily available, simultaneous data from throughout a species' range. I do not consider the Purple Finch an irruptive, because it is a normal fall migrant for which variation in winter detectability depends on the berry crop here and hence on the number that *remains*, not the number that *arrives*. The same is true of the Blue Jay, which seems to be regularly cyclic (Fig. 1 in the Species Account) and probably varies in abundance according to the acorn crop. The Snowy Owl is often cited as having irruptions that coincide with cyclic lows in Arctic rodent populations, but this species is so scarce in the Keweenaw that the data fail to demonstrate any pattern.

I consider the following 21 species as irruptives (but four, marked *, are irruptives only in western North America and are considered vagrants in the Keweenaw):

Snowy Owl
Northern Hawk Owl
Great Gray Owl
Boreal Owl
Northern Shrike
*Black-billed Magpie
Boreal Chickadee
Red-breasted Nuthatch
Golden-crowned Kinglet
*Townsend's Solitaire
*Varied Thrush
Bohemian Waxwing
*Gray-crowned Rosy-Finch
Pine Grosbeak
Red Crossbill
White-winged Crossbill
Common Redpoll
Hoary Redpoll
Pine Siskin
American Goldfinch
Evening Grosbeak

Irruptions must be analyzed with careful attention to geography and chronology, because at any given time of year, one region's irruption may be another's exodus. Evaluation at only one geographic point does not tell the story elsewhere and usually is insufficient to explain inter-year variations at the point. Most Keweenaw irruptions may be envisioned as a band of annually variable width and density proceeding in a southerly or easterly direction. The number of individuals present usually differs from fall to early winter to late winter, but the only useful data I have are from the Houghton County Christmas Bird Count in early winter. An illustration of the above points is provided by the Red-breasted Nuthatch, a species that irrupts southward from Canada in response to periodic lows in the abundance of conifer seeds, especially spruce. HCCBC data for this bird (refer to Table 15 and Fig. 5), when compared with data from Christmas Bird Counts in northern Illinois (Evanston, Lisle, and Rockford combined), reveal the following. For 11 years (1976, 77, 78, 79, 82, 83, 88, 90, 91, 92, 98), both regions had below average numbers. Four years had irruptions well above average in Michigan but at or below average in Illinois (84, 89, 94, 96). Conversely, 8 counts had flights at or above average in Illinois but at or below average in the Keweenaw (80, 81, 85, 86, 93, 95, 97, 99). Only 1987 had above average movements in both regions. I interpret these data as follows. The 11 years were "normal" in that most Canadian birds had sufficient food to remain on the breeding grounds in fall and winter, or at least not venture as far south as the Keweenaw. During 4 years, birds found adequate resources in Michigan and did not need to proceed farther south. During 8 years, most birds found little food on the Peninsula and had to migrate to Illinois. This is theory. Data are needed for fall and late winter; *e.g.*, perhaps early winter birds in the Keweenaw eventually went south. Also, Bock & Lepthien (1972) found nearly biennial flights into the eastern US in the period 1960-70. They, however, compared only two areas, the vast fir-spruce forests of Canada with the deciduous-pine forests of the southeastern US, whereas I included the geographically and botanically intermediate Keweenaw. Similar interstate analyses for other species might be enlightening (see Boch & Lepthien, 1976). For instance, four of the five highest nuthatch counts in the Keweenaw corresponded to major irruptions of the White-winged Crossbill, another spruce cone specialist.

Biogeography

In this section I compare the three counties in relation to species diversity and breeding bird diversity, with special reference to southern affinities. Table 1 lists by county the 324 species and 178 breeding birds recorded on the Keweenaw Peninsula as of 10 Aug 2005. These figures represent 76.4% of the state's 424 species (MBRC, Internet) and 76.4% of its 233 breeders (Brewer *et al.*, 1991).

Total species lists for the three counties are Houghton 299 (92.3% of the Peninsula's 324), Baraga 279 (86.1%),

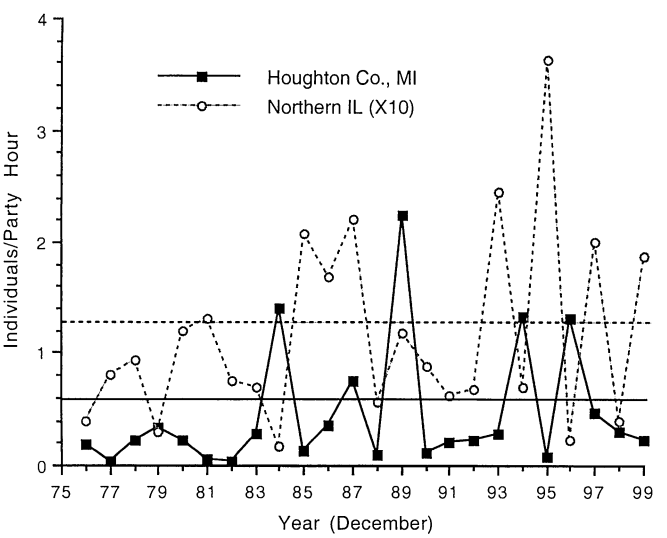

Fig. 5. Comparative detectabilities of the Red-breasted Nuthatch on Christmas Bird Counts in MI and northern IL, 1976-99. The Houghton County Christmas Bird Count was used for MI, and an average of the Evanston, Lisle, and Rockford counts for Illinois. To facilitate comparison, the individuals per party hour for Illinois were multiplied by 10. Horizontal lines represent averages for the two areas. For each year, comparisons between states must be made only in relation to the average for each state. Keweenaw data from Table 15.

and Keweenaw 273 (84.3%). Forty-four species have been recorded in only one county: Houghton 20, Keweenaw 15, and Baraga 9. These variations are mostly due to coverage, which strongly affects the number of recorded rarities. Over the years, Houghton Co., with its large population center, has had many more observers and thus the best coverage, whereas Baraga has received the least attention. In recent years, however, coverage has been similar in each of the three counties.

Among the Peninsula's 178 breeding species, 166 are considered to be confirmed, 11 probable, and 1 possible (Table 1). County totals are Baraga 161 (91.1% of the 177), Houghton 172 (96.6%), and Keweenaw 150 (84.7%). Of the 11 probables, the Greater Prairie-Chicken is extirpated, Passenger Pigeon extinct, Peregrine Falcon and Short-eared Owl accidental, Least Bittern casual, Tennessee Warbler occasional, Connecticut Warbler and Red Crossbill very rare, Marsh Wren rare, Black-billed Cuckoo uncommon, and Whip-poor-will locally common. That the last two have not been confirmed is due to a lack of persistence on the part of observers. The possible breeder is Great Gray Owl, which is accidental in summer. Although only 12 breeders (6.7%) have not been confirmed for the Peninsula, much work remains within each county (Table 1), because 40 species (24.8% of the county total) have not been confirmed for Baraga Co., 26 (15.1%) for Houghton Co., and 42 (28.2%) for Keweenaw Co.

As a rough measure of relative species diversity, five observers engaged in a low-key Big Year in 2000 to determine how many species are likely to be seen in one year on the Peninsula and in each county. Although somewhat more time was spent in Baraga Co., less in Houghton Co, and least in Keweenaw Co., coverage differences were not enough to account for the results. In all, 247 species were recorded (76.2% of the total Peninsula list), including all regular species, with 224 (80.3% of the county's total) in Baraga, 216 (72.2%) in Houghton, and 182 (66.7%) in Keweenaw. The differences between the counties were only slightly affected by extreme rarities, which numbered 16 in Baraga and 12 in Houghton, and 11 in Keweenaw. In each of the counties, some of its regular species were missed, but again these numbers were similar. Among the regular birds, Baraga had seven exclusives (Spruce Grouse, Snowy Owl, Whip-poor-will, Wood Thrush, Connecticut Warbler, Eastern Towhee, and Red Crossbill), Houghton none, and Keweenaw one (Northern Mockingbird). Note that six of the seven Baraga exclusives were breeders. Between Baraga and Houghton, the difference came down to a combination of the four additional rarities plus breeding birds found most commonly, or only, on the Baraga Plains: Spruce Grouse, Wild Turkey, Black-backed Woodpecker, Connecticut Warbler, Eastern Towhee, and Red Crossbill. Keweenaw Co. presented a different story. Of the species seen during the year in the other two counties, Keweenaw missed 19 of 27 shorebirds, 14 other waterbirds, 1 farmland species (Vesper Sparrow), and 2 urban birds (Rock Pigeon and House Sparrow). Except for Black-backed Woodpecker, it also lacked five Baraga Plains birds. These groups totaled 41 species, quite sufficient to account for Keweenaw's low total and percentage. Almost all misses were the result of lack of habitat. No wonder visiting Michigan listers consider Keweenaw one of the more difficult counties in which to reach 200 species! And, by the way, among the four combatants, Joe Youngman achieved the highest list—235. Another measure of species diversity was an unofficial Big Day, extending to all three counties, conducted by J. M. Musser (with part time help from T. Auer and myself) on 30 May 2002; he recorded 135 species. Also, during 2002, with its incredibly good spring for rarities, Musser and I attempted to find 200 species by 7 June (my cutoff date for spring); I saw 202 and Musser 201.

Presence of breeding species and rarities. Italics indicate breeders, and **boldface** non-breeders, unique to one county.

Baraga Co. supports the most extensive and best quality jack pine forest (Baraga Plains), although southern Houghton Co. has some. These Plains harbor the last remaining *Spruce Grouse* (formerly also in Houghton), the newly arrived Wild Turkey (now also in Houghton Co.), the largest breeding populations of Upland Sandpiper, Whip-poor-will, Palm Warbler, Connecticut Warbler, Eastern Towhee, and Red Crossbill, and probably Common Nighthawk, Black-backed Woodpecker, and Dark-eyed Junco, and the only ***Kirtland's Warblers*** (irregular vagrant, but has bred). The *American Three-toed Woodpecker* has been found breeding only in this county, but could nest elsewhere. Baraga Co. also has the most productive waterbird locality, L'Anse Bay and the adjacent Baraga sewage ponds, which together manage to attract most shorebird species (32 of 35) despite their meagre habitat, including Piping Plover, American Avocet, Willet, Whimbrel, both godwits, Red Knot, and Wilson's, Red-necked, and **Red** Phalaropes; only Ruff, Western Sandpiper, and Long-billed Dowitcher are lacking. These are also prime traps for other irregular transient and vagrant waterbirds in spring (Red-throated Loon, Eared Grebe, Great Egret, Snowy Egret, Cattle Egret, Franklin's Gull, Little Gull, Glaucous Gull, **Forster's Tern**, Black Tern) and fall (Harlequin Duck, Pacific Loon, **Western Grebe**, **Long-tailed Jaeger**, **Sabine's Gull**, Black-legged Kittiwake), in part because of the Bay's north-south orientation, which makes it the first major body of water encountered by northbound birds in spring and the last by southbound species in fall; it also intercepts rare western waterbirds that are drifted

Table 1. The 324 recorded species and maximum breeding data for Baraga (B), Houghton (H), and Keweenaw (K) Counties, MI, as of 1 June 2005. Breeding: co = confirmed; po = possible; pr = probable. The seven species enclosed by brackets ([]) are accepted but lack documentation (see Species Accounts). The three in parentheses are extinct or extirpated and unlikely to return.

Species	B		H		K	
Gr. White-fronted Goose	x		x		x	
Snow Goose	x		x		x	
Ross's Goose			x			
Brant					x	
Cackling Goose	x		x		x	
Canada Goose	x	co	x	co	x	co
Mute Swan	x	co	x			
Trumpeter Swan	x		x		x	
Tundra Swan	x		x		x	
Wood Duck	x	co	x	co	x	co
Gadwall	x		x	co	x	
Eurasian Wigeon	x		x			
American Wigeon	x	pr	x	co	x	
American Black Duck	x	co	x	co	x	co
Mallard	x	co	x	co	x	co
Blue-winged Teal	x	co	x	co	x	pr
Northern Shoveler	x	co	x	co	x	
Northern Pintail	x		x	co	x	
Green-winged Teal	x	po	x	co	x	pr
Canvasback	x		x		x	
Redhead	x		x		x	
Ring-necked Duck	x	co	x	co	x	co
Greater Scaup	x		x		x	
Lesser Scaup	x		x		x	
King Eider			x			
Harlequin Duck	x		x			
Surf Scoter	x		x		x	
White-winged Scoter	x		x		x	
Black Scoter	x		x		x	
Long-tailed Duck	x		x		x	
Bufflehead	x		x		x	
Common Goldeneye	x		x	co	x	co
Hooded Merganser	x	co	x	co	x	co
Common Merganser	x	co	x	co	x	co
Red-breasted Merganser	x	co	x	co	x	co
Ruddy Duck	x		x		x	
Ruffed Grouse	x	co	x	co	x	co
Spruce Grouse	x	co	x	pr		
(Sharp-tailed Grouse)	(x	pr)	(x	co)		
(Greater Prairie-Chicken)			(x	pr)		
Wild Turkey	x	co	x	pr		
Red-throated Loon	x		x		x	
Pacific Loon	x		x		x	
Common Loon	x	co	x	co	x	co
Pied-billed Grebe	x	co	x	co	x	po
Horned Grebe	x		x		x	
Red-necked Grebe	x		x		x	
Eared Grebe	x		x			
Western Grebe	x					
American White Pelican	x		x		x	
Double-crested Cormorant	x		x	co	x	
American Bittern	x	co	x	co	x	po
Least Bittern			x	pr		
Great Blue Heron	x	co	x	co	x	po

Species	B		H		K	
Great Egret	x		x			
Snowy Egret	x		x		x	
Little Blue Heron	x					
Cattle Egret	x		x			
Green Heron	x	co	x	co	x	po
Black-crowned Night-Heron	x		x		x	
White Ibis			x			
Glossy Ibis	x					
Black Vulture			x		x	
Turkey Vulture	x	co	x	po	x	pr
Osprey	x	co	x	co	x	co
Bald Eagle	x	co	x	co	x	co
Northern Harrier	x	co	x	co	x	po
Sharp-shinned Hawk	x	pr	x	co	x	po
Cooper's Hawk	x		x	co	x	co
Northern Goshawk	x	co	x	co	x	co
Red-shouldered Hawk	x	pr	x	co	x	
Broad-winged Hawk	x	co	x	co	x	pr
Swainson's Hawk					x	
Red-tailed Hawk	x	co	x	co	x	pr
Rough-legged Hawk	x		x		x	
Golden Eagle	x		x		x	
American Kestrel	x	co	x	co	x	po
Merlin	x	co	x	co	x	co
Gyrfalcon			x			
Peregrine Falcon	x		x		x	pr
Yellow Rail			x		x	
Virginia Rail	x	co	x	co	x	pr
Sora	x	pr	x	co	x	pr
Common Moorhen			x		x	
American Coot	x		x	co	x	
Sandhill Crane	x	co	x	co	x	co
Black-bellied Plover	x		x		x	
American Golden-Plover	x		x		x	
Semipalmated Plover	x		x		x	
Piping Plover	x		x		x	
Killdeer	x	co	x	co	x	co
American Avocet	x		x			
Greater Yellowlegs	x		x		x	
Lesser Yellowlegs	x		x		x	
Solitary Sandpiper	x		x		x	
Willet	x		x		x	
Spotted Sandpiper	x	co	x	co	x	co
Upland Sandpiper	x	co	x	co	x	
Whimbrel	x		x		x	
Hudsonian Godwit	x		x		x	
Marbled Godwit	x		x			
Ruddy Turnstone	x		x		x	
Red Knot	x		x		x	
Sanderling	x		x		x	
Semipalmated Sandpiper	x		x		x	
Western Sandpiper			x			
Least Sandpiper	x		x		x	
White-rumped Sandpiper	x		x		x	

Table 1 (continued)

Species	B		H		K	
Baird's Sandpiper	x		x		x	
Pectoral Sandpiper	x		x		x	
Dunlin	x		x		x	
Stilt Sandpiper	x		x			
Buff-breasted Sandpiper	x		x			
Ruff			x			
Short-billed Dowitcher	x		x		x	
Long-billed Dowitcher			x			
Wilson's Snipe	x	co	x	co	x	pr
American Woodcock	x	co	x	co	x	co
Wilson's Phalarope	x		x		x	
Red-necked Phalarope	x		x		x	
Red Phalarope	x					
Pomarine Jaeger					x	
Parasitic Jaeger					x	
Long-tailed Jaeger	x					
Franklin's Gull	x		x			
Little Gull	x		x			
Bonaparte's Gull	x		x		x	
Ring-billed Gull	x		x	co	x	
Herring Gull	x	co	x	co	x	co
Thayer's Gull			x			
Glaucous Gull	x		x			
[Great Black-backed Gull]			x			
Sabine's Gull	x					
Black-legged Kittiwake	x		x			
Caspian Tern	x		x		x	
Common Tern	x		x		x	
Forster's Tern	x					
Black Tern	x		x	co		
Rock Pigeon	x	pr	x	co	x	co
White-winged Dove			x		x	
Mourning Dove	x	co	x	co	x	co
[(Passenger Pigeon)]			(x)		(x	pr)
Black-billed Cuckoo	x	po	x	pr	x	pr
Yellow-billed Cuckoo	x	po	x	pr	x	co
Great Horned Owl	x	co	x	co	x	co
Snowy Owl	x		x		x	
Northern Hawk Owl	x		x		x	
Burrowing Owl			x			
Barred Owl	x	pr	x	co	x	pr
Great Gray Owl	x		x		x	po
Long-eared Owl	x		x	co	x	po
Short-eared Owl	x		x	pr	x	
Boreal Owl	x		x		x	
Northern Saw-whet Owl	x	co	x	co	x	co
Common Nighthawk	x	pr	x	pr	x	co
Whip-poor-will	x	pr	x	pr	x	
Chimney Swift	x	co	x	co	x	co
Broad-billed Hummingbird					x	
Ruby-thr. Hummingbird	x	po	x	co	x	co
Rufous Hummingbird			x			
Belted Kingfisher	x	co	x	co	x	co
Lewis's Woodpecker					x	
Red-headed Woodpecker	x	po	x	po	x	co
Red-bellied Woodpecker	x		x		x	

Species	B		H		K	
Yellow-bellied Sapsucker	x	co	x	co	x	co
Downy Woodpecker	x	co	x	co	x	co
Hairy Woodpecker	x	co	x	co	x	co
Am. Three-toed Woodpecker	x	co	x		x	
Black-backed Woodpecker	x	co	x	pr	x	co
Northern Flicker	x	co	x	co	x	co
Pileated Woodpecker	x	pr	x	co	x	co
Olive-sided Flycatcher	x	pr	x	pr	x	co
Eastern Wood-Pewee	x	pr	x	co	x	pr
Yellow-bellied Flycatcher	x	co	x	co	x	pr
Alder Flycatcher	x	co	x	co	x	co
Least Flycatcher	x	co	x	co	x	co
Eastern Phoebe	x	co	x	co	x	co
Say's Phoebe			x		x	
Great Crested Flycatcher	x	co	x	co	x	co
Tropical/Couch's Kingbird					x	
Western Kingbird	x		x		x	
Eastern Kingbird	x	co	x	co	x	co
Scissor-tailed Flycatcher					x	
Loggerhead Shrike	x		x		x	
Northern Shrike	x		x		x	
Bell's Vireo			x			
Yellow-throated Vireo	x	po	x	co	x	
Blue-headed Vireo	x	co	x	pr	x	co
Warbling Vireo	x	pr	x	co	x	pr
Philadelphia Vireo	x	co	x	co	x	pr
Red-eyed Vireo	x	co	x	co	x	co
Gray Jay	x	co	x	pr	x	po
Blue Jay	x	co	x	co	x	co
Black-billed Magpie	x		x			
American Crow	x	co	x	co	x	co
Common Raven	x	co	x	co	x	co
Horned Lark	x		x		x	
Purple Martin	x	pr	x	co		
Tree Swallow	x	co	x	co	x	co
N. Rough-winged Swallow	x	co	x	co	x	co
Bank Swallow	x	co	x	co	x	co
Cliff Swallow	x	co	x	co	x	co
Barn Swallow	x	co	x	co	x	co
Black-capped Chickadee	x	co	x	co	x	co
Boreal Chickadee	x	co	x	co	x	po
[Tufted Titmouse]			x			
Red-breasted Nuthatch	x	co	x	co	x	co
White-breasted Nuthatch	x	po	x	co	x	po
Brown Creeper	x	co	x	co	x	co
Rock Wren	x		x		x	
House Wren	x	co	x	co	x	co
Winter Wren	x	pr	x	co	x	co
Sedge Wren	x	co	x	pr	x	po
Marsh Wren	x	pr	x	pr	x	
Golden-crowned Kinglet	x	co	x	co	x	co
Ruby-crowned Kinglet	x	co	x	co	x	co
Blue-gray Gnatcatcher	x		x		x	
Eastern Bluebird	x	co	x	co	x	co
Townsend's Solitaire			x		x	
Veery	x	co	x	co	x	co

Table 1 (continued)

Species	B		H		K	
Gray-cheeked Thrush			x		x	
Swainson's Thrush	x	co	x	co	x	co
Hermit Thrush	x	co	x	co	x	co
Wood Thrush	x	co	x	co	x	
American Robin	x	co	x	co	x	co
Varied Thrush	x		x		x	
Gray Catbird	x	co	x	co	x	co
Northern Mockingbird	x		x	co	x	
Brown Thrasher	x	co	x	co	x	pr
European Starling	x	co	x	co	x	co
White Wagtail			x			
American Pipit	x		x		x	
Bohemian Waxwing	x		x		x	
Cedar Waxwing	x	co	x	co	x	co
Blue-winged Warbler			x			
Golden-winged Warbler	x	pr	x	co	x	po
Tennessee Warbler	x	po	x	pr	x	pr
Orange-crowned Warbler	x		x		x	
Nashville Warbler	x	co	x	co	x	co
Northern Parula	x	co	x	co	x	co
Yellow Warbler	x	pr	x	co	x	co
Chestnut-sided Warbler	x	co	x	co	x	co
Magnolia Warbler	x	co	x	co	x	co
Cape May Warbler	x	po	x	co	x	co
Black-throated Blue Warbler	x	pr	x	co	x	co
Yellow-rumped Warbler	x	co	x	co	x	co
Black-thr. Green Warbler	x	co	x	co	x	co
Blackburnian Warbler	x	co	x	co	x	co
Yellow-throated Warbler					x	
Pine Warbler	x	co	x	po	x	co
Kirtland's Warbler	x	co				
Prairie Warbler					x	
Palm Warbler	x	pr	x	co	x	po
Bay-breasted Warbler	x	po	x	co	x	co
Blackpoll Warbler	x		x		x	
Black-and-white Warbler	x	co	x	co	x	co
American Redstart	x	co	x	co	x	co
[Worm-eating Warbler]	x					
Ovenbird	x	co	x	co	x	co
Northern Waterthrush	x	pr	x	co	x	co
Connecticut Warbler	x	pr	x	pr	x	pr
Mourning Warbler	x	co	x	co	x	co
Common Yellowthroat	x	co	x	co	x	co
Wilson's Warbler	x		x		x	
Canada Warbler	x	pr	x	co	x	co
Yellow-breasted Chat	x		x		x	
Summer Tanager	x				x	
Scarlet Tanager	x	pr	x	pr	x	co
Western Tanager			x			
Eastern Towhee	x	co	x	po	x	
Cassin's Sparrow					x	
American Tree Sparrow	x		x		x	
Chipping Sparrow	x	co	x	co	x	co
Clay-colored Sparrow	x	co	x	co	x	pr
Field Sparrow	x		x		x	
Vesper Sparow	x	co	x	co	x	pr
Lark Sparrow	x		x		x	
Lark Bunting					x	
Savannah Sparrow	x	co	x	co	x	co
Grasshopper Sparrow	x		x		x	
Henslow's Sparrow					x	
Le Conte's Sparrow	x	po	x	po	x	co
Nelson's Sharp-t. Sparrow					x	
Fox Sparrow	x		x		x	
Song Sparrow	x	co	x	co	x	co
Lincoln's Sparrow	x	pr	x	co	x	co
Swamp Sparrow	x	co	x	co	x	co
White-throated Sparrow	x	co	x	co	x	co
Harris's Sparrow	x		x		x	
White-crowned Sparrow	x		x		x	
Dark-eyed Junco	x	co	x	co	x	co
Lapland Longspur	x		x		x	
Smith's Longspur	x		x		x	
[Chestnut-coll. Longspur]					x	
Snow Bunting	x		x		x	
Northern Cardinal	x	po	x	co	x	pr
Rose-breasted Grosbeak	x	co	x	co	x	co
Indigo Bunting	x	co	x	co	x	co
Painted Bunting	x		x		x	
Dickcissel			x	co		
Bobolink	x	co	x	co	x	pr
Red-winged Blackbird	x	co	x	co	x	co
Eastern Meadowlark	x	co	x	pr	x	po
Western Meadowlark	x	pr	x	pr	x	co
Yellow-headed Blackbird	x		x		x	
Rusty Blackbird	x		x		x	
Brewer's Blackbird	x	co	x	co	x	co
Common Grackle	x	co	x	co	x	co
Brown-headed Cowbird	x	co	x	co	x	co
Orchard Oriole			x		x	
Baltimore Oriole	x	co	x	co	x	
Bullock's Oriole			x			
Gray-crowned Rosy-Finch			x			
Pine Grosbeak	x		x		x	
Purple Finch	x	co	x	co	x	co
House Finch	x	co	x	co	x	po
Red Crossbill	x	pr	x	po	x	pr
White-winged Crossbill	x	co	x	co	x	pr
Common Redpoll	x		x		x	
Hoary Redpoll	x		x			
Pine Siskin	x	pr	x	co	x	co
American Goldfinch	x	co	x	co	x	co
Evening Grosbeak	x	co	x	co	x	co
House Sparrow	x	co	x	co	x	co

Total species:	324	279	299	273
Total breeding:	178	161	172	150
Confirmed:	166	121	146	107
Probable:	11	28	20	25
Possible:	1	12	6	18

eastward off course. L'Anse Bay is the only breeding site for the introduced *Mute Swan* (formerly). Baraga Co. lacks Lake Superior proper and its shoreline, embracing only a part of lower Keweenaw Bay, but the rare species that might be found there—Pomarine and Parasitic Jaegers, and Great Black-backed Gull—are nearly as likely on L'Anse Bay. This county shares with Houghton one of the best wetlands on the Peninsula, the Arnheim Sloughs (**Glossy Ibis** in the Baraga portion; Long-eared Owl and Smith's Longspur in both). Some other rarities recorded elsewhere in Baraga Co. are Greater White-fronted Goose, **Little Blue Heron**, Yellow-throated Vireo, Black-billed Magpie, Rock Wren, Varied Thrush, **Worm-eating Warbler**, Summer Tanager, and Painted Bunting.

Houghton Co. has the most numerous sewage ponds (Greater White-fronted Goose, Ross's Goose, Eurasian Wigeon, Eared Grebe), some of which are especially good because of adjacent grassy areas that afford nest habitat for ducks (*Gadwall*, American Wigeon, Northern Shoveler, *Northern Pintail*). Mud flats formed by drying of these ponds, together with beaches elsewhere in the county, give Houghton all but one Peninsula shorebird (Red Phalarope), including **Western Sandpiper**, **Long-billed Dowitcher**, and **Ruff**. Houghton shares with Baraga the large Arnheim Sloughs, which include high-quality cattail marsh (***Least Bittern***, **Gyrfalcon**, *American Coot*, *Black Tern*, *Short-eared Owl*, and *Marsh Wren* in the Houghton section) and has its own Sturgeon River Sloughs, Unit 1 (Willet, Yellow Rail, Yellow-breasted Chat, Smith's Longspur). The Lake Superior shoreline of northern Houghton has not proven very profitable, partly because the beaches are today inhospitable for birds, but mostly because of incomplete coverage of the open waters, which could produce such species as Red Phalarope, jaegers, and Sabine's Gull; old records for Redridge beach include Piping Plover and **Burrowing Owl**. The county's extensive Portage Lake system, especially South Portage Entry and the Pilgrim and Sturgeon River mouths, is unique and rivals (but does not match) L'Anse Bay (**King Eider**, Harlequin Duck, Cattle Egret, shorebirds, Franklin's Gull, Little Gull, *Ring-billed Gull* [the only common breeding species restricted to one county], **Great Black-backed Gull**, Black-legged Kittiwake), and **White Wagtail**. The most extensive farmland and old fields occur in Houghton Co. (***Dickcissel***, Black-billed Magpie, *Northern Mockingird* [breeding vagrant], and formerly Sharp-tailed Grouse and ***Greater Prairie-Chicken***). This county has Traverse Island, which supports the only breeding colony of the *Double-crested Cormorant*. Some other rarities seen elsewhere in Houghton Co. include Black-crowned Night-Heron, **White Ibis**, Common Moorhen, **Thayer's Gull**, White-winged Dove, **Rufous Hummingbird**, Say's Phoebe, **Bell's Vireo**, Yellow-throated Vireo, **Tufted Titmouse**, Rock Wren, Townsend's Solitaire, Varied Thrush, **Blue-winged Warbler**, **Western Tanager**, Lark Sparrow, Painted Bunting, Orchard Oriole, **Bullock's Oriole**, **Gray-crowned Rosy-Finch**, and formerly Passenger Pigeon, Purple Martin, and Spruce Grouse.

Keweenaw Co. is at the bottom of the totem pole in both species and breeding bird diversity. It is essentially one, large, solid, overlogged expanse of forest; it lacks the habitat diversity and hence bird species diversity of the other two counties. Extensive jack pine forest is absent. All bays except one are small, shrub uplands, old fields and grassland are virtually absent, and there is only one, small, poor-quality cattail marsh (Ahmeek). Hayfields and rural situations are restricted to one very small patch in the extreme southwestern corner. There is no urban development (I'm not complaining!), and residential habitat is found only in a few small villages. Because its sewage ponds never have more than a steep, narrow mud edge and there are no large rivers to form terminal bars, only 27 of the 35 Peninsula shorebirds have been recorded, and 4 of these are summer residents and 3 others (Piping Plover, Hudsonian Godwit, Short-billed Dowitcher) have been seen only in flight. No Keweenaw Co. bay is as large as L'Anse Bay or has its north-south orientation, and most are lined with sand, rock, or forest. Thus they attract only a few birds, not the flocks of migrant waterbirds or frequent vagrants found on L'Anse Bay.

On the positive side, much of the north shore of the county between Eagle Harbor and Copper Harbor runs due east-west and contains the northernmost spot in mainland Michigan—Dan's Point. This stretch forms a major target and leading line for fall migrating geese, ducks, loons, grebes, cormorants, and other waterbirds (see Waterbird Migration on Lake Superior). It remains to be seen how fall numbers compare to those at Whitefish Point and if there is any appreciable spring migration. The only real rarities seen here have been Arctic/Pacific Loon, **Pomarine Jaeger**, and **Parasitic Jaeger**, but others would be expected, as at Whitefish Point. Paralleling this shoreline is a chain of ridges, one of which, Brockway Mt., is the major diurnal raptor lookout on the Peninsula and the best place for **Swainson's Hawk**. Finally, the county is so extensively wooded that any clearing, including towns, especially the northernmost, Copper Harbor, provides a trap for vagrants, largely open-country species, in spring (Snowy Egret stranded on a pier in Copper Harbor, Black-crowned Night-Heron, Common Moorhen, White-winged Dove, **Broad-billed Hummingbird**, **Lewis's Woodpecker**, Say's Phoebe, **Tropical/Couch's Kingbird**, **Yellow-throated Warbler**, Summer Tanager, Field Sparrow, **Henslow's Sparrow**, **Chestnut-collared Longspur**, Painted Bunting, Orchard Oriole), fall (Rock Wren, Varied Thrush, **Prairie Warbler**,

Cassin's Sparrow, Lark Sparrow, **Nelson's Sharp-tailed Sparrow**), or both (**Scissor-tailed Flycatcher**, Western Kingbird, Blue-gray Gnatcatcher, Townsend's Solitaire, Yellow-breasted Chat, **Lark Bunting**, Smith's Longspur). How much of this phenomenon is due to the isolated openings and how much to the presence of Lake Superior as a barrier is uncertain; probably both have an effect, because some of these birds, presented with poor habitat at best, would be expected to continue flying north or east were it not for the Lake. A few species that breed (some only possibly) in Baraga or Houghton Cos. are found in Keweenaw Co. only in spring, as vagrant overshoots or transients, primarily near Lake Superior (Red-shouldered Hawk, Whip-poor-will, Wood Thrush, Golden-winged Warbler, Eastern Towhee, Grasshopper Sparrow, Baltimore Oriole), in fall as transients (Upland Sandpiper), or both (Short-eared Owl). Some other rarities found in Keweenaw Co. are Greater White-fronted Goose, **Brant**, Black Vulture, Yellow Rail, Red-necked Phalarope, Long-eared Owl, and American Three-toed Woodpecker. As for breeding species, Keweenaw Co. has only three exclusives: *Peregrine Falcon*, for which Keweenaw Co. has the only suitable nesting cliffs, which attracted one pair that failed; *Great Gray Owl*, which is supported by only possible evidence and could breed in any county; and *Passenger Pigeon*, which probably bred before it became extinct.

Absence or scarcity of breeding birds by county. In one or two of the three counties, 35 of the 178 Peninsula breeders appear to be absent (Table 1), and 25 others are appreciably less common. In the lists below, detectability terms refer to summer only.

Baraga Co. Fourteen species have no breeding evidence for Baraga Co., and three others that bred or probably bred are now extirpated (Sharp-tailed Grouse, Greater Prairie-Chicken, and Purple Martin). Three lack either offshore islands (Double-crested Cormorant, Ring-billed Gull) or high rocky cliffs (Peregrine Falcon) for nesting. Six species that are rare on the Peninsula find either poor quality or very scarce nesting habitat but could breed: cattail marsh (Least Bittern, American Coot, Black Tern); extensive sedge-grass marsh (Short-eared Owl); and ponds with adjacent grassland (Gadwall and Northern Pintail). Six seem to have good habitat but are very rare or local elsewhere on the Peninsula: forest-edged lakes (Common Goldeneye, which has only recently colonized Houghton and Keweenaw Cos.); mature (*i.e.*, unlogged for a long time) mesic deciduous forest (Cooper's Hawk, an accidental southern species at the edge of its range); forest with scattered openings (Great-gray Owl, accidental, and Long-eared Owl, casual), and old fields, hayfields, and rural situations (Northern Mockingbird, a vagrant breeder; Dickcissel, a nomad from the west, which apparently missed Baraga Co. during its only invasion in 1988). Note that none of these 14 species entirely lacks feeding habitat. I have found no Baraga Co. record for the Passenger Pigeon, although it likely bred.

Only four species that breed in Baraga Co. are scarcer there than elsewhere. The Turkey Vulture and Merlin seem to have habitat but have not had time to spread southward in numbers from Keweenaw Co. The Bank Swallow finds few nest sites, because the county is less humanized than Houghton Co. The Herring Gull finds no offshore rocks; it has nested once on the mainland, but predator pressure probably will prevent it from doing so regularly.

Houghton Co. Five species formerly bred in Houghton Co. but are now extirpated: Spruce Grouse, Sharp-tailed Grouse, Greater Prairie-Chicken, Passenger Pigeon (extinct), and Purple Martin. Only five species have never been found breeding in the county. One lacks high rocky cliffs for nesting (Peregrine Falcon, which could nest in cities). Three have adequate habitat but are rare on the Peninsula: Mute Swan (has not been introduced in this county), Great Gray Owl (accidental), and American Three-toed Woodpecker (accidental). Only one species seemingly lacks both nesting and foraging habitat, regenerating jack pine shrubland (Kirtland's Warbler), but southern Houghton Co. should be explored for this habitat and bird.

Seven species that breed in Houghton Co. are less common there than in one or both of the other counties. The Common Goldeneye, Turkey Vulture, and Merlin seem to be spreading southward from Keweenaw Co. and have not had time to occupy the ample habitat in Houghton Co. The Upland Sandpiper was formerly more common but has declined due to maturation of old fields and hayfields into shrub upland and forest and perhaps to new farming practices (see Historical Changes). The Wild Turkey has just entered the county. Shrub wetland with conifers for Yellow-bellied Flycatcher and partially open, black spruce bog for Gray Jay are scarce.

Keweenaw Co. This county is quite different, because many habitats are absent, very scarce, or of poor quality. Twenty-eight Peninsula breeders have never been found nesting. Three others bred, but two are at least temporarily extirpated, even though habitat exists (Osprey, Bank Swallow), and one is extinct (Passenger Pigeon). Two lack coastal islands suitable for breeding (Double-crested Cormorant, Ring-billed Gull). The primary Peninsula habitats are entirely absent for 12 species: extensive jack pine forest, either with adjacent grassy or shrubby openings (Wild Turkey, Whip-poor-will, Eastern Towhee) or regenerating patches of trees (Kirtland's Warbler); lowland (*i.e.*, moist), mature, mesic deciduous forest (Red-shouldered Hawk, Wood Thrush); ponds suitable for foraging, with adjacent grassland

for nesting (Gadwall, American Wigeon, Northern Shoveler, Northern Pintail); *extensive* sedge-grass marsh (Short-eared Owl); and ponds and shallow lakes or bays with marsh vegetation (Mute Swan). For another 14 absent breeding species, primary habitat is very scarce or of inferior quality: rural and residential settings (Purple Martin, Northern Mockingbird, Baltimore Oriole); black spruce bog (Spruce Grouse, American Three-toed Woodpecker); wet deciduous forest swamp (Yellow-throated Vireo); cattail marsh (Least Bittern, American Coot, Black Tern, Marsh Wren); and old fields and hayfields (Sharp-tailed Grouse, which may have occurred in the past, Greater Prairie-Chicken, which never occurred, Upland Sandpiper, and the nomadic Dickcissel).

Keweenaw Co. has 23 breeding species that I judge to be less abundant than in one or both of the other counties; this is many more than the 3 in Baraga Co and 7 in Houghton Co. For none is habitat entirely lacking, but all find little or only poor quality habitat, as follows. Rural settings, including grassy openings (American Kestrel), are restricted to one block of farmland less than 1 square mile in extent, and residential settings (Mourning Dove, House Finch) are confined to a few tiny villages. Hence suitable man-made nest sites are scarce (Rock Pigeon, Common Nighthawk, Eastern Phoebe, Tree Swallow, Cliff Swallow, Barn Swallow, House Wren, European Starling). Sedge-grass marsh (Sedge Wren) is confined to a few abandoned and filled beaver ponds and dying lakes, which have much sedge and little grass. Most shrub wetlands (Green Heron, Gray Catbird, Golden-winged Warbler) are restricted to narrow strips at forest edge and therefore are not extensive enough. Shrub upland (Black-billed Cuckoo, Brown Thrasher) is scarce, because the farmland of the mining era has grown up to forest; the cuckoo is found also in shrub wetland and rural settings, neither extensive. Red oak patches in mesic deciduous forest (Eastern Wood-Pewee, White-breasted Nuthatch) are overlogged, not numerous, and usually consist of only a few scattered oak trees, a condition also pertaining to aspen patches within mesic mixed and mesic deciduous forests (Yellow-bellied Sapsucker, Philadelphia Vireo). Forest openings are too small to support isolated patches of aspen (Warbling Vireo). Finally, extensive, dense, wet conifer forest bog with openings (Gray Jay) occurs only as small patches in the Pt. Isabelle-Gay area.

When I began the above analysis I supposed that rarity alone, caused by close approach to overall distributional boundaries, would be, for many species, of great importance in explaining the observed differences in abundance between counties. However, upon detailed analysis and lengthy deliberation, I have concluded that habitat explains nearly all of the differences in range and abundance, and range/rarity comes into play only for the few species discussed below. From the above lists, three species seem to have some habitat in all three counties, but perhaps for the following reasons, the first is currently extirpated from Keweenaw Co. and the other two never occurred there: Osprey (decimated by pesticides and still not fully recovered); Purple Martin (extirpated; eastern US population reduced by uncertain causes); Mute Swan (extirpated; here dependent on man's introductions). Five species might owe their Peninsular status to range/rarity alone, as four are at the edges of their eastern distributions (Cooper's Hawk, Great Gray Owl, American Three-toed Woodpecker, and Yellow-throated Vireo), and one is scarce everywhere (Long-eared Owl). However, the Great Gray Owl and American Three-toed Woodpecker prefer boreal forest and the vireo edges of wet deciduous forest swamp, both of which are very scarce and local on the Peninsula (the vireo makes do with the edges of beaver ponds). Only five species seem almost definitely to owe their Peninsular status to range/rarity alone. One, the Dickcissel, is a nomad from the west. The Wild Turkey was introduced to the south and has just spread into southern Baraga and Houghton Cos. The Common Goldeneye and Merlin recently colonized Keweenaw Co., probably from Isle Royale, and are spreading southward into ample habitat. The Turkey Vulture is also spreading from an isolated population in Keweenaw Co. that seemingly originated from transients. And the Northern Mockingbird has been spreading northward into the Keweenaw and only recently (2005) bred. *Thus, the only species that seem certainly to owe their status to range/rarity are new or nomadic colonists.*

Southern affinities. Species that are essentially southeastern in distribution, at least at this longitude, deserve special attention, because many appear to be spreading northward, perhaps in response to global warming. I recognize eight categories based on the degree to which these 64 birds have or have not occupied the three counties. These are arranged in the order in which invasion might theoretically occur, assuming southern origins (even for widespread vagrants) but not necessarily a south-to-north occupation within the Peninsula (*i.e.*, spread might have been mosaic in character). All breeding records, *i.e,*. possible, probable, and confirmed, are used. Each species is annotated with the counties in which it has been found during the given periods (B = Baraga Co., H = Houghton Co., K = Keweenaw Co.). See also, Historical Changes.

(1) Eighteen southern species have occurred as vagrants during the migration periods or winter, but not in summer: Great Egret (B, H), Snowy Egret (B, H, K), Little Blue Heron (B), Cattle Egret (B, H), White Ibis (H), Glossy Ibis (B), Common Moorhen (H, K), Red-bellied

Woodpecker (B, H, K), Bell's Vireo (H), Tufted Titmouse (H), Blue-winged Warbler (B), Yellow-throated Warbler (K), Prairie Warbler (K), Worm-eating Warbler (B), Summer Tanager (B, K), Henslow's Sparrow (K), Painted Bunting (B, H), and Orchard Oriole (H, K). These show no south to north pattern within the Peninsula; for example, five species have been recorded in B but not K, whereas seven have the opposite distribution. On a small geographic scale such as the Keweenaw Peninsula, vagrants are almost as likely to appear in the north as the south, especially when confronted in the north by Lake Superior as a barrier. None is currently invading the Peninsula, and probably none (except Red-bellied Woodpecker and Henslow's Sparrow?) is a potential breeder in the *near* future. Nevertheless, they form the most likely pool from which breeders may be drawn in the *distant* future.

(2) Seven species have been found sparingly in summer without confirmed breeding (some of these occur also during migration): Least Bittern (H), Black-crowned Night-Heron (H), Black Vulture (K), Blue-gray Gnatcatcher (B), Yellow-breasted Chat (B), Field Sparrow (B, H), and Grasshopper Sparrow (B, H). With the exception of the night-heron, vulture, and chat, these are the most likely species to be confirmed breeding in the *near* future, at least in B or H. Keweenaw Co has little or no breeding habitat for any of these birds, although all but the Least Bittern have been recorded there during the migration periods.

(3) Five species have just begun to invade the Peninsula *in summer*: Wild Turkey (B, since 1998; H since 2002); Yellow-throated Vireo (first recorded in 1988 in B; bred in H in 2002 and 2004); Northern Mockingbird (first Keweenaw record in 1962, first summer record in H in 1988, bred 2005); Kirtland's Warbler (B, first recorded in 1994, bred in 1995, 2005, a vagrant, probably irregular); and Northern Cardinal (B, H, since 1997). The turkey and cardinal might develop viable populations with continued feeding by man, whereas the warbler, which must rely on recruitment of additional vagrants from the Lower Peninsula, probably will not—adding to the data indicating that not all invaders survive (as with the Red-headed Woodpecker and Purple Martin, listed below). The distributions of the turkey, vireo, mockingbird, and cardinal might suggest slow regular northward expansion, but in fact, the turkey has little choice, spreading largely on foot; the cardinal is nearly as common, and the mockingbird more common, in Keweenaw Co. than elsewhere but they have not yet been found breeding there, perhaps due to inadequate coverage or rarity everywhere; and the vireo seems to be confined to one small area in B and adjacent H.

(4) Three are irregular breeders, probably in all three counties, and are not spreading: Cooper's Hawk (H, K), Yellow-billed Cuckoo (B, H, K), and Red-headed Woodpecker (B, H, K, currently extirpated).

(5) Seven are, or were, breeders only in B and/or H: Mute Swan (B, introduced, extirpated), Red-shouldered Hawk (B, H), Whip-poor-will (B, H), Purple Martin (B, H, extirpated), Wood Thrush (B, H), Eastern Towhee (B, H), and Baltimore Oriole (B, H). As noted above, most probably owe their absence in Keweenaw Co. to the scarcity or poor quality of their habitats; the swan has not been introduced in the county, and the Purple Martin is in trouble throughout the Midwest.

(6) Twelve seemingly breed, or bred, in all three counties but are much less common in K: Green Heron, Rock Pigeon, Mourning Dove, Eastern Wood-Pewee, White-breasted Nuthatch, House Wren, Gray Catbird, European Starling, Golden-winged Warbler, Eastern Meadowlark, House Finch, and House Sparrow. As with category 5, these have only limited habitat in Keweenaw Co.

(7) Three have invaded rather recently and spread quickly in a mosaic pattern throughout the Peninsula: Canada Goose (race *maxima*), Turkey Vulture, and Sandhill Crane.

(8) At least eight species have spread essentially throughout the Peninsula, apparently prehistorically: Wood Duck, Broad-winged Hawk, Ruby-throated Hummingbird, Great-crested Flycatcher, Veery, Pine Warbler, Scarlet Tanager, and Indigo Bunting. Many others (*e.g.*, American Redstart) probably evolved in the southeast but are now distributed well to the north and west in Canada.

Although some southern species are clearly spreading northward, perhaps in response to global warming, this analysis fails to demonstrate a spread from south to north *within* the Peninsula and, like the above analysis of all birds, indicates that habitat distribution and quality, rather than bird range and rarity, are the primary factors in determining Peninsular ranges. I suspect that the Peninsula is so small that most birds are able to occupy the entire area too quickly to allow discernment, even on the county level. Only for a few species that are actively spreading from recent local colonizations can distribution be attributed to range/rarity alone.

In my opinion, most migratory species first invade a new region through vagrancy (see Vagrancy), and because of the mobility of vagrants, do so in a mosaic pattern. Keweenaw data indicate that summer vagrants seek out the best available habitat, which is also where they are most likely to meet conspecifics. When they become plentiful enough, or lucky enough, to find mates, they might breed. This can happen anywhere in an area as small as the Keweenaw, especially considering that there are no purely southern habitats to which birds might be drawn. But initial colonization is most likely

to occur in Baraga and Houghton Cos., not because they are farther south but because they have more and better quality habitats than does Keweenaw Co.

Waterfowl and other species at sewage ponds.

In conjunction with my shorebird censuses at three sewage pond systems in northern Houghton County—Calumet, Lake Linden, and Tamarack City—I also counted adult and prejuvenile waterfowl and all other species directly associated, in nesting or foraging, with the open water, dry basins, emergent aquatic vegetation, or grassy dikes. For a description of these ponds and more details on methods, see Shorebird Migration at Sewage Ponds.

By my count, these three systems have hosted 88 species, including 11 breeding and 11 transient ducks and geese, 2 breeding and 25 non-breeding shorebirds, breeding American Kestrel, Tree Swallow, Eastern Bluebird (the latter three in nest boxes), Vesper Sparrow, Savannah Sparrow, Red-winged Blackbird, Brewer's Blackbird, and 32 other transients. Transient shorebirds and breeding waterfowl are of primary importance because of the limited amount of their aquatic habitats.

Counts of adult waterfowl were used in formulating the status of each species (see Species Accounts) and will not be discussed further. Censuses from 1986 to 2002 for the Lake Linden and Tamarack City sewage ponds are too incomplete to present here but are available from the author; these do demonstrate that ducks (not geese) breed there commonly, including such Michigan rarities as Gadwall, American Wigeon, Northern Shoveler, and Northern Pintail. The Canada Goose, Wood Duck, American Black Duck, Blue-winged Teal, Green-winged Teal, and Ring-necked Duck were found breeding only at Calumet, whereas the Gadwall and American Wigeon were restricted to Lake Linden and Tamarack City.

Colonization. Keweenaw data demonstrate that the rarer breeding ducks summer for a number of years before actually nesting. This has been true for Gadwall, American Wigeon, Northern Shoveler, Northern Pintail, and Common Goldeneye (see details in Species Accounts). Because the Bufflehead is regular in the first week of June, occasional later in summer, and breeds as close as Minnesota and western Ontario, I predict it will eventually nest on the Peninsula. The Lesser Scaup is well known to summer south of its breeding range. It has bred once in Michigan and might be expected to do so again. Because it nests in grass and other vegetation at the edges of ponds, it is a good candidate at *properly managed* sewage ponds, where most Keweenaw summer records have been obtained..

Unlike the above species, those waterfowl that are very unlikely to breed, judging from their ranges and habitats, have been recorded very rarely, if ever, in the Keweenaw in summer (number of summer records in parentheses): Greater White-fronted Goose (0), Snow Goose (2), Ross's Goose (0), Brant (0), Tundra Swan (4), Eurasian Wigeon (0), Greater Scaup (3), King Eider (0), Harlequin Duck (0), Surf Scoter (1), White-winged Scoter (0), Black Scoter (0), and Long-tailed Duck (1). The Canvasback (1), Redhead (1), and Ruddy Duck (4), have nested elsewhere in the state, but probably lack suitable breeding habitat in the Keweenaw. The status of Trumpeter and Mute Swans is obscured by introductions.

Waterfowl breeding success. In the summers of 1996 to 2002, during nearly weekly censuses of the Calumet sewage ponds, I tracked the development of waterfowl broods (Table 2). Brood size was based on the number of young when first discovered, so reflected early, but not late, mortality. I judge the former to have been considerable, based on published clutch sizes, but the latter minor, because the only predators are terrestrial mammals that eat the eggs or small land-bound young; no fish, large turtles, or threatening raptors are present. During the seven years, I counted 788 young in 121 broods of 9 species. This is an average of 112.6 young per year! The commonest species was the Ring-necked Duck, which does not nest within the facility but in an adjacent shrub-sedge wetland, using the ponds for foraging and raising broods. The Mallard and Blue-winged Teal were also common. The remaining six were relatively scarce, but included two Michigan rarities, the Northern Shoveler and Northern Pintail. From 1996 to 1998, the number of broods and young rose rapidly, as the aquatic vegetation and dike grass matured at this newly-made facility. However, in the summer of the latter year, by order of the Michigan Department of Environmental Quality, the grass was mowed and emergent aquatic vegetation dug out by the roots, resulting in drastic declines in 1999—64.0% in broods and 77.0% in young. With continued annual removal of the vegetation, breeding success remained low through 2004.

How many young waterfowl could be raised in one year at the Calumet ponds alone and at the three sewage pond systems combined if the ponds were allowed to mature naturally? Table 2 gives theoretical projected annual totals calculated by summing the maximum annual count for each species from 1996 to 2002 for Calumet alone and from 1986 to 2002 for the three combined; for example, the figures used for the Canada Goose were 6 broods and 30 young in 2001, and for the Blue-winged Teal, 6 and 48 in 2000. Given the small extent of these ponds, the results are amazing—32 broods and 239 young at Calumet alone and 53 and 395 for all ponds! And these figures are minimal, because they are based on years when the ponds had not yet matured and suffered from management practices counter-

Table 2. Breeding success of ducks and geese at the Calumet sewage ponds, Houghton Co., MI, 1996-2002. Also included are theoretical, projected annual totals for sewage ponds at Calumet (C) and at Calumet, Lake Linden (L), and Tamarack City (T) combined (see text). B = number of broods; Y = number of young in all broods combined when first observed.

Species	1996 B - Y	1997 B - Y	1998 B - Y	1999 B - Y	2000 B - Y	2001 B - Y	2002 B - Y	Total Broods	Total Young	Projected Totals, C	Projected Totals, C, L, T
Canada Goose	1 - 3	2 - 16	3 - 16	no count	4 - 18	6 - 30	5 - 24	21	107	6 - 30	6 - 30
Wood Duck			1 - 7					1	7	1 - 7	1 - 7
Gadwall								0	0	0	1 - 7
American Wigeon								0	0	0	3 - 29
American Black Duck	1 - 8	1 - 9	1 - 3					3	20	1 - 9	1 - 9
Mallard	3 - 19	4 - 34	6 - 39	2 - 7	2 - 16	4 - 17	2 - 17	23	149	6 - 39	20 - 144
Blue-winged Teal	1 - 8	1 - 10	6 - 39	1 - 6	6 - 48		2 - 13	17	124	6 - 48	6 - 48
Northern Shoveler					1 - 1		1 - 10	2	11	1 - 10	2 - 19
Northern Pintail		1 - 1						1	1	1 - 1	3 - 7
Green-winged Teal		2 - 10				1 - 5	1 - 9	4	24	2 - 10	2 - 10
Ring-necked Duck	10 - 63	8 - 71	8 - 44	6 - 21	3 - 20	8 - 85	6 - 41	49	345	8 - 85	8 - 85
Total Broods - Young	16 - 101	19 - 151	25 - 148	9 - 34	16 - 103	19 - 137	17 - 114	121	788	32 - 239	53 - 395
Total Species	5	7	6	3	5	4	6	9		9	11

productive for wildlife. With a little management, many more birds could be raised. Sewage ponds at Copper Harbor, Ahmeek, Chassell, Atlantic Mine, and Baraga also produce young waterfowl (see Species Accounts). Harnessing this potential resource throughout the United States might produce several million more ducks per year.

Management of sewage ponds for birds. Obviously, sewage ponds are meant for sewage disposal, so that it will not harm man or the environment, and secondarily for collecting spring snow meltoff (Calumet only), to avoid possible flooding. But I firmly believe that, with careful planning, Peninsula sewage ponds could be managed for birds as well, and with minimal effort (supplied mostly by volunteers) and *no additional funding*. Any plan to accomplish this must be developed by a consortium of avian ecologists, sewage management authorities, local governments, the Michigan Department of Environmental Equality, local volunteers (*e.g.*, Boy Scouts, school groups, Copper Country Audubon Club), and perhaps the US Fish and Wildlife Service, all of whom must believe in the importance of increasing the number of ducks and have a desire to provide them and other aquatic birds with more and better habitat. Although all wetland and grassland birds are important, the sewage ponds are especially valuable as habitat for transient shorebirds and breeding waterfowl (see discussion above and Shorebird Migration at Sewage Ponds). If managed for these groups, the ponds would automatically attract other species, even more so than they do now. Essential to any plan is the recognition that aquatic vegetation (especially emergents) and grassland on dikes and in adjacent fields must be allowed to grow freely and naturally, without cutting. The grassy areas are used by pond ducks and geese to hide their nests and recently hatched young. As it is, the grass is mowed so early in the summer that some birds find no habitat in which to nest, and some early nests and fledged young almost certainly are run over. Even ducks need safe shores for resting, preening, and sunning, and this is especially true of the young. The emergent aquatic vegetation is needed to hide the young, because they are flightless until full-sized, and as a reservoir for the invertebrate animals on which both adults and young feed.

As for transient shorebirds, the only necessary management would be to control the water level so that usable mud flats are available during as much of the shorebird season as practical for sewage treatment. For instance, water levels at the Lake Linden and Tamarack City ponds, which are close enough together that they are used by some of the same individual shorebirds, could be lowered at different times; this is especially true at Calumet, where the large number of ponds allows

rotation. As it is today, I find too often that all ponds are either dry or full. In this regard, I should point out that only ponds with receding water, not those that are being filled, support the invertebrate fauna sought by birds. The dabbling ducks prefer the same low water level.

Other ideas that could be implemented include the placement of nest boxes, made and deployed by volunteers, for Wood Ducks, Hooded Mergansers, American Kestrels, Tree Swallows, and Eastern Bluebirds. Minnows might be introduced into the permanent ponds to attract fish-eating waterbirds, including potentially breeding Hooded Mergansers and migrant loons and grebes. Some pond systems, such as at Calumet, might be opened to the public, including schools and nature clubs, for wildlife study and as an example of civic wildlife management, perhaps even for a small voluntary contribution or fee. The Lake Linden ponds already have an adjacent nature trail, where the only observable "nature" consists of planted grassland and the birds in the sewage ponds.

Effects of wildlife management. Aside from the benefits for birds and other wildlife, what would be the effect of such a plan on local governments? Sewage pond personnel would need to expend only a little more time in planning and controlling water levels (perhaps using a predetermined schedule or set of guidelines developed with the aid of ecologists), but this would be more than offset by avoiding the time and expense of removing aquatic and terrestrial vegetation. Local governments would benefit from the favorable publicity generated by the knowledge that they are doing something for the environment, especially in regard to increasing waterfowl populations for hunters (although hunting should not be allowed at the ponds); a successful venture here could become the pilot program for sewage facilities throughout the nation. Such use would not require supervision by pond personnel. Local economies would benefit from ecotourism—my friends and I, for instance, invariably purchase gas, fast foods, or lunch in Lake Linden when we visit its ponds, and I do almost all my business in Calumet after visiting its ponds. A book on bird-finding in Michigan (Chartier and Ziarno, 2004) mentions all three pond systems (and others), undoubtedly resulting in additional visits by tourists.

Millions of taxpayer dollars are spent annually on federal and state wildlife refuges and prairie potholes, primarily to enhance duck and goose populations for hunting. Sewage ponds here and throughout the country could provide important *ready-made* reservoirs for breeding and migrating waterfowl and transient shorebirds, and with little more management and no more funds than already expended for sewage treatment.

Migration

Here I consider various aspects of spring and fall migration not treated elsewhere (see Vagrancy, Raptor Migration, Shorebird Migration at Sewage Ponds, Waterbird Migration on Lake Superior, and Fall Translake Migrants). Table 3 lists taxonomically all available median arrival and departure dates, but for this discussion, the reader is referred to Tables 5, 6, 8, and 9, in which the same data are given chronologically. I attempt to correlate arrival and departure times and spans with various characteristics of certain taxonomic groups, and in some cases individual species, especially in relation to feeding habits and the chronology of habitat availability as controlled by the climatic change from winter to summer. These groups are waterfowl, shorebirds, flycatchers, vireos, swallows, warblers, and sparrows (Tables 4 and 7). Each group has its exceptions, which are in themselves enlightening; these are treated in a separate section at the end of this discussion. Various species in other taxonomic groups are also considered. A better approach would be to compare feeding guilds, but I do not have enough Keweenaw data to do this. With the information on hand, dates of specific events in habitat development can only be estimated. Information on feeding habits is primarily from Terres (1980).

Spring. I consider the normal spring period on the Keweenaw Peninsula to be approximately 26 Mar to 7 June, a period of 74 days. Spring median arrival dates for summer residents and transients cover most of this range, from 31 March (American Robin) to at least 31 May (Eastern Wood-Pewee), but vary considerably between groups. Also, given the 74-day length of spring, the arrival period for some taxonomic groups is remarkably abbreviated.

Migrant birds instinctively attempt to reach their breeding ground as early as possible, perhaps to preempt the best territories, maximize the breeding season, or synchronize hatching with peaks in food. Clearly, however, birds are migrating northward into an increasingly hostile environment, and those that arrive too early risk death. Although many factors are important to birds in spring, survival, in my opinion, hinges primarily on food availability. Given enough food, most birds can survive for a considerable length of time, even when exposed to inclement weather. Food availability is controlled by the effects of climate on the habitat, *i.e.*, as the climate improves, habitats change from winter to summer conditions, and food, such as invertebrates, fish, and rodents, becomes available concomitantly. Superimposed on this general change is variability from year to year. I judge the range of variation in most parameters (*e.g.*, temperature, thawing of ice and snow, leaf and flower development, and insect emergence) to be at least 21 days between an "early spring" and a

Table 3. Median annual extreme dates for spring arrival (SMAD), spring departure (SMDD), fall arrival (FMAD), and fall departure (FMDD) of birds on the Keweenaw Peninsula, MI. Sample sizes are in parentheses.

Species	SMAD (n)	SMDD (n)	FMAD (n)	FMDD (n)
Snow Goose			26 Sep (14)	18 Oct (14)
Cackling Goose			27 Sep (9)	20 Oct (9)
Canada Goose	18 Apr (25)	27 Apr (18)	14 Sep (26)	19 Oct (24)
Tundra Swan	21 Apr (18)	14 May (14)		16 Nov (10)
Wood Duck	18 Apr (26)			30 Sep (21)
Gadwall	15 Apr (5)		29 Jul (9)	
American Wigeon	18 Apr (20)			10 Oct (14)
American Black Duck	15 Apr (10)			
Mallard	8 Apr (27)			
Blue-winged Teal	22 Apr (26)			23 Sep (8)
Northern Shoveler	22 Apr (18)			23 Sep (8)
Northern Pintail	23 Apr (20)			19 Oct (17)
Green-winged Teal	18 Apr (20)			19 Oct (16)
Canvasback	20 Apr (12)			3 Nov (8)
Redhead	25 Apr (17)	19 May (12)	20 Sep (11)	21 Nov (10)
Ring-necked Duck	18 Apr (23)			30 Nov (14)
Greater Scaup			25 Sep (10)	
Lesser Scaup	18 Apr (22)		30 Sep (18)	
Surf Scoter			24 Sep (13)	8 Nov (8)
White-winged Scoter			27 Sep (12)	3 Dec (11)
Black Scoter			14 Oct (10)	13 Dec (8)
Long-tailed Duck			11 Oct (8)	15 Dec (11)
Bufflehead	15 Apr (26)	17 May (22)	12 Oct (20)	13 Dec (16)
Common Goldeneye	1 Apr (22)			
Hooded Merganser	13 Apr (24)			
Common Merganser	9 Apr (23)			
Red-breasted Merganser	19 Apr (23)			28 Nov (9)
Common Loon	26 Apr (27)			15 Nov (23)
Pied-billed Grebe	16 Apr (27)			2 Oct (18)
Horned Grebe	29 Apr (20)	11 May (13)	23 Aug (9)	8 Nov (21)
Red-necked Grebe	22 Apr (12)	12 May (7)	12 Aug (5)	29 Nov (12)
Double-crested Cormorant	3 May (19)			13 Oct (14)
American Bittern	1 May (15)			
Great Blue Heron	11 Apr (28)			7 Oct (20)
Green Heron	21 May (14)			
Turkey Vulture	19 Apr (21)			7 Oct (8)
Osprey	26 Apr (19)			30 Sep (10)
Northern Harrier	10 Apr (26)			14 Oct (22)
Broad-winged Hawk	27 Apr (24)			10 Sep (13)
Red-tailed Hawk	15 Apr (26)			7 Sep (14)
Rough-legged Hawk	13 Apr (24)	15 May (22)	13 Oct (16)	11 Nov (18)
American Kestrel	13 Apr (27)			14 Sep (23)
Merlin	12 Apr (15)			13 Oct (13)
Peregrine Falcon	5 May (14)	23 May (11)	23 Sep (12)	3 Oct (16)
Virginia Rail	14 May (7)			
Sora	12 May (14)			23 Sep (8)
American Coot	29 Apr (13)	23 May (12)	25 Sep (17)	23 Oct (19)
Sandhill Crane	12 Apr (19)	9 Jun (8)		21 Sep (10)
Black-bellied Plover	17 May (10)	2 Jun (9)	7 Sep (10)	15 Oct (16)
American Golden-Plover			13 Sep (18)	2 Oct (17)
Semipalmated Plover	18 May (15)	2 Jun (13)	25 Jul (18)	17 Sep (17)
Killdeer	2 Apr (26)			27 Sep (10)
Greater Yellowlegs	27 Apr (22)	13 May (18)	25 Jul (12)	15 Oct (9)
Lesser Yellowlegs	28 Apr (18)	20 May (17)	30 Jun (13)	10 Sep (13)
Solitary Sandpiper	10 May (14)	22 May (14)	11 Jul (13)	13 Sep (11)
Spotted Sandpiper	11 May (26)			31 Aug (24)
Upland Sandpiper	7 May (27)			
Hudsonian Godwit	15 May (13)			
Ruddy Turnstone	15 May (6)	27 May (6)		

Table 3 (continued)

Species	SMAD (n)	SMDD (n)	FMAD (n)	FMDD (n)
Sanderling				24 Sep (16)
Semipalmated Sandpiper	18 May (13)	7 Jun (14)	25 Jul (18)	30 Aug (21)
Least Sandpiper	16 May (12)	27 May (11)	5 Jul (14)	18 Sep (11)
Baird's Sandpiper			8 Aug (13)	16 Sep (12)
Pectoral Sandpiper	12 May (9)	1 Jun (7)	18 Jul (12)	17 Oct (15)
Dunlin	15 May (14)	29 May (14)		17 Oct (5)
Stilt Sandpiper			8 Aug (9)	1 Sep (9)
Buff-breasted Sandpiper			7 Aug (12)	13 Sep (13)
dowitcher sp	15 May (14)		20 Jul (11)	28 Aug (8)
Wilson's Snipe	20 Apr (28)			15 Oct (23)
American Woodcock	8 Apr (20)			26 Oct (8)
Wilson's Phalarope	13 May (10)			
Bonaparte's Gull	6 May (15)	19 May (9)	20 Aug (18)	19 Oct (18)
Ring-billed Gull	28 Mar (25)			
Caspian Tern	17 May (7)			
Common Tern	14 May (11)			
Mourning Dove	31 Mar (13)			
Black-billed Cuckoo	28 May (18)			
Short-eared Owl	18 Apr (12)			
Common Nighthawk	25 May (8)			4 Sep (12)
Whip-poor-will	10 May (9)			
Chimney Swift	21 May (26)			11 Aug (20)
Ruby-thr. Hummingbird	14 May (11)			17 Sep (12)
Belted Kingfisher	18 Apr (28)			4 Oct (20)
Red-headed Woodpecker	19 May (12)	2 Jun (5)		20 Sep (7)
Yellow-bellied Sapsucker	17 Apr (24)			25 Sep (13)
Northern Flicker	19 Apr (28)			27 Sep (27)
Olive-sided Flycatcher	25 May (18)			14 Aug (13)
Eastern Wood-Pewee	31 May (11)			26 Aug (11)
Yellow-bellied Flycatcher	27 May (10)			
Alder Flycatcher	25 May (24)			13 Aug (11)
Least Flycatcher	21 May (24)			2 Sep (7)
Eastern Phoebe	14 Apr (24)			13 Sep (23)
Great Crested Flycatcher	23 May (23)			
Eastern Kingbird	15 May (30)			23 Aug (24)
Northern Shrike		16 Apr (21)	9 Oct (14)	
Blue-headed Vireo	13 May (15)			15 Sep (8)
Warbling Vireo	26 May (6)			
Philadelphia Vireo	23 May (6)			1 Sep (9)
Red-eyed Vireo	23 May (26)			25 Sep (8)
Horned Lark			24 Sep (22)	15 Oct (20)
Tree Swallow	17 Apr (27)			2 Aug (27)
N. Rough-winged Swallow	20 May (12)			
Bank Swallow	18 May (26)			11 Aug (18)
Cliff Swallow	16 May (29)			16 Aug (25)
Barn Swallow	2 May (28)			30 Aug (24)
Brown Creeper	7 Apr (8)			
Winter Wren	13 Apr (15)			
Sedge Wren	7 May (4)			
Ruby-crowned Kinglet	26 Apr (26)	21 May (22)	12 Sep (15)	15 Oct (15)
Eastern Bluebird	22 Apr (16)			5 Oct (19)
Veery	19 May (28)			4 Sep (12)
Gray-cheeked Thrush			13 Sep (9)	
Swainson's Thrush	20 May (9)		4 Sep (8)	21 Sep (15)
Hermit Thrush	28 Apr (16)			2 Oct (18)
American Robin	26 Mar (27)			19 Oct (24)
Gray Catbird	21 May (25)			20 Sep (14)
Northern Mockingbird	14 May (17)			
Brown Thrasher	8 May (26)			19 Sep (8)
American Pipit	7 May (10)	27 May (9)	20 Sep (16)	10 Oct (11)
Cedar Waxwing	26 May (16)			14 Sep (27)

Table 3 (continued)

Species	SMAD (n)	SMDD (n)	FMAD (n)	FMDD (n)
Golden-winged Warbler	19 May (9)			17 Aug (6)
Tennessee Warbler	20 May (21)			23 Sep (16)
Orange-crowned Warbler	16 May (11)	25 May (7)	18 Sep (8)	13 Oct (8)
Nashville Warbler	14 May (27)			15 Sep (21)
Northern Parula	17 May (12)			15 Sep (10)
Yellow Warbler	18 May (27)			
Chestnut-sided Warbler	18 May (28)			24 Aug (11)
Magnolia Warbler	17 May (27)			23 Sep (10)
Cape May Warbler	14 May (20)			23 Sep (8)
Black-throated Blue Warbler	21 May (11)			
Yellow-rumped Warbler	26 Apr (28)			12 Oct (25)
Black-throated Green Warbler	15 May (22)			21 Sep (12)
Blackburnian Warbler	19 May (18)			
Pine Warbler	5 May (6)			15 Sep (8)
Palm Warbler	6 May (24)	22 May (24)	3 Sep (27)	8 Oct (27)
Bay-breasted Warbler	21 May (13)			
Blackpoll Warbler	19 May (12)	29 May (9)	1 Sep (16)	23 Sep (12)
Black-and-white Warbler	14 May (28)			15 Sep (9)
American Redstart	18 May (29)			15 Sep (20)
Ovenbird	16 May (28)			15 Sep (14)
Northern Waterthrush	18 May (13)			27 Aug (8)
Mourning Warbler	28 May (18)			27 Aug (10)
Common Yellowthroat	20 May (27)			17 Sep (22)
Wilson's Warbler	19 May (27)	30 May (20)		
Canada Warbler	25 May (19)			23 Aug (7)
Scarlet Tanager	24 May (15)			23 Aug (10)
American Tree Sparrow	9 Apr (21)	4 May (23)	28 Sep (10)	
Chipping Sparrow	6 May (30)			6 Oct (14)
Clay-colored Sparrow	10 May (18)			
Vesper Sparow	29 Apr (16)			24 Sep (18)
Savannah Sparrow	25 Apr (28)			15 Oct (7)
Fox Sparrow	15 Apr (20)	3 May (13)	29 Sep (10)	16 Oct (15)
Song Sparrow	8 Apr (27)			13 Oct (25)
Lincoln's Sparrow	10 May (14)	25 May (9)	8 Sep (18)	13 Oct (20)
Swamp Sparrow	25 Apr (4)			13 Oct (12)
White-throated Sparrow	24 Apr (28)			17 Oct (18)
Harris's Sparrow	13 May (11)		26 Sep (21)	13 Oct (19)
White-crowned Sparrow	6 May (26)	20 May (24)	17 Sep (26)	13 Oct (27)
Dark-eyed Junco	31 Mar (27)	11 May (27)	31 Aug (10)	
Lapland Longspur	10 May (12)		23 Sep (21)	14 Oct (15)
Snow Bunting		28 Apr (15)	16 Oct (27)	
Rose-breasted Grosbeak	16 May (29)			6 Sep (13)
Indigo Bunting	25 May (22)			
Bobolink	16 May (30)			24 Aug (22)
Red-winged Blackbird	1 Apr (28)			
Rusty Blackbird	26 Apr (18)		23 Sep (16)	11 Oct (15)
Brewer's Blackbird	4 May (19)			
Common Grackle	6 Apr (28)			
Brown-headed Cowbird	12 Apr (26)			
Baltimore Oriole	18 May (24)			15 Aug (7)
Pine Grosbeak		20 Mar (10)	14 Nov (20)	
Common Redpoll		20 Apr (17)	15 Nov (22)	
American Goldfinch	14 May (18)		11 Nov (8)	
Evening Grosbeak	5 May (24)		9 Oct (16)	

"late spring." Because early arrival during a late spring would be fatal for many birds, it is imperative for each species or foraging guild to evolve a pattern of timing that assures its arrival when sufficient food is available.

In the Keweenaw, most winters are characterized by sub-zero temperatures, deeply snow-covered land, and frozen waters (usually excepting the offshore portions of Lake Superior, which are too deep for foraging anyway). During spring, rising temperature is the primary factor causing annual habitat development. Temperatures increase from about mid March to mid July, but are characterized by irregular and frequent, and therefore important, surges (some as early as February) and setbacks (some as late as mid May). Major events in spring climate and habitat development are given below, with emphasis on the latest dates when they are completed (LB data).

Feb and Mar: large bays open and close irregularly.

Last week of Mar: ice usually gone from large bays and rushing streams (rarely, float ice fills L'Anse Bay into mid May); ice and *winter* snow begin to disappear from open habitats (marshes, fields, and at least edges of shallow ponds, streams, and shrub wetlands), where the sun has maximum effect, in wetlands thawing the ground beneath. Minor local flooding occurs. *Spring* snows continue.

15 Apr: melting of ice and winter snow completed in open vegetated habitats, causing heavy flooding. Inland lakes begin thawing. Insects begin to appear, especially over aquatic habitats. Foliage may begin to develop in early springs, always to be stalled later. Light spring snows continue.

First week of May: significant spring snows end. Last lakes open. Flooding abates; river bars emerge unless spring runoff is too great. More terrestrial insects emerge.

Second week of May: all snow has melted off floor of level and south-facing forests.

Mid May (ca 17 May): in all springs, even late ones, foliage and flowers on herbs and deciduous shrubs and trees have begun to emerge, first on quaking aspen and white birch. Many insects appear.

First week of Jun: last ice and snow disappear from shaded north-facing sites and Lake Superior shores.

Mid Jun: foliage completely developed.

Late Jun to mid Jul: insects peak.

Timing of spring arrival. Average spring arrival of the seven bird groups treated here ranges from 19 Apr to 24 May (Table 4; see also Table 5). These dates, I suggest, reflect shared characteristics, mostly in foraging guilds, within each group, and in some cases between groups, that are correlated with the environmental events mentioned above.

Most of the 17 species of waterfowl (excluding the listed exceptions) are grazers, dabblers, or shallow divers that can feed largely on vegetable matter. Except during early springs, these birds do not arrive at first thaw in late March, when their habitats begin to open, but allow for the three-week annual variation in climate and habitat development, arriving on average 19 Apr (range 13-25 Apr), when their marsh, field, and shallow pond habitats are assured of being open, which happens about 15 Apr. Early flooding does not hamper, in fact benefits, waterfowl (but see marsh passerines below). The marsh inhabiting Pied-billed Grebe (16 Apr) also fits this pattern, and the Common Loon (26 April), Horned Grebe (29 April), Red-necked Grebe (22 Apr), and Osprey (26 Apr) arrive about the same time or slightly later, more closely coincident with the thawing of some of the larger inland lakes, especially those in the southern part of the Peninsula.

Arrival of the 15 shorebirds averages 12 May (range 27 Apr-18 May). All feed on invertebrate animals in aquatic habitats (including edge) or flooded fields. Because foraging strategies vary considerably, their timing must be examined in more detail. Keweenaw beaches are rather devoid of invertebrate life, and in my experience are used mostly for resting, not foraging. I do not treat sewage ponds, because their water level is controlled by man, and some are usually full of snow meltoff in spring. During most years, the two best spring habitats, marshes and river mouth bars, are inundated by meltoff in early spring, leaving only flooded fields for shorebirds. Perhaps this is why the two wading yellowlegs 27, 28 Apr. are the first to arrive (but see exceptions)—some 12 days before the next aquatic shorebird, the Solitary Sandpiper. The Upland Sandpiper, which arrives next (7 May), shares grassland habitat with the sparrows (which see) and has a similar timing. The next two, Solitary Sandpiper (10 May) and Spotted Sandpiper (11 May), forage at water's edge, most of which becomes available only after spring runoff recedes from ponds, lakes, and rivers, sometimes in late April but usually not until early May. The river mouth bars and marsh mud flats used by most of the remaining species become available about the same time. Two of the latest species, Black-bellied (17 May) and Semipalmated (18 May) Plovers, perhaps delay until the marshes and fields have dried to suit their run-and-peck foraging methods, and insects—their primary food—have emerged in numbers, both of which occur in mid May. This same schedule of habitat exposure after spring flooding may well pertain to the northern Great Plains, where much larger populations of shorebirds migrate.

Table 4. Spring median arrival dates for selected taxonomic groups of species on the Keweenaw Peninsula, MI. Data from Table 3. All data exclude the listed exceptions.

Group	Number of Species	Mean Arrival Date	Arrival Period	Days in Arrival Period	Exceptions
Waterfowl	17	19 Apr	13-25 Apr	13	Mallard (8 Apr), Common Goldeneye (1 Apr), Common Merganser (8 Apr)
Shorebirds	15	12 May	27 Apr-18 May	22	Killdeer (2 Apr), Common Snipe (20 Apr), American Woodcock (8 Apr)
Flycatchers	7	24 May	15-31 May	17	Eastern Phoebe (14 Apr)
Vireos	3	21 May	23-26 May	4	Blue-headed Vireo (13 May)
Swallows	4	14 May	2-20 May	19	Tree Swallow (17 Apr)
Warblers	22	18 May	14-28 May	15	Yellow-rumped (26 Apr), Pine (5 May), Palm (6 May)
Sparrows	9	3 May	24 Apr-13 May	20	American Tree (9 Apr), Fox (15 Apr), Song (8 Apr), Dark-eyed Junco (31 Mar)

Flycatchers (7 species) are the latest group to arrive (mean 24 May, range 15-31 May); the lone exception is the Eastern Phoebe. As aerial foragers, they must arrive when the late flying insects have emerged, such as mayflies, caddisflies, blackflies, houseflies, horseflies, deerflies, mosquitoes, and most dragonflies and butterflies. Considering all bird species for which I have spring median arrival dates (Table 5), 8 of the latest 19 (42.1%) are aerial foragers, including 6 flycatchers, Chimney Swift (21 May), and Common Nighthawk (25 May). Put another way, of the total 10, non-swallow, aerial foragers, 8 arrive very late, 20-31 May (average 25 May), the exceptions being Whip-poor-will (10 May) and Eastern Kingbird (15 May).

The four swallows (mean 14 May, range 2-20 May), which catch insects in or over water and clearings, arrive slightly earlier than warblers and apparently also time their arrival with the first major emergence of insects in mid May; the main exception is the Tree Swallow. The Barn Swallow (2 May) is earlier than the other three and perhaps should be treated as an exception. Swallows average about 10 days earlier than other aerial foragers (see flycatchers above), when I think they take advantage of the early swarms of insects that mate over open areas, especially water.

Warblers (22 species, mean 18 May, range 4-28 May) and vireos (3 species, 21 May, 23-26 May) arrive late and about the same time. I treat them together because they are in the same broad foraging guild and have similar timing. All are insectivorous, and most are forest dwellers. Because the appearance of insects, foliage, and arboreal flowers are all attuned to temperature, they emerge together, sometimes as early as mid Apr (always to be stalled later), but at latest about 17 May, just before the average arrival of warblers. Other insectivorous species that fit this pattern are Black-billed Cuckoo (28 May), Veery (19 May), Swainson's Thrush (20 May), Gray Catbird (21 May), Scarlet Tanager (24 May), Rose-breasted Grosbeak (16 May), Indigo Bunting (28 May), and Baltimore Oriole (18 May). Perhaps the cuckoo arrives latest to allow for its caterpillar prey to fatten for the kill.

The average arrival for the nine sparrows is 3 May (range 24 Apr-13 May), at a time when insects are emerging but still scarce. Although sparrows are primarily insectivorous in summer, in spring they feed in open habitats on the previous year's grass and weed seeds, which begin to become uncovered in late March. That the birds do not arrive then is, I suggest, because as late as early May irregular *spring* snows inundate the ground for several days at a time, grasslands and marsh (which are flattened by winter snow) are often flooded by snow melt, and new plants, with their insects, have not yet matured enough to allow foraging (and cover). Other marsh and field passerines that eat seeds (as well as insects) and fit this date pattern are Sedge Wren (7 May), American Pipit (7 May), Lapland Longspur (10 May), and Brewer's Blackbird (4 May).

Other species are also of interest. The secretive Virginia Rail (14 May) and Sora (12 May) do not arrive with the marsh-feeding ducks, but, I suspect, must wait until the marsh vegetation, which is killed and flattened by winter snow, regrows enough to provide cover. The Sandhill Crane (12 Apr) and Short-eared Owl (18 Apr) can occupy all but their most flooded habitats when they become permanently available in mid Apr. See also, Exceptions below.

From the above, it seems likely that arrival is not

Table 5. Spring median arrival dates (SMAD) and spring earliest arrival dates (SEAD) for migrating individuals of birds on the Keweenaw Peninsula, MI, presented chronologically to allow comparisons and anticipation of events. See Species Accounts for sample sizes and for spring earliest arrival dates of other species.

SMAD	Species	SEAD
Mar 26	American Robin	7 Mar
28	Ring-billed Gull	27 Feb
31	Mourning Dove	20 Mar
	Dark-eyed Junco	7 Mar
Apr 1	Common Goldeneye	11 Mar
	Red-winged Blackbird	10 Mar
2	Killdeer	26 Feb
6	Common Grackle	7 Mar
7	Brown Creeper	1 Apr
8	Mallard	13 Mar
	American Woodcock	20 Mar
	Song Sparrow	27 Mar
9	Common Merganser	12 Mar
	American Tree Sparrow	11 Mar
10	Northern Harrier	6 Mar
11	Great Blue Heron	24 Mar
12	Merlin	23 Mar
	Sandhill Crane	23 Mar
	Brown-headed Cowbird	23 Mar
13	Hooded Merganser	22 Mar
	Rough-legged Hawk	14 Mar
	American Kestrel	20 Mar
	Winter Wren	2 Apr
14	Eastern Phoebe	28 Mar
15	Gadwall	24 Mar
	American Black Duck	22 Mar
	Bufflehead	24 Mar
	Red-tailed Hawk	18 Mar
	Fox Sparrow	4 Apr
16	Pied-billed Grebe	14 Mar
17	Yellow-bellied Sapsucker	4 Apr
	Tree Swallow	4 Apr
18	Canada Goose	7 Mar
	Wood Duck	24 Mar
	American Wigeon	18 Mar
	Green-winged Teal	23 Mar
	Ring-necked Duck	24 Mar
	Lesser Scaup	1 Apr
	Short-eared Owl	30 Mar
	Belted Kingfisher	31 Mar
19	Turkey Vulture	2 Apr
	Red-breasted Merganser	18 Mar
	Northern Flicker	25 Mar
20	Canvasback	28 Mar
	Wilson's Snipe	30 Mar
21	Tundra Swan	25 Mar
22	Red-necked Grebe	4 Apr
	Blue-winged Teal	28 Mar
	Northern Shoveler	28 Mar
	Eastern Bluebird	28 Mar
23	Northern Pintail	13 Mar
24	White-throated Sparrow	28 Mar
25	Redhead	20 Mar
	Savannah Sparrow	2 Apr
	Swamp Sparrow	15 Apr
26	Common Loon	1 Apr
	Osprey	9 Apr
	Ruby-crowned Kinglet	6 Apr
	Yellow-rumped Warbler	6 Apr
	Rusty Blackbird	25 Mar
27	Broad-winged Hawk	11 Apr
	Greater Yellowlegs	11 Apr
28	Lesser Yellowlegs	12 Apr
	Hermit Thrush	12 Apr
29	Horned Grebe	5 Apr
	American Coot	29 Mar
	Vesper Sparrow	10 Apr
May 1	American Bittern	15 Apr
2	Barn Swallow	23 Apr
3	Double-crested Cormorant	14 Apr
4	Brewer's Blackbird	16 Apr
5	Peregrine Falcon	17 Apr
	Pine Warbler	29 Apr
	Evening Grosbeak	22 Apr
6	Bonaparte's Gull	20 Apr
	Palm Warbler	27 Apr
	Chipping Sparrow	13 Apr
	White-crowned Sparrow	28 Apr
7	Upland Sandpiper	27 Apr
	Sedge Wren	30 Apr
	American Pipit	30 Apr
8	Brown Thrasher	11 Apr
10	Solitary Sandpiper	29 Apr
	Whip-poor-will	1 May
	Clay-colored Sparrow	4 May
	Lincoln's Sparrow	1 May
	Lapland Longspur	21 Mar
11	Spotted Sandpiper	22 Apr
12	Sora	26 Apr
	Pectoral Sandpiper	24 Apr
13	Wilson's Phalarope	5 May
	Blue-headed Vireo	26 Apr
	Harris's Sparrow	25 Apr
14	Virginia Rail	26 Apr
	Common Tern	2 May
	Ruby-throated Hummingbird	3 May
14	Northern Mockingbird	25 Apr
	Nashville Warbler	30 Apr
	Cape May Warbler	3 May
	Black-and-white Warbler	24 Apr
	American Goldfinch	4 May
15	Hudsonian Godwit	28 Apr
	Ruddy Turnstone	7 May
	Dunlin	9 May
	dowitcher sp.	7 May
	Eastern Kingbird	4 May

Table 5 (continued)

SMAD	Species	SEAD
	Black-throated Green Warbler	28 Apr
16	Least Sandpiper	5 May
	Cliff Swallow	2 May
	Orange-crowned Warbler	1 May
	Ovenbird	4 May
	Rose-breasted Grosbeak	4 May
	Bobolink	7 May
17	Black-bellied Plover	2 May
	Caspian Tern	6 May
	Northern Parula	2 May
	Magnolia Warbler	8 May
18	Semipalmated Plover	5 May
	Semipalmated Sandpiper	13 May
	Bank Swallow	6 May
	Yellow Warbler	2 May
	Chestnut-sided Warbler	6 May
	American Redstart	11 May
	Northern Waterthrush	1 May
	Baltimore Oriole	29 Apr
19	Red-headed Woodpecker	8 May
	Veery	8 May
	Golden-winged Warbler	13 May
	Blackburnian Warbler	7 May
	Blackpoll Warbler	14 May
	Wilson's Warbler	6 May
20	N. Rough-winged Swallow	30 Apr
	Swainson's Thrush	22 Apr
	Tennessee Warbler	10 May
	Common Yellowthroat	6 May
21	Green Heron	16 Apr
	Chimney Swift	2 May
	Least Flycatcher	6 May
	Gray Catbird	5 May
	Black-throated Blue Warbler	8 May
	Bay-breasted Warbler	10 May
23	Great Crested Flycatcher	7 May
	Philadelphia Vireo	12 May
	Red-eyed Vireo	6 May
24	Scarlet Tanager	12 May
25	Common Nighthawk	21 May
	Olive-sided Flycatcher	16 May
	Alder Flycatcher	16 May
	Canada Warbler	19 May
	Indigo Bunting	2 May
26	Warbling Vireo	5 May
	Cedar Waxwing	11 May
27	Yellow-bellied Flycatcher	17 May
28	Black-billed Cuckoo	17 May
	Mourning Warbler	16 May
31	Eastern Wood-Pewee	12 May

timed with the *earliest* nor even the *average* date when food is available, because this can vary from year to year by as much as three weeks, but to the *latest time*, when birds are *guaranteed* that the adverse climatic conditions of a late spring will no longer obscure or destroy food resources. This suggests that in an early spring the development of habitats could be well advanced and food plentiful before the birds arrive, and indeed, this happens in the Keweenaw. For instance, on 28 Apr 1998 at Agate Harbor, Keweenaw Co., temperatures were warm, deciduous trees blooming and leafing out, and insects plentiful, but few insectivores except the early exceptional species had yet arrived; the first major flight was on a normal date, 14 May. The same conditions prevailed at Agate Harbor on 26 Apr 2001, with good foliage and many insects (even ants, which tend to emerge later), but major flights of insectivores did not appear until 16 and 19 May. Nevertheless, the same weather patterns that cause the habitats, with their food, to develop early also allow a few individual birds to arrive early. During both years, early "windows" in southerly positioned fronts allowed warm air to reach the Keweenaw and accelerate spring conditions. These windows closed before most birds were far enough north to take advantage of them, but some did get through; 1998 produced 7 all-time earliest arrival dates, and 2001 was the earliest migration I have witnessed, with 25 species providing first or second earliest records. Because these springs were advanced, food was available, and these individuals were rewarded with first choice of the best territories and a longer summer in which to breed. Selection against early arrival should occur during *late* springs, when early birds cannot find enough food and potentially perish. Such a spring occurred in 2002, when at Agate Harbor the trees were leafless and insects virtually absent on 15 May; conditions improved on 17 May, and the first major flight arrived on 21 May, a week later than usual. No mortality was reported. That negative selection does not result in wholesale slaughter every cold spring is because the birds are somehow adapted to arriving at the latest possible time that their food first becomes assured. Just how birds coordinate arrival time with habitat development every year is uncertain and well beyond the scope of this discussion. In my opinion, the same weather patterns that cause delayed development of habitats also retard migration, but this probably is only part of the solution (see further discussion under Rate of Spring Migration below).

Span of spring arrival. Table 4 gives the date limits and span of the spring arrival period for the seven taxonomic groups. Spans vary from 4 to 22 days, remarkably short, considering the 74-day length of spring. And if we disregard the short 4-day span for vireos, a fair treatment because their arrival dates and foraging guild are the

same as for warblers, spans become very similar, 13 to 22 days. Thus, all species in a particular guild (as partly defined by habitat) seem to arrive more or less together in spring. I attribute this to a trade-off between the instinctive urge to migrate quickly to reach the breeding grounds as soon as possible and the necessity of lagging just enough to assure adequate food enroute and at the destination. I predict that when spring median arrival dates are more clearly defined, interspecific differences within foraging guilds (and habitats and taxonomic groups) will be found to be less, producing even shorter and more similar spans.

Timing of spring departure. Few data are available for spring departure, because transient individuals usually cannot be separated from breeders. Nevertheless, a few interesting facts can be drawn from Table 6. Among the 16 exceptionally early species listed in Table 4, 4 also depart early: Palm Warbler (22 May), American Tree Sparrow (4 May), Fox Sparrow (3 May), and Dark-eyed Junco (11 May); the other 12 early species lack median departure dates because they are summer residents. A similar pattern is exhibited by the Ruby-crowned Kinglet (21 May) and the four winter residents for which I have median departure dates: Northern Shrike (16 April), Snow Bunting (28 April), Pine Grosbeak (20 March), and Common Redpoll (20 April). The nomadic and partially frugivorous grosbeak leaves especially early, probably because by late March most berries and much of the arboreal seed crop have been exhausted. Depature dates for the Palm Warbler and kinglet might seem late, but most insectivorous transients remain even later. For all nine species, adaptation to the harsh foraging conditions in the Keweenaw make them "preadapted" to similar conditions farther north. The shrike, for instance, can feed on the very same redpolls and Snow Buntings that it accompanies northward.

Span of spring departure. The spring departure period (Table 6) for 10 species of shorebirds is 13 May to 7 June, or 26 days, about the same as the 22-day span in arrival. For sparrows (but n=only 5), the departure period is 3-25 May, or 23 days, similar to the 20-day span in arrival. The minor differences of 4 and 3 days, respectively, probably are an artifact of the data, wherein departure dates are more difficult to determine and thus less accurate. Departure and arrival spans are similar in length, because both are controlled by the same influences (see Span of Spring Arrival).

Rate of spring migration. In the Keweenaw, the rate of spring migration for transient species (*i.e.*, non-breeders) increases as the season progresses, as demonstrated by a decrease in the number of days between the median arrival date and median departure date for 27 pure transients (Fig. 6; data from Table 3). Expressed numerically, the length of stay for the earliest 9 of the 27 averaged 24.6 days (range 17-33); the second 9, 17.6 days (13-25); and the last 9, 14.1 days (10-21). The overall mean was 18.7 days (range 10-33).

Table 6. Spring median departure dates (SMDD) and spring latest departure dates (SLDD) for migrating individuals of birds on the Keweenaw Peninsula, MI, presented chronologically to allow comparisons and anticipation of events. See Species Accounts for sample sizes and for spring latest departure dates of additional species.

SMDD	Species	SLDD
Apr 16	Northern Shrike	4 May
20	Common Redpoll	24 May
27	Canada Goose	16 Jun
28	Snow Bunting	25 May
May 3	Fox Sparrow	22 May
4	American Tree Sparrow	21 May
11	Horned Grebe	9 Jun
	Dark-eyed Junco	29 May
12	Red-necked Grebe	13 Jun
13	Greater Yellowlegs	3 Jun
14	Tundra Swan	14 Jun
15	Rough-legged Hawk	10 Jun
17	Bufflehead	9 Jun
19	Redhead	3 Jun
	Bonaparte's Gull	8 Jun
20	Lesser Yellowlegs	18 Jun
	White-crowned Sparrow	5 Jun
21	Ruby-crowned Kinglet	5 Jun
22	Solitary Sandpiper	10 Jun
	Palm Warbler	15 Jun
23	Peregrine Falcon	19 Jun
	American Coot	14 Jun
25	Orange-crowned Warbler	30 May
	Lincoln's Sparrow	5 Jun
27	Least Sandpiper	15 Jun
	Ruddy Turnstone	14 Jun
	American Pipit	2 Jun
29	Dunlin	8 Jun
	Blackpoll Warbler	19 Jun
30	Wilson's Warbler	14 Jun
Jun 1	Pectoral Sandpiper	14 Jun
2	Black-bellied Plover	9 Jun
	Semipalmated Plover	10 Jun
	Red-headed Woodpecker	12 Jun
7	Semipalmated Sandpiper	18 Jun
9	Sandhill Crane	16 Jun

Spring concentrations and fallouts. Fallouts are large concentrations of grounded nocturnal migrants that appear suddenly after a night's flight. As noted above, these rarely happen in the Keweenaw. The only fallouts I have witnessed or heard of in 20 springs were on the north coast of Keweenaw Co. from Agate Harbor to Copper Harbor, where Lake Superior concentrates birds. One such flight involved only a single patch of woods at Copper Harbor on 20 May 1999. In 75 min standing in one spot, I recorded 96 individuals of 42 species. On 22 and 23 May 2002 I witnessed (with J. M. Musser on 22

May) a phenomenal movement of passerines flying just above the treetops in a narrow westward stream over the tip of the North Point, Agate Harbor. They followed the very first trees inland from Lake Superior, avoiding the coastal rocks and inner bay shore, where they would be exposed to foraging Merlins. On 22 May, during a 7-min period, I counted 455 birds, which extrapolated to the 45 min we stayed (0625-0710 EDT), amounted to 2925 birds. But 23 May was even more spectacular. I watched from 0655 to 0915. From 0655 to 0703 (8 min) I counted 600 birds, and from 0725 to 0737 (12 min), another 1238, for a total of 1838 in 20 min, or 91.9 per min and 5514 per hour. This flight continued unabated until 0750, then slowed gradually to virtual termination at 0915. Allowing for an average 50% reduction from 0750 to 0915, 8960 birds passed. However, assuming this flight started by at least 0630 (it was in full swing by 0625 on the previous day), I estimate that 11258 birds passed overhead in the 2 hours and 45 min period, or 68.2 per min and 4094 per hr! Only about 2% of these birds stopped long enough to be identified. Most were warblers, of which I saw 16 species, but the others embraced a wide variety of species, including flycatchers (4 species), vireos (2 species), Blue Jay, Ruby-crowned Kinglet, wrens (2 species, both local vagrants, including Keweenaw County's first Marsh Wren), thrushes (2 species), Scarlet Tanager (rare on

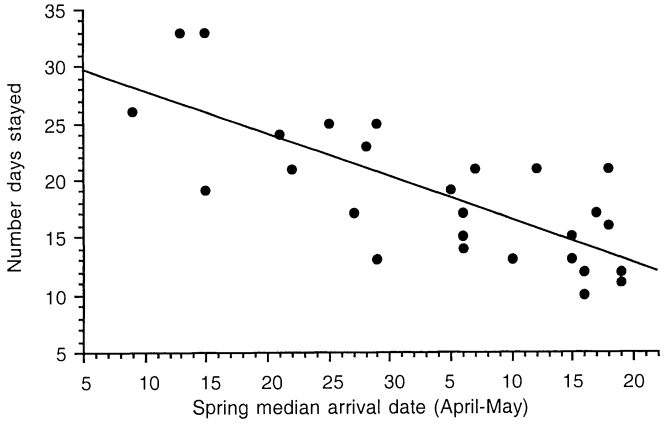

Fig. 6. Increase in the rate of spring migration of transients on the Keweenaw Peninsula, MI. Increase demonstrated by a decrease in the number of days between median arrival and median departure dates for 27 transient species. Data from Table 3. Regression significant: y=65.194-0.37462x; R=.748; n=27; P<001.

migration), sparrows, Rose-breasted Grosbeak, and blackbirds. I theorize that these birds were stopped by Lake Superior, and their westward flight, into a measured 25-30 mph wind (fide D. Slagle), was an attempt to correct for eastward wind drift during the previous night. At times, strong gusts literally stopped birds in mid air. Several times a Merlin flew past, causing all birds to dive into the forest, only to stream out at about a 45 degree angle the instant the falcon disappeared. On both days this migration phenomenon occurred at the same time on Lighthouse Point, near Copper Harbor (fide J. Rooks), where Red-bellied Woodpecker (vagrant) and Baltimore Oriole (local vagrant) were seen by Rooks and later LB. With four vagrants seen in the 2% of identified birds, how many were actually among the 11258?! No multi-species fallouts have been recorded in fall, although birds sometimes become concentrated on the north Keweenaw Co. coast by irregular infestations of caterpillars (LB), and Dark-eyed Juncos sometimes arrive in the thousands. Even without such unusual flights, the north coasts of Houghton Co. and especially Keweenaw Co. are the best place to witness passerine migration in both spring and fall. The shore acts as a leading line and temporary barrier in spring and the first refuge for translake migrants in fall. The first 75 yards inland are best. See also Translake Migration, and Vagrancy.

Fall. Here I treat fall migration in the same manner as spring migration (which see). My fall period, based on climate, habitats, and birds, encompasses 85 days, 15 Aug to 7 Nov. The actual migration period for birds, based on median dates, is considerably longer, from 30 Jun (Lesser Yellowlegs) to 17 Dec (Long-tailed Duck), because shorebirds arrive in mid summer, and ducks linger into early winter.

Unlike spring birds, which instinctively try to reach their breeding grounds as early as possible, most fall birds have little incentive for fast or early migration. Birds are migrating into increasingly better environments and run little risk if they proceed too quickly or too far. Nevertheless, food availability is still paramount to survival, because winter storms are pushing birds from behind, and individuals that linger too long may suddenly have their food covered by snow. As in spring, timing must also account for a three-week variation in climatic events, but the critical periods within each species' period of occurrence differ by being toward the *beginning* of spring and the *end* of fall. Data suggest that Keweenaw birds leave just *before* the initiation of particular climatic events as they occur during *early* falls, thus assuring migration before storms might interfere with feeding.

Below I list, in chronological order, the major climatic events that occur as winter approaches during an early fall.

First week of Sep: climate begins to cool, and many insects that mate on the wing or fly between food sources are gone by now (some disappear in Jul).

Third week of Sep: light frosts destroy some adult insects. Trees in full color and leaves no longer edible for insects.

Last week of Sep: first strong fall storms bring

Table 7. Fall median departure dates for selected taxonomic groups of species on the Keweenaw Peninsula, MI. Data from Table 3. All data exclude the listed exceptions.

Group	Number of Species	Mean Departure Date	Departure Period	Days in Departure Period	Exceptions
Waterfowl	18	5 Nov	23 Sep-17 Dec	87	Mallard, Common Goldeneye, Common Merganser; see text
Shorebirds	18	22 Sep	28 Aug-17 Oct	51	American Woodcock (26 Oct), Common Snipe (15 Oct, but see text)
Flycatchers	5	22 Aug	13 Aug-2 Sep	21	Eastern Phoebe (13 Sep)
Vireos	3	14 Sep	1-25 Sep	25	
Swallows	3	19 Aug	11-30 Aug	20	Tree Swallow (2 Aug)
Warblers	16	9 Sep	17 Aug-23 Sep	38	Orange-crowned (13 Oct), Yellow-rumped (12 Oct), Palm (8 Oct)
Sparrows	9	14 Oct	13-17 Oct	5	American Tree (see text), Vesper (24 Sep), Dark-eyed Junco (see text)

heavy frosts, killing or forcing into hiding most remaining adult insects. Deciduous trees in highlands losing their leaves. Light snows may occur.

Second week of Oct: first regular light snows. Deciduous trees in highlands mostly bare.

Third week of Oct: first appreciable snow and freezing of ground and shallowest ponds and lakes.

Nov: shallowest waters may freeze.

Mid Dec (normally early Jan): heavy snows and freezing of streams, lakes, and bays.

Timing of fall arrival. Because most Keweenaw birds breed, there are few pure transients to provide fall arrival dates, but some observations can be made from Table 8. Transient passerines that forage on the ground arrive about the same time, 13-28 Sep, just before the first major fall storms in late Sep produce frosts in the Keweenaw and, most importantly, food-covering snow to the north. These species are: Horned Lark (24 Sep), American Pipit (20 Sep), American Tree Sparrow (28 Sep), Fox Sparrow (29 Sep), Harris's Sparrow (26 Sep), White-crowned Sparrow (17 Sep), Lapland Longspur (23 Sep), and Rusty Blackbird (23 Sep). The Snow Bunting (16 Oct) arrives later, perhaps because of its special adaptations to harsher climatic conditions (*e.g.*, dense and cryptic plumage, roosting beneath snow to conserve body heat, somewhat nomadic behavior). The first 8 arrivals and 11 of the first 12 (30 Jun-8 Aug) are shorebirds, with Black-bellied Plover (7 Sep) and American Golden-Plover (13 Sep) conspicuously later. Except for Gadwall, waterfowl appear rather late, starting 14 Sep. The Red-necked (12 Aug) and Horned (23 Aug) Grebes arrive surprisingly early, especially considering they share the same habitat as the diving ducks; the Red-necked must have time to molt at localities enroute to its wintering grounds. The three latest arrivals are all "winter finches," which are arboreal foragers and thus can remain north longer.

Timing of fall departure. Table 7 (see also Table 9) gives the pertinent departure data for the same seven taxonomic groups treated under spring. Departure dates for waterfowl fall into three categories. The Wood Duck (mean departure 30 Sep), Blue-winged Teal (23 Sep), and Northern Shoveler (23 Sep) leave earliest. These are the only Keweenaw waterfowl that habitually feed off the water's surface, rather than dabbling or diving. I suspect that whatever they eat in summer succumbs to the first heavy frosts in the last week of Sep. The second group leaves from 10 to 19 October. These are the grazers, Snow Goose (18 Oct) and Canada Goose (19 Oct), and dabbling ducks, American Wigeon (10 Oct), Northern Pintail (19 Oct), and Green-winged Teal (19 Oct); the American Coot (23 Oct), a dabbler, fits here. This timing is just before fields may become snow-covered and shallow waters frozen, closing these bird's habitats. With the exception of the Tundra Swan, the remaining waterfowl are all diving ducks. The first to depart (3-30 Nov) are all shallow divers: Canvasback, Redhead, and Ring-necked Duck; the Tundra Swan (16 Nov), with its long neck and dabbling behavior, uses essentially the same foraging habitat. All are largely vegetarians, and I hypothesize that their plant food disappears with the cooling of waters; also, the shallowest waters freeze during this period. The latest to migrate are the deep water divers, 28 Nov-17 Dec: White-winged Scoter, Black Scoter, Long-tailed Duck, Bufflehead, and Red-breasted Merganser. Other divers that depart with the diving ducks are Common Loon (15 Nov) and Red-necked Grebe (29 Nov). The deep divers, which prey on animals in the large, deep coastal bays, leave before the earliest time when freezing might occur during an early fall. The two apparent exceptions are the Horned Grebe

Table 8. Fall median arrival dates (FMAD) and fall earliest arrival dates (FEAD) for migrating individuals of birds on the Keweenaw Peninsula, MI, presented chronologically to allow comparisons and anticipation of events. See Species Accounts for sample sizes and for fall earliest arrival dates of other species.

FMAD	Species	FEAD
Jun 30	Lesser Yellowlegs	20 Jun
Jul 5	Least Sandpiper	23 Jun
11	Solitary Sandpiper	27 Jun
18	Pectoral Sandpiper	24 Jun
20	dowitcher sp.	3 Jul
25	Semipalmated Plover	1 Jul
	Greater Yellowlegs	1 Jul
	Semipalmated Sandpiper	24 Jun
29	Gadwall	8 Jul
Aug 7	Buff-breasted Sandpiper	27 Jul
8	Baird's Sandpiper	3 Jul
	Stilt Sandpiper	13 Jul
12	Red-necked Grebe	18 Jul
20	Bonaparte's Gull	15 Jul
23	Horned Grebe	23 Jul
31	Dark-eyed Junco	18 Aug
Sep 1	Blackpoll Warbler	14 Aug
3	Palm Warbler	26 Aug
4	Swainson's Thrush	28 Aug
7	Black-bellied Plover	25 Jul
8	Lincoln's Sparrow	31 Aug
12	Ruby-crowned Kinglet	12 Aug
13	American Golden-Plover	6 Jul
14	Canada Goose	16 Aug
17	White-crowned Sparrow	4 Sep
18	Orange-crowned Warbler	1 Sep
20	Redhead	23 Aug
	American Pipit	26 Aug
23	Peregrine Falcon	26 Aug
	Lapland Longspur	18 Aug
	Rusty Blackbird	6 Sep
24	Surf Scoter	15 Sep
	Horned Lark	12 Sep
25	Greater Scaup	30 Aug
	American Coot	11 Sep
26	Snow Goose	9 Sep
	Harris's Sparrow	3 Sep
27	White-winged Scoter	25 Aug
28	American Tree Sparrow	16 Sep
29	Fox Sparrow	22 Sep
30	Lesser Scaup	27 Aug
Oct 9	Northern Shrike	7 Oct
	Evening Grosbeak	2 Oct
11	Long-tailed Duck	29 Sep
12	Bufflehead	9 Sep
13	Rough-leggd Hawk	23 Sep
14	Black Scoter	2 Oct
16	Snow Bunting	1 Oct
Nov 11	American Goldfinch	30 Oct
14	Pine Grosbeak	15 Oct
15	Common Redpoll	10 Oct

(8 Nov) and Surf Scoter (8 Nov), which seem to leave earlier than would be expected; I suspect more data from L'Anse Bay will show them to stay later. The controlling factor for divers might not be the freezing of waters per se but the effect of decreasing water temperature on the availability of their animal prey, which might move into deeper warmer waters in early winter.

The 19 shorebirds do not readily separate into groups according to departure dates, but form a continuum from 28 Aug to 17 Oct, and I am unable to correlate departure dates with specific foraging habits. All but one leave before the third week of Oct, when the first snows cover fields and low temperatures freeze pond shores and shallows, presumably killing aquatic stages of invertebrates. The main question concerning shorebirds is, Why do some species leave well *before obvious* changes in their foraging habitats? Perhaps the answer lies with their invertebrate prey, which might respond to decreasing temperatures by digging deep before the surface appears to us to be unusable by shorebirds. More likely, however, as with the Tree Swallow, food resources are much more extensive farther south, especially on the Gulf Coast, which most shorebird species reach in July and August.

Most of the swallows and flycatchers in Table 8 leave early, 2-30 Aug and 13 Aug-2 Sep, respectively (exception, Eastern Phoebe). Use of fall latest departure dates (FLDD) for four species for which medians are unavailable reveals that all other aerial obligates also depart early, as follows: Common Nighthawk (4 Sep), Whip-poor-will (FLDD 30 Aug), Chimney Swift (11 Aug), Great Crested Flycatcher (FLDD 4 Sep), Yellow-bellied Flycatcher (FLDD 3 Sep), and Rough-winged Swallow (FLDD 18 Aug). Thus, of the 29 earliest departers, 15 (51.7%) are aerial foragers. Put another way, of the total 16 aerial foragers, all but the Eastern Phoebe depart early, on or before 4 Sep, about two weeks prior to other obligate insectivores. I attribute this timing to a scarcity of flying insects by the first week of Sep, when the climate begins to cool; most or all mayflies, caddisflies, blackflies, horseflies, deerflies, and mosquitoes are gone. Also, insects that mature and mate in swarms do so in summer. As noted previously, many aerial foragers arrive late in spring, and because they leave early, they are present only during the optimal period for flying insects.

Departure dates for warblers and vireos fall into three distinct periods. Five leave early, 17 Aug-1 Sep: Philadelphia Vireo (1 Sep), Golden-winged Warbler (17 Aug), Chestnut-sided Warbler (24 Aug), Mourning Warbler (27 Aug), and Northern Waterthrush (27 Aug). What these diverse species have in common that would subject them to the first fall cooling in early Sep I cannot guess. A group of 12 warblers and 2 vireos leaves two

Table 9. Fall median departure dates (FMDD) and fall latest departure dates (FLDD) for migrating individuals of birds on the Keweenaw Peninsula, MI, arranged chronologically to allow comparisons and anticipation of events. See Species Accounts for sample sizes and for fall latest departure dates of other species.

FMDD	Species	FLDD
Aug 2	Tree Swallow	20 Aug
11	Chimney Swift	9 Sep
	Bank Swallow	30 Aug
13	Alder Flycatcher	13 Sep
14	Olive-sided Flycatcher	5 Sep
15	Baltimore Oriole	24 Aug
16	Cliff Swallow	27 Sep
17	Golden-winged Warbler	28 Aug
23	Eastern Kingbird	20 Sep
	Canada Warbler	3 Sep
	Scarlet Tanager	17 Sep
24	Chestnut-sided Warbler	29 Sep
	Bobolink	21 Sep
26	Eastern Wood-Pewee	9 Sep
27	Northern Waterthrush	7 Oct
	Mourning Warbler	8 Sep
28	dowitcher sp.	29 Sep
30	Semipalmated Sandpiper	12 Oct
	Barn Swallow	14 Sep
31	Spotted Sandpiper	12 Oct
Sep 1	Stilt Sandpiper	27 Sep
	Philadelphia Vireo	28 Sep
2	Least Flycatcher	28 Sep
4	Common Nighthawk	22 Sep
	Veery	19 Sep
6	Rose-breasted Grosbeak	4 Oct
7	Red-tailed Hawk	19 Dec
10	Broad-winged Hawk	23 Sep
	Lesser Yellowlegs	7 Oct
13	Solitary Sandpiper	9 Oct
	Buff-breasted Sandpiper	28 Sep
	Eastern Phoebe	8 Oct
	Gray-cheeked Thrush	1 Oct
14	American Kestrel	7 Oct
	Cedar Waxwing	24 Dec
15	Blue-headed Vireo	7 Oct
	Nashville Warbler	23 Oct
	Northern Parula	7 Oct
	Pine Warbler	9 Oct
	Black-and-white Warbler	28 Sep
	American Redstart	28 Oct
	Ovenbird	5 Oct
16	Baird's Sandpiper	13 Oct
17	Semipalmated Plover	4 Nov
	Ruby-throated Hummingbird	14 Oct
	Common Yellowthroat	12 Nov
18	Least Sandpiper	5 Oct
19	Brown Thrasher	9 Nov
20	Red-headed Woodpecker	1 Nov
	Gray Catbird	20 Oct
21	Sandhill Crane	11 Oct
	Swainson's Thrush	18 Oct
	Black-throated Green Warbler	30 Sep
23	Blue-winged Teal	3 Oct
	Northern Shoveler	16 Oct
	Sora	2 Nov
	TennesseeWarbler	18 Oct
	Magnolia Warbler	28 Sep
	Cape May Warbler	28 Oct
	Blackpoll Warbler	30 Sep
24	Sanderling	11 Nov
	Vesper Sparrow	16 Nov
25	Yellow-bellied Sapsucker	20 Oct
	Red-eyed Vireo	17 Oct
27	Killdeer	20 Nov
	Northern Flicker	27 Oct
30	Wood Duck	6 Nov
	Osprey	16 Oct
Oct 2	Pied-billed Grebe	24 Nov
	American Golden-Plover	3 Nov
	Hermit Thrush	4 Nov
3	Peregrine Falcon	18 Oct
4	Belted Kingfisher	20 Dec
5	Eastern Bluebird	20 Nov
6	Chipping Sparrow	12 Nov
7	Great Blue Heron	8 Dec
	Turkey Vulture	25 Oct
8	Palm Warbler	17 Nov
10	American Wigeon	15 Dec
	American Pipit	4 Nov
11	Rusty Blackbird	28 Nov
12	Yellow-rumped Warbler	11 Nov
13	Double-crested Cormorant	31 Dec
	Merlin	29 Oct
	Orange-crowned Warbler	23 Oct
	Song Sparrow	16 Dec
	Lincoln's Sparrow	29 Oct
	Swamp Sparrow	30 Oct
	Harris's Sparrow	28 Oct
	White-crowned Sparrow	19 Dec
14	Northern Harrier	9 Nov
	Lapland Longspur	8 Nov
15	Black-bellied Plover	19 Nov
	Greater Yellowlegs	12 Nov
	Wilson's Snipe	31 Dec
	Horned Lark	31 Dec
	Ruby-crowned Kinglet	24 Oct
	Savannah Sparrow	21 Oct
16	Fox Sparrow	17 Dec
17	Pectoral Sandpiper	4 Nov
	Dunlin	10 Nov
	White-throated Sparrow	23 Dec
18	Snow Goose	16 Dec
19	Canada Goose	12 Jan
	Northern Pintail	3 Dec
	Green-winged Teal	26 Nov
	Bonaparte's Gull	15 Dec
	American Robin	2 Jan
23	American Coot	22 Nov
26	American Woodcock	5 Nov
Nov 3	Canvasback	17 Dec
8	Horned Grebe	30 Dec
	Surf Scoter	28 Dec
11	Rough-legged Hawk	27 Dec
15	Common Loon	1 Jan
16	Tundra Swan	30 Dec
21	Redhead	9 Jan
28	Red-breasted Merganser	14 Jan
29	Red-necked Grebe	20 Jan
30	Ring-necked Duck	7 Jan
Dec 3	White-winged Scoter	7 Jan
13	Black Scoter	30 Dec
	Bufflehead	7 Jan
15	Long-tailed Duck	7 Jan

weeks later during a remarkably short period of 11 days, 15-25 Sep. These wait until just before the earliest major cold fronts kill most remaining free-moving insects in the last week of Sep. The last three warblers leave very late, 8-13 Oct: Orange-crowned (13 Oct), Yellow-rumped (12 Oct), and Palm (8 Oct); see Exceptions below. Any warblers except those seen after 1 Oct are worthy of documentation. Other insectivorous birds that fit these patterns (or slightly extend the date periods) are, for the early group, Veery (4 Sep), Scarlet Tanager (23 Aug), Bobolink (24 Aug), and Baltimore Oriole (15 Aug); and the middle group, Yellow-bellied Sapsucker (25 Sep), Northern Flicker (27 Sep), Swainson's Thrush (21 Sep), Gray Catbird (20 Sep), and Brown Thrasher (19 Sep).

The 10 sparrows for which I have data depart 24 Sep-17 Oct, a 24-day period, but 8 of these leave in a remarkably short 5-day period, 13-17 Oct. The latter period is just before the first winter snows are heavy enough to cover the seeds on which these birds feed. The American Pipit (10 Oct), Lapland Longspur (14 Oct), and Brewer's Blackbird (11 Oct) also fit this pattern.

For most summer resident passerines, there is at least a month lag between the termination of breeding and departure. Most breeding is finished by the end of July, and almost all by mid August, but the height of passerine migration is about 1 September, and appreciable numbers are still present in mid September. Presumably, this period is needed to finish prebasic molt and fatten for the journey. Some birds, especially young of the year, might gain some selective advantage by remaining as long as possible on their home ground, where they can continue to grow and fatten and have learned the local predators and the best places to feed, drink, roost, and hide, rather than spending more time along an unknown, potentially hazardous, migration route.

As in spring, fall environmental conditions vary from year to year by about three weeks. During all falls, early or late, passerines, at least, appear to leave *just before the earliest* harsh climatic conditions would begin to hamper their particular foraging strategies during an early fall, thus again assuring adequate food resources. This suggests that in late falls, birds might leave well before they are forced to. This happened in the Keweenaw in 2002, the latest fall in my experience. Botanists judged the leaves to be three weeks later than normal in turning color; only 10% of the leaves had turned by 30 Sep. Leaf drop was also three weeks late; most trees were fully leaved on 15 Oct. Mild wet weather prevailed until a light snow on 14 Oct. The birds, however, did not linger, but left on time. A few individuals provided latish dates, but no extremes. Most transient sparrows arrived and left on time, the exception being American Tree Sparrow, which came late en masse, as if forced by the 14 Oct snow to leave northern regions (this species winters along the latitudinal snow line). Thus birds do not wait until forced out by inclement weather or decreasing food resources, but instinctively leave earlier, probably in response to decreasing day length (see Terres, 1980) or to environmental cues they can detect firsthand.

Exceptions to group timing of spring arrival and fall departure. Each of the seven taxonomic groups has its exceptions (Tables 4 and 7)—species that arrive much earlier than their relatives in spring and/or leave much later or earlier in fall. In my opinion, this is possible because *most have adaptations that allow them to find food when the rest in their group cannot.* None arrives later than its relatives in spring, and only 2 of 13 leave earlier in fall. For some of the fall exceptions noted below, I can only estimate departure time using extreme dates, because no median dates are available.

The Mallard (arrival 8 Apr, departure mid to late Dec) has the greatest range of foraging habitats of any duck, frequenting bay edge, lakes, ponds of all types (including forested), rivers, creeks, marshes, flooded and dry grain fields, lawns, and shrub wetland. It is adept at finding small openings in otherwise frozen waters. It feeds on both plant and animal matter and is one of the two primary waterfowl species (with Canada Goose) fed by man. Its early spring arrival is timed with the final thawing of bays and streams and the first melting of marshes and shallow ponds, all at the end of Mar. Most depart in late Oct, but many linger until the earliest dates when the bays, lakes, and streams freeze and heavy snow may occur in mid Dec, and it has wintered in the Keweenaw. Captive wild Mallards can live without food for three weeks (Terres, 1980), and thus can withstand temporary freezes of its aquatic foraging habitats. The Common Goldeneye (1 Apr, late Dec) and Common Merganser (8 Apr, late Dec), both deep divers, forage in the deeper waters of large Lake Superior bays, which is the first habitat to open permanently in spring, about 1 April, and last to close in fall, often mid Dec to early Jan, sometimes even later. Possibly, they linger near the local ice line or fly inland to open stretches of the Sturgeon River, because they sometimes return during temporary mid winter thaws; both have wintered in the Keweenaw during warm years.

The Killdeer (2 Apr, 27 Sep) has the broadest range of breeding and foraging habitats of any Keweenaw shorebird. It forages in almost any open situation, from mud flats and pond edge to the dry Baraga Plains and rural road sides (see Species Account). Unlike most shorebirds, it times its spring arrival with the *first* thaw of winter snow in open areas, apparently not hindered by later spring snows and freezes, when it can move into less affected habitats. It is said to eat insects almost exclusively, but will take earthworms. Its fall departure

is just before the first strong cold fronts kill most adult insects. This suggests that in spring it feeds on something that is not available in fall, a pattern that fits earthworms, which probably are flooded out of their burrows in early Apr. The other exceptionally early spring shorebirds, Wilson's Snipe (20 Apr, 15 Oct) and American Woodcock (8 Apr, 26 Oct), have unique feeding adaptations. Both have long bills used to probe in soft wet soil, even beneath snow, for earthworms, larval insects, and other animals in vegetated habitats not available to other birds. The woodcock arrives shortly after the first thaw in the last week of Mar exposes its moist field and shrub wetland habitats. It is the latest shorebird, departing just before major snows and freezes close its habitats in late Oct, making its long bill useless. The American Robin (26 Mar, 19 Oct), the earliest thrush in spring and latest in fall, shares the woodcock's habitat and diet, and thus has similar timing. The snipe feeds in wetter, more lowland situations, such as marshes and ponds, which are usually too flooded until mid April. Although its mean departure is 15 Oct, I predict that with additional data it will prove to leave about 10 days later; it is the only shorebird known to have wintered on the Peninsula.

The Eastern Phoebe (14 Apr, 13 Sep) is the only flycatcher that normally feeds along streams and pond and lake edge, habitats that first open in late Mar but do not harbor insects until mid Apr. It is also somewhat opportunistic, even fishing for minnows (Binford, 1957), a behavior that makes me suspect it also catches aquatic insect larvae. In fall, it leaves later than other flycatchers, but in contrast with many other insectivores, just before the first major storms kill most adult insects in late Sep.

The Tree Swallow (17 Apr, 2 Aug) is unique in being the earliest swallow to arrive and the *earliest species* to leave. It feeds throughout the year primarily over open aquatic habitats where adult insects maturing from aquatic larvae mate in swarms from mid Apr through Jul, but not in fall. It has the broadest feeding niche of all Keweenaw swallows, sometimes feeding on the ground, picking aquatic insects off water, and eating berries and seeds when insects are scarce. Elsewhere during severe early spring weather, several birds will "bundle" in a cavity and assume a torpor-like state (Robertson *et al.*, 1992) Its early fall departure may be more closely attuned to the greater abundance of flying insects in staging areas to the south.

The Yellow-rumped Warbler (26 Apr, 12 Oct) has the widest foraging niche of any Keweenaw warbler, feeding (at least on migration) from ground to treetops, in fields, clearings, and forest interior and edge, both deciduous and coniferous. It probes bark crevasses, eats berries, sap, and seeds, and habitually flycatches. The Palm Warbler (6 May, 8 Oct) is also quite versatile, on migration feeding primarily on and near the ground in clearings, marshes, bogs, hedgerows, shrublands, towns, *etc.*, habitats that are free of snow and floods by the first week of May. At times it ascends into the forest canopy, and like the Pine and Yellow-rumped Warblers, investigates conifer twigs and cones and eats berries. It is attracted to the edges of aquatic habitats, which open earlier than most terrestrial ones, where it finds early insects. The Pine Warbler (5 May, 15 Sep) is the only Keweenaw warbler that feeds primarily in pines, although during migration, at least, it will visit deciduous trees; in spring, conifer needle clusters harbor insects that are not available in leafless deciduous trees. It also gleans bark crevasses, feeds on the ground, and eats a variety of berries and occasionally seeds (LB). Its pine habitat is often rather open, so that ground snow melts faster than in dense deciduous or mixed forests. That all three of these warblers, as well as the Orange-crowned (16 May, 13 Oct), habitually feed on or near the ground probably is significant, as I have observed that during cold weather, insects are more available there, sometimes even attracting purely arboreal foragers. The timing of the Yellow-rumped and Palm, in both spring and fall, is like that of sparrows, which also feed on the ground in openings, but the warblers use a wider variety of foraging niches and are more adept at catching the few insects available in late April and early May and in mid Oct. In fall, the Orange-crowned, Yellow-rumped, and Palm Warblers remain as late as possible, until just before the third week of Oct, when temperatures drop into the 20s (degrees F), highland (but not lowland) trees become leafless, the first significant snows occur, and essentially all remaining adult insects are killed. The Orange-crowned Warbler is unique in arriving at a normal time in spring but remaining late in fall. In spring, I suspect it times its arrival more with the emergence of flowers in mid May, because it probes catkins and other deciduous tree flowers and drinks nectar more often than most warblers (LB observations). As can the other late warblers, it forages low, frequently among weeds, where the last remaining insects are likely to be found. Its "wrenlike probing behavior along branches and trunks may be one factor allowing the species to winter successfully farther north than most of our warblers" (Dunn & Garrett, 1997). It also eats berries, which are available every fall in the Keweenaw. The Blue-headed Vireo (13 May, 15 Sep) arrives not much earlier than the bulk of warblers, when many insects are available, but some 10 days before other vireos. It is the only vireo that frequently feeds in conifers, a behavior it shares with the three early warblers. In fall, the vireo and Pine Warbler depart at a normal time for insectivorous passerines, just before the first major fall storms kill many insects. Species in groups not treated herein that fit this pattern of early spring arrival and late fall departure are the

Yellow-bellied Sapsucker (17 Apr, 20 Oct) and Ruby-crowned Kinglet (26 Apr, 15 Oct). The sapsucker is unique in feeding habitually on sap, which presumably begins to rise as arboreal leaf and flower buds swell in mid Apr and terminates with the first heavy freeze in late Oct. The Ruby-crowned Kinglet, like the Yellow-rumped and Palm Warblers, can survive harsher conditions than most birds because of its unusually broad feeding niche, which includes foraging on the ground and in conifers (see Species Account).

The four sparrows that are exceptional in spring timing arrive with the first snow thaw. The American Tree Sparrow (9 Apr, Dec) and Dark-eyed Junco (31 Mar, Dec) do not avoid snow if it is not too extensive or deep; the northern edge of their winter range approximates that of the latitudinal snow line, and both have wintered in the Keweenaw. All four breed in the arctic or boreal zones and hence are adapted to a harsh changeable climate and to finding seeds in obscure snowless patches. I suspect they retain the ability to migrate throughout the winter. The Fox Sparrow (15 Apr, 16 Oct) and Song Sparrow (8 Apr, 13 Oct) forage to a large extent in shrub wetland, which begins to thaw in late Mar and open fully in mid Apr. Although the Song is fond of wet sites, it is the most ubiquitous of our sparrows in choice of habitat (see Species Account). In fall, neither stays later than other sparrows, leaving just before the first major snows in the third week of Oct, but both have lingered into early winter. The Fox Sparrow is the most vigorous and effective scratcher of ground litter, and can remove light spring snow and dead leaves to unearth food not readily available to other birds. The Vesper Sparrow (29 Apr, 24 Sep) seems to be unique in arriving at a normal spring date but leaving three weeks before other sparrows, just before the first major fall storms in late Sep kill most remaining adult insects. Although it breeds in the driest habitat of any sparrow, seeds should still be available. I suspect my departure data are inaccurate, as supported by a late September flock at a Hancock feeder, which left piecemeal until the last date of 16 Oct. Its general scarcity, localness, and flocking behavior make it difficult to find in fall, thus minimizing accurate departure dates.

As discussed above, 7 of the 18 exceptional species in Tables 4 and 7 have foraging niches that are among the broadest within their respective families (considering Keweenaw species only), so that they have a wider selection of food than is available to more specialized birds. These are Mallard, Killdeer, Eastern Phoebe, Tree Swallow, Yellow-rumped Warbler, Palm Warbler, and Song Sparrow. This is true also of the Ruby-crowned Kinglet. Three other species have very specialized foraging behaviors and food: American Woodcock, Wilson's Snipe, and Fox Sparrow, as well as Yellow-bellied Sapsucker and American Robin. Four others appear to be adapted to climatic conditions along the latitudinal ice or snow lines (*i.e.*, nearly winter environment), so can use their habitats when they first begin to open in spring or after they have closed for most species in fall: Common Goldeneye, Common Merganser, American Tree Sparrow, and Dark-eyed Junco (the Mallard fits in this category as well as above).

Among the 19 species noted above as exceptional in their early spring arrival, 13 (68.4%) are among the latest to depart in fall. The only exceptions are Tree Swallow, which both arrives and leaves early, and Killdeer, Blue-headed Vireo, Pine Warbler, Fox Sparrow, and Song Sparrow, all of which leave at a normal time. I attribute timing of the 13 to their specific adaptations to foraging under harsh environmental conditions, which are very similar in mid Apr and mid Oct. As for the other six species, I hypothesize that their spring diets include something not available in late fall; for the Tree Swallow, this is almost certainly insects that develop in, and mate over, open water. The spring availability and fall absence of earthworms may affect the Killdeer, and a similar distribution of sub-litter invertebrates probably affects the Fox Sparrow and Song Sparrow.

All 18 exceptional species listed in Tables 4 and 7, as well as the 3 others discussed under exceptions, share one attribute: they winter commonly in the southeastern or lower midwestern US, as far or farther north than any other members of their respective families. The Eastern Phoebe and Tree Swallow, for instance, are the only members of their families that winter commonly in the eastern US. Further perusal of Table 5 shows that the first 56, and 75 of the first 78, species to arrive in spring have large populations in the eastern US (many also winter farther south); the exceptions are Osprey, Broad-winged Hawk, and Barn Swallow. Conversely, 35 of the 40 latest species to arrive lack significant, eastern wintering populations (exceptions, Green Heron, Semipalmated Plover, Gray Catbird, Cedar Waxwing, and Common Yellowthroat). Clearly, species that arrive early or leave late have less distance to migrate in spring and fall than their relatives. However, distance only gives them the *opportunity* to arrive early or stay late; they must still be adapted to feeding in the harsh spring and fall environments of the Keweenaw. Because most of the eastern US is temperate in climate, subject to the effects of the cold winter westerlies that produce periodic insect-killing frosts and, in the northern parts, even snow, I suggest that they are "preadapted," through their particular feeding strategies, to early and late climatic and habitat conditions in the Keweenaw, where mid Apr and mid Oct are similar to winter farther south. As evidence for this assertion, note that many shorebirds have large wintering populations on the warm Gulf Coast and do not reach the Keweenaw until

May (Table 3). In eastern North America, male Hermit Thrushes winter farther north than do females, but their earlier arrival on the breeding grounds is not because of the shorter distance traveled, but because they initiate migration some 20 days earlier (Stouffer & Dwyer, 2003). The same might be true between different species.

Effects of Lake Superior on migration

Here I simply summarize the effects of Lake Superior on migrant birds and refer the reader to sections where they are discussed (see Species Accounts for the species listed below). In the following list, I make a distinction between the Lake as a total barrier for birds thought not to cross and as a concentrator for individuals and flocks presumed to cross. Only along the north coast of Keweenaw Co. (and presumably adjacent Houghton Co.) does the Lake have a decided effect on migration, and here it acts as a:

Barrier, causing spring birds to be trapped, at least temporarily, on the Peninsula, for:

Most spring raptors (see Raptor Migration).

Certain other spring *diurnal* migrants: Sandhill Crane, Eastern Kingbird, Blue Jay, American Crow, Tree Swallow, Eastern Bluebird, Cedar Waxwing, Red-winged Blackbird, Common Grackle, Brown-headed Cowbird, and Evening Grosbeak. I suspect that diurnal passerines do not cross the Lake from the Keweenaw but instead skirt around, probably to the west throuth Duluth, MN.

Concentrator for:

Large numbers of certain species of translake migrants in spring (Common Raven [or are these trapped?], Chipping Sparrow, and Evening Grosbeak), fall (Black-capped Chickadee, Golden-crowned Kinglet, Swainson's Thrush, American Tree Sparrow, Dark-eyed Junco, Lapland Longspur, Snow Bunting, and Common Redpoll), and both seasons (Northern Flicker, Savannah Sparrow, White-throated Sparrow, and White-crowned Sparrow).

Small numbers of many nocturnal transients in spring, when casually producing fallouts (see Migration: Spring Fallouts), and fall (see Fall Translake Migrants and Harris's Sparrow).

Vagrants in spring and fall (see Vagrancy: Where to Find Vagrants; see Species Accounts for many vagrants, especially Scissor-tailed Flycatcher, Blue-gray Gnatcatcher, Townsend's Solitaire, Northern Mockingbird, and Baltimore Oriole). Is it a coincidence that both vagrant hummingbirds (one Rufous, one Broad-billed) were on the coast of Keweenaw Bay, or is the east coast, which is poorly birded, a barrier for western vagrants?

Others. See Great Gray Owl.

Leading line for:

Eastbound and westbound waterbirds in fall and perhaps spring (see Waterbird Migration on Lake Superior; Biogeography: Keweenaw Co.).

Some spring raptors, locally (see Raptor Migration).

Westbound passerines in spring (see Migration: Spring Fallouts; Evening Grosbeak) and fall (Horned Lark, American Pipit, and Lapland Longspur).

Aiming point for:

Translake migrants in fall (see Fall Translake Migrants; Migration of Waterbirds on Lake Superior; Snow Goose, Canada Goose, Common Loon, and Double-crested Cormorant).

Departure point for:

Presumably, all nocturnal migrants in spring (not discussed).

A few diurnal migrants in spring (Canada Goose, Common Loon, Double-crested Cormorant) and fall (Common Raven).

Waterbird migration on Lake Superior

In the falls of 1986 through 1999, I conducted irregular censuses of waterbirds migrating along the shore of Lake Superior off Agate Harbor, Keweenaw Co. Here the coast runs exactly east-west and forms a leading line for birds moving in those directions. As the northernmost coastline on the south shore of the Lake (and in Michigan), it also provides an aiming point for birds migrating southward, southeastward, and southwestward from Canada. My primary purposes were to examine species diversity and the direction, timing, and magnitude of migration. Here I discuss group patterns among the 28 primary waterbird migrants (geese, ducks, loons, grebes, and cormorant), leaving specific details to the Species Accounts. The few Cackling Geese seen are included in the Canada Goose totals, as this form was not considered a full species until after 1999. Data are in Table 10.

Methods. Counts were conducted for a total of 209.5 hours on 150 mornings from 4 August to 22 October, 1986-99. Census length varied from .25 to 4.5 hours, depending on the magnitude of migration and my desires. I sat on the coastal rocks about 10 ft above lake level and 30 yds from water's edge and used 10X40 binoculars and a 20X spotting scope, recording

identity, number of individuals, flock composition, and time (EDT). At the beginning of each count (and later if changes occurred) I recorded temperature, precipitation, cloud cover, wave height, horizontal visibility, wind direction, and estimated wind speed. Because I counted only during the morning, which appears to be the most productive time (my few afternoon hours were relatively unproductive), and quickly terminated censuses when migration was light, the recorded passing rates (birds/hr) are inflated over what all-day, every-day counts would have produced, because the latter would have included many hours with poor migration. Hence, my numbers are not strictly comparable with those from elsewhere (*e.g.*, Whitefish Point Bird Observatory). In the following discussions, I pay particular attention to the direction of migration, recognizing that several different agendas are involved.

Species diversity (Fig. 7). My maximum one-day species totals by month were 9 for August, 12 for September, and 18 for October. Weekly species diversity varied from 4 to 23. Three species began to arrive as early as the last two weeks of July (Common Loon, Horned Grebe, and Red-necked Grebe). Diversity increased to 6 in the third week of Aug with the addition of transient individuals of the Canada Goose, Mallard, and Blue-winged Teal, then jumped to 12 in the last week of Aug with the appearance of Double-crested Cormorant, other pond ducks (American Wigeon, Northern Shoveler, and Green-winged Teal) and the first few diving ducks (Lesser Scaup, White-winged Scoter). A drop to 9 in the first week of September was an artifact of the data—the temporary loss of Lesser Scaup and White-winged Scoter, which were irregular that early, and the last recorded (but probably not occurring) Northern Shovelers, which were very scarce anytime. In the second week of September the total jumped to 16, as later pond ducks (American Black Duck, Northern Pintail) and more divers (Red-throated Loon, Redhead, Greater Scaup, Surf Scoter) arrived, and the Lesser Scaup and White-winged Scoter became more regular. In the third week of September, the two mergansers swelled the total to 18. The last week of September heralded the first major flights of diving ducks, and therefore the beginning of maximum species diversity, 22 to 23 species, which lasted through at least the third week of October (when this study ended). This four-week consistency in species diversity occurred because as the later divers—Black Scoter, Long-tailed Duck, Bufflehead, and Common Goldeneye—began to migrate in numbers, most early pond ducks left. This observed pattern of timing demonstrates that, in general, most dabbling species leave their northern breeding grounds earlier than do divers, presumably because the shallow waters in which they forage freeze before deep waters. Hint to birders: although the maximum abundance of Surf Scoters is in the last week of September and first week of October, the best time to have a chance at all three scoters is in the second week of October.

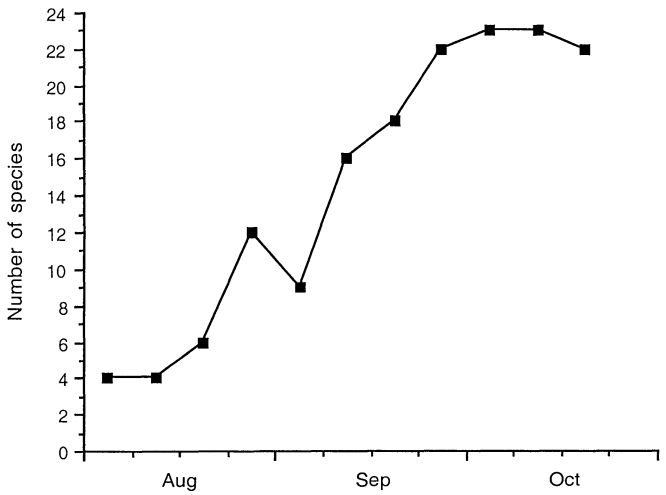

Fig. 7. Fall species diversity for waterbirds migrating all directions over Lake Superior off Agate Harbor, Keweenaw Co., MI, 1986-99. A curve for birds migrating west to east only (not shown) is nearly identical but lower. Data from Table 10.

Detectability (Fig. 8). A total of 34845 individuals was recorded, a passing rate of 166.3/hr. Of these, 26298 (75.5%; 125.5/hr) flew west to east (most birds) or northwest to southeast (some Common Loons), and 8547 (24.5%; 40.8/hr) either east to west, northeast to southwest, or north to south. Of the total 34845, 14467 (41.5%) passed too far away or quickly to identify the species, although 8831 could be allocated to group (*Aythya*, scaup sp., dark-winged scoter, or merganser sp.).

Interspecific detectability. Here I focus on species migrating *primarily* from west to east. In general, most pond ducks were rather scarce, the primary exceptions being Blue-winged Teal (4.4/hr), American Wigeon (3.8), and Mallard (1.2). The vast majority of birds *identified* (but see below) were, in order of abundance, Red-necked Grebe (21.4), Greater Scaup (10.4), Horned Grebe (5.4), White-winged Scoter (4.7), Redhead (4.1), Surf Scoter (3.0), and Common Loon (3.0). However, unidentified *Aythya* ducks (29.1), duck sp. (25.5), and scaup sp. (15.0) headed the list. If the scaup sp. alone were distributed among the two species according to the percentage of each identified, the Greater Scaup would be the commonest species (24.5); many of the *Aythya* and unidentified ducks must also have been this species. The Red-necked Grebe was the commonest *identified* waterbird, but its numbers were inflated compared to other species, because it could be identified by shape nearly as far away as it could be seen. That the Horned Grebe was third in detectability is also questionable, because its passing rate included a

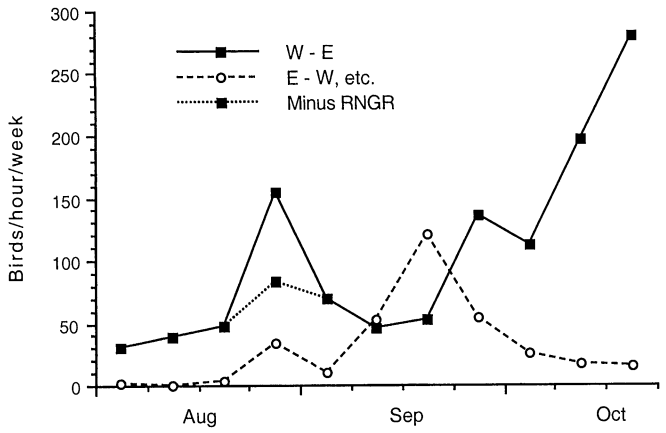

Fig. 8. Fall detectability of waterbirds migrating west to east vs. all other directions (mostly east to west, see text) over Lake Superior off Agate Harbor, Keweenaw Co., MI, 1986-99. Dotted line reflects deletion of phenomenal 1093 Red-necked Grebes on 31 Aug 93. Data from Table 10.

unique 586 seen on one day, and it is also very easily identified. Although the White-winged is the commonest of the three scoters, part of the difference is because the other two have dark wings and are difficult to separate at a distance—hence many get recorded as unidentified "dark-winged scoters." Common Loons are also highly visible, as they fly well above the water, but Red-throated Loons, which in my experience usually fly low against the dark waters, can be missed. Redheads, especially females, and all Lesser Scaup and Ring-necked Ducks are so similar to the Greater Scaup at a distance or from below, that many may have been overlooked. I could go on, but by now it should be obvious that the variables related to conspicuousness make any list of detectabilities or relative detectabilities tentative at best. With this in mind, the reader may peruse Table 10 (column Mean I/hr, W-E) and draw his/her own conclusions.

Seasonal detectability (Table 10, fourth row from bottom). In the last two weeks of July, Common Loons, Red-necked Grebes, and Horned Grebes arrived. During the first three weeks of August, these three species together accounted for 91.2, 94.7, and 80.6% of the total individuals per hour, respectively. Totals rose appreciably (by 106.7 ind/hr) in the last week of August as the Red-necked Grebe, Blue-winged Teal, Northern Shoveler, and Green-winged Teal reached annual peaks in abundance, and the American Wigeon a secondary peak; note the early preponderance of pond, not diving, ducks. However, much of this increase was due to an exceptional total of 1093 Red-necked Grebes on 31 Aug 93; deleting these resulted in a rate of only 83.3, a much lower, but nevertheless real peak (Fig. 8). Totals then dropped slightly during the first three weeks of September, as Red-necked Grebes gradually but significantly declined (by 93.9 ind/hr) and no longer dominated the totals, and American Wigeons decreased by 6.8 ind/h, even as the Common Loon reached a peak and the commoner species of diving ducks began to arrive in very small numbers. The important increase to 136.4 in the last week of September featured annual peaks for the American Wigeon and Redhead, plus the sudden arrival of significant numbers (but not peaks) of Greater Scaup, Surf Scoter, *Aythya* ducks, unidentified ducks (probably mostly *Aythya*), and scaup sp. A slight decline in the first week of October probably reflected decreases in Red-necked Grebes (down 7.3), American Wigeons (down 9.1), and Redheads (down 6.6). The middle two weeks of October showed major and about equal increases to a peak of 279.2 ind/h in the third week, at which time this census was concluded. Probably, totals from late October through mid November remain about the same, as the late divers (Long-tailed Duck, Bufflehead, Common Goldeneye, and mergansers) peak (see Species Accounts) and all *Aythya* species decline; much more data are needed for late fall.

Daily detectability. Abundance varied dramatically from day to day. Six counts of 15-30 minutes duration produced no migrants, whereas the highest total of individuals was 1812 in 3.5 hrs on 21 October 1994. The five best counts in birds per hour were 610/hr (13 Oct 89), 592 (20 October 1994), 576 (10 October 1987), 518 (21 October 1994) and 509 (11 October 1992).

Weather. I found no correlations between the magnitude of eastward migration and temperature, cloud cover, visibility, or wave action , except as these relate to frontal activity (see below). Fig. 9 indicates a weak correlation between abundance and winds from the west, west-northwest, and northwest. However, this might be a coincidence, because more westerly (especially northwest) winds occur in October, when migration is at its height, *i.e.*, by chance, big flights were more likely to arrive with a west wind in October than earlier. Also, the mean passing rate was greater with light and variable winds than with winds from any specific direction. Further, some birds moved with every wind direction for which I have data (no data for east-southeast or south-southwest), and good one-day flights occurred with seemingly adverse winds, (*e.g.*, northeast, 222 ind/hr; southeast, 183; south-southeast, 103; south, 226) and even "calm" (191). Finally, 28 of 79 (35.4%) counts with westerly winds had poor passing rates of less than 50 ind/hr. Wind direction may have a greater effect at the point of inception of a day's flight. I conclude that Agate Harbor waterbirds, although certainly aided by a westerly component, will migrate under any wind direction, and that any apparent correlation is ultimately related to other factors.

A graph of wind speeds (not shown) suggests that passing rate might *decrease* with winds of 17.5 mph and over (but n=only 8). This seemed true even

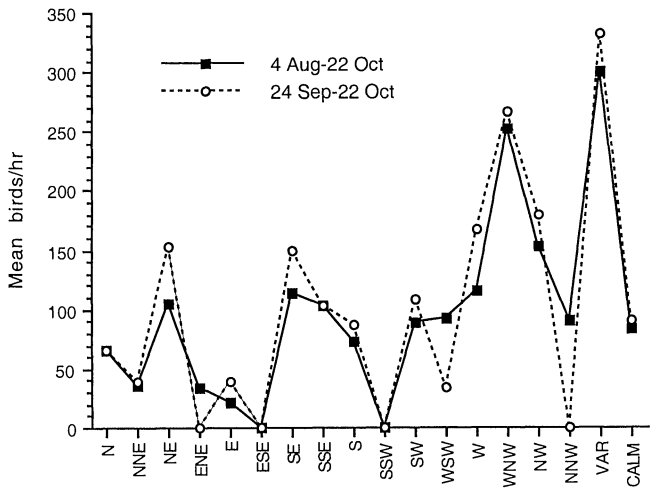

Fig. 9. Effect of wind direction on the detectability of waterbirds migrating eastward in fall along the south shore of Lake Superior off Agate Harbor, Keweenaw Co., MI, 1986-99. The apparent differences seen here may not be significant; see text.

with supposedly favorable west, west-northwest, and northwest tail winds (but see above). The 13 highest passing rates, all from those directions, were evenly distributed from 2.5 to 15 mph, whereas the 8 counts with winds of 17.5 to 32.5 mph, again all from those directions, produced relatively few birds. Because the strongest fall winds are produced by polar fronts, which are frequent in late September through October, when most waterbirds are migrating, one would expect birds to take advantage of them, or at least ignore them, but in fact they seem to avoid them. More data are needed.

The primary factors controlling the chronology, daily abundance, and rate of migration are controversial and beyond the scope of this discussion. Clearly, however, all are subject to the influences of weather, which, I advance, are only the extremes, namely fog, rain, and very strong (especially opposing) winds, all of which can be caused by polar fronts. In the hypothetical absence of any frontal activity, migration would progress evenly and therefore predictably, which it does in moderate periods between fronts. The effects of polar fronts on bird migration are very difficult to assess, because of variations in the geographic position, timing, speed, and intensity (winds, rain content, and cohesiveness of cells) of the fronts in relation to differences in initial migratory restlessness, geographic position, and daily energy resources of the birds. I was therefore quite surprised to find clear correlations, even though tentative because of the small sample sizes. In this rough analysis, I divided flights (individuals/hr) into four categories, very good, good, fair, and poor, with due regard to time of year (*i.e.*, a count of 50/hr would be good in August but poor in October).

The following observations are arranged in the same order in which westerly fronts approach, arrive, and leave Agate Harbor. During one good flight, a front was not close enough to see but arrived that night, suggesting that birds were being pushed ahead of the front (see also below). A front positioned a short distance to the southwest or west, as judged by a visible dark cloud bank and subsequent rain (n=14), invariably produced poor flights, but if the front arrived during the census (n=7), migration was very temporarily good (5) or very good (2); *i.e.*, there was a clear pulse of birds, of short duration, *immediately* prior to frontal passage. During intra-frontal activity, with visible, widely scattered rain squalls (n=9), migration was varied, 4 good, 2 fair, 3 poor, suggesting that sometimes birds that had already been overtaken by heavy solid rains had stopped, whereas at other times, birds continued flying under semi-adverse conditions, perhaps dodging the squalls or flying through the light ones. In one instance, a dry front passed the previous night, resulting in a good flight the next morning, suggesting that it is not lowering barometric pressure but rain that stops birds. After a rainy frontal passage the previous night (n=15), 1 flight was very good, 3 fair, and 11 poor. But after frontal passage during the previous daytime (n=5), counts improved to 1 very good, 2 good, and 2 fair. By the second and third days (n=6), when skies usually cleared and winds were westerly, 5 were good and 1 fair. A few days with clear skies produced poor flights, because another front was imminent. These last observations suggest that birds do not stop until forced to by extensive heavy rains, when they would use more energy and probably even get too wet, thus needing a short period to recover before resuming migration. To test these theories, one needs daily counts and detailed data on weather, especially frontal position, to the west and north of the count location.

The Keweenaw Current. In Lake Superior off the north coasts of Houghton and Keweenaw Cos. is the Keweenaw Current, which moves about 2 mph from west to east and approaches the shore as close as 100 yards off Agate Harbor. It has been under study for several years by personnel at MTU. Transient Common Loons, Red-necked Grebes, and Horned Grebes regularly feed in these waters in fall (as do local loons and Double-crested Cormorants in summer). Some individuals temporarily maintain their position in the current in order to forage at favored spots, but others, especially Horned Grebes, float slowly eastward—a lazy bird's migration. All three species are fish-eaters. Although mergansers can also find small fish in these waters, and do in summer, I have never seen them exhibiting similar behavior in fall. No other type of food is available in these deep cold waters, so none of the other 23 waterbirds treated here can feed along shore, although a few occasionally stop briefly to rest.

Non-eastbound migrants (Table 10). Three species were never recorded flying eastward. Snow and Canada Geese migrated east to west along the horizon of Lake Superior, northeast to southeast and then inland, or due north to south and inland. The coast of Keweenaw Co. seems to be an important aiming point for transient Double-crested Cormorants, all of which came inland from due north. More Northern Pintails and Green-winged Teals migrated westward than eastward, 71.4% and 70.7%, respectively. These are the only pond ducks (except American Black Duck) that have large breeding populations east of Hudson Bay. The Mallard and Blue-winged Teal, which had small percentages of west bound migrants (14.2 and 6.9%, respectively), have smaller populations only southeast of Hudson Bay. I tentatively consider the few westbound individuals of all other species to be local birds or transients returning a short distance to feed or rest, a phenomenon often seen among Red-necked and Horned Grebes. Eastbound Common Loons were unique in having two distinct subroutes, one from due west and the other from the northwest, the direction of Isle Royale; possibly, the former also originated from the northwest, hitting the coast west of Agate Harbor and then turning east. No other species used this northwestern route.

Where and when to observe fall waterbird migration. Agate Harbor lands are either private or afford no view of Lake Superior, but equally good views can be obtained at Hebard Park (2.5 mi west of Copper Harbor) and 1.5 mi farther west on the Michigan Nature Association's land at Dan's Point. Use of a spotting scope is imperative. Perhaps the best time to have a chance to see maximum numbers of individuals and species, based on the above observations, is after 25 September, on a clear day at least 1.5 days after frontal passage and preferably at least 2 days before arrival of another front, with winds that are west to northwest at 2-15 mph or light and variable. Although temperature, wave height, visibility, cloud cover, and wind direction per se appear to be of little importance to the birds, they are indicative of the weather patterns that do, and a northwest wind pushes birds closer to shore for better observation. Although the infrequent visitor needs luck, because good flights are rather scarce and may feature birds too far offshore to identify, nearly every day produces something of interest, whether it be an incoming passerine, raptor, or Great Blue Heron, migrating longspurs, foraging Merlins, the one Red-throated Loon needed for one's list, or (with great luck) a rarity.

Spring waterbird migration. Off Whitefish Point, Chippewa Co., in spring, observers see fairly large quantities of White-winged Scoters, Common Loons, and Red-necked Grebes, with lesser numbers of other species that pass in fall (Granlund & Byrne, 1996). The very few spring hours I have spent observing off the shore of Keweenaw Co. have netted almost nothing. However, during the period 5-7 May 2002, J. Youngman (field notes) and party, conducting a survey of Manitou Is., off Keweenaw Point, Keweenaw Co., noted numbers of scaup sp., Red-breasted Merganser, Common Loon, Red-throated Loon, and Red-necked Grebe (see Species Accounts), lesser but significant numbers of Green-winged Teal, Bufflehead, and Common Goldeneye, and a few Gadwalls, Mallards, American Wigeons, and Horned Grebes. A thorough study of spring waterbird migration off Hebard Park or Dan's Point is needed, even if to collect negative data!

Other waterbirds. The only other common species regularly migrating along the shore off Agate Harbor in fall were Herring and Ring-billed Gulls. I did not count these, because I thought they could not be separated from local residents, but I should have, because some days produced obvious flights, mostly eastward. For instance, on 5 October 1994 off Agate Harbor, I counted 63 large gulls, mostly Ring-billed, flying east between 0850 and 1130 EDT. On 4 October 1993, a steady stream of Herring Gulls flew west. The Bonaparte's Gull (9 dates) and Common Tern occurred very infrequently but usually in flocks (see Species Accounts). Shorebirds, unlike at Whitefish Point, rarely flew by and were not attracted by Keweenaw County's pebble beaches and conglomerate rocks. Compared to Whitefish Point, which is manned eight hours daily, very few rare waterbirds were seen at Agate Harbor, the exceptions being a lone Arctic/Pacific Loon and four jaegers (two Parasitics, one Pomarine, and one unidentified).

Fall translake migrants

Five migrant species regularly cross Lake Superior from north to south during daytime in fall: Snow Goose (rare), Cackling Goose, Canada Goose, Common Loon, and Double-crested Cormorant (see Species Accounts and Waterbird Migration on Lake Superior). I also saw numerous individuals of other species arriving off the Lake in fall along the coast from Agate Harbor to 1.5 miles east of Dan's Point, Keweenaw Co., and J. Youngman noted many arriving at the east end of Manitou Is. (*e.g.*, 9 September 2002 and 6-8 October 2003). Those identified, at least partially, included 239 individuals of 24 species. Most were nocturnal migrants for which crossing has only been assumed. Many were initially spotted by scope an estimated 2-3 miles offshore, sometimes with a clue from attacking Merlins or gulls. The number of individuals (some in flocks) is given in the list below; arrival times, dates, and other details are in the Species Accounts.

Great Blue Heron (7)
Osprey (3)

Table 10. Fall detectability of waterbirds migrating along the south shore of Lake Superior off Agate Harbor, Keweenaw Co., MI, 4 August-22 October, 1986-99. Total individuals (TI) and individuals per hour (I/hr) are given by direction of flight, primarily west to east, but also, in parentheses, a combination of east to west, northeast to southwest, and north to south. All numbers are within each species' recorded period of occurrence at Agate Harbor (see individual Species Accounts for periods). The last two columns on the right, as well as the two rows labeled I/hr at the bottom of the table, may be combined to produce total I/hr in all flight directions. Key: E = east; hr = one hour of observation; I = individual birds; T = total; W = west.

Species	Individuals/hour/week, West to East (East to West, etc.)										TI W-E	TI E-W etc.	Mean I/hr W-E	Mean I/hr E-W etc.
	August				September			October						
Snow Goose							(.04)	(1.1)	(2.7)	(6.8)		265		2.5
Canada Goose		(2.6)	(9.3)		(49.5)	(112)	(43.2)	(22.4)	(12.5)	(6.0)		7101		37.4
Gadwall								.03		1.4	23		.1	
American Wigeon			8.3	2.8	3.3	1.5	11.0	1.9	3.1	3.1	721		3.8	
American Black Duck					.1	.2	.04	.03	.2	.1	16		.1	
										(.2)		4		.02
Mallard		.4	.8	.2		.3	.4	1.2	2.2	4.0	238		1.2	
		(1.1)	(.3)		(.2)	(.3)	(.1)	(.4)		(.1)		40		.2
Blue-winged Teal		3.0	22.1	.2			.7				351		4.4	
			(1.4)									22		.3
Northern Shoveler			.6								9		.04	
Northern Pintail						,2	.1	.1		.4	18		.1	
						(.3)	(1.2)	(.1)				45		.3
Green-winged Teal			1.8		.9	1.1	1.1	.3	.4		132		.7	
	(1.2)		(.6)	(2.2)		(3.2)	(5.8)	(.7)	(.1)			319		1.7
Canvasback									.2	.3	13		.1	
Redhead					1.6	1.8	10.3	3.7	2.2	6.6	677		4.1	
Ring-necked Duck									.1		3		.02	
						(.2)						7		.04
Greater Scaup					1.3	2.0	11.4	9.3	20.2	9.3	1712		10.4	
Lesser Scaup			.1				.3	.3	1.1	2.8	110		.6	
Surf Scoter					.4	1.1	4.9	5.4	2.6	.6	494		3.0	
						(.1)	(.2)	(.2)	(.3)			28		.2
White-winged Scoter			.2		.5	.7	1.9	2.2	13.7	11.5	922		4.7	
									(.4)			18		.1
Black Scoter								.03	.4	.1	17		.2	
									(.02)			1		.01
Long-tailed Duck							.2	.1	.7	1.8	63		.6	
Bufflehead								.1	.2	1.0	23		.4	
										(.2)		4		.1
Common Goldeneye									.1		5		.04	
							(.04)			(.1)		3		.02
Common Merganser						.2	.04	.3	.1		20		.1	
						(.1)						2		.01
Red-breast. Merganser						.1	.04	.4	1.8	1.9	128		.8	
					(1.0)					(.2)		16		.1

Table 10 (continued)

Species	Individuals/hour/week, West to East (East to West, etc.)												TI W-E	TI E-W etc.	Mean I/hr W-E	Mean I/hr E-W etc.
	August					September			October							
Red-throated Loon						2.2	.5	.4	.2	.2	.1		63		.4	
									(.03)					1		.01
Common Loon	.6	2.0	1.0	2.4	3.0	7.4	5.1	2.5	1.7	2.2	2.2		624		3.0	
						(.1)	(.2)							8		.04
Horned Grebe	1.0	4.7	.2	1.4	4.4	1.2	1.3	2.3	4.1	17.6	3.1		1138		5.4	
						(.1)		(.1)		(.1)				9		.04
Red-necked Grebe	27.2	25.3	42.2	104.9	57.2	22.9	11.0	15.2	7.9	9.0	4.0		4477		21.4	
							(.2)							5		.02
Double-cr. Cormorant				(22.2)	(7.4)	(.5)	(3.7)	(1.5)	(.2)					483		3.8
Aythya ducks					.2	.9	3.4	12.1	31.5	49.3	86.6		5106		29.1	
							(.1)		(.3)					14		.1
scaup sp.							6.5	23.7	24.5	7.4	23.9		2465		15.0	
dark-winged scoter							.1	1.0	1.0	1.2	1.8		146		.9	
									(.1)					4		(.02)
merganser sp.								.2	1.8	15.9	22.2		1088		6.9	
						(.3)	(.1)				(.3)			8		.05
unidentified ducks	1.6	7,7	.8	11.7	1.5	2.9	15.0	35.3	12.4	42.7	89.3		5349		25.5	
			(.4)	(.6)	(.5)	(.6)	(.5)	(2.3)	(.2)	(.4)	(1.5)			140		.7
loon/grebe/duck						.7	1.2	1.3	.7	.4	1.1		147		.7	
Totals													26298	8547	125.5	40.9
I/hr/week, W to E	30.4	39.7	47.6	154.3	69.5	46.3	53.3	136.4	111.2	195.8	279.2					
I/hr/week, E to W, etc	1.2	0	4.1	34.4	10.1	52.3	120.8	54.5	25.7	16.5	15.4					
Number of species	4	4	6	12	9	16	18	22	23	23	22		total species: 28			
Number of hours	5.0	3.0	5.0	15.4	10.2	16.2	32.4	25.3	39.6	40.9	16.3		total hours: 209.5			

Northern Harrier (2)
Merlin (3)
Peregrine Falcon (5)
Yellow Rail (1)
Cuckoo sp. (1)
Asio owl (1)
Large owl sp., probably Great Horned (1)
Downy Woodpecker (5)
Northern Flicker (3)
Red-breasted Nuthatch (2)
Brown Creeper (2)
Winter Wren (4)
Golden-crowned Kinglet (9)
kinglet sp. (13)
American Robin (4)
Yellow-rumped Warbler (8)
Palm Warbler (7)
Northern Waterthrush (1)
American Tree Sparrow (3)
White-throated Sparrow (1)
Dark-eyed Junco (61)
Rusty Blackbird (1)
Common Redpoll (91, 4 flocks)

These records demonstrate that four species of diurnal raptors cross the Lake in fall and thus might be expected to do so in spring (see Raptor Migration for spring data). These four often forage in aquatic habitats (as do the Great Blue Heron, Yellow Rail, Northern Waterthrush, and Rusty Blackbird) and perhaps have no instinctive reluctance to cross water barriers. I also saw Bald Eagles coming in off the Lake, but could not be positive they had not simply been foraging far offshore.

All my birds not being chased by predators flew close to the water's surface. Only twice did I see exhausted birds hit the water and expire, and only rarely did birds appear tired when they reached shore. Instead, most seemed quite chipper, feeding actively and calling after only a minute or so to stop and survey their new surroundings.

All 239 birds were seen between 0731 and 1127 EDT (we did little censusing in the afternoon). Why did they arrive during daytime and so late? I note that most were small and would be expected to fly relatively slowly. Also, most were seen on days with light winds with a southerly component (often southwest)—a head wind—which certainly slowed their progress. (On the other hand, birds were much more easily detected when the water was calm, as was the case with southerly winds.) The maximum distance from the north shore of Lake Superior to the Keweenaw Peninsula is only about 100 miles. If a bird left the north shore at 2030 hrs, about an hour after sundown, and flew straight with an air speed of 20 mph, it should reach the Keweenaw by 0130. However, if it encountered a 10 mph head wind (stronger than we recorded during good flights), its ground speed would be lowered to only 10 mph and the trip would last until 0630. Because all birds arrived after this time, and many after 1000, I suggest that they originated farther north, overflew the north shore at night, and at dawn found themselves over water in sight of the Keweenaw. In this scenario, their late arrival was a combination of starting north of Lake Superior, flying with a low air speed and, due to adverse winds, an even slower ground speed. The cuckoo (September) and robins (October), which are larger and presumably fly faster, probably started farther north and ended up in the same predicament. That we did not see more large species and individuals perhaps is because almost all the birds we saw were in late September and October, when most thrushes, grosbeaks, etc. had finished migration; additional observations in August and early September might include these birds.

Diehl *et al.* (2003), using radar, demonstrated a major nocturnal migration of passerines in fall from southwestern Ontario (roughly between Thunder Bay and Nipigon) over Isle Royale to the Keweenaw Peninsula (west about to North Portage Entry) and thence over Keweenaw Bay into eastern Baraga Co. and Marquette Co. Each fall this translake migration causes a small concentration of transients along the immediate coast of northern Keweenaw Co., at least from Agate Harbor to Manitou Is., especially within 75 yards of shore. This might be true of northern Houghton Co. as well (few data). Birders are advised to drive slowly along highway M 26 between Agate Harbor and Devil's Washtub (where the road turns inland), listening for Black-capped Chickadees, which often advertise the presence of transient (and resident) flocks.

In spring, a number of landbirds have been seen coming off Lake Superior early in the morning, especially at the east end of Manitou Is. (Youngman field notes). Presumably, these are nocturnal migrants that have been caught over the Lake at dawn and are returning to the nearest visible land (or simply reversing their direction). Manitou Is. thus has great potential as a spring concentration point for normal migrants and as a vagrant trap, with birds migrating in from the west and sometimes needing to return to it from the east.

See the Species Accounts for the Merlin, Ring-billed Gull, and Herring Gull for hazards these translake migrants face during daylight. See the Common Raven Species Account for the only known example of apparent northward crossing in fall.

Raptor migration

Here I summarize our knowledge of Keweenaw diurnal raptor migration. My purpose is to present a framework for future research. Data are from Brockway

Mt., Keweenaw Co., unless otherwise noted. Further details are in the Species Accounts. Because the data are still fragmentary, ideas presented here must be evaluated with caution.

Brockway Mt. raptor lookout. At the west edge of Copper Harbor, Keweenaw Co., begins an east-west ridge, the first inland from Lake Superior, known as Brockway Mt., the west end and highest point of which, West Bluff, is 4 mi from town in T59N, R29W, Sec. 34. From West Bluff, a long, gradual, westward downgrade forms a leading line that many raptors use to reach the peak, where they often kettle on updrafts caused primarily by the sheer cliff on the south side. Birds also follow the high ridge to the southwest, which has Mt. Lookout as its highest point, and its continuation, Rocky Ridge, directly south of Brockway. At the east end of the Mt. Lookout ridge, birds often turn northeast to gain West Bluff, thus missing Rocky Ridge. Because the annual spring migration here exceeds 15000 birds of 17 species (Peacock, 1992a, 1992b; Table 11), the Mountain has been designated, at my request, as a national Important Bird Area by the American Bird Conservancy. The best feature of the Brockway migration, however, is not the high number of species or individuals, because other lookouts in the Midwest host more birds, but the unparalleled views of the raptors, many of which pass at close range and often at or below eye level (some cause observers to duck!).

The history of the lookout was reviewed by Isaacs & Hennigar (1980). Briefly, Wood (1933) saw migration over the town of Copper Harbor and on Manitou Is. in spring 1931 but did not know of the lookout, because the road to the peak was not built until the mid 1930s. Brockway Mt. was not discovered as a spring lookout until 1965 (see Isaacs & Hennigar, 1980), although Binford (1965) noted raptor migration there in August 1963. Only two comprehensive studies have been made. Isaacs & Hennigar (1980) censused raptors on 81 days (513.3 hours) from 26 March to 11 June, 1975-78, recording 14958 individuals, for averages of 185 per day and 29.1 per hour. J. Peacock (1992a, orig. notes) conducted intensive raptor counts on 155 days (1134.25 hours) from 1982 to 1995; this included 57 days (411.75 hours, average 6.8 hours per day) from 2 April to 31 May 1992, when he saw 15033 eastbound birds (and 7191 westbound, here considered repeats) of 16 species, averages of 263.7 per day and 36.51 per hour. Only Peacock's 1992 data give a meaningful picture of annual spring migration, and for this reason I present his raw data, which have never been published, in Table 11. I conducted sporadic part-day counts on 27 days (55.2 hours) from 28 April to 4 July, 1988-2000, recording 6761 individuals of 16 species migrating eastward, for averages of 250.4 per day and 122.5 per hour; my number of birds per hour is high

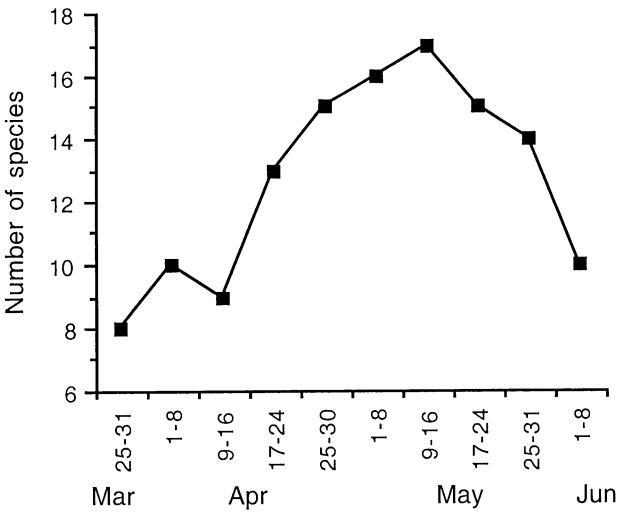

Fig. 10. Spring species diversity of diurnal raptors migrating eastward at Brockway Mt., Keweenaw Co., MI, 1976-2002. Data from field notes of L. Binford, F. Isaacs, J. Peacock, and J. Youngman.

because I counted only during prime morning hours on days with average to heavy flights.

Detectability. For eastbound raptors only, the highest one-day total and also the greatest rate for a full day count was 3142 on 18 May 82 (299 per hour, 10 hours, 12 species, J. Peacock). Other high counts (all J. Peacock) included the following: 2215 birds on 10 May 91 (185 per hour, 12 hours, 15 species); 1752 on 16 May 95 (219 per hour, 8 hours, 14 species); and 1401 on 11 May 86 (155 per hour, 9 hours, 14 species). A higher passing rate of 410 per hour on 30 Apr 2001 (1367 birds, 13 species, LB) was in only 3.3 morning hours and thus indicates only the maximum rate at the height of a day's flight; an all-day count would have increased the total but reduced the birds per hour.

Table 12 gives relative spring detectabilities for the 16 commonest raptors (excluding Black Vulture) migrating eastward past Brockway Mt. during 734.6 hours of observation by J. Peacock and me from 2 April to 31 May, 1985-95. The three commonest species were, in order, Broad-winged, Sharp-shinned, and Red-tailed Hawks, which together accounted for 92.2% of the total 47620 raptors. The other 13 species contributed less than 2% each. The Turkey Vulture total might have been inflated by local breeders.

Species diversity. Maximum species diversity occurred in the second week of May (Fig. 10), but the first week of May would have been the same had it not been for the one record of Black Vulture. The curve for species diversity closely resembled that for detectability (Fig. 11, all raptors).

Timing of migration. All peaks noted here are tentative; more data are needed. All raptors combined (Fig. 11) appeared to reach maximum detectability in the

Table 11. Spring migration of diurnal raptors eastward (upper numbers for each date) and westward (lower numbers for each date) past Brockway Mt., Keweenaw Co., MI, in 1992. Census conducted by J. Peacock (in litt.) for the Michigan Audubon Society. Key: I/Hr = individual raptors per hour; m = mean; TE = total individuals eastward; THr = total hours of observation; TI = total individuals; TS = total species; TW = total individuals westward. Species: AK = American Kestrel; BE = Bald Eagle; BwH = Broad-winged Hawk; CH = Cooper's Hawk; GE = Golden Eagle; Me = Merlin; NG = Northern Goshawk; NH = Northern Harrier; Os = Osprey; PF = Peregrine Falcon; RsH = Red-shouldered Hawk; RtH = Red-tailed Hawk; SH = Swainson's Hawk; SsH = Sharp-shinned Hawk; TV = Turkey Vulture; Un = unidentified raptors.

Date	TV	Os	BE	NH	SsH	CH	NG	RsH	BwH	SH	RtH	RlH	GE	AK	Me	PF	Un	TI	THr	I/Hr	TS
1 Apr																		-	0	-	-
																		-		-	-
2			5					1			1						2	9	6	1.50	3
			5										1					6		1.00	2
3			6			1	1				4						3	15	7	2.14	4
			5				1										2	8		1.14	2
4			2														1	3	6.5	.46	1
			3															3		.46	1
5			16	1			2				12							31	9	3.44	4
				1							3							4		.44	2
6			18	14	5		8	4			16	1		2			3	71	8.5	8.35	8
							1	3			2	1	1	2			8	18		2.12	6
7																		0	2	0	0
			1															1		.50	1
8			16	1			3	1			12	2	4				5	44	8.5	5.18	7
			31	1			1				10		5				8	56		6.59	5
9			3	1			2				13							19	8	2.38	4
	1			1			2				14				2		7	36		4.50	6
10																		0	4	0	0
			2								2						1	5		1.25	2
11																		0	3	0	0
																		0		0	0
12													1					1	4	.25	1
			1										1					2		.50	2
13							2				7		3				1	13	7	1.86	3
		1	1		1		1	1			4		2					11		1.57	7
14	1						3				17			1	1		2	25	8	3.12	5
					1		3				9		1	1				15		1.88	5
15			1		1		1										1	4	7.5	.53	3
	1		2								14	1	3					21		2.80	5
16											1							1	8	.12	1
											2							2		.25	1
17	6		14	2	4	1	3				54	11	2		1		7	105	9.5	11.05	10
	1				1						7			1	1		1	12		1.26	5
18	11	1	14	14	45	2	4				79	44	1	1	1		6	223	9.5	23.47	12
			9	1	1						21		1				2	35		3.68	5
19	6		2	2	2						1	1		2			2	18	2	9.00	7
				1	1													2		1.00	2
20		1		2	37						9	3		2	1		2	57	3.5	16.29	7
				1	5						1			1				8		2.29	4
21																		-	0	-	-
																		-		-	-
22																		0	1	0	0
																		0		0	0
23	6	7	1	10	26			1			54	6	1	2	1		4	119	9	13.22	11

Table 11 (continued)

Date	TV	Os	BE	NH	SsH	CH	NG	RsH	BwH	SH	RtH	RlH	GE	AK	Me	PF	Un	TI	THr	I/Hr	TS
	2	3	2		24			1			32	8		4			2	78		8.67	8
24	4			3	39						1			1	1		1	50	7	7.14	6
	5			1	67	1	1				19	10		2	1			107		15.29	9
25	1	2			16						6				1			26	4.5	5.78	5
			1	1	75						55	5		1	1		1	140		31.11	7
26	1	1	6	2	54		1				15	2		2			2	86	9	9.56	9
		1	4		47						11	3			3		2	71		7.89	6
27	5	4	5	4	68	2	3	1	2		164	60	1	3			8	330	10	33.00	13
	3		5		30						94	8	3	1			1	145		14.50	7
28	8	16	31	38	209		5	2	78		219	118	10	15	1	3	29	782	10.25	76.29	14
	11	4	6	3	85	1	2	1	12		123	3	1	3	3		11	269		26.24	14
29	7	19	2	4	185	1	3	1	13		58	8	1	4		1	10	317	8.5	37.29	14
	29	1	1	1	65	2			2		32		1	1	1		3	129		16.35	11
30	6	8	9	3	128	1			14		91	17	1	25	1		5	309	9	34.33	12
		1	2		13			2	3		17	3	5				1	47		5.22	8
1 May	7	16	6	11	229	3	3	3	566	1	106	27	3	17	1	3	2	1003	9	111.44	16
	4	7	1	6	102	1	2		757	1	35	3		3	1	1	1	925		102.78	14
2	2	6	2	2	43				34		12	2		3		1	1	108	7	15.43	10
	5	4	2	3	126	1			13		21	3	2	4		1	2	187		26.71	12
3			1		2				5		2							10	5.5	1.82	4
	2		2		127		1		24		15	1		1			2	175		31.82	8
4	4	5		3	166	4	1		42		75	6		4			3	313	8	39.12	10
	1	1			31	1	1		60		24		1			1	4	125		15.62	9
5	3	2	6	1	80	2			131		43	5	1	3			8	225	8.5	33.53	11
	5		2		5				21		5							38		4.47	5
6	23	7	22	11	190	5	1		236		86	45	2	11	3	3	8	653	10	65.30	14
	20	1	5	1	63	4		1	192		38	1	2	3	1		3	335		33.50	13
7	19	2	6	3	50	2	1		85		10	2				1	3	184	8.5	21.65	11
	13	2	10	2	223	1			520	1	18	7	2	11	3		11	824		96.94	13
8	9	3	7	7	111	3	2		399		33	8	3	4	2	2	12	605	9	67.22	14
	13	3	7	5	86				1089		25	1	2	2		3	6	1242		138.88	11
9	3	4	1	3	158		2	1	252		45	15		21	3	2	8	518	8.75	59.20	13
		1			7			1	3		3	1	2			1	1	20		2.29	8
10	40	17	7	9	527	9	1	2	791		90	39	1	22	3	11	16	1585	10.5	150.95	15
	2		1	1	17				263		2	1	1		1	1		290		27.62	10
11	13	8	4	6	221	2	2	2	463		73	6		14	2		5	821	6	136.83	13
	1	1		1	27				35		3			1			3	72		12.00	7
12	4	3		3	122	1			28		6	2			1	1	3	174	7	24.86	10
	1	1	1		26	1			4		2							36		5.14	7
13											6						1	7	2.5	2.80	1
					9											2		11		4.40	2
14	10	1	4		270	4	1	2	225		43	9	2	2		1	10	584	9.5	61.47	13
	4		9		38				35		9	3	2		1		2	103		10.84	8
15	2	1	2	1	77	2	1		417		22	1			1	1	8	536	8	67.00	12
		1			5						4					1	3	14		1.75	4
16		2			27				7		2	2		4	1	2	1	48	3.5	13.71	8
	1	1	1		3				1								1	8		2.29	5
17																		-	0	-	-

Table 11 (continued)

Date	TV	Os	BE	NH	SsH	CH	NG	RsH	BwH	SH	RtH	RlH	GE	AK	Me	PF	Un	TI	THr	I/Hr	TS
																		-		-	-
18	4	8	9	5	185	2	1	2	899		101	10		6	4	1	22	1259	10	125.90	14
	7		1		11				56		6				1		1	83		8.30	6
19	12	6	5	4	230	2	1	2	687		81	16	2	4	4	3	9	1068	10	106.80	15
	4		3	1	27				199		11				1	2	3	251		25.1	8
20	9	2	7	1	19				325		11			1		1	1	377	9	41.89	9
	8	2	6		19				433		7	1					5	481		53.44	7
21	4	3	5	1	47			1	780		38	2		1	1		4	887	8.75	101.37	11
		2	4		22				275		15	2	1	1			2	324		37.03	8
22		2		3	83				144		16	1		1	3		1	254	9	28.22	8
		2			9				44				1				1	57		6.33	4
23																		-	0	-	-
																		-		-	-
24		1		1	1				2		8							13	5	2.60	5
			2						4				1		1			8		1.60	4
25	1	1	2	1	3			1	26		7		1				7	50	8	6.25	9
	1		1		1				2		1							6		.75	5
26		1			15				39		18	1		1		1	3	79	8	9.88	7
		1			3				3								1	8		1.00	3
27		1	2		16				78		7						10	114	7	16.29	5
					2				126		4						1	133		19.00	3
28			1	1	21				105		6			1			2	137	8	17.12	6
			1		7				11								4	23		2.88	3
29			1		16				252		9	2					5	285	8	35.62	5
		1	8		3				109		1						7	129		16.12	5
30		2	3	1	14	1			370		14	1					3	409	8	51.12	8
			5		4				28		1						4	42		5.25	4
31									3		4						1	8	2	4.00	2
																		0		0	0
TE	231	163	254	179	3742	50	58	27	7498	1	1808	475	40	180	38	38	251	15033	411.75	36.51	16
TW	145	42	162	32	1419	13	16	10	4324	2	722	66	42	43	22	13	118	7191		17.46	16

Table 12. Spring detectabilities for 16 diurnal raptors migrating eastward past Brockway Mt., Keweenaw Co., MI, 2 April to 31 May, 1985-95. Data from 734.6 hours of observation by J. Peacock and L. Binford. The period for each species was calculated by removing 5% of the individuals per hour at each end of the total two-month period of observation, except for Swainson's Hawk, for which its entire period of occurrence was used; when the 5% total fell within a date, all birds per hour for that date were deleted.

Species	Individuals per hour in period	Total individuals in period	% of total individuals, using periods	Hours in period	Period
Broad-winged Hawk	35.26	25633	53.83	727	2 May-29 May
Sharp-shinned Hawk	20.11	13875	29.14	690	25 Apr-21 May
Red-tailed Hawk	6.08	4407	9.25	725	18 Apr-21 May
Rough-legged Hawk	1.40	853	1.79	608	19 Apr-15 May
American Kestrel	.86	534	1.12	622	20 Apr-17 May
Turkey Vulture	.84	619	1.30	735	19 Apr-22 May
Osprey	.57	400	.84	697	24 Apr-21 May
Northern Harrier	.55	386	.81	706	7 Apr-17 May
Bald Eagle	.51	436	.92	850	2 Apr-22 May
Cooper's Hawk	.17	107	.22	658	18 Apr-18 May
Merlin	.15	106	.22	688	18 Apr-19 May
Peregrine Falcon	.15	100	.21	678	29 Apr-20 May
Northern Goshawk	.10	62	.13	649	6 Apr-13 May
Golden Eagle	.07	46	.10	676	9 Apr-15 May
Red-shouldered Hawk	.05	39	.08	757	3 Apr-18 May
Swainson's Hawk	.03	17	.04	562	1 May-16 May
Totals	66.90	47620	100.00	734.6	2 Apr-31 May

second week of May, because this is when four of the five commonest species peaked (Fig. 11): Sharp-shinned Hawk, Broad-winged Hawk, Red-tailed Hawk, and American Kestrel. Movements past Brockway continued even into July. For example, J. Youngman (field notes) saw 300 to 500 raptors circling over Manitou Is. on 20 June 2002 and 40+ on 1 July 2003, and R. Russell and I saw 82 Broad-wings and 11 Red-tails, all immatures, in 60 minutes at Brockway Mt. on 4 July 1996. I suggest that such late birds are wandering, "trapped" on the Peninsula by Lake Superior. All appear to be immatures. As they wander, they may coalesce into larger flocks, especially as fall approaches and they become physiologically disposed to migrate south in mid August. The lack of birds in mid September, when raptors peak at Whitefish Point, MI, and Duluth, MN, strongly supports this view.

Timing of the 16 regular species varies (Fig. 11; Table 11, 90% period). The Bald Eagle has two peaks, one in the first week of April, composed largely of adults, and another in the last week of April, mostly immatures; additional data from March probably will demonstrate that the real peak for adults is in the third or fourth week of March (see Species Account). The early dates correspond with the first major thawing of coastal waters. The Northern Goshawk also peaks early, in the second week of April, when local birds have already commenced breeding, and when grouse and Snowshoe Hares are available as prey, regardless of snow depth. The Northern Harrier and Rough-legged Hawk apparently follow the snow-melt line, attaining their greatest abundance in the third week of April, when the snow has melted to reveal their rodent prey. The Red-tailed Hawk seems to have two peaks, one in the last week of April, again approximating the snow-melt line and rodent availability, and the other in the second week of May; the two, I suspect, are age related, the adults peaking first; certainly, immatures greatly predominate in May. The Golden Eagle seems to peak in the last week of April, but more March data are needed; the April birds may be mostly immatures, with adults coming earlier. The Red-shouldered Hawk presents a mystery, as it is not known to breed north of Lake Superior. Most are immatures that peak in the last week of April, well after the species is on its breeding grounds in the northern Lower Peninsula. An earlier peak in the first week of April might represent adults, but age data are lacking. All Red-shouldered Hawks may be vagrants that overshoot their normal summer range. In the first week of May, the Turkey Vulture, Osprey, and Cooper's Hawk peak. Probably, the late peak of the piscivorous Osprey is timed with the melting of ice in its lake foraging habitat, and that of the bird-eating Cooper's Hawk, with the first major flight of passerines. The Broad-winged Hawk, Sharp-shinned Hawk, Merlin, American Kestrel, and Peregrine Falcon peak the latest—in the second week of May. The first three feed on small birds and must await the mid May appearance of major numbers of insectivorous passerines. The Peregrine feeds largely

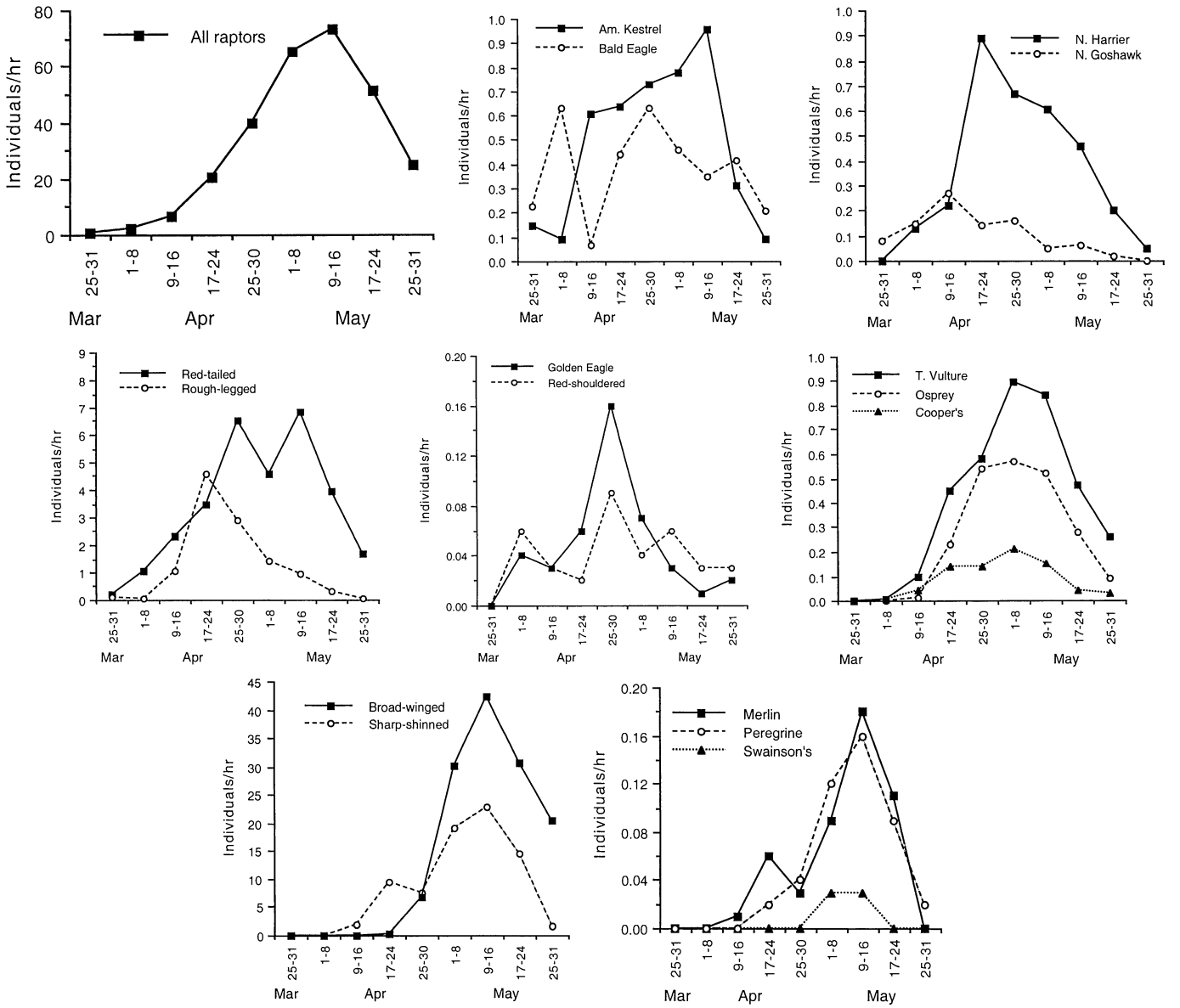

Fig. 11. Combined and separate spring timing for 16 species of diurnal raptors migrating eastward at Brockway Mt., Keweenaw Co., MI, 1976-2002. Data from field notes of L. Binford, F. Isaacs, J. Peacock, and J. Youngman.

on aquatic birds, especially shorebirds, which have a late timing similar to insectivorous passerines. The American Kestrel has a varied diet, part of which is large insects, which emerge late. The timing of the Swainson's Hawk, a western vagrant that has been recorded only in the first two weeks of May, presumably is correlated with some aspect of its western environment, perhaps the emergence of large insects.

Age. Few data are available on ages of Brockway raptors, but the following may be said. For every species, adults and immatures each make up a large percentage of the total (see Routes below). Adults precede most immatures in at least Bald Eagle, Sharp-shinned Hawk, Broad-winged Hawk, and Red-tailed Hawk, and perhaps, judging from the double peaks in Fig. 11, Golden Eagle, Red-shouldered Hawk, and Merlin (see also, Timing of Migration above). Peacock (1992) stated that in the period 2 April-31 May 1992, 92.6% of all Turkey Vultures were immatures. He also found that adults comprised only 9.8% of all eastbound Bald Eagles, probably because he missed the major movement of adults in March. Raptor counters need to record ages.

Color morphs. Dark morphs (color phases) for four species have been recorded in the Keweenaw. About 5.2% of Red-tailed Hawks are black, rufous, or chocolate morphs, which do not occur in eastern populations but are vagrants from farther west (LB). My records suggest that about 15.2% (14 of 92) of Rough-legged Hawks are dark (some jet black) or intermediate morphs. All four Swainson's Hawks I have seen were dark rufous

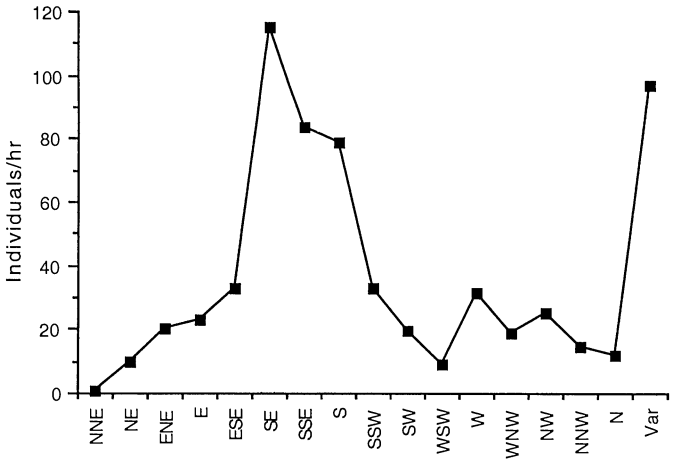

Fig. 12. Spring detectability of eastbound diurnal raptors in relation to wind direction at Brockway Mt., Keweenaw Co., MI. Data from field notes of F. Isaacs and J. Peacock, 1976-1995. Var = variable light wind.

morphs. There have been two certain records for black morph Broad-winged Hawks; these require thorough documentation.

Wind direction. A number of weather variables may affect raptor migration, including wind speed and direction, temperature, percent cloud cover, humidity, barometric pressure, fog, precipitation, and physiography, but available data are insufficient to evaluate any but wind direction, and even this analysis is tentative. Also, knowing the weather conditions only at Brockway Mt. is inadequate; any detailed analysis must factor in weather at the point of a flight's inception and in between. Fig. 12 suggests that the best wind for maximum numbers at Brockway Mt. is southeast, with south and south-southeast also very good. Also, that light and variable winds can produce large flights suggests that birds will migrate anytime as long as winds and other weather factors (especially rain and fog) are not greatly adverse. This might explain why there is some migration, even an occasional good flight, with what would seem to be opposing winds—northeast, east-northeast, and east; perhaps (no data) the winds were light enough to be of little hindrance. A fair number of birds also arrive with west-northwest and northwest winds; these winds might also be light, but perhaps need not be, because they are quartering winds that should produce good updrafts off the coastal ridges. I suggest that such birds are ones that arrived farther southwest on the coast during the previous day or two (probably with south winds) and are the "dregs" of a major flight (with adequate data, this can be tested). That southwest and west-southwest winds seem to produce few birds might be an artifact of the data—few count days involved these directions. However, the ultimate destination of Keweenaw transient raptors, like that of many passerines, may be to the northwest, as suggested by Canadian range maps; this is particularly true of the Broad-winged Hawk. If so, southwest winds would tend to drift birds northeast off course and therefore may be avoided. Also, if the major source of Keweenaw birds is the west shore of Lake Michigan (see Routes), there might be few birds to produce flights from the southwest.

Routes. The routes spring raptors take to and from Brockway Mt. are uncertain. The most interesting question is, do any raptors cross Lake Superior from the Peninsula? I offer the following hypotheses concerning routes.

Reference to a map suggests that the major leading line from the south is the west shore of Lake Michigan (*e.g.*, past the raptor station at Cedar Grove, WI), which if extended northward, brings birds to the Keweenaw from slightly east of south. Some birds heading toward the Peninsula from the southeast, south-southeast, and south must encounter the east side of Keweenaw Bay, which I doubt is crossed, by buteos at least. No routes have been identified in Baraga Co.; in fact, on the Baraga NAMC of 11 May 2002, very few raptors were seen, while on the same day over 1200 were recorded at Brockway Mt. Because there is no evidence for concentrations on either side of Keweenaw Bay or for birds skirting it through L'Anse and Baraga, I suggest these turn northeast (more their preferred direction because it includes a northerly component), rather than southwest, and follow the Lake Superior coast to the Huron Mountains of Marquette Co., where some might cross and others continue east to eventually cross at Whitefish Point or farther east. This idea could be tested by observing raptors at Pt. Abbaye, Baraga Co., in the Huron Mountains of Marquette Co., and farther east along the coast.

I propose that those birds that miss Keweenaw Bay on the west side fly directly north to the Lake Superior coast in Ontonagon and Houghton Cos., but probably not Keweenaw Co., because the Bay would block birds heading directly there. Upon encountering the Lake, birds must decide whether to turn southwest or northeast; they choose the latter because it includes a desirable northerly component. Twice I have seen large movements at Calumet Township Waterworks Park on the shore of Lake Superior northwest of Calumet, Houghton Co. For instance, in .5 hr on 15 May 98, I counted 118 raptors of six species (Turkey Vulture 7, Osprey 1, Sharp-shinned Hawk 33, Broad-winged Hawk 72, Red-tailed Hawk 3, and small falcon 2) flying northeast within a few hundred yards of the beach rather than at the top of the gentle grade 1 mile inland; this was with a 10-20 mph south wind and on the same day as a major flight at Brockway Mt. An hour later I saw no birds along the high inland ridge above nearby Bumbletown, suggesting that all birds were following the coast. This coastal route explains why on the best Brockway days

most birds come not from the high Mt. Lookout ridge to the west-southwest but up the valley and low ridge directly from the west. On other days, probably with a slightly different wind direction (this could be tested), many birds pass to the south of Brockway Mt., using Mt. Lookout and Rocky Ridge.

Once birds reach Brockway Mt., they continue east to the tip of Keweenaw Point and Manitou Is. A 2002-04 study by J. Youngman (2002, field notes) demonstrates that many return to the mainland (*e.g.*, 320 did so on 5 May 2002), some the next day. However, some disappear to the east, east-northeast, or northeast and are not seen returning. Evidence for the crossing of four species appears strong, if not conclusive: Sharp-shinned Hawk (482 flew out, 39 returned= 443 apparently crossed), Rough-legged Hawk (69-24=45), Northern Harrier (35-2=33), and American Kestrel (47-7=40). No Broad-winged Hawks crossed. Evidence for other species is inconclusive: Cooper's Hawk (3-1=2), Red-tailed Hawk (20-13=7), Red-shouldered Hawk (1-0=1), Bald Eagle (4-2=2), Merlin (2-0=2), Peregrine Falcon (1-0=1), and Turkey Vulture (19-15=4). At least some individuals of Osprey, Merlin, and Peregrine Falcon presumably cross Lake Superior in spring, because I have seen them migrating in off the Lake in fall. Both Youngman and I have noted that Sharp-shins are adept at flapping against head winds that stop buteos, and thus may be able to flap across the Lake. Also, some species breed on Isle Royale: Sharp-shinned (uncommon), Cooper's (rare), Red-tailed (uncommon), and Broad-winged (*common*). Although these could skirt the Lake into Ontario and then return southeast across the 22 miles of water to the island, I think it more likely that they use strong south winds to traverse the 48 miles from the Keweenaw Peninsula, probably by kettling so high over Brockway that they can no longer be seen. Finally, at Ashland, WI, Brady (2000) found a lower percentage of Sharp-shinned Hawks and greater percentage of Red-tailed Hawks than occur at Brockway, suggesting that some of the former cross Lake Superior from the Keweenaw, whereas most of the latter do not.

Returning from Keweenaw Point, birds fly west and southwest, using several ridges, not just Brockway Mt. (LB and J. Youngman data). This accounts for J. Peacock's 1992 Brockway data, which demonstrate that at least 47.8% of the birds going eastward eventually return west past Brockway (Table 11), and his numbers probably are low, because some birds use ridges not visible from Brockway (Youngman data).

Where do spring birds go from the Keweenaw Peninsula? As noted, some apparently cross Lake Superior. Most birds, however, especially buteos, probably fly southwest along the coast and interior mountain ranges, past Ashland, WI, to skirt Lake Superior at Duluth, MN. Supporting this view are data from near Ashland (Brady, 2000), where most raptors were recorded with north, northeast, and east winds, which are among the poorest directions at Brockway Mt. (Fig. 12); many of these probably turn southwest immediately upon reaching the coast, rather than fly northeast against adverse winds to Brockway. Conversely, few raptors occur at Ashland with southeast and south winds, the best at Brockway, because birds reaching the coast between the two localities use these favorable winds to push them northeast—a direction with a preferable northerly component—to Brockway. Only after discovering that they are trapped by Lake Superior do they turn back southwest toward Ashland. The meagre banding data also suggest, but do not prove, this route to Duluth (see Fall Migration below and Species Accounts for Sharp-shinned Hawk, Merlin, Snowy Owl, Great Gray Owl, and Brown-headed Cowbird). Thus all data indicate that most Keweenaw raptors, especially buteos, are temporarily trapped on the peninsula and must extricate themselves by flying in an inappropriate southwestern direction past Ashland to Duluth.

As noted previously, many adults of all species are seen at Brockway. Assuming that adults retrace the first *spring* route they learn as immatures (raptors often take a different route in spring than in fall), we can state that each spring's flight does not consist of entirely new individuals (as might be expected along a route that traps them), but also of many older birds, which are thus forced to fly much farther to their breeding grounds than would otherwise be necessary. Perhaps selection favors taking the same route, even though longer, rather than try a new, possibly less safe or more taxing course. Also, since some species, such as Broad-winged and Red-shouldered Hawks, might still be expanding their ranges (see Species Accounts), perhaps selection is not yet complete. See Fall Migration below.

Fall migration. On 14 August 1965, B. and D. Wolck saw a flock of 36 raptors (6 species) flying northeast over Houghton (JPW 43: 167). On 21 August 1963, in two hours at Brockway Mt., I recorded 1 Northern Harrier, 254 Broad-winged Hawks, and 62 Red-tailed Hawks flying west; four days later I saw a flock of 14 Broad-wings at Agate Harbor (Binford, 1965). In 2001, at Brockway Mt., I recorded the following: 4 August, 4 Bald Eagles, 3 Red-tailed, 1 Sharp-shinned, and 2 buteos flying east in 90 minutes; 6 August, 1 Broad-winged, 5 Red-tailed (3 adults, 2 immatures), and 1 Sharp-shinned going east in 30 minutes; 11 August, 2 Bald Eagles (1 adult, 1 immature), 1 Sharp-shinned (immature), and 5 immature Broad-winged flying east in 85 minutes. These records, especially the adults, suggest fall movement from Duluth to the Keweenaw, thence south, although I cannot prove they did not cross Lake Superior or

simply remained from spring (note the 4 July record above). Certainly, there is no migration to equal spring flights. Banding data for the Sharp-shinned Hawk and Merlin (see Species Accounts) suggest that in spring some birds move from Wisconsin to the Keweenaw and then to Duluth, and in fall return through Duluth, with some possibly retracing their route from Duluth to the Keweenaw before turning south. Banding records also demonstrate that some Bald Eagles, Northern Harriers, and Red-tailed Hawks raised to the south move north into the Keweenaw the same fall, thus adding a different population to the confusion.

Historical changes in transient populations. Of the 15 most regular diurnal raptors (excluding Black Vulture and Swainson's Hawk), 6 have clearly increased since the mid 1970s (Peacock and Binford recent data compared with Isaacs & Hennigar, 1980): Turkey Vulture (507% increase), Osprey (283), Bald Eagle (515), Golden Eagle (643), Merlin (900), and Peregrine Falcon (800). At least the Bald Eagle, Golden Eagle, and Peregrine Falcon are still increasing today (LB). I attribute these increases to recovery from the devastating effects of pesticides in the 1950s-mid 1970s. For seven species, relatively slight changes may be an artifact of the limited data: Northern Harrier (29% increase), Sharp-shinned Hawk (75% increase), Cooper's Hawk (19% decrease), Northern Goshawk (no difference), Red-tailed Hawk (106% increase), Rough-legged Hawk (29% increase), and American Kestrel (6% increase). None of these seems to have been seriously affected by pesticides. More difficult to interpret are seeming increases in the Red-shouldered Hawk (130%) and Broad-winged Hawk (303%). My records since 1986 suggest that the former is on the increase, even including a few migrating adults. Possibly, both species, which are essentially southeastern in distribution, are expanding northward in response to global warming or destruction of southern breeding habitat.

Non-raptor migration. West Bluff of Brockway Mt. is also a good vantage for observing spring migration of non-raptors through the Lake Medora gap, a low point to the southwest between Mt. Lookout ridge and Rocky Ridge (see Gazetteer), through which fly Canada Geese (thousands), Common Loons (hundreds), and Double-crested Cormorants (small numbers). Small numbers of Sandhill Cranes and Common Ravens, rarely White Pelicans, accompany the raptors passing West Bluff. Few passerines use Brockway, but the barren crest sometimes attracts open-country vagrants in spring (Say's Phoebe, Field Sparrow, Smith's Longspur, Chestnut-collared Longspur).

When to visit Brockway Mt. Although the road to West Bluff usually does not become snow free until late April, one should ignore the "Road Closed" signs and give it a try, or use a snowmobile. A few raptors should be seen on any day without rain or fog. From the above data, I suggest that the ideal time to view maximum numbers of individuals and species is in the last week of April and first two weeks of May, on warm clear mornings (0900-1200 EDT) without current or imminent frontal activity, with strong southeast, south-southeast, south, or light and variable winds, and preferably after a period of days with storms or adverse winds (which concentrate birds to the south). However, be warned, predicting raptor movements is far from an exact science!

Shorebird migration at sewage ponds

From 1986 through 2001, I conducted 29 spring and 157 fall censuses of shorebirds at the Calumet (starting in 1995), Lake Linden, and Tamarack City sewage ponds in northern Houghton Co. My primary purposes were to determine species diversity and the timing and magnitude of migration. Most of the following discussion deals with sewage pond birds *only*, so statements may not agree exactly with the Species Accounts, which include records from throughout the Peninsula.

Methods. My census method was simply to identify and count every bird present, regardless of time. The total count period varied from year to year, depending on when I was present in the Keweenaw; extreme dates were 25 April and 21 October, which therefore did not include early spring or very late fall migrations. The period 8-22 June was considered summer. An attempt to conduct weekly counts was somewhat compromised by variable later levels (see Habitat below). For analysis, I deleted counts with no wet habitat but included a few in which damp soil harbored the four plovers and Buff-breasted, Baird's, and Least Sandpipers. When evaluating results, I used the number of birds per count within each species' primary spring and fall periods of occurrence *on the Peninsula as a whole* (see Species Accounts for periods), excluding extrememost dates well beyond the normal periods.

Habitat. Most inland ponds and lakes on the Peninsula have vegetated shores lacking mud edge, so shorebirds are restricted to sewage ponds, coastal and Portage Lake shores, river mouth bars, irregularly dryish marsh ponds, and (spring only) flooded farm fields. The shores and river bars are often covered when the level of Lake Superior is high or spring runoff excessive, and the sewage ponds vary considerably in the amount of mud edge and flats. Thus observers must continually visit all possible sites to determine where shorebird habitat is available.

The Lake Linden and Tamarack City systems consist of two ponds each, which are easily scanned by spotting scope from any point outside the enclosing posted fence. One pond is for receiving and holding water and is

Table 13. Spring detectability of shorebirds at northern Houghton Co., MI, sewage ponds, 25 April-8 June, 1986-2001. All numbers are within each species' primary period of spring occurrence on the entire Keweenaw Peninsula (see individual Species Accounts for periods). An "x" indicates a week of potential occurrence, because it is bracketed by weeks with sewage pond records. Key: F = frequency in percent of total counts; I/C = individuals per count; TI = total number of individuals.

Species	Individuals/count/week						TI	Mean	F
	April	May				Jun		I/C	(%)
Black-bellied Plover					.1		1	.04	4.0
Semipalmated Plover			1.0	2.9	1.5	5.2	63	2.4	53.8
Killdeer	4.5	8.5	1.4	1.7	2.2	4.4	85	2.9	86.2
Greater Yellowlegs		2.0	.8	x	x	.2	9	.4	15.4
Lesser Yellowlegs		18.5	1.4	4.3	.4	2.0	87	3.0	44.8
Solitary Sandpiper		.5	x	.1	x	.2	3	.1	10.7
Spotted Sandpiper			4.2	1.1	4.8	7.4	104	3.6	72.4
Hudsonian Godwit				.7			5	.2	8.3
Semipalmated Sandpiper			.4	.3	7.5	34.8	238	9.9	45.8
Least Sandpiper			2.8	7.7	.5	.8	76	3.3	47.8
White-rumped Sandpiper			.2	.6	.1	1.8	15	.7	28.6
Baird's Sandpiper			.2	x	x	.8	5	.2	16.7
Pectoral Sandpiper		1.5	.4	.6	.1		10	.3	20.7
Dunlin			.6	3.0	4.2	5.2	84	3.4	44.0
Short-billed Dowitcher				1.3	.4		12	.6	18.2
Wilson's Snipe				.1			1	.03	3.4
Wilson's Phalarope		.5	x	.6	1.1	1.0	19	.7	26.9
Total Individuals							817		
Individuals/count/week	4.5	31.5	13.4	25.0	22.9	63.8	mean I/C: 28.2		
Recorded species/week	1	6	11	14	12	12	total: 17 species		
Potential species/week	1	6	13	16	15	12			
Total counts/week	2	2	5	7	8	5	total: 29 counts		

always full (but should be searched for phalaropes); the other is for evaporation and percolation and varies from full to dry in all seasons, depending on sewage treatment practices, with a bottom that is uneven enough to have muddy pools when low. The Calumet system includes two very large holding ponds, one of which is a least partially drained in fall, and about 25 small evaporation ponds, which vary from full to dry; all are accessible by car on weekdays (ask permission at office) and by foot on weekends. Many are full in spring, because in addition to sewage, they collect storm sewer water from snow meltoff. In summer and fall, and some years in spring, usually three or four are at the proper level to support a wide mud edge or extensive mud flat. Ponds that are totally dry or are being filled lack the invertebrate food sought by shorebirds.

Twenty-seven of the 35 shorebird species recorded for the Keweenaw have been seen at these sewage ponds in spring (Table 13) or fall (Table 14); these figures include Western Sandpiper, which, however, was found too late (2004) to include in the rest of this discussion. The other eight have never been found at any Peninsula sewage pond, either because of rarity or preference for other habitats. The Upland Sandpiper and American Woodcock are summer residents that breed and forage in other habitats; the Piping Plover, Red Phalarope, American Avocet, Willet, Whimbrel, and Marbled Godwit have been recorded only on the shores of Lake Superior, Keweenaw Bay or the Portage Lake system, although all six might occur at sewage ponds. The 35 Peninsula shorebirds represent 85.4% of the state's 41 species. Those unrecorded (Snowy Plover, Wilson's Plover, Black-necked Stilt, Eskimo Curlew [extinct?], Purple Sandpiper, Curlew Sandpiper) are all extreme rarities, but are possible in the Keweenaw.

Spring. Only 817 individuals of 17 species were recorded on my 29 spring censuses, or 28.2 per day (Table 13). This paucity of data renders tentative the ideas advanced below and does not allow meaningful graphing.

Spring seasonal detectability. My highest one-day totals were 173 individual birds (7 species) on 3 June 86 (including 130 Semipalmated Sandpipers; Lake Linden, Tamarack City), 93 (10 species) on 17 May 90 (Lake Linden, Tamarack City), and 54 (10 species) on 27 May 98 (all three localities).

Total spring detectability (in individuals per count per week) started at 4.5 in the last week of April, when most shorebirds had not yet arrived (see row entitled Individuals/count/week in Table 13). A sharp rise to

Table 14. Fall detectability of shorebirds at northern Houghton Co., MI, sewage ponds, 17 June-21 October, 1986-2001. All numbers are within each species' primary period of fall occurrence on the entire Keweenaw Peninsula (see individual Species Accounts for periods), except (*) for Killdeer and Spotted Sandpiper, which start on 9 and 16 June, respectively, and Red Knot, Ruff, and Red-necked Phalarope, for which periods were estimated from McPeek and Adams (1994). An "x" indicates a week of potential occurrence because it is bracketed by weeks with sewage pond records. F = frequency in percent of total counts; I/C = individuals per count; TI = total individuals.

Species	Individuals/count/week																	TI	Mean I/C	F (%)
	June		July				August				September				October					
Black-bellied Plover						.1	.1	.3	x	x	.1	x	1.0	2.1	2.2	2.9	2.4	83	.7	23.9
American Golden-Plover						.1	.3	.1	x	.3	.7	1.4	4.8	6.4	3.3	5.9	1.4	187	2.0	35.9
Semipalmated Plover			.4	x	.3	1.8	2.1	3.5	9.3	11.7	10.7	6.3	1.5	2.9	.7	1.4	.8	543	3.7	56.5
Killdeer*	8.6	8.0	11.6	11.7	13.3	18.5	24.3	19.4	20.4	23.0	17.0	11.3	9.8	7.7	1.3			2001	15.9	87.3
Greater Yellowlegs			.6	.4	.3	.5	.9	.5	1.3	.4	.4	.6	.1	.1	.3	1.1	1.0	83	.6	30.1
Lesser Yellowlegs	6.4	2.4	4.7	5.3	6.8	10.8	22.7	25.4	26.1	12.4	8.9	4.5	1.0					1520	13.1	83.9
Solitary Sandpiper		.5	.4	1.8	.8	2.2	7.6	7.2	9.8	5.7	2.9	2.0	.4	2.5				517	3.7	53.2
Spotted Sandpiper*	4.2	4.0	4.9	4.0	3.3	2.8	3.5	2.5	2.2	2.1	1.6	.5	.1					221	2.2	62.7
Ruddy Turnstone												.1						1	.02	2.0
Red Knot*									.5									4	.03	.8
Sanderling								.1	.1	x	x	.6	.9	.3	.3	.2		24	.2	13.0
Semipalmated Sandpiper				.5	3.9	2.6	4.0	14.0	20.5	18.3	4.9	1.4	.4	.4	.3	.3		828	6.7	66.9
Least Sandpiper	1.2	3.2	6.4	12.4	10.7	23.8	40.6	31.6	20.4	9.6	5.1	1.2	.4	.2				2059	14.4	69.9
White-rumped Sandpiper									.1	x	x	x	x	x	1.3	x	1.4	12	.2	6.7
Baird's Sandpiper					1.1	2.8	.9	3.3	13.4	5.4	4.9	6.1	2.1	1.3				499	4.6	54.1
Pectoral Sandpiper				2.2	3.5	5.5	13.1	12.2	11.1	4.3	12.9	20.4	22.5	69.6	68.2	36.6	12.4	2439	18.5	81.8
Dunlin														.1	.8	1.3	1.4	22	.7	29.0
Stilt Sandpiper					.1	x	.6	.7	1.9	2.4	1.0	.2	x	.2				79	.7	24.8
Buff-breasted Sandpiper						1.8	.1	.3	.2	.6	.6	.9	.1					46	.5	17.0
Ruff*								.1										1	.01	1.4
dowitcher sp.			.4	.1	.5	.3	.7	2.1	1.5	.5								76	.8	33.3
Long-billed Dowitcher														.4				3	.03	2.0
Wilson's Snipe		.2	.1	3.0	1.3	1.0	1.8	.6	.6	.6	1.4	1.0	1.3	.9	.5	.6		131	1.0	35.4
Wilson's Phalarope							.2	.4	.4									12	.3	16.2
Red-necked Phalarope*											.7							5	.1	1.8
Total Individuals																		11396		
Individuals/count/week	20.4	18.2	29.4	37.7	45.9	74.8	123.3	124.2	139.4	97.3	73.7	58.5	45.6	93.3	78.7	50.0	20.8	mean I/C: 72.6		
Recorded species/week	4	6	8	10	13	14	17	19	17	15	16	16	15	15	11	9	7	total: 25 species		
Potential species/week	4	6	8	11	13	15	17	19	19	18	18	18	17	16	11	10	7			
Total counts/week	5	5	9	11	10	13	15	11	17	7	7	12	10	7	6	7	5	total: 157 counts		

31.5 in the first week of May reflected seasonal peaks in Killdeer and both yellowlegs, and to a much lesser degree, the arrival of Solitary Sandpiper, Pectoral Sandpiper, and Wilson's Phalarope. In the second week of May (13.4), a sharp decline in the first three species (by 24.4 per count) was partially compensated for by the appearance of Semipalmated Plover, Spotted, Semipalmated, Least, and White-rumped Sandpipers, and Dunlin. The third week of May (25.0) marked the arrival of Hudsonian Godwit and Short-billed Dowitcher, the seasonal peak in Least Sandpiper, and slight increases of various other species. In the fourth week (22.9), most yellowlegs were gone and Leasts diminished, but Semipalmated Sandpipers and Dunlins increased, resulting in little change. The maximum number of individuals per count (63.8) occurred in the first week of Jun. This number, however, was greatly inflated by the exceptional 130 Semipalmated Sandpipers seen on 3 Jun 86, a strange year for shorebird migration. Deleting these resulted in the Semipalmated's reduction from 34.8 to 11.0 per count and total shorebirds from 63.8 to 40.0, much more realistic numbers. The remainder of the June total was comprised largely of highs in Semipalmated Plover, Spotted Sandpiper, and Dunlin, and the continued presence of other species (the high for White-rumped Sandpiper was in that unusual year, l986, when this species apparently summered). A more detailed analysis revealed that the spring peak was actually in the last few days of May and first few of June, bringing it close to the departure dates for most species, a circumstance I attribute to a more rapid pace of migration later in the season (Fig. 6).

Spring species diversity. Seventeen species occurred at the ponds in spring. My maximum one-day species total was 10 on 17 May 90 and again on 27 May 98 (see data above). Table 13 shows when arrival or departure of specific species affected weekly diversity, which rose steadily from 1 in late April to a peak of 14 in the third week of May, then dropped slightly to 12 through the first week of June. In some years, a few stragglers remained another week or so. However, if we assume that each species, during the period between its arrival and departure at the ponds, occurs every week (potential species per week, as indicated by an "x" in Table 13), a similar, but in my opinion more accurate picture emerges; the curve is smoother and peaks at 16 rather than 14 species.

Spring interspecific detectability. The commonest species was the Semipalmated Sandpiper, at 238 individuals or 9.9 per count; even if I ignore the extraordinary 130 on 3 Jun 1986, an unusual year for shorebirds, the totals remain the highest, 108 and 4.7 per count. Following closely were Spotted Sandpiper (3.6 per count; a breeder), Dunlin (3.4), Least Sandpiper (3.3), Lesser Yellowlegs (3.0), Killdeer (2.9), and Semipalmated Plover (2.4). No other species exceeded .7 per count. Thus 7 of the 17 species accounted for 90.2% of the 817 total individuals. Three spring species are summer residents, the Killdeer and Spotted Sandpiper, which breed at the sewage ponds, and Wilson's Snipe, which is casual because it is on territory in other habitats.

Spring frequency (Table 13). Because shorebirds travel in flocks, the statistic "mean individuals per count" might be misleading if one is trying to estimate the odds of seeing a particular species on a given day. Hence, I also give frequency—the percentage of total counts on which each species was seen (within its period of occurrence in the Keweenaw). Expectedly, the two highest frequencies were for species that breed at the ponds, Killdeer (86.2%) and Spotted Sandpiper (72.4). The next five most frequent species, Semipalmated Plover (53.8), Least Sandpiper (47.8), Semipalmated Sandpiper (45.8), Lesser Yellowlegs (44.8), and Dunlin (44.0), had percentages that were much lower and in a narrow range, 44.0 to 53.8%. These seven species are the same as determined using detectability (mean I/C), but the order is different. However, see Fall Frequency below.

Fall. Shorebirding is much better in fall than spring, because of better habitat and more birds with the addition of juveniles. In fall, 11396 individuals of 25 species were counted on 157 censuses, or 72.6 per day (Table 14).

Fall seasonal detectability. The highest one-day totals were 431 (10 species) on 20 Aug 2002 (Calumet, Lake Linden, Tamarack City); 366 (12 species) on 22 Aug 86 (Lake Linden, Tamarack City); 311 (13 species) on 8 August 97 (Calumet); and 287 (11 species) on 21 Aug 97 (Calumet). The latest three of these highs correspond to the overall peak in shorebird numbers in the third week of August (see below). Total fall detectability (in individuals/count/week; Table 14, Fig. 13) started at 20.4 in the third week of June, half of which were breeding Killdeers and Spotted Sandpipers and the rest the two earliest transients, Lesser Yellowlegs and Least Sandpiper. The slight drop in numbers (to 18.2) in the last week of June probably was an artifact of the small sample size. In July, numbers rose steadily as new species arrived and those present gradually increased. In the first week of Aug (123.3), Killdeer, Least Sandpiper, and Wilson's Snipe reached annual peaks, and Lesser Yellowlegs and Pectoral Sandpiper increased greatly. The highest total (139.4) was attained in the third week of August, as Greater and Lesser Yellowlegs and Solitary, Semipalmated, and Baird's Sandpipers reached annual peaks, and there were still many Killdeers and Least Sandpipers. In the last week of August, numbers dropped precipitously to 97.3, of which 87.0% were the result of greatly reduced quantities of Lesser Yellowlegs

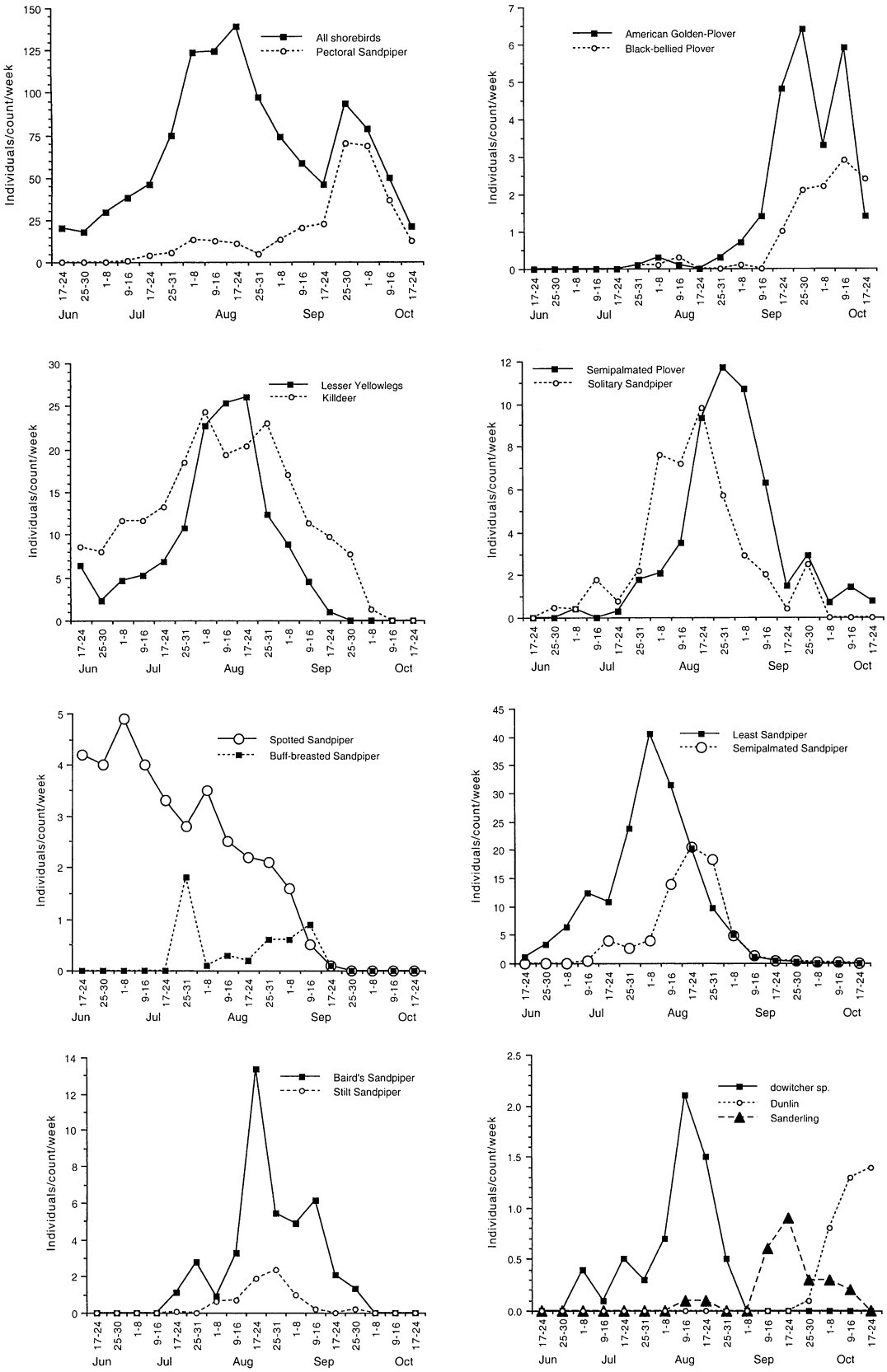

Fig. 13. Combined and separate fall timing for 15 species of shorebirds at northern Houghton Co., MI, sewage ponds, 17 June-21 October, 1986-2001. Data from Table 14.

and Solitary, Least, and Baird's Sandpipers; however, I suspect that insufficient data may have played a part in the seeming decline of these species. Numbers continued to drop slowly through the first three weeks of September. Then, suddenly, in the fourth week, the total jumped from 45.6 to 93.3, stayed rather high in the first week of Oct (78.7), then declined to 20.8 in the third week. This rise was due almost entirely to unusually large numbers of Pectoral Sandpipers in 1999 and to a lesser degree 2000. Removing these birds produced more realistic values, but a low peak still remained, demonstrating that the Pectoral often, but probably not annually, increases at this time.

Fall species diversity (Fig. 14). Twenty-five species (not including Western Sandpiper) occurred at the ponds in fall. My highest species totals were 16 on 14 Aug 86 (Lake Linden) and 14 each on 11 Aug 88 (Lake Linden, Tamarack City), 18 Aug 2001 (all three systems), and 20 Aug 87 (Lake Linden). As with total individuals, total species depended in part on the amount and quality of the habitat. Table 14 and Fig. 13 show when the arrival or departure of a species affected weekly species diversity, which rose steadily from 4 in the third week of June to 19 in the second week of August, then decreased very slowly to 15 in the last week of September. A more even curve emerges if we include potential species; the middle two weeks of August each have 19 species, and the subsequent decline is slower, the total remaining at 18 through the second week of September. In the third week of October, my last counts, 7 species were still present, demonstrating that migration extended later—about two weeks for most late species, as indicated by data from elsewhere on the Peninsula.

Fall interspecific detectability. The commonest species in fall was the Pectoral Sandpiper (2439 individuals or 18.5 per count; Table 14, Fig. 14). Three other species were much more abundant than all other species: Killdeer (2001, 15.7, a breeder), Least Sandpiper (2059, 14.4), and Lesser Yellowlegs (1520, 13.1). These four species accounted for 70.4% of the total 11396 individuals. The next most numerous species was Semipalmated Sandpiper, at a distant 828, or 6.7 per count.

Fall frequency (Table 14). As in spring, fall frequencies coincided roughly with detectabilities. This might suggest that frequency, for which data are easily acquired, can be used as a surrogate for detectability, which is more difficult to determine because it requires numbers of individuals. However, a graph of detectabilities against frequencies (Fig. 15) does not produce a straight regression line (1:1 relationship), but approximates a logarithmic curve, because the rate of frequency rise decreases with increasing detectability. This fact compromises the usefulness of frequency as an exact replacement for detectability. Nevertheless,

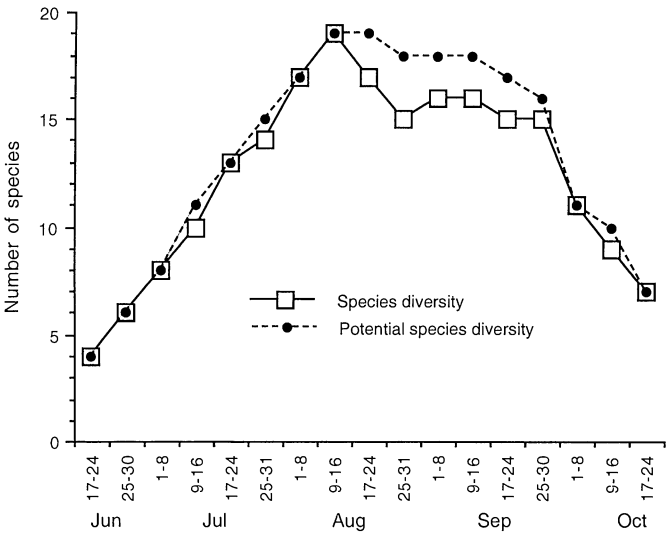

Fig. 14. Fall species diversity and potential species diversity of shorebirds at northern Houghton Co., MI, sewage ponds, 17 June-21 October, 1986-2001. Potential diversity assumes that each species is present every week between its recorded arrival and departure dates at the sewage ponds. Data from Table 14.

frequencies alone are useful in estimating how often an observer is likely to see a species. As an extreme example, one should expect to see a Lesser Yellowlegs (83.9%) but quickly realize that a sighting of a Red Knot (.8) would require immediate reporting and subsequent documentation.

Comparisons of spring and fall. Most comparisons between spring and fall detectabilities are invalid because of the paucity of spring data due to the scarcity of sewage pond habitat. Nevertheless, some observations are warranted.

In spring, eight species migrate primarily through the Great Plains states and provinces, so that on the Keweenaw Peninsula they are occasional (Hudsonian Godwit and White-rumped Sandpiper), casual (American Golden-Plover, Baird's Sandpiper, and Stilt Sandpiper) or unrecorded (Buff-breasted Sandpiper, Long-billed Dowitcher). In fall, the White-rumped and godwit move southward primarily to the east of the Peninsula and therefore become even rarer—casual and absent, respectively. The other five species become more common, because their migration routes expand to encompass the east coast, Baird's becoming common, American Golden-Plover fairly common, Stilt and Buff-breasted uncommon, and Long-billed Dowitcher casual. Some Keweenaw evidence suggests that annual variations in synoptic weather patterns affect the abundance of some of these species, as seemingly in fall 2000, which featured many east winds and few of the normal west winds, resulting in more White-rumps (drifted west from their eastern fall route) and fewer Baird's and Stilts (hindered from extending eastward). The Willet (ours belonging to the western population),

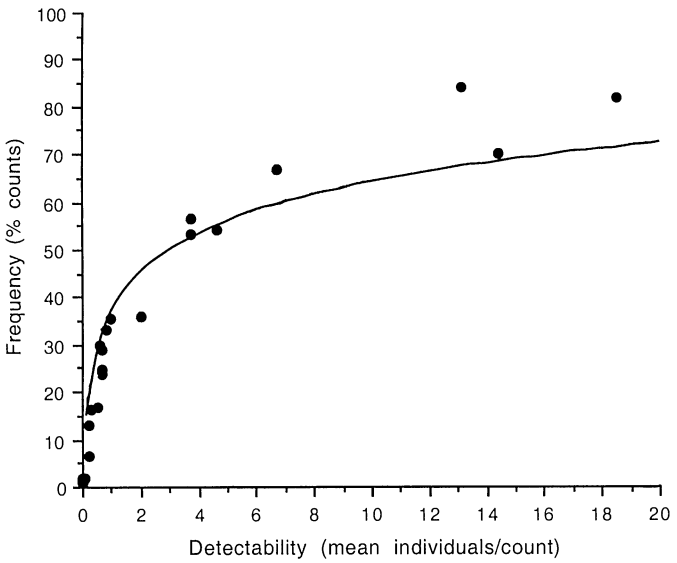

Fig. 15. Relationship of frequency of occurrence to detectability for fall transient shorebirds at northern Houghton Co., MI, sewage ponds, 17 June-21 October, 1986-2001. Data (from Table 14) approximate a logarithmic curve (solid line), equation y=37.171+26.942*LOG(x); R=.946; n=23; P<.001.

Marbled Godwit, and Wilson's Phalarope, all of which migrate primarily through the Great Plains in both seasons, are also commoner in spring, because, I submit, their spring migration period is in May, when west winds associated with fronts usually are numerous and drift them eastward, while in fall they pass early—in August and early September—before west winds increase in late September. As further evidence of this, May 2003 featured almost no west winds, because all but two fronts passed to the south, giving the Keweenaw east winds; only one Willet and no Marbled Godwits or Wilson's Phalaropes were recorded. The Pectoral Sandpiper's seeming rarity in spring probably is an artifact of incomplete coverage or poor habitat (too wet) in April. The Dunlin's apparent rarity in fall is because of its late migration, primarily in late October and November, when I did not census, and few observers are looking for it. The Spotted Sandpiper is more numerous in spring because most leave early in fall, but a few linger, thus extending its period of occurrence, while at the same time, decreasing the number of individuals/count/week.

In spring, each species has one migration peak, whereas in fall, two peaks are evident for most, the first consisting of adults and the second primarily of juveniles (see Age Groups)

That fall produces many more individuals per count than spring (72.6 *vs.* 28.2) is partly a function of habitat—ponds are often full in spring but have mud flats in fall. Also, of course, fall migration includes the summer's production of juveniles. The difference would be much greater (in terms of number of individuals/count/week) if all fall birds were compressed into a short period like spring (see below).

A comparison of the lengths of the two migration periods is interesting. Here I deal only with pure transients, ignoring the five summer residents, and use data from throughout the Peninsula. Spring migration is compressed and fall migration prolonged. Based on median dates (Table 3), the spring period is 42 days (27 April-7 June), whereas the fall period is 110 days (30 June-17 October), a difference of 68 days. Using only the 8 species for which I have all four median arrival and departure dates, the totals are 22 days in spring and 110 in fall, a difference of 88 days. Based on extreme arrival and departure dates (data in Species Accounts; excluding Red Phalarope on 5 Dec), the migration periods are 68 days (11 April-18 June) and 152 days (20 June-19 November, a difference of 84 days. Note also that the intervening "summer" period for shorebirds, measured from spring departure to fall arrival, is only 23 days—about 3 weeks—when using medians, and only 2 days if calculated from extreme dates. I suggest the following explanation for these differences. In spring, shorebirds cannot survive in their Arctic or Subarctic habitats, or along their migration routes, until thawing allows emergence of their invertebrate prey. I attribute the narrowness of the spring migration period to a trade-off between the instinct to reach the breeding grounds as early in summer as possible (perhaps to maximize the length of the breeding season) and the necessity of remaining south of the latitudinal thaw line, especially this far north and this late in spring, when snow and ice are just disappearing. These factors cause birds to concentrate ("dam up") within a narrow latitudinal band and thus pass in a brief period. In fall, neither constraint applies. Birds fly south into progressively warmer climates, and as long as they can find ample food enroute, they have little impetus to reach the wintering grounds quickly.

Shorebird migration in 1986 was unique in the last 19 years and therefore instructive, according to my hypothesis. Spring birds were very late, having been stalled somewhere to the south of the Peninsula. By the time they arrived, a few individuals apparently had lost their physiological ability to migrate and summered (White-rumped Sandpiper and possibly Semipalmated Sandpiper). Most continued northward, but some apparently found environmental conditions on the breeding grounds so inhospitable, because of the lateness of spring, that they either did not breed at all or failed, thus returning on record early arrival dates in the Keweenaw. Most started breeding so late that when they finally returned, they produced record late departure dates. These kinds of annual variations in fall arrival and departure dates and peak numbers, when averaged, produce broad peaks (Fig. 13) that may not be

valid for any specific year, *i.e.*, normal annual spans are much narrower.

Age groups. Adults of most Nearctic shorebird species migrate southward earlier in fall than do juveniles, but the extent to which they overlap is not clear (see shorebird accounts in McPeek & Adams, 1994). Although I did not record age data (I should have!), most graphs of detectability for Peninsular transient shorebirds depict a similar pattern (*e.g.*, Fig. 13, Pectoral Sandpiper). A prolonged early period of several weeks with low numbers, usually encompassing a very low peak, extends from the "normal extreme arrival date" (see Plan of the Species Accounts) to a point when the population suddenly surges upward to a high annual peak. Probably, the early group consists of adults only, whereas the second influx includes some adults and almost all the juveniles. Such species are: Black-bellied Plover, American Golden-Plover, Semipalmated Plover, Solitary Sandpiper, Sanderling, Semipalmated Sandpiper, Least Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, and dowitcher sp. The Lesser Yellowlegs and Stilt Sandpiper have lengthy early periods but no early peak (the apparent peak in the third week of June for the yellowlegs probably is an artifact of the data), suggesting that adults broadly overlap juveniles. That the Dunlin has no early low period or peak might be a result of the meagre sample size; however, the period shown (last week of September through the third week of October) might actually be the low period for this late shorebird, with many juveniles appearing after my counts ended. The Buff-breasted Sandpiper was unusual in having all or most adult migration compressed into a very short period (see P. C. Chu in McPeek & Adams, 1994), producing the highest peak of the fall, because the juveniles were spread over about six weeks.

Management of sewage ponds for shorebirds. See Waterfowl and Other Species at Sewage Ponds.

Christmas Bird Counts

Houghton County Christmas Bird Count (HCCBC). This census has been conducted during 26 Decembers from 1976 to 2001 (Table 15). Ninty-five species were reported during this period. However, in my opinion, four are not countable; the Ring-necked Pheasant was an escape (see Hypothetical List), and I consider the Osprey, Cooper's Hawk, and Brewer's Blackbird of questionable identification (see Species Accounts). Thus I accept 91 species (plus Varied Thrush, Chipping Sparrow, and Indigo Bunting, found after the 2001 cut-off date for this discussion). Two others have been reported only during count week, a well-documented Little Gull and an unacceptable Peregrine Falcon. I also reject two numbers, the 16 Common Loons in 1987 and the 65 House Finches in 96 (see Species Accounts). In Table 15, the questionable data, as well as count week (CW) records, are given in brackets, and all totals are modified according to my opinions.

With these changes, the number of species per count has varied from 22 (1986) to 47 (2001), with a mean of 31.2. The number of individuals per count has ranged from 726 (1986) to 3278 (1992), mean 1701, and individuals per party hour from 18.7 (1976) to 74.9 (1992), mean 37.5. The major causes for the great magnitude of these variations are coverage, weather, and irruptions. The number of observers, and hence party hours, varies according to the number of interested people available, and what they see depends in part on their expertise and comfort level. On counts with bad weather, some observers may go afield for less time or not at all, and those that try see less. Fewer birds, both species and individuals, occur during early winters with extreme cold, which freezes aquatic habitats, and heavy snow cover, which buries ground and shrub food, thus forcing emigration of most birds that feed in these habitats. In mild winters, more waterbirds and ground foragers linger. Of the 91 total species on the HCCBC, 18 (19.8%) are directly attributable to the presence of bird feeders (see Effects of Climate and Bird Feeders on the Wintering Avifauna). Irregular irruptions of winter passerines (*e.g.*, redpolls) also swell species and particularly individual totals. The relatively warm and snowless December of 2001 produced the all-time greatest species total (47), second highest total of individuals (2924), the most anseriform species (11), the highest counts for Canada Goose (141), Mallard (174), Common Goldeneye (192), and Common Merganser (267), irruptions of Common Redpoll (330) and Pine Grosbeak (106), and 4 species of lingering ground foragers. Observer effort also contributed to these numbers—the many warm and happy observers stayed afield for a near record 88.5 party hours.

The twelve commonest species recorded on the 26 counts are as follows: Black-capped Chickadee (7.65 per party hour), American Goldfinch (3.43), European Starling (3.33), Herring Gull (2.82), Rock Pigeon (2.75), Blue Jay (1.61), Common Redpoll (1.42), Common Goldeneye (1.38), Evening Grosbeak (1.10), Pine Grosbeak (1.05), Common Raven (1.03), and Bohemian Waxwing (1.03). However, the goldfinch, redpolls, grosbeaks, and waxwing do not occur every year, their total numbers being swelled by irregular irruptions. In fact, only 10 (11.0%) of the 91 species, all permanent residents, have been recorded on every count (100%C in Table 15): Rock Pigeon, Downy and Hairy Woodpeckers, Blue Jay, Common Raven, Black-capped Chickadee, Red-breasted and White-breasted Nuthatches, European Starling, and Evening Grosbeak (see Effects of Climate and Bird Feeders on the Wintering Avifauna). The Common Goldeneye and Herring Gull would also have occurred

every year were it not for the winter of 95, when all waters were frozen and not one waterbird of any kind was seen. Nineteen of the 29 permanent residents (65.5%) have not been recorded every year (see Effects of Climate and Bird Feeders on the Wintering Avifauna).

Twenty-five (27.5%) of the 91 species have been recorded only once (those marked 3.8% C in Table 15), including falcon sp. and meadowlark sp., and 10 others (11.0%) only twice (7.7% C in Table 15). Three of these are scarce permanent residents (Mute Swan [now extirpated], Great Horned Owl, Gray Jay). Six are casual or accidental visitants or transients at any time of year (Harlequin Duck, Glaucous Gull, Black-legged Kittiwake, Northern Hawk Owl, Great Gray Owl, and Loggerhead Shrike). Surprisingly, none is a true vagrant (but note the Varied Thrush in 2004). The other 26 species are lingering summer residents or fall transients. Of the last, 2 are raptors (including falcon sp.), 15 waterbirds, and 9 passerines (including meadowlark sp.), all of which depend on the vagaries of early winter weather, the waterbirds on open shallow or deep waters and the others on snowless ground; thus it is not surprising that of the 9 passerines, all but Horned Lark were at feeders. That over one-third of the 91 species have been recorded only once or twice I attribute mainly to the harsh winters, which limit food resources, and partly to species' ranges. Although some of these birds will eventually be seen again, thus moving them out of these frequency categories, new species almost certainly will take their place. Because of the large size of the pool from which the latter can be drawn, attainment of equilibrium will take many decades.

Fourteen HCCBC species have undergone significant winter population changes, as demonstrated in part by Christmas count data (see also, Species Accounts; Effects of Climate and Bird Feeders on the Wintering Avifauna; and Historical Changes). Four species seemingly have declined on the count: Herring Gull, White-winged Crossbill (?), House Sparrow, and Evening Grosbeak. Eleven have increased: Canada Goose, Bald Eagle, Ring-billed Gull, Rock Pigeon (now stable), Mourning Dove, Pileated Woodpecker, American Crow, European Starling (now stable), Cedar Waxwing Dark-eyed Junco, and Northern Cardinal. Other possible increases are likely the result of a temporary series of warm, snowless early winters starting in 1997-98: Mallard, Golden-crowned Kinglet, and American Tree Sparrow.

Eagle Harbor Christmas Bird Count. In contrast to the HCCBC, the Eagle Harbor census (Table 16) has recorded, approximately, half the number of species (47 *vs.* 91); two-thirds the mean species per count (20.8 *vs.* 31.2); one-third the mean party hours (15.7 *vs.* 45.4); and one-fifth the mean individuals per count (372.2 *vs.* 1701) but two-thirds the individuals per party hour (24.3 *vs.* 37.5). The difference in party hours is a result of having only 2-3 parties, which is about all that is needed to cover adequately the very few roads accessible in December. The other differences are owing largely to habitat. The Eagle Harbor count circle has no urban or rural habitats (and hence fewer feeders, but see below), only three residential villages, no farmland, only one old field, no marsh, few accessible lakes, and deep bays attractive to only a few diving waterbirds. In its favor are more extensive mesic mixed and wet coniferous forests. Also, the unbroken forests concentrate open country lingerers in the towns, where they are easily discovered; 8 species owe their presence to feeders, as compared with 18 on the HCCBC. Finally, of course, this count has been conducted only 5 times, compared to 26 for the HCCBC; additional species will be added, but the total probably will never reach 91.

The list of the 12 commonest species shares eight with the HCCBC list, but lacks Rock Pigeon and European Starling (no urban habitat), Evening Grosbeak (few feeders), and Bohemian Waxwing (no major irruption during the count years), and substitutes Common Merganser, Downy Woodpecker, Red-breasted Nuthatch, and Cedar Waxwing; only the nuthatch is significant—the result of more spruce trees.

Eight species (compared to 10 on the HCCBC) have been recorded on all counts, including Common Goldeneye and Herring Gull; missing are Rock Pigeon and European Starling (no urban habitat), Common Raven (but it has been seen all five years if one includes count week), Evening Grosbeak (few feeders), and White-breasted Nuthatch (very rare in Keweenaw Co. even in summer).

Twenty-four species (51.1% of 47) have been recorded only once and 9 (19.1%) only twice, compared to 25.3% and 11.0% on the HCCBC, but because only 5 counts have been conducted, these figures should drop as more counts are added; I doubt that new species will be added at the same rate, considering the uniformity of habitat. Compared to the HCCBC, the Eagle Harbor count is a better indicator of the natural, early winter avifauna of the Peninsula.

Effects of climate and bird feeders on the wintering avifauna

Winter data for the Peninsula, including Christmas Bird Counts (Tables 15 and 16), beg answers to such questions as why are there only 29 permanent residents among the 324 Peninsula species, and what attributes allow these, the 3 winter residents, and 6 winter visitants to survive when other species cannot? Also, why have only 10 permanent residents been recorded every year on the HCCBC (those marked 100%C in Table 15 and ** below)? See also, Modes of Occurrence.

Table 15. Houghton County Christmas Bird Count, MI, 1976-77 to 2001-02. CW = count week; I/PH = number of individual birds per party hour; I/C = number of individual birds per count; PH = party hours; TI = total number of individual birds; %C = percentage of the 26 counts on which species recorded. Because all counts were taken in December, the year at the top is the first year of each count period.

Species	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Snow Goose															1
Canada Goose												108			99
Mute Swan															
Tundra Swan				1											
American Wigeon															
American Black Duck															
Mallard		18			1							6			23
Canvasback		2													
Ring-necked Duck											1				
Greater Scaup		4													
Lesser Scaup				7											
scaup sp.			1			11		8							2
Harlequin Duck															
White-winged Scoter				4											
Black Scoter		1													
Long-tailed Duck		1						4							
Bufflehead		34					6	1							
Common Goldeneye	49	181	54	86	10	62	74	26	60	12	32	133	41	9	161
goldeneye sp.														12	
Hooded Merganser		1	1												
Common Merganser	80	53	70	6	17	14	22	3	[CW]	31	18	13	40	4	10
Red-breasted Merganser			2												
merganser sp.														4	
Ruddy Duck															
duck sp.															
[Ring-necked Pheasant]															
Ruffed Grouse	10	13	[CW]	3	6	2	2		10	3	4	14	2	[CW]	10
Common Loon									[CW]			[16]			
loon sp.														2	
Double-crested Cormorant															
[Osprey]									[1]						
Bald Eagle	1	1		1									1	1	1
Sharp-shinned Hawk						1			[CW]		1				1
[Cooper's Hawk]														[2]	
Northern Goshawk						1	1								
accipiter sp.				1										1	
Red-tailed Hawk															
Rough-legged Hawk	1														
[Peregrine Falcon]													[CW]		
falcon sp.				1											
[Little Gull]								[CW]							
Bonaparte's Gull				1											
Ring-billed Gull				8		50		50	12					4	120
Herring Gull	35	276	188	565	31	630	262	81	304	6	10	68	20	4	195
Glaucous Gull															
Great Black-backed Gull									1						
Black-legged Kittiwake															1
gull sp.						326	51	15	60	1	64	36		41	86
Rock Pigeon	51	17	28	6	5	45	100	127	85	67	8	44	74	254	131
Mourning Dove													9	1	22
Great Horned Owl															
Snowy Owl			1					1							
Northern Hawk Owl				1											
Barred Owl			1			1							[CW]		
Great Gray Owl															
Belted Kingfisher									2						
Downy Woodpecker	13	9	5	11	12	25	15	22	12	14	8	30	23	25	18
Hairy Woodpecker	5	3	5	13	12	17	14	14	1	15	8	21	13	27	11
Black-backed Woodpecker										1		1			
Pileated Woodpecker			[CW]				1	[CW]	1		3	4	2	[CW]	3
Loggerhead Shrike		1													
Northern Shrike		2		2	1	7			5	1		2	3	1	2
shrike sp.										2					
Gray Jay															
Blue Jay	96	41	37	62	37	43	26	27	60	80	28	33	129	137	66
American Crow	1			7			5	1	13	7	2	3	3	2	10

Table 15 (continued)

Species	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TI	%C	Mean I/C	I/PH
Snow Goose												1	3.8	.04	.001
Canada Goose		26		15		17	64	112	20		141	602	34.6	23.15	.51
Mute Swan							3					3	3.8	.12	.003
Tundra Swan												1	3.8	.04	.001
American Wigeon											1	1	3.8	.04	.001
American Black Duck							6	1			2	9	11.5	.35	.008
Mallard		1		46			56	58	72	2	174	457	42.3	17.58	.39
Canvasback												2	3.8	.08	.002
Ring-necked Duck											3	4	7.7	.15	.003
Greater Scaup							12					16	7.7	.62	.01
Lesser Scaup							1					8	7.7	.31	.007
scaup sp.		1					3	11		1		38	30.8	1.46	.03
Harlequin Duck								1				1	3.8	.04	.001
White-winged Scoter		1										5	7.7	.19	.004
Black Scoter												1	3.8	.04	.001
Long-tailed Duck											6	11	11.5	.42	.009
Bufflehead	3		5	1		1		5	10		5	71	38.5	2.70	.06
Common Goldeneye	33	68	36	20		41	39	63	113	27	192	1622	96.2	62.38	1.38
goldeneye sp.												12	3.8	.46	.01
Hooded Merganser							1				44	47	15.4	1.81	,04
Common Merganser				6		11	12	41	84	11	267	813	80.8	31.27	.69
Red-breasted Merganser											7	9	7.7	.35	.008
merganser sp.												4	3.8	.15	.003
Ruddy Duck								1				1	3.8	.04	.001
duck sp.				3								3	3.8	.12	.003
[Ring-necked Pheasant]				[1]								[1]	[3.8]	[.04]	[.001]
Ruffed Grouse	2	4		3	2	12	8	8	9	31	17	175	84.6	6.73	.15
Common Loon							1				2	3	7.7	.12	.003
loon sp.												2	3.8	.08	.002
Double-crested Cormorant								1				1	3.8	.04	.001
[Osprey]												[1]	[3.8]	[.04]	[.001]
Bald Eagle	1	1	1	1	1	2	3	1	17		11	45	61.5	1.73	.04
Sharp-shinned Hawk		1										4	15.4	.15	.003
[Cooper's Hawk]												[2]	[3.8]	[.08]	[,001]
Northern Goshawk						1	1			1		5	19.2	.19	.004
accipiter sp.												2	7.7	.08	.002
Red-tailed Hawk		1										1	3.8	.04	.001
Rough-legged Hawk		1						3	1		1	7	19.2	.27	.006
[Peregrine Falcon]												[CW]			
falcon sp.												1	3.8	.04	.001
[Little Gull]												[CW]			
Bonaparte's Gull												1	3.8	.04	.001
Ring-billed Gull	60	12	3	28		3	4	4	33		49	440	57.7	16.92	.37
Herring Gull	149	156	19	66		18	91	2	2	38	112	3328	96.2	128.0	2.82
Glaucous Gull	1											1	3.8	.04	.001
Great Black-backed Gull												1	3.8	.04	.001
Black-legged Kittiwake												1	3.8	.04	.001
gull sp.	35	24	67	9			51	14	169	6	51	1106	69.2	42.54	.94
Rock Pigeon	251	348	53	49	410	294	87	171	198	159	194	3256	100	125.2	2.76
Mourning Dove	[CW]	23	3	19	32	25	6	27	38	36	47	288	50.0	11.08	.24
Great Horned Owl		1							2			3	7.7	.12	.003
Snowy Owl		1					1	1				5	19.2	.19	.004
Northern Hawk Owl												1	3.8	.04	.001
Barred Owl			1								1	4	15.4	.15	.003
Great Gray Owl							1					1	3.8	.04	.001
Belted Kingfisher							1				1	4	11.5	.15	.003
Downy Woodpecker	4	20	12	23	26	18	14	21	21	24	37	462	100	17.77	.39
Hairy Woodpecker	9	7	8	9	7	16	14	8	17	15	8	297	100	11.42	.25
Black-backed Woodpecker			[CW]						1			3	11.5	.16	.003
Pileated Woodpecker	2	5	1	[CW]	2	2	4	3	6	7	4	50	61.5	1.92	.04
Loggerhead Shrike												1	3.8	.04	.001
Northern Shrike	1	2	[CW]	4	3	2	3	4	1	1	1	48	76.9	1.85	.04
shrike sp.												2	3.8	.08	.002
Gray Jay				3			1					4	7.7	.15	.003
Blue Jay	39	52	108	114	49	118	164	68	111	120	59	1904	100	73.23	1.61
American Crow	7	7	11	35	32	101	57	61	43	56	79	543	84.6	20.88	.46
Common Raven	25	60	50	24	52	56	25	89	182	17	50	1212	100	46.62	1.03

Table 15 (continued)

Species	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Common Raven	33	20	14	34	43	59	18	33	47	43	31	39	34	48	86
Horned Lark		3													
Black-capped Chickadee	141	242	153	131	338	288	306	529	188	401	322	440	543	336	341
Boreal Chickadee									5		2				3
Red-breasted Nuthatch	8	2	7	15	7	2	1	7	41	3	10	44	5	75	5
White-breasted Nuthatch	9	7	9	17	4	11	4	12	8	7	18	19	24	14	3
nuthatch sp.										4					
Brown Creeper	2	1	1	[CW]					1	1		1		1	2
Golden-crowned Kinglet									12						2
kinglet sp.				1											
American Robin	[CW]	[CW]	1		1					1		1			
European Starling	58	125	79	282	33	82	168	51	239	49	11	94	58	116	96
Bohemian Waxwing			[CW]		12				75	20		90	50	24	14
Cedar Waxwing												5		65	
Cape May Warbler															
Yellow-rumped Warbler															
American Tree Sparrow									[CW]						1
Song Sparrow															
Swamp Sparrow															
White-throated Sparrow															
Harris's Sparrow															
White-crowned Sparrow															
sparrow sp.															
Dark-eyed Junco								2	2	2			1		
Snow Bunting		8		[CW]		15	10		1			42			85
Northern Cardinal															
Red-winged Blackbird					3					2			1		
meadowlark sp.															
[Brewer's Blackbird]						[3]								[1]	
Common Grackle			1		3								1		
Brown-headed Cowbird												1		1	
blackbird sp.									1						
Pine Grosbeak	13	70			41	38		14	30	36	6	111	5	355	30
Purple Finch	1	3	8	9	2				20			1			
House Finch															
Carpodacus sp.												3			
Red Crossbill		8							15						
White-winged Crossbill	1	3			26		16		98			96		474	
Common Redpoll	46	278			50	44	5	11	50		102	90		123	
Hoary Redpoll		6				1									
redpoll sp.										1					
Pine Siskin		161		54	15	6			47			632	16	43	
American Goldfinch	19	2	1	106		1	33	20	151	3		160	163	145	2
Evening Grosbeak	41	18	55	282	67	25	130	124	22	43	33	37	68	25	29
House Sparrow	71	42	12	20	23	25	16	33	122		4	40	85	12	14
Total species	24	36	24	30	26	27	23	24	34	25	22	33	27	30	35
Total individuals	785	1657	734	1737	800	1832	1286	1216	1801	856	726	2462	1414	2386	1686
Total I/PH	18.7	37.7	24.1	39.5	25.8	53.9	40.2	48.6	62.1	36.4	25.9	41.4	28.0	71.2	39.7
Total PH	42	44	30.5	44	31	34	32	25	29	23.5	28	59.5	50.5	33.5	42.5
December date	18	17	16	15	20	19	18	17	16	21	21	19	17	17	16

Table 15 (continued)

Species	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TI	%C	Mean I/C	I/PH
Horned Lark												3	3.8	.12	.003
Black-capped Chickadee	208	418	354	323	302	458	372	483	503	406	494	9020	100	346.9	7.65
Boreal Chickadee							1			1		12	19.2	.46	.01
Red-breasted Nuthatch	6	10	9	56	3	87	27	26	16	31	18	521	100	20.04	.44
White-breasted Nuthatch	3	19	9	12	7	9	16	23	15	20	35	334	100	12.85	.28
nuthatch sp.												4	3.8	.15	.003
Brown Creeper		1	[CW]		1	2	2				3	19	50.0	.73	.02
Golden-crowned Kinglet						1	10	8		12	6	51	26.9	1.96	.04
kinglet sp.												1	3.8	.04	.001
American Robin		1					1		1			7	26.9	.27	.006
European Starling	28	278	131	336	119	309	76	277	259	285	283	3922	100	150.8	3.33
Bohemian Waxwing	[CW]		128	50		10	56	646	20		22	1217	53.8	46.81	1.03
Cedar Waxwing	[CW]					75	24	9	1			179	23.1	6.88	.15
Cape May Warbler											1	1	3.8	.04	.001
Yellow-rumped Warbler										[CW]		[CW]			
American Tree Sparrow								9		11	2	23	15,4	.88	.02
Song Sparrow					1							1	3.8	.04	.001
Swamp Sparrow										1		1	3.8	.04	.001
White-throated Sparrow					1		1				1	3	11.5	.12	.003
Harris's Sparrow	1							1				2	7.7	.08	.002
White-crowned Sparrow								1				1	3.8	.04	.001
sparrow sp.							1					1	3.8	.04	.001
Dark-eyed Junco	2	1		1	2	25	5	3	10	3		59	50.0	2.27	.05
Snow Bunting	3	60	1		2			95		40	2	364	50.0	14.0	.31
Northern Cardinal					1				1	3	1	6	15.4	.23	.005
Red-winged Blackbird						[CW]				2		8	15.4	.31	.007
meadowlark sp.						1						1	3.8	.04	.001
[Brewer's Blackbird]	[1]										[1]	[6]	[15.4]	[.23]	[.005]
Common Grackle							1		1			7	19.2	.27	.006
Brown-headed Cowbird												2	7.7	.08	.002
blackbird sp.												1	3.8	.04	.001
Pine Grosbeak	38	2	15	6	97	7	112	22	77	2	106	1233	88.5	47.42	1.05
Purple Finch	5	1		42		376		43		3	1	515	53.8	19.81	.44
House Finch						[65]				8		8	3.8	.31	.007
Carpodacus sp.						37						40	7.7	1.54	.03
Red Crossbill						4	12					39	15.4	1.50	.03
White-winged Crossbill		16				91						821	34.6	31.58	.70
Common Redpoll	91	85	170	35			91		72		330	1673	65.4	64.35	1.42
Hoary Redpoll			1									8	11.5	.31	.007
redpoll sp.												1	3.8	.04	.001
Pine Siskin	1	12	3			20				10	9	1029	53.8	39.58	.87
American Goldfinch	2	1455		244	17	428	1	336	29	710	20	4048	88.5	155.7	3.43
Evening Grosbeak	19	56	53	33	8	21	50	2	22	11	18	1292	100	49.69	1.10
House Sparrow		40	14		20			57	40		6	696	76.9	26.77	.59
												Totals:	Means:		
Total species	28	39	26	29	25	35	46	42	36	34	47	91	31.2		
Total individuals	1029	3278	1266	1616	1197	2699	1593	2820	2217	2111	2924	44217	1701		
Total I/PH	33.7	74.9	38.4	38.0	32.4	40.6	27.9	32.9	31.0	28.3	33.0		37.5		
Total PH	30.5	43.75	33.0	42.5	37.0	66.5	57.0	85.75	71.5	74.5	88.5	1179.5	45.4		
December date	15	19	18	17	16	21	20	19	18	16	15				

Table 16. Eagle Harbor Christmas Bird Count, Keweenaw Co., MI, 1962-63, 1963-64, and 1999-2000 to 2001-02. CW = count week; I/PH = number of individual birds per party hour; I/C = number of individual birds per count; PH = party hours; TI = total number of individual birds; %C = percentage of the 5 counts on which species recorded.

Species	1962 1963	1963 1964	1999 2000	2000 2001	2001 2002	TI	%C	Mean I/C	I/PH
[Canada Goose]	[CW]						[CW]		
Mallard					9	9	20	1.8	.07
Ring-necked Duck					1	1	20	.2	.01
Long-tailed Duck			1		4	5	40	1.0	.06
Bufflehead			1	3	3	7	60	1.4	.09
Common Goldeneye	21	3	30	22	76	152	100	30.4	1.94
Hooded Merganser					2	2	20	.4	.02
Common Merganser	3	[CW]			14	17	40	3.4	.22
Red-breasted Merganser		[CW]	1	1		2	40	.4	.03
Ruffed Grouse	1	[CW]	1	4	2	8	80	1.6	.10
loon sp.					1	1	20	.2	.01
Bald Eagle	1		4		4	9	60	1.8	.11
Northern Goshawk			1			1	20	.2	.01
Wilson's Snipe					1	1	20	.2	.01
Ring-billed Gull	1					1	20	.2	.01
Herring Gull	350	77	6	27	103	563	100	112.6	7.17
gull sp.			9	25	6	40	60	8.0	.51
Mourning Dove			1			1	20	.2	.01
[Great Horned Owl]		[CW]					[CW]		
Downy Woodpecker	17	10	19	3	12	61	100	12.2	.78
Hairy Woodpecker	3	1	1	1	1	7	100	1.4	.09
Am. Three-toed Woodpecker	1					1	20	.2	.01
Black-backed Woodpecker		1				1	20	.2	.01
Pileated Woodpecker			1			1	20	.2	.01
Blue Jay	13	4	16	26	28	87	100	17.4	1.12
American Crow				1	1	2	40	.4	.03
Common Raven	19	[CW]	6	7	26	58	80	11.6	.74
Black-capped Chickadee	29	65	114	57	129	394	100	78.8	5.02
Boreal Chickadee					8	8	20	1.6	.07
Red-breasted Nuthatch	13	8	2	8	8	39	100	7.8	.50
White-breasted Nuthatch					2	2	20	.4	.02
Brown Creeper			1		4	5	40	1.0	.06
Golden-crowned Kinglet	[CW]		4	2	8	14	60	2.8	.18
American Robin	2					2	20	.4	.03
European Starling				1		1	20	.2	.01
Bohemian Waxwing	16					16	20	3.2	.20
Cedar Waxwing	30					30	20	6.0	.38
American Tree Sparrow					1	1	20	.2	.01
Fox Sparrow				1		1	20	.2	.01
Harris's Sparrow				1		1	20	.2	.01
Northern Cardinal				2	1	3	40	.6	.04
Red-winged Blackbird				1		1	20	.2	.01
Common Grackle	2			4		6	40	1.2	.08
blackbird sp.				3		3	20	.6	.04
Pine Grosbeak	2	9	14	1	4	30	100	6.0	.38
Purple Finch	6					6	20	1.2	.08
Red Crossbill		2				2	20	.4	.03
White-winged Crossbill		4				4	20	.8	.05
crossbill sp.			2			2	20	.4	.03
Common Redpoll	8	161	40			209	60	41.8	2.66
American Goldfinch	3			36	1	40	40	8.0	.51
Evening Grosbeak			2	1		3	40	.6	.04
						Totals:	Means:		
Total species	21	12	22	22	27	47	20.8		
Total individuals	541	345	277	238	460	1861	372.2		
Total I/PH	38.6	28.8	17.9	15.9	20.5		24.3		
Total PH	14	12	15.5	15	22	78.5	15.7		
Date	24 Dec	29 Dec	1 Jan	17 Dec	16 Dec				

In discussing "winter" in the Keweenaw, in fact throughout the United States and Canada, a distinction must be made between "early winter" and "late winter." In the Keweenaw, a major weather change occurs annually sometime between mid December and early January, as north polar fronts suddenly become more frequent and severe. Temperatures plunge, freezing the surface of all shallow waters and eventually most, or sometimes all, deep waters, and snow 2 to 3 feet deep on the level quickly accumulates, covering everything on and near the ground. Since most Keweenaw Christmas counts are taken in mid December (hopefully, for the observers, early enough to avoid such conditions), they reflect only early winter bird status. Many birds (not treated here) linger into this period but disappear or become much less numerous in January, February, and early March. Whether they migrate, die, or simply go unmonitored is uncertain; a study would be enlightening.

Many variables can affect bird distribution (*e.g.*, see Wiens, 1989). Such climatic parameters as temperature and precipitation, for instance, may affect a few birds directly, especially in regard to exposure on nocturnal roosts, and some birds have evolved physical, physiological, or behavioral defenses against them. An individual bird not adapted to winter conditions, such as a Brown Thrasher, might survive for a period at a feeder, then slowly succumb to exposure. In my opinion, however, the most important effect of winter climate in the Keweenaw is on the availability of food resources. If the proper diet is available, many birds can withstand very harsh conditions. Thus, my approach below is to compare the status of winter birds with their food and normal foraging habits.

Before discussing that subject, however, let me mention the 19 permanent residents that have *not* been recorded on every HCCBC and may in fact go undetected all winter in the entire Keweenaw, even though present. The Sharp-tailed Grouse and Greater Prairie-Chicken are extirpated from the Peninsula. The Spruce Grouse and Wild Turkey do not occur in the HCCBC circle today, and the American Three-toed Woodpecker has never been recorded on this count. The Mourning Dove, American Crow (Fig. 2), and Northern Cardinal were not recorded in the early years but recently have spread north and now appear to be regular. The absence of the rest is related to their conspicuousness and rarity. The Ruffed Grouse, Barred Owl, and Pileated Woodpecker are silent, scarce, or secretive enough to be difficult to find in winter, when many small roads are closed and forests inaccessible to all but the adventurous. The Northern Goshawk, Great Horned Owl, and House Sparrow are so rare at all times of year that finding them during a single day requires diligent precensusing or good luck. This is true also of Black-backed Woodpecker, Gray Jay, Boreal Chickadee, Brown Creeper, and Golden-crowned Kinglet, which in addition have limited habitat in the circle, particularly spruce forest. Although these species are considered permanent residents on the Peninsula as a whole, some might actually be absent from the 15-mile diameter count circle during certain winters.

Adaptations to climate by the winter avifauna. In this section I treat the 29 permanent residents (marked *), 10 of which have been recorded on all HCCBCs (**), the 3 winter resident species (wr), the 6 winter visitant *species* (vi), and other selected winter birds (see definitions in Plan of the Species Accounts; and Modes of Occurrence in Discussions). The *Sharp-tailed Grouse and *Greater Prairie-Chicken are extirpated and will not be mentioned again.

Because low winter temperatures kill all free-moving adult insects, insectivorous birds that feed on them (*e.g.*, vireos, thrushes, warblers, all aerial feeders) must migrate to warmer climes where insects are plentiful. Some insectivores, however, can prosper, because they have evolved foraging methods that allow them to exploit invertebrate eggs and immature stages deep inside tree trunks (*Pileated Woodpecker), on or beneath bark (**Downy, **Hairy, *American Three-toed, and *Black-backed Woodpeckers), or in bark crevices (*Brown Creeper). Others investigate bark but also clusters of dead deciduous leaves and conifer needles (**Black-capped and *Boreal Chickadees, *Golden-crowned Kinglet); the two chickadees also forage on seeds. The last four species, all small-billed, are adept at finding and grasping the tinyest morsels, some nearly invisible to the unaided human eye.

Although a variety of species eat fruit, no permanent resident or winter resident is primarily frugivorous. The only persistent berry plant is the ground juniper, most of which are covered by snow in winter (but remain to be used in spring). The arboreal berry crop, unless exceptionally large, is mostly exhausted by late December, either through animal consumption or spoiling and dropping. Black Bears (*Ursus americanus*) and humans (*Gluttonus insatiabilis*) account for a high percentage of edible berries, as jellies and jams are a cottage industry in the Keweenaw. The rest are consumed during summer, fall, and early winter by other mammals and a variety of birds, including at least the following (LB observations): Ring-billed Gull (!), Pileated Woodpecker, Eastern Bluebird, Townsend's Solitaire (a vagrant eating ground juniper berries), Swainson's and Hermit Thrushes, American Robin, Gray Catbird, European Starling, Bohemian and Cedar Waxwings, Yellow-rumped Warbler, White-throated Sparrow, Pine Grosbeak, and Purple Finch; all these except the bluebird, Swainson's Thrush, and catbird have been recorded in at least early winter. The one frugivore that occurs every winter, the

Bohemian Waxwing (vi), is nomadic and does not remain all winter. Two summer resident species, the American Robin and Cedar Waxwing, are also nomadic in winter; occasionally they linger into early winter, casually to late winter. Early arriving robins have been seen eating the few remaining apples when their earthworm food is temporarily covered by snow (L. Murphy, pers. comm.).

Granivorous species fall into three natural categories, those that feed on or near the ground, in trees, or both. Because, by late winter, deep snow completely covers all low plants, members of the first group migrate, perish, or become restricted to feeding stations (which all but the Spruce Grouse attend at some time of year; see beyond). Five species are dependent on feeders: *Wild Turkey, **Rock Pigeon, *Mourning Dove, *Northern Cardinal, and *House Sparrow (and probably European Starling, see below). All other granivores that winter regularly or irregularly are arboreal foragers, which do not have a problem with snow, as follows: the Red Crossbill specializes on pine cones; White-winged Crossbill on spruce cones; Common Redpoll (wr), Hoary Redpoll (vi, but probably a wr), Pine Siskin, and American Goldfinch on white birch, speckled alder. and white-cedar cones; and Purple Finch, Pine Grosbeak (wr), and **Evening Grosbeak (all of which also eat berries) on a variety of tree seeds and buds. The **Red-breasted and **White-breasted Nuthatches can glean dormant insect life from bark, but in winter are largely granivorous, feeding on spruce and other conifer seeds (Red-breasted) or acorns (White-breasted). Even the ground-dwelling *Spruce Grouse and *Ruffed Grouse ascend into trees in winter to eat seeds, leaves, and buds. However, even arboreal seeds are not entirely dependable; the crop size varies from year to year, and many seeds drop before late winter, factors that cause major variations in annual abundance of all arboreal granivores.

Three permanent residents are carnivorous. The *Northern Goshawk feeds diurnally on birds up to grouse and crow size and on mammals as large as Snowshoe Hares (*Lepus americanus*). *Barred and *Great Horned Owls eat anything they can catch at night and even during day, and are large and fierce enough to handle animals the size of grouse, Red Squirrels (*Tamiasciurus hudsonicus*) and hares, which are more likely than small mammals to appear above snow level. The few Northern Shrikes (wr) hunt small birds. Raptors that feed mostly on small rodents and shrews, such as Snowy Owl (transient), Northern Hawk Owl (vi), Boreal Owl (vi), and Great Gray Owl (vi), cannot survive most mid to late winters because their prey lives beneath the snow most of the time. In view of the starving Boreal Owls (vi) that have been found in winter, the same probably is true of the Northern Saw-whet Owl, which I consider a summer resident only. Finally, the Gyrfalcon (vi), which forages in open habitats on large birds, especially ducks and grassland grouse, finds little to prey upon in the Keweenaw.

The four permanent resident corvids, *Gray Jay, **Blue Jay, *American Crow, and **Common Raven, as well as **European Starling, are omnivorous, eating a variety of both plant and animal food; all are adept at discovering new and unusual food sources. I theorize that no single food source is adequate to maintain these species, but a variety is. The crow has only recently become a permanent resident, and future very severe winters may confine it to summer residency. In my opinion, Blue Jays feed primarily on acorns in winter, and most emigrate southward during years with poor crops (see Fig. 1 in Species Accounts). The raven probably exists largely on road kills and deer carcasses, and many individuals migrate southward for winter. All will visit feeders, but only rarely in the cases of the Gray Jay and raven. The European Starling probably is dependent on feeders in winter, because it is largely a ground forager and secondarily arboreally frugivorous.

Adaptations to cold are not restricted to feeding habits. For instance, some permanent residents, especially the smaller ones, which because of their higher metabolism are more susceptible to low temperatures, roost at night in protective cavities, namely the Rock Pigeon, four woodpeckers, two chickadees, two nuthatches, Brown Creeper, European Starling, and House Sparrow, these 12 representing 41.4% of the 29 permanent residents and all small species except Golden-crowned Kinglet (which might bundle, see Terres, 1980). The grouse have special physical adaptations to winter conditions—pectinations that each fall form on the toes and act like snowshoes—and will roost under loose snow to conserve heat. Crossbills, Northern Cardinal, and Evening Grosbeak roost in densely needled branches of coniferous trees.

In any harsh environment, opportunism is advantageous, even necessary, during particularly stressful periods, and I have observed the following in the Keweenaw. Prime examples are the use of feeders, garbage dumps (formerly), and road kills. In cold weather, insectivorous arboreal passerines often descend to ground level, where insects are more plentiful. During one cold spring, a Summer Tanager could find only sunflower seeds at a feeder. Gulls follow fishing boats and plows and even pick black cherries off trees. Pileated Woodpeckers eat arboreal berries, and Golden-crowned Kinglets pick insect carcasses off old spider webs. European Starlings routinely warm themselves on chimney tops. House Sparrows and Rock Pigeons pick up refuse at fast food restaurants. Birds monitor the actions of others, including different species, to see what they have discovered.

No aquatic species is a true permanent resident.

Normally, parts of Portage Lake, especially its mouth, as well as L'Anse Bay, remain open in at least their deepest parts until early or even mid January, so that a few diving waterbirds are found on most December Christmas Counts. However, the HCCBC of December 1995 recorded not one waterbird of any kind—all waters were frozen, even Lake Superior. In most winters, waters freeze by January or February, including the inshore shallows of Lake Superior. Pond ducks are much scarcer than divers, because shallow waters, unless running, freeze earlier and more completely; only three dabblers have been recorded on Peninsula counts, American Wigeon (once), American Black Duck, and Mallard (see Migration).

Feeders. At least the following 69 species have visited seed, suet, or peanut butter feeders or the ground beneath at some time of year in the Keweenaw (data from numerous sources):

Canada Goose
Mallard
Ruffed Grouse*
Wild Turkey*
Rock Pigeon*+
White-winged Dove, v
Mourning Dove*+
Red-headed Woodpecker, v
Red-bellied Woodpecker, v
Downy Woodpecker*
Hairy Woodpecker*
Pileated Woodpecker*
Gray Jay*
Blue Jay*
American Crow*
Common Raven*
Black-capped Chickadee*
Boreal Chickadee*
Tufted Titmouse, v
Red-breasted Nuthatch*
White-breasted Nuthatch*
Brown Creeper* (peanut butter)
Varied Thrush, v (at suet and seed feeder)
Brown Thrasher
European Starling*+
Cape May Warbler+ (suet)
Pine Warbler
Summer Tanager, v
Eastern Towhee**
American Tree Sparrow**+
Chipping Sparrow
Clay-colored Sparrow
Field Sparrow, v
Vesper Sparrow
Lark Sparrow, v
Savannah Sparrow
Fox Sparrow**
Song Sparrow**+
Lincoln's Sparrow
Swamp Sparrow**+
White-throated Sparrow**+
Harris's Sparrow**+
White-crowned Sparrow**+
Dark-eyed Junco**+ (including Pink-sided)
Lapland Longspur**
Snow Bunting**
Northern Cardinal*+
Rose-breasted Grosbeak**
Indigo Bunting**
Painted Bunting, v
Red-winged Blackbird**+
Eastern Meadowlark (meadowlark sp.+)
Western Meadowlark**
Yellow-headed Blackbird, v
Rusty Blackbird
Common Grackle**+
Brown-headed Cowbird**+
Gray-crowned Rosy-Finch, v
Pine Grosbeak
Purple Finch**
House Finch**+
Red Crossbill
White-winged Crossbill
Common Redpoll
Hoary Redpoll
Pine Siskin**
American Goldfinch**
Evening Grosbeak*
House Sparrow*+

Twenty (* on above list) of the 29 permanent residents have been recorded at feeding stations, all regularly except Pileated Woodpecker, Gray Jay, Common Raven, Boreal Chickadee, and Brown Creeper. Feeder attendance is in addition to natural foraging habits and thus opportunistic. The Evening Grosbeak is thought by some to have taken advantage of feeders to spread its winter range into the northeastern US, and such seems to be the case with several Keweenaw species. Six permanent residents are largely ground foragers that, in my opinion, owe their winter survival solely to seed feeders: Wild Turkey, Rock Pigeon, Mourning Dove, European Starling, Northern Cardinal, and House Sparrow. In fact, all but the migratory Mourning Dove probably owe their *summer residency*, and hence the entire Keweenaw portion of their overall ranges, to *winter* feeding. On the other hand, evidence suggests that at least some individuals of the last three species are migratory. The American Crow (Fig. 2 in Species Account) has recently raised its winter status from casual to uncommon, in response to either feeders or a recent

warming trend.

Another 21 summer resident or transient passerines that are largely granivorous in winter (including blackbirds) have lingered irregularly into December or later (** on above list). Seventeen of these (81.0%) have been found, in winter, *only* at seed feeders, thus demonstrating their dependence on man and the importance of feeders to winter species diversity. The four exceptions are Purple Finch, Pine Siskin, and American Goldfinch, which occur often and in some abundance at feeders, but also feed on arboreal seeds, and the Snow Bunting, which is occasionally seen eating exposed seeds along plowed roadsides.

Completing the wintering feeder birds are two winter residents, Pine Grosbeak and Common Redpoll; three irregular visitants, Red and White-winged Crossbills and Hoary Redpoll; four partially or wholly insectivorous lingerers, Brown Thrasher, and Cape May Warbler, Rose-breasted Grosbeak, and Indigo Bunting; and five vagrants (v on above list), Red-headed Woodpecker, Red-bellied Woodpecker, Tufted Titmouse, Varied Thrush, and Field Sparrow. Six other vagrants (v) have been found at seed feeders in spring or fall. The remaining 9 species on the feeder list (unmarked on list and not mentioned above) have occurred only during summer or migration. Of the 91 species recorded on the HCCBC, 18 (+ on above list)—an amazing 19.8%—have been found *only* at feeders. Thus, Christmas Count compilers wishing to maximize their species lists should increase coverage of feeder yards. Counting the two vagrant hummingbirds and Orchard and Bullock's Orioles (see below), seed, suet, and nectar feeders have attracted a total of 15 vagrant species, and thus are a boon to birders. Feeders owners should *immediately* report all rarities (see below).

In addition to the 69 species that eat seeds, suet, or peanut butter, the Sharp-shinned Hawk, Boreal Owl, Northern Shrike, and probably other raptors hunt birds and small mammals attracted to feeding stations.

Economics strongly affect the number of active feeders. During the recent three-year recession (2002-04), many people in the Keweenaw stopped feeding birds (LB observation).

Nectar feeders. Hummingbird feeders in the Keweenaw have attracted three species of hummingbirds, the summer resident Ruby-throated and vagrant Broad-billed and Rufous. So strong is the Ruby-throat's attraction to nectar feeders that, in my opinion, they have allowed (or caused) earlier spring arrival and later fall departure (see Species Account). The Orchard and Bullock's Orioles (vagrants) and Baltimore Oriole (frequently) have also visited nectar feeders.

How to feed birds. To attract the maximum number of species and individuals, feeder owners should provide a variety of foods, including black oil sunflower seed (the most popular seed among birds), thistle seed (redpolls, goldfinch *etc.*; seed may spoil if over one year old), a wild bird mix (sparrows and blackbirds; place on ground near bushes), peanut butter, suet (woodpeckers, insectivorous birds; hang out of reach of *all* mammals, especially raccoons and bears; the larger Wallmarts have cheaper fresh suet than sold in seed-suet mixes). Orange halves may attract Baltimore Orioles. The more feeders the better; space them widely. Clean water, preferably in a bird bath and dripping if possible, is important if no natural source is available nearby. Seed feeders can harbor disease harmful, even fatal, to birds (not humans) and should be kept clean; also, periodically remove bird droppings and seed shells under seed feeders.

A popular hummingbird feeder is Perky Pet's Four Fountain Feeder, No. 203-CP, with the simulated flower petals removed but bee guards retained. A mixture of 3 parts water to 1 part white sugar, without food coloring, is recommended by most hummingbird experts. Nectar feeders must be kept full and clean during the period 1 May to 15 November to aid early and late Ruby-throats and perhaps attract a vagrant. Once filled, feeders should not be allowed to go dry or freeze even for a few minutes, as birds may have become dependent upon them and must eat continually to survive. Bees deter hummingbirds and should be eliminated if the bee guards do not work. There is a good correlation between the number of hummers and the number of feeders (LB), which should be well spread to reduce competition between the birds. Hummingbirds thought to be other than Ruby-throated, as well as other rare or unknown birds, should be reported *within the hour* to local birders (*e.g.*, try 289-4863, 482-8986, 482-3216, or 523-4416).

Feeders are supplemental to natural food sources, and although we might consider them unnatural and of little importance, the birds do not, some species using them even to expand their ranges and timing of migration. Deprived of seed feeders in winter, most permanent residents would still survive, but lingerers, vagrants, and the six permanent residents mentioned above probably would not.

Historical changes

Dynamic is the term that describes the bird populations of the Keweenaw Peninsula, as 91 species—over one-quarter of the total avifauna—appear to have increased or decreased in historic times, most of which are still undergoing change (Table 17). And this figure may be low because of incomplete historical information restricted primarily to Kneeland (1857), Cahn (1918), Wing (1939), Wood (1933), and Wallace (1949), plus data from various sources starting in 1972. I use the term "stable" to denote species for which there is no evidence (or even opinion) for change, although probably no

population is truly stable. Below I attempt to elucidate patterns based on Keweenaw data alone. See also Biogeography, Vagrancy, and Christmas Bird Counts.

Summer populations. Today, 37 species that breed or have summered appear to be increasing, 28 declining, 8 stable after previous change, 5 extirpated, and 1 extinct. In the discussion below, stable species are distributed among increasing and decreasing categories.

Increasing and stable summer populations. Forty-two species are either increasing (37) or stable (5). Fourteen increasing species have their primary population centers to the south or to the south and west of the Peninsula and here approach their northern distributional limits at this longitude. All seem to be actively spreading northward (or eastward) into the Keweenaw, where they find suitable unoccupied habitat; some of these, however, are spreading slowly because of the small amount or poor quality of their habitats, especially in Keweenaw Co. (see Biogeography). These 14 are Canada Goose (reintroduced race *maxima*), Wild Turkey (introduced to the south), Turkey Vulture, Broad-winged Hawk, Mourning Dove, Ruby-throated Hummingbird, Great Crested Flycatcher, Yellow-throated Vireo (breeding vagrant), Blue-gray Gnatcatcher (summer non-breeding vagrant), Northern Mockingbird (breeding vagrant), Golden-winged Warbler, Kirtland's Warbler (breeding vagrant), Northern Cardinal, and Baltimore Oriole. Most of these, I theorize, are reacting to global warming, whether it be a result of man's careless treatment of his own environment or a natural vacillation in the climatic regime. The Wild Turkey, Mourning Dove, Ruby-throated Hummingbird, and Northern Cardinal seem to owe their increase and persistence to bird feeding (see Effects of Climate and Bird Feeders on the Wintering Avifauna). Four other southern/western species, after increasing historically, seem to have established at least temporarily stable (and small) summer populations: Green Heron (rare enough that any changes might not be discernible), Red-shouldered Hawk (increasing as a spring transient), Rock Pigeon, and Evening Grosbeak (but see Winterers below).

Nine other increasing or stable (starling only) species have ranges that extend far to the north of the Keweenaw: Sandhill Crane, American Crow (but decreasing in farmland), Tree Swallow, Eastern Bluebird, American Robin, European Starling (overall stable; locally expanding and rurally declining), Cedar Waxwing, Red-winged Blackbird, and Common Grackle. All have also benefited from man, through provision of bird boxes (swallow, bluebird, starling), bird feeders (crow, starling, grackle), residential developments (for food and nest sites; robin, starling, waxwing, grackle), and hay fields (crane, blackbird).

Nine species are responding, at least locally, to forest maturation after logging of the virgin forests left only second growth, presumably reducing bird populations adapted to old growth. Two are closely associated, the Common Goldeneye and Pileated Woodpecker. Several localities on the north coast of Keweenaw Co. (including Agate Harbor and nearby Lake Glazon) have been protected from lumbering since the 1940s and recently have developed trees large enough to support the woodpecker, which, in turn, makes the nest cavities that have allowed colonization by the duck. The Common Raven, Winter Wren, Northern Parula, Nashville, Magnolia, Yellow-rumped, and Black-and-white Warblers are also increasing where forest patches have avoided the saw long enough.

Since the 1940s, the Gadwall, American Wigeon, and Northern Shoveler have been expanding very slowly, irregularly, and locally from the Great Plains into new, man-made, aquatic habitats in the northeastern US, including the Keweenaw.

At least three breeding raptors, the Osprey, Bald Eagle, and Merlin, which declined seriously in the 1950s-early 70s due to environmental contamination by organochlorine pesticides, began recovery in the early 1980s after the banning of DDT in 1962. However, the eagle is fairing poorly on the Peninsula coast, compared to inland, and the Osprey still has not regained former abundance, especially on the coast. I attribute this lack of full recovery not to continued pesticide contamination but to a great reduction in fish populations (especially yellow perch); commercial fisheries are reduced and those based in Keweenaw Co. have been abandoned.

Decreasing or stable summer populations. Thirty-seven breeding species are extinct (1), extirpated (5), decreasing (28), or stable (3). Of these, 15 are known or theorized to have been scarce or absent prior to the mid 1800s, then increased or invaded, mostly from the Great Plains grasslands, when copper mining resulted in logging of the virgin forests and clearing for farms, as follows: Sharp-tailed Grouse, Greater Prairie-Chicken (these two extirpated), Killdeer, Upland Sandpiper, Cliff Swallow, Barn Swallow, Clay-colored Sparrow (overall decreasing; very recently and locally increasing), Vesper Sparrow, Savannah Sparrow, Bobolink, Eastern Meadowlark, Western Meadowlark, Brewer's Blackbird, Brown-headed Cowbird, and House Sparrow. The last two owe their invasion in part to the large horse and cow poopulations then needed to sustain them and man. Today, all have declined, because hayfields continue to be abandoned, reverting to old fields and then second growth, livestock has become very scarce, and many farm buildings are no longer suitable for nesting, having been destroyed, cleansed, or renovated. I also have noticed that many farmers today do not simply cut fallow fields, as they did in the past, but cultivate fields

Table 17. Historical changes in summering, wintering, and spring migrating populations of birds on the Keweenaw Peninsula, MI, as of 31 Dec 2002. A series of marks denotes, chronologically, the known or presumed original historic status, all known changes, and lastly the current trend. The directions of origin, given only for birds marked as absent (a), are to the nearest major population from which Peninsula breeding birds are theorized to have originated. Key: – = population decreasing; + = population increasing; a = absent; e = extirpated; N = north; p = present; S = south; S-W = south and west; st = stable; W = west.

Species	Summerers	Winterers	Spring Transients	Direction of Origin
Canada Goose (*maxima*)	p ; a ; +		p ; a ; +	S
Mute Swan	a ; p ; e	a ; p ; e		Introduced
Gadwall	a ; +			W
American Wigeon	a ; +			W
American Black Duck		p ; e		
Northern Shoveler	a ; +			W
Canvasback			p ; –	
Common Goldeneye	p ? ; a ; +			N
Ruddy Duck			p ? ; +	
Spruce Grouse	p ; –	p ; –		
Sharp-tailed Grouse	a ; + ; e	p ; + ; e		S-W
Greater Prairie-Chicken	a ; + ; e	p ; + ; e		S-W
Wild Turkey	a ; +	a ; +		S
Common Loon	p ; –			
American White Pelican			a ; +	W
Double-crested Cormorant	p ; –; + ; –			
American Bittern	p ; – ; st			
Green Heron	a ; + ; st			S
Turkey Vulture	a ; +		a ; +	S
Osprey	p ; – ; +		p ; – ; +	
Bald Eagle	p ; – ; +	p ; – ; +	p ; – ; +	
Sharp-shinned Hawk			p ; – ; +	
Red-shouldered Hawk	a ? ; p ; st		p ? ; +	S
Broad-winged Hawk	p ; +		p ; +	
Red-tailed Hawk			p ; +	
Golden Eagle			p ; – ; +	
Merlin	p ; – ; +		p ; – ; +	
Peregrine Falcon			p ; – ; +	
Sandhill Crane	p ; a ; +		p ; a ; +	
Killdeer	p ; + ; –			
Upland Sandpiper	a ; + ; –			S-W
Ring-billed Gull	a ; + ; –	a ; +		W
Herring Gull	p ; + ; –	p ; + ; –		
Caspian Tern			p ? ; +	
Rock Pigeon	a ; +; st	a ; +; st		S
Mourning Dove	a ; +	a ; +		S
Passenger Pigeon	p ; extinct			
Black-billed Cuckoo	p ; –			
Ruby-throated Hummingbird	a ; +			S
Red-headed Woodpecker	a ; p ; – ; e			S
Red-bellied Woodpecker		a ; +	a ; +	S
Northern Flicker	p ; + ; –			
Pileated Woodpecker	p ; – ; +	p ; – ; +		
Least Flycatcher	p ; –			
Great Crested Flycatcher	a ; +			S
Yellow-throated Vireo	a ; +			S
American Crow	a ; +	a ; +	a ; +	W
Common Raven	p ; – ; +			
Purple Martin	a ; + ; e			S
Tree Swallow	p ; +			
Cliff Swallow	a ; + ; –			S-W
Barn Swallow	p ; + ; –			
Winter Wren	p ; +			
Blue-gray Gnatcatcher	a ; +		a ; +	S
Eastern Bluebird	p ; – ; +			
Veery	p ; –			
American Robin	p ; + ; – ; +			
Northern Mockingbird	a ; +		a ; +	S
European Starling	a ; + ; st	a ; + ; st	a ; +	
Cedar Waxwing	p ; +	a ; + ?		
Golden-winged Warbler	a ; +			S

Table 17 (continued)

Species	Summerers	Winterers	Spring Transients	Direction of Origin
Tennessee Warbler	a ; + ; –			N
Nashville Warbler	p ; – ; +			
Northern Parula	p ; +			S
Chestnut-sided Warbler	p ; –			
Magnolia Warbler	p ; – ; +			
Cape May Warbler	p ; + ; –			
Yellow-rumped Warbler	p ; – ; +			
Kirtland's Warbler	a ; +			S
Bay-breasted Warbler	p ; + ; –			
Black-and-white Warbler	p ; – ; +			
Clay-colored Sparrow	a ; + ; –			S-W
Vesper Sparrow	p ; –			
Savannah Sparrow	a ; + ; –			S-W
Song Sparrow	p ; –			
White-throated Sparrow	p ; –			
Dark-eyed Junco		p ; +		
Northern Cardinal	a ; +	a ; +		S
Rose-breasted Grosbeak	p ; – ?			
Bobolink	a ; + ; st			S-W
Red-winged Blackbird	p ; +		p ; +	
Eastern Meadowlark	a ; + ; –			S
Western Meadowlark	a ; + ; –			S-W
Brewer's Blackbird	a ; +; st			S-W
Common Grackle	p ; +		p ; +	
Brown-headed Cowbird	p ; –		p ; +	S-W
Baltimore Oriole	a ; +			S
House Finch	a ; + ; –			S
White-winged Crossbill		p ; –		
Evening Grosbeak	a ; + ; st ?	a ; + ; –		N
House Sparrow	a ; + ; –	a ; + ; –		S

and plant rows of grass that appears inadequate for nest building by at least the meadowlarks and Upland Sandpiper. These species sink their nests into a layer of old vegetation, which cultivation destroys, leaving only narrow rows of dry stubble interspersed with bare soil. Also, some fields are cut in July, when the young birds are not fully fledged. The Bobolink and Brewer's Blackbird have the same history of occupation from the west but seem to have stable populations; I predict their decline. The Upland Sandpiper, Vesper Sparrow, and Brewer's Blackbird may survive only on the Baraga Plains, and there only if clear-cutting remains the primary logging practice.

Four species appear to be decreasing, at least locally, from loss of shrub wetland, shrub upland (including edge), and hedgerows: Black-billed Cuckoo (also harmed by forest maturation), Chestnut-sided Warbler, Song Sparrow, and White-throated Sparrow. These habitats are changing naturally to forest, and shrubby edge is often removed along roads and hayfields.

Forest maturation benefits some species but causes others to decline, such as Northern Flicker (needs clearings), and probably Rose-breasted Grosbeak (prefers second growth).

Human activities seem to have caused declines in five species: Spruce Grouse (probably previously over-hunted, causing the reduction of local populations to sub-viable status), Common Loon (harassed by man's disturbance on nesting lakes), Passenger Pigeon (killed by man to the point of extinction), and Least Flycatcher (canopy trees selectively over-logged).

The Tennessee, Cape May, and Bay-breasted Warblers have declined since the 1980s due to a natural low in the cycle of spruce budworms.

The migratory House Finch perhaps extended its range too far north, to a point where it was affected by population reduction resulting from attempted wintering in too harsh a climate, coupled with limited recruitment (the House Sparrow also fits this category). The Red-headed Woodpecker (extirpated) was probably simply a case of vagrant breeding, and the mini-population never was viable. I place Mute Swan here, even though it was introduced, because it, too, failed to establish a viable population and became extirpated; in this case "recruitment" by man was fortuitously nil.

The Herring Gull immediately decreased in both summer and winter with the closing of all garbage dumps (see Conservation). I submit, however, that it was, and is still, affected by a decline in fish populations and the fishing industry, which provided fish offal. I also attribute to fish decline the recent decreases in the Double-crested Cormorant and perhaps Ring-billed

Gull.

The Purple Martin, for unknown reasons, has declined throughout its eastern range and is extirpated from the Keweenaw Peninsula.

The American Bittern is the only species that seemingly decreased after 1914 (Cahn, 1919) but is stable today; however, both past and current data are incomplete.

The Veery seems to have declined for unknown reasons, perhaps factors on the wintering grounds or along migration routes.

Winterers. In winter, 10 species are currently increasing, 5 declining, 2 stable, and 4 extirpated. Most changes mirror those in summer and will not be discussed further (see Table 17). Exceptions are the American Black Duck, which lost the hot water outflow in L'Anse and hence usually leaves in early winter, when shallow waters freeze. The Ring-billed Gull has increased in winter; however, if summer abundance continues to decline, winter numbers will soon follow. The Dark-eyed Junco is the only species that has increased in winter but not in summer, a fact that I attribute to transients attending feeders. The White-winged Crossbill and Evening Grosbeak appear to be declining, presumably as the result of unknown factors outside the Peninsula; both seem to me to be decreasing in summer, too, but this might be temporary, and I cannot provide supporting data.

Spring transients. Among those species that have spring transient populations distinct from breeders or winterers, 23 are increasing and only 1 decreasing. Eleven of the 23 are increasing also in summer (see Table 17), but one does not reflect the other, because the two populations are distinct. The difference between 23 and 1 may seem impressive, but probably is an artifact of the data, because most increasing species are large, conspicuous, and well-monitored, whereas small passerines are none of these. In my birding experience over 62 years here and elsewhere, passerine transients are declining, but Keweenaw data are insufficient to demonstrate this. I do not treat fall transients, because none appears to have changed. In fact, all species that are increasing in spring, except Canada Goose and Cedar Waxwing, have fall transient populations that are much smaller than in spring, suggesting that they take a different route, bypassing the Keweenaw.

The Golden Eagle and Peregrine Falcon, which have not bred successfully on the Peninsula, were decimated by pesticides in the 1950s-early 70s but have increased greatly as transients since the mid 1970s. Four breeding raptors, the Sharp-shinned, Red-shouldered, Broad-winged, and Red-tailed Hawks, which apparently were not so affected, have also increased as transients during the same period, although to a lesser degree. The Caspian Tern increase reflects the general trend in Michigan and elsewhere on the Great Lakes.

The American White Pelican, and possibly Ruddy Duck, have extended their migration routes eastward, the pelican concomitant with the spread of its breeding population in Minnesota and northern Lake Michigan.

The Canvasback is the only transient that seems to have decreased in recent years, as it has nation-wide.

Among summer residents, six are becoming more abundant as spring transients, at least on the north coast of Keweenaw Co.: Sandhill Crane, American Crow, European Starling, Red-winged Blackbird, Common Grackle, and Brown-headed Cowbird. These (as well as some raptors and Blue Jay) may be "trapped" on the Peninsula, unable or unwilling to cross Lake Superior. Probably, some (all?) eventually skirt the Lake via Duluth and perhaps the eastern end of the Upper Peninsula (see Effects of Lake Superior on Migration; Raptor Migration). The cowbird is the only species that has increased as a transient but is decreasing in summer, although both trends might be local.

Southern and southern/western species (see also Biogeography). Of the 22 summering species originating from the south (S in Table 17), 5 from the west (W), and 11 from the south or west (S-W), all known to have undergone change, 18 (47.4%) are increasing (none of the 11 southern/western birds), 5 (13.2%) stable, 11 (28.9%) decreasing, and 4 (10.5%) extirpated. (Another group of southern species is not included here, because no changes have yet been detected.) Of the last mentioned 20 species (stable, decreasing, extirpated), 2 stable (Bobolink, Brewer's Blackbird), 7 decreasing (Upland Sandpiper, Cliff Swallow, Clay-colored Sparrow, Savannah Sparrow, Eastern Meadowlark, Western Meadowlark, House Sparrow) and 2 extirpated (Sharp-tailed Grouse, Greater Prairie-Chicken) owe their current reduced status primarily to declining hay farms (including their buildings) and livestock. The more widespread Killdeer, Vesper Sparrow, and Brown-headed Cowbird, all formerly common on farms, are also declining. This, I submit, is because these 12 species invaded a region not *naturally* suitable, having taken advantage of an ephemeral man-made extension of grassland and farms. Of the remaining 8 of the 20, the Green Heron and Red-shouldered Hawk seem to be stable but are very rare and thus vulnerable, the House Finch is declining, and the Red-headed Woodpecker and Purple Martin are extirpated as breeders. The stable and common Rock Pigeon would have become extirpated without man. The last five apparently ventured northwest into a climate that is too harsh to provide adequate natural food. Finally, two forest species, the Veery (S-W) and Northern Parula (S) seem to be declining and increasing, respectively. Even some of the 16 increasing species,

especially those that winter, are subject to future decline if the climate deteriorates, either temporarily or in the long term.

Neotropical migrants. Keweenaw data reveal no firm evidence for declines due to destruction of neotropical habitats or mortality during migration; only the Black-billed Cuckoo, Veery, and Rose-breasted Grosbeak might fit this theory. All other declines can be explained readily by changes in habitats on the breeding grounds. However, the only real data I have that might detect neotropical effects are from the Bootjack BBS, which probably has not been run long enough. Although I agree that some specialized North American species, such as the Wood Thrush, have decreased probably as a result of the cutting of primary tropical forests, I think that most species are more adaptable to tropical second growth than generally believed. Far more devastating causes occur along the "gauntlet" that transients must fly between the Gulf Coast or Mexico and the Canadian border. In that stretch, birds are exposed to intensive direct mortality caused by millions of feral and domestic cats, billions of windows, vehicles (including airplanes), far too many communication towers, pesticides, hunting (even though controlled), and even the proverbial little boy with a BB gun. And these are in addition to the reduced amount of *temperate* habitat (especially extensive forest, grassland, and wetland) used for rest and refueling on migration, and the intensive natural effects of adverse weather and wild predators. I realize that grant funds were for a period easily obtained for research on the tropical bandwagon, *but the time has come to look* ***at home*** *for the real answers.* Lest we soon have nothing to study, perhaps ornithological researchers should direct their attentions less to esoteric subjects and more to the environment; but if this is to happen, employers and granting agencies must do the same.

Effects of development. See Conservation.

Conservation

Here I briefly discuss man's recent major actions that have affected bird populations.

Logging. The forests of the Peninsula have been logged continuously for over 150 years. The virgin lumber was removed and used primarily for buildings, mine timbers, and firewood during the copper mining boom. Many areas were cleared for growing produce for people and the hay needed by horses and milk cows. Later the forests were selectively harvested for hardwood and clearcut for pulp. This continues today, but is slowing as the trees become smaller and landowners find logging less profitable than selling the scarred land, usually to developers, who then bulldoze all vegetation and topsoil to make way for buildings and lawns.

It is easy to say, as some environmentalists do, that we should do away with lumbering and let nature repair the damage. But I sit here now in my wooden house in a wooden chair at a wooden desk using a wooden pencil to write on "wooden paper". Until man invents a substitute for wood, lumbering must continue. And what would be the effect on wildlife if lumbering were terminated? To ensure the viability of a bird's population, we need only to provide an adequate amount of proper quality habitat—at least what we have today. Without logging, however, the wild lands would eventually revert to unbroken old-growth forest (if fires continue to be controlled, as they will be to protect buildings), resulting in the extinction of grassland, old fields, shrub upland, and second growth, along with their avifaunas—a slow process already underway. The alternative would be to manage these habitats. But does man really want to do this, especially in an economically depressed region such as the Keweenaw, without monetary compensation? Not really.

I do not pretend to know the solution to this dilemma. In fact, until I though it out, I would have been the last to defend logging! A good compromise might be to set aside some large tracts for natural succession to old-growth forest and continue to log the other areas in a manner that maintains the current variety of habitats. Controlled burns are another option, but an unpopular one, because of the real possibility of a run-away fire destroying buildings. Because most of Keweenaw Co. is still forested, it would be the logical area to set aside, letting ecotourism become the mainstay of its economy. Although this approach would fail to help second growth, shrub upland, grassland, and old field biota, I would argue that the last two habitats are not native on the Peninsula anyway, having invaded when man cleared the forests; saving these would require farm management, which should be considered but might be less profitable for farmers. Unfortunately, the alternative to logging might well be development, which has already been allowed to proceed too far in parts of Keweenaw Co. In any event, without logging we cannot retain the habitats necessary to maintain all of the present avifauna, and perhaps that is the way it should be.

Development. By "development," I mean construction of new dwellings (with their clearings, driveways, lawns, *etc.*), business buildings, roads, communication towers and lines (including TVs and cell phones), electric lines, poles, and stations, sewage and garbage disposal facilities, and all the other physical things we have become accustomed to in our indulgent society, plus privatization of lands formerly available to the public. Nothing has a more deleterious effect on birds and other wildlife than development, because habitats are invariably removed or seriously altered. Just a small amount of care on the part of construction companies

could save many trees and shrubs. And I can only wonder about the people who come to the wild North Woods to build a mansion surrounded by lawn.

On the other hand, without some degree of development, people could not exist in a region. I would not be writing this book if I didn't have a cabin, a car, roads, a gas station, a grocery store, a mechanic, a doctor, a lawyer, and a candlestick maker, and these could not survive without their own support groups. So as much as we might like to live on Walden Pond, we are stuck with civilization. However, despite what politicians say, an inhabited area does not need to "grow"; it can survive quite nicely with a *finite* number of people and supporting businesses. This is particularly true of the Keweenaw Peninsula, which has Michigan Technological University to bring in outside funds. The town of Eagle Harbor, which is little more than a summer settlement with one small grocery store and no post office, has changed little in 50 years. Copper Harbor, which uses its natural environment and Fort Wilkins State Park to attract summer residents, sightseers, campers, hunters, fishermen, birders, cross country skiers, snowmobilers, and (alas) ORVs, all of which support the economy, had changed little until developers recently moved in. Although additional residents increase the tax base, the tax base does not need increasing without additional residents!

The major problem is not urban sprawl, often discussed today, but *rural* sprawl. Unfortunately, new people find this an inviting area in which to summer or retire, and developers are all too willing to accommodate them. However, recent developments in Keweenaw Co., some instigated by ill-informed "outlanders," who spend their profits elsewhere, are unsightly, ill-conceived, largely unprofitable, and in some cases perhaps illegal, such as the Mt. Bohemia ski hill (which I predict will close), the defunct mine above Gratiot Lake (which never even opened and to which the county built a wide expensive road), an abandoned housing development near Copper Harbor (which destroyed a wetland and an old-growth aspen forest), and mansions that destroy views of the spectacular Lake Superior shoreline, all of which have left ugly scars on the landscape. Two other housing developments in Keweenaw Co. have sold only one lot each as of 2005. Such "growth" has greatly increased property values and therefore property taxes for local residents. And the county and township expenditures needed to service such places (with police, fire departments, roads, schools, sewage and garbage disposal, *etc.*) may exceed collected taxes. It is time that residents in lightly inhabited areas realize that continued "growth" in residency is counter-productive, destroying the natural values that attract the tourist dollar.

The types of tourism noted above are the best option for economic growth in lightly inhabited regions such as Keweenaw Co. However, the Keweenaw Peninsula is so far from any metropolis that its visitor base is small. Thus any additional business growth not only is unnecessary but unlikely to be successful. Competition for the tourist dollar is severe, and small businesses that rely on winter or year-round patronage often fail, because if snows are light in the Keweenaw or heavy farther south, tourists seeking winter sports will not come, especially given the long distance by vehicle and the inconvenience and expense of airplane access. New businesses based on increased residency are also doomed, because they must compete with better facilities in the cities. New businesses should be carefully planned and confined to the larger cities, where they have enough resident patronage to succeed and will not harm the natural environment that attracts tourists.

Wetlands. Although drainage of wetlands for development is not a serious problem on the Peninsula, clogging of marshes is. The future of at least rails and bitterns, which require marsh *edge* for foraging, may well depend on man's desire to provide adequate wetlands. Today, most cattail marshes are so densely clogged with vegetation that edge, in the form of interior ponds and channels, does not exist. This, I believe, is why the Virginia Rail has deserted the Swedetown (Houghton Co.) marsh. Probably, natural water flow, which would keep marshes open, has been impeded by man. Also, Muskrats, which keep marshes open, are too heavily trapped for their fur. Fortuitously, a few ponds in the MDNR impoundments in the Sturgeon River Sloughs—constructed and managed only for huntable waterfowl—are marginally suitable for rails (Youngman & Murphy, 1999), but these are few. Clogged marshes should be identified and surveyed for preservation and possible minimal management (especially in regard to water flow).

The Sands, at the mouth of the Pilgrim River in Houghton Co., formerly an extensive mixture of marsh and mud bars and a mecca for shorebirds and waterfowl, was reduced after 1984 to a few bars that are often inundated. This river should be surveyed to determine if the small size of the bars is the result of inadequate flow that no longer carries enough soil.

Communication towers. Numerous tall towers erected for cell phones and for the Michigan State Police potentially threaten migrating birds. The latter were constructed without environmental assessment. Their effect on birds needs to be carefully monitored.

Farm fields. A reduction in the number and quality of hayfields has caused serious declines, even extirpation, in some grassland birds. Also, a new farming technique, by which fields are cultivated and grass planted, appears to pose a threat to nesting birds (see Historical Changes).

I doubt that anything can be done short of asking farmers to revert to the former, presumably less lucrative, practice of simply cutting fallow fields, but this situation should be studied.

Sewage ponds. These ponds provide the best habitat in the Keweenaw for transient shorebirds and breeding ducks, but current management practices are counter-productive for birds. With only minor adjustments to management and no additional cost, this situation could be greatly improved. Of primary importance to breeding pond ducks, the aquatic vegetation and adjacent grassy dikes and fields must remain uncut to hide nests and young. See Waterbirds and Other Species at Sewage Ponds.

Bird feeders. Feeding stations are a necessity for sick and injured birds, some vagrants, late fall lingerers, early spring transients, and even a few permanent residents. People should be encouraged to start new stations and to run them all year, not just in winter. Nectar feeders are probably the sole reason for the high abundance and migration timing of the Ruby-throated Hummingbird. See Effects of Climate and Bird Feeders on the Wintering Avifauna for further discussion, including ideas on how to feed birds.

Stamp sands. Extensive stamp sand flats and dunes, a byproduct of copper mining, are found at many sites on the shores of Lake Superior and Portage Lake. This coarse, dark gray sand is completely sterile, and only if mixed liberally with soil can anything live in it, plant or animal. Long ago the Environmental Protection Agency designated Torch Lake as a Super Fund Site. By 2001 they had covered the land areas with soil, but made no attempt to cover the immediate beach, which would have benefited shorebirds. One species of grass was then planted and some areas fenced off to the public. Some of this area is immediately adjacent to the Lake Linden and Tamarack City sewage ponds, where many ducks breed. This new grass, however, is not dense or tall enough for duck nests, at least not yet. Although the town of Lake Linden has established a "walking nature trail" between the grassland and sewage pond, the only "nature" to view is in the sewage ponds, and I must assume that the average person would find the odor rather offensive. Because of the shallowness of the newly laid soil, the trees that have been planted (for unknown reasons) are not likely to survive when their roots reach the nutrient-poor stamp sand; pines planted here in former years died. In other places, the land is already up for sale and will eventually be developed for housing or industry. Thus, in my opinion, a habitat that was useless before will continue to be so unless it is managed as grassland suitable for duck nesting. The area, people, and wildlife deserve better.

The good side. Yes, there is one, but the list is very short. Several recent actions have cleaned up the environment, causing only unimportant declines in some birds. In 1974 the Environmental Protection Agency ordered all Keweenaw garbage dumps closed. The Portage Lake dump (Houghton-Hancock) was abandoned in 1987, the Grant Township dump (Copper Harbor) in 1991, and the rest about the same time (J. M. Musser, in litt.). This resulted in a major decline in breeding and wintering Herring Gulls but apparently no other species; this gull is abundant throughout the Great Lakes. Unfortunately for birders, the absence of dumps also reduces the probability of finding rare gulls.

Lake Superior beaches are much cleaner than 40 years ago (LB)—no longer littered with human debris and drift wood. This, I suspect, has reduced beach use by a few transient shorebirds, because they no longer find the invertebrate food once harbored by such objects (but I'll take the clean beaches!).

Stoppage of the warm water outflow from the Upper Peninsula Power Company plant in L'Anse presumably was good for the environment. The only known effect on birds was to cause a few wintering pond ducks, notably American Black Ducks, to abandon an unnatural habitat.

Most importantly, the Nature Conservancy, Michigan Nature Association, Michigan Audubon Society, Copper Country Audubon Club, Keweenaw Land Trust, and Michigan Department of Natural Resources have obtained some parcels of land for preservation. Let us hope that the last named organization is not too overzealous in developing its land for recreation.

Bird finding

I do not include a bird finding section because this subject is very thoroughly treated by Weaver (2000), Black & Smith (1994), and especially Chartier & Ziarno (2004). For localities for specific species, the reader is referred to the Species Accounts. Other information may be found in the Discussions section under Vagrancy (Where to Find Vagrants), Biogeography, Waterfowl Migration on Lake Superior (Where and When to Observe Waterbird Migration), Raptor Migration, and Shorebird Migration at Sewage Ponds. The reader is urged to obtain both the *Mapbook of Michigan Counties* (Michigan Natural Resources Magazine, Box 30034, Lansing, MI 48909) and the *DeLorme Michigan Atlas and Gazetteer* (available from the American Birding Association, mail order phone 800-634-7736). Local maps can be obtained at the tourist bureau on highway US 41 in Laurium and at the Laughing Loon gift shop and Gas Lite General Store in Copper Harbor.

The future

The reader may consider the thickness of this tome

an indication that nothing is left to be learned about the birds of the Keweenaw Peninsula, but such is far from the case. This is only the next step following the pioneering efforts of Kneeland (1857), Cahn (1918), Wood (1933), Wing (1939), and Wallace (1949) and the first comprehensive works by Weaver (revised 2000) and Binford *et al.* (1999a). The following is an incomplete list of some of the subjects, major and minor, that need further research; many other unanswered questions are in the Species Accounts.

To add to our knowledge, future data must be ***published****, preferably in* Michigan Birds and Natural History, *where they will not be overlooked by Michigan biologists.*

General. We tend to know more about rarer species than common ones. For instance, we have a clear picture of the status of the Summer Tanager, but what is the exact summer status of the introduced House Sparrow? Does it migrate? If so, when does it leave and return? Why has its population declined? How many broods does it raise in a year—enough to sustain a population? Will it survive? Do we care?!

Species diversity. What new species will be added to the Peninsula and county lists? How long can we continue to add an average of 2.6 species per year to the Keweenaw list? How many species can be found on monthly Big Days, or, with better coverage, on a NAMC or CBC?

Habitat. Although I believe my characterizations of species' habitats are correct, they may be incomplete. What other habitats do particular species use? What percentage of each species' population uses each of its several habitats? Why are species restricted to certain habitats (a life-long study)?

Migration dates. All extreme and normal extreme arrival and departure dates could be improved, but "fall" departure of summer residents is especially poorly known, particularly for those species that leave or flock in July and early August, such as flycatchers, swallows, blackbirds, and certain vireos and warblers. To obtain accurate departure dates requires recording a species every day, so that the last day can be determined. All median dates could use adjustment with more exact annual arrival and departure dates; this will require one organizer to acquire data from all other reliable observers over a long period of years (the data in my files are best since 1990). Are spring arrival dates really, as I think, dictated by food availability as controlled by climatic effects on habitat, and if so, how do birds coordinate their migrations accordingly?

High counts. Concerted effort could increase almost all high counts, thus improving our knowledge of detectability and peak dates. Observers should get in the habit of carefully counting large flocks, rather than roughly estimating or ignoring them entirely.

Breeding. Confirmed breeding is lacking for some Peninsula and many county birds. What are the limits of each species' breeding season, and how many broods are raised? Data on egg dates, which are the best indication of clutch size, number of broods, and breeding period, all of which vary geographically, are very few. What is the real status of those species that today only probably or possibly breed, such as the Connecticut Warbler? The many old Great Blue Heron rookeries I list should be revisited to see if they are still active. What will future BBS and Michigan Breeding Bird Atlas data reveal? Although Atlas data are useful on the state level, they often lack the detail desired for a county checklist; because of a shortage of manpower, only about one-quarter of the blocks in the Keweenaw were covered for the 1991 Atlas, and these rather superficially. Observers should record all geographical information to at least the section level, determine the number of eggs or young in nests, describe the habitat, *etc.*

Breeding Bird Survey and North American Migration Count. The BBS routes need to be run *every* year, which requires that new compilers with excellent hearing and knowledge of vocalizations volunteer periodically. What future changes in populations will these data reveal? The NAMC is lots of fun, but how useful will it prove to be?

Christmas Bird Counts. What new species will be added? What present trends will be upheld and new ones revealed?

Historical changes. The history of currently invading species, such as the rare pond ducks, Wild Turkey, and especially all southern birds (*e.g.*, Yellow-throated Vireo, Northern Mockingbird, Northern Cardinal), should be documented in relation to distribution and detectability. The same is true of all declining species; *e.g.*, will declines in such species as House Finch and most grassland birds continue to extirpation, and at what rate? What additional species will attempt colonization? What will be the next species to become extirpated (I'll bet on Spruce Grouse)? Properties owned by conservation organizations (*e.g.*, Nature Conservancy, Michigan Nature Association, Michigan Audubon Society) need thorough surveys like that of Youngman & Murphy (1999) to compare with future data.

Migration. See this Discussion. Also, to obtain more data on spring (or fall) departure of transient individuals of summer resident species—an important part of a bird's natural history— observers need to find a small, well-defined locality that has few breeding birds but attracts transients, such as a city park, an isolated woods in open country (to assess forest birds), or an opening within extensive forest (for open country birds).

Fall waterbird migration on Lake Superior. How far southwest do fall eastbound transients hit the Peninsula?

What species and how many that do this turn southwest? How far off Agate Harbor does the band of migrating birds extend—to the other side of Lake Superior? Is there a similar migration along the north shore of the Lake? Where do Keweenaw birds go from Keweenaw Point? What is the nature of this migration in late fall (mid October to December), after my data terminate? What comparisons can be made between Agate Harbor and Whitefish Point—would fall numbers be similar with equal coverage? How do weather parameters affect the timing and volume of daily migration? What is the magnitude of westbound spring migration; how does it compare with Whitefish Point?

Raptor migration. How should my basic theory concerning the route of spring raptors be modified? Specifically, what proportion of birds that reach Manitou Is. or Keweenaw Point turn back, and which cross Lake Superior from there or from Brockway Mt.? Are spring raptors and some passerines (*e.g.*, Blue Jay, Cedar Waxwing, blackbirds, Evening Grosbeak) really "trapped" on the Peninsula, at least temporarily, or do they cross Lake Superior? What is the extent of fall raptor migration, and where do birds come from and go from the Keweenaw? Telemetry may be needed to answer these questions.

Shorebird migration. What is the exact status of shorebirds in early spring and very late fall, periods my censuses did not cover? What is the timing of fall migration of adults *vs.* juveniles, now poorly known even for the state?

Translake landbird migration. What additional species will be seen crossing Lake Superior in fall? Why do they often arrive so late in the day? And what in the world were those two Common Ravens thinking of when they set off northwestward across the Lake in mid September?! A radar study is needed to elucidate nocturnal and diurnal migration.

Conservation (see also, Conservation in Discussions). Will man help, hinder, or ignore declining populations? Will he continue to introduce exotic species (*e.g.*, Mute Swan) while doing nothing for native species (*e.g.*, Sharp-tailed Grouse)? Will the MDEQ and local sewage treatment authorities agree to manage sewage ponds for the benefit of wildlife or at least leave them alone to mature naturally, and will someone step up to ramrod such a project? Will the populace begin to realize the importance of ecotourism as a viable alternative to unnecessary development? Is logging really necessary to our local economy, or does it benefit only big companies and a handful of loggers, with most profits leaving the Keweenaw? And do we really want logging to stop, given the resultant forest regrowth and likely loss of some habitats and birds? I mention these subjects because all affect bird populations. I could go on....

Future birders and researchers. Will experienced field observers enlist and train novices to take our place, especially those that are too young to drive? Will additional reliable observers learn to keep and publish detailed field notes so that the above questions can be answered? Incomplete and often erroneous reports on Internet are not "publications" and must not replace the published "hard copy."

I leave to future generations of researchers the task of advancing our knowledge of Keweenaw Peninsula birds.

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ADDENDUM

The following data came to my attention after 1 September 2005, too late to include in the Species Accounts. These records raise the Peninsula total to 326 species and county totals as follows: Baraga, 280; Houghton, 302 ; Keweenaw, 275.

Keweenaw Bay Christmas Bird Count. On 18 Dec 2005 J. Kaplan (compiler) initiated a new Christmas Bird Count in the Baraga region, including parts of both Baraga and Houghton Cos., the towns of Pelkie, Baraga, L'Anse, and Pequaming, and the MDNR sloughs near Arnheim. It is centered southwest of the village of Keweenaw Bay at coordinates N46°50.7I5' and W88°30.340' (T51N, R33W, west-central Sec. 4). The first count recorded 1417 individuals of 41 species.

Cackling Goose. 15 Sep 2005 (5) Agate Harbor, LB; earliest fall arrival date for Peninsula.

Canada Goose. 29 lan 2006 (5) L'Anse Bay, RH, JK; latest winter record for Peninsula; a mild winter.

Tundra Swan. 6 Oct 2005 (2 adults) Copper Harbor (Wescoat's pond) LB, C. Wescoat (finder); second earliest fall arrival date for Peninsula; third record, first in fall, for K.

Canvasback. 5 Apr 2006 (1) L'Anse Bay, Z. Gayk; second earliest spring arrival date for Peninsula.

Greater Scaup. 10 Jan 2006 (2) L'Anse Bay, JK. 20 Jan 2006 (2) South Portage Entry, H, JK. The latest winter records for Peninsula.

Harlequin Duck. 26 Sep 2005 (2 migrating eastward about 1 hr apart) Hebard Park, K, LB, JK, JY; first fall records for Peninsula and first ever for K; treated as 2 records. 28 Jan 2006 (1 female) L'Anse marina, S. Haas; first winter record for Peninsula.

White-winged Scoter. 31 Dec 2005 (1) Copper Harbor in bay, RH, JK, Eagle Harbor Christmas Bird Count; first winter record for K. 28 Jan 2006 (1) L'Anse Bay off L'Anse, S. Haas; latest winter record for Peninsula.

Long-tailed Duck. 14 Oct 2005 (1 male) Calumet sewage ponds, LB; first sewage pond, and second inland record for Peninsula. 31 Dec 2005 (8) 4 in Copper Harbor, RH, JK, another 4 elsewhere, Eagle Harbor Christmas Bird Count.

Bufflehead. 20 Jan 2006 (3) South Portage Entry, H, JK *et al.;* first late winter record for B and second for Peninsula.

Pacific Loon. 10 Jan (2), 14 Jan-3 Feb (1) 2006, L'Anse Bay, M. Henschell, JK (photos), K. Zufelt, *et al.;* fourth Peninsula record.

Common Loon. 21 Sep 2005 (170) Manitou Is., JK, K. Tischler; highest fall count for Peninsula. 31 Dec 2005 (1) Copper Harbor in bay, RH, JK, K. Tischler, Eagle Harbor Christmas Bird Count; first winter record for K.

Horned Grebe. 21 Sep 2005 (120) Manitou Is., JK, K. Tischler; a high count. 6 Apr 2006 (3) L'Anse Bay, TA, JM; second earliest spring arrival date for Peninsula.

Red-necked Grebe. 31 Dec 2005 (1) Copper Harbor, TA, RH, JK, K. Tischler, Eagle Harbor Christmas Bird Count; first winter record for K. 6 Apr 2006 (2) L'Anse Bay, TA, JM; second earliest spring arrival date for Peninsula.

Western Grebe. 2-8 Nov 2005 (1) L'Anse Bay, A. Byrne, Z. Gayk, S. Haas, RH, JK, JY (finder); second record, third for the genus, for Peninsula; not yet judged by the MBRC.

American White Pelican. 23 May 2005 (13) Pequaming Bay, B, T. Gribble, E. Dougavito.

Double-crested Cormorant. 6 Apr 2006 (1) L'Anse Bay, TA, JM; earliest spring arrival date for Peninsula.

American Bittern. 21 Oct 2005 (1) Arnheim, Unit 7, B, LB; second latest fall date for Peninsula. 6 Apr 2006 (1) Ahmeek marsh, K, TA; earliest spring arrival date for Peninsula.

Great Egret. 25 Jul 2005 (1 flying) 1 mi S Copper City, H, D. Flaspohler; fifth record and earliest fall date for Peninsula.

Cattle Egret. 5-7 Nov 2005 (1) 3 mi N Oskar, H, RH, JK (photos), P. Muller (finder), LM, M. Shupe, JY; seventh record (fifth fall) for Peninsula. All five fall records have been in a narrow period, 26 Oct to 12 Nov.

Bald Eagle. 23 Sep 2005 (1 immature) Hebard Park, K, LB; first instance of a bird apparently crossing Lake Superior from north to south.

Ferruginous Hawk *Buteo regalis.* 6 Apr 2006 (adult light morph) Swedetown marsh, H, TA, RH, JK (finder; photos), D. McCormick, O. and S. Mills, JM, K. Tischler; first record and 326th species for Peninsula.

American Golden-Plover. 3 Nov 2005 (1) L'Anse, JK (photos); ties latest record for Peninsula.

White-rumped Sandpiper. 7 Oct 2005 (I) Calumet sewage ponds, LB; casual in fall.

Herring Gull. 2 Jan 2006 (508) Big Traverse Bay town, H, RH, JK, JM; second highest count for Peninsula.

Glaucous Gull. 1-2 Jan 2006 (1 first winter plumage) Big Traverse Bay town, H, RH, JK (photo). 6 Apr 2006 (1 first winter plumage) L'Anse Bay, TA, JM. Fourth and fifth records for Peninsula.

Great Black-backed Gull. 9 Dec 2005 (1 first winter plumage) Big Traverse Bay town, H, RH, JK (description), K. Tischler; third record, first documented, for Peninsula. Brackets should be removed from around the name of this bird in the Species Accounts.

Forster's Tern. 21 Sep 2005 (1 in basic plumage with 6 unidentified terns) migrating southeastward past east end of Manitou Is., JK; first fall record for Peninsula and first record ever for K.

Saw-whet Owl. 24 Feb 2006 (1) Chassell, H, JK, JY (finder); third earliest spring arrival date for Peninsula.

Red-bellied Woodpecker. 17 Dec 2005 (1) near Chassell, H, HCCBC, JY. 19-22 Feb 2006 (female) Sedar Bay, K, RH, JK.

Black-backed Woodpecker. 11 Feb 2006 (6) 5 at Rice Lake burn, H, and 1 at Grand Traverse, H, TA, JM; highest count for Peninsula. Most were drumming, indicating its courtship period.

Northern Flicker. 1 Apr 2006 (1) Bumbletown, K, TA; second earliest spring arrival date for Peninsula.

Yellow-bellied Flycatcher. 24 Jul 2005 (adult carrying food) near Delaware, T58N, R29W, Sec. 16, K, J. Hewitt; first confirmed breeding for K.

Eastern Phoebe. 16 Oct 2005 (1) 4 mi E Lac La Belle, K, J. Hewitt; latest fall departure date for Peninsula.

Western Kingbird. 16 Oct 2005 (1) Copper Harbor, LB, Z. Gayk, RH, LM, JY; tenth record, fifth and latest in fall, for Peninsula.

Northern Shrike. 31 Dec 2005 (1) Copper Harbor, RH, JK, K. Tischler, Eagle Harbor Christmas Bird Count; first winter record for K.

Black-billed Magpie. 30 March 2006 (1) Seven-mile Point, K, N. Auer (finder), TA; first record for K and third for Peninsula.

Common Raven. 11 Oct 2005 (6) Hebard Park, K, LB; one loose flock apparently migrating westward high over coastal rocks; fall migration records are scarce.

White-breasted Nuthatch. 31 Dec 2005 (2) Eagle Harbor Christmas Bird Count; very rare in K in winter.

Townsend's Solitaire. 16 Oct 2005 (1) Copper Harbor, LB, Z. Gayk (finder), LM, JY. 2 Apr 2006 (1) Bumbletown, K, TA (photos), JM.

Gray-cheeked Thrush. 20 Sep 2005 (5) Manitou Is., JK, K. Tischler; highest single-party total for Peninsula at any time of year.

Northern Mockingbird. 11 Apr 2005 (1) Agate Beach Road near Misery Bay, H, M. Shupe (photos); earliest spring record for Peninsula. 17 May 2005 (1) Sedar Bay, K, J. Ziemnick.

Brown Thrasher. Early Dec 2005-21+ Feb 2006 (1) Salo area feeder, H, RH, JK, S. and E. Stevens (finders); fifth winter record for Peninsula, all at feeders in H.

European Starling. 7 Jan 2006 (89) Lake Linden, H, RH, JK; highest single-party winter count for Peninsula.

American Pipit. 19 Oct 2005 (1) Eagle Harbor, LB; third latest fall date for Peninsula.

Cedar Waxwing. 31 Dec 2005 (130 on Eagle Harbor Christmas Bird Count; 60 of these were in Copper Harbor, JK, RH, K.Tischler); highest multi-party winter count and highest single-party early winter count for Peninsula. 5 Apr 2006 (12) Bumbletown, K, TA, JM;, only Apr record for Peninsula; probably winter residents.

Yellow-rumped Warbler. 11 Nov 2005 (I) Eagle River, K, JK; second latest fall date for Peninsula.

Pine Warbler. 18 Dec 2005-29 Jan 2006 (male) suet feeder in Pequaming, B, Keweenaw Bay Christmas Bird Count, RH, JK (photos), K. Kitchen, K. Tischler; second early winter record for Peninsula and first for B.

Scarlet Tanager. 21 Sep 2005 (1 female) Manitou Is., JK; latest fall date for Peninsula.

Spotted Towhee *Pipilo maculatus.* 17 Dec 2005-27 Jan 2006 (male) at feeder in Hancock, HCCBC, TA, O. Mills (finder), A. Byrne, RH, JK (photos), K. Tischler, *et al.;* first record for Peninsula. Accidental vagrant from the west.

Chipping Sparrow. 15-191an 2006 (1) Hancock feeder, P. Hurley, JK, K. Tischler; second winter record for Peninsula; possibly same bird as previous winter in different Hancock. yard. 5 Apr 2006 (1) feeder near Ahmeek, K, TA; earliest spring arrival date for Peninsula.

Clay-colored Sparrow. 4 May 2001 (1) 1 mi N Boston, H, JK; ties earliest spring arrival date for Peninsula.

Lark Bunting. 2-3 Oct 2005 (1) Arnheim, Units 5 (H) and 7 (B), A. Byrne, Z. Gayk, S. Haas, RH, JK (photos), LM (finder), K. Tischler, JY (photos); fourth record (third fall) for Peninsula and first record for B and H.

Fox Sparrow. 21 Sep 2005 (1) Manitou Is., JK, K. Tischler; earliest fall arrival date for Peninsula. 21 Jan 2006 (1) Hancock feeder, D. Flaspohler (photos); second winter, first late winter, record for Peninsula.

White-throated Sparrow. 1-10 Jan 2006 (1) Chassell feeder, H, JK, J. and L. Vucetich. 23 Nov 2005-21 Jan 2006 (1) Hancock feeder, D. Flaspohler. Accidental in late winter.

White-crowned Sparrow. 31 Dec 2005 (immature) Copper Harbor, RH, JK, K. Tischler, Eagle Harbor Christmas Bird Count; fourth winter record for Peninsula and first for K.

Snow Bunting. 29 Jan 2006 (2) Pequaming, B, RH, JK; casual in late winter.

Rose-breasted Grosbeak. 13 Nov 2005-23+ Feb 2006 (female) Baraga feeder, G. Wadaga (photos seen by J. Kaplan) and L. Wadaga; second winter record for Peninsula and county; seen on the new Keweenaw Bay Christmas Bird Count, 17 Dec.

Indigo Bunting. 15 Oct 2005 (1 immature) Copper Harbor, LB; second latest fall date for Peninsula.

Bobolink. 29 Sep, 2-3 Oct 2005 (1) Arnheim, MDNR field, B and flying into H, RH, JK, JY (finder); latest fall date for Peninsula.

Red-winged Blackbird. 31 Dec 2005-28 Jan 2006 (1) Copper Harbor, RH, JK. 16 Jan 2006 (1) Baraga, RH, JK. First late winter records for B and K and second and third latest for Peninsula.

Yellow-headed Blackbird. 10 May 2004 (adult male) at feeders in Baraga, G. Wadaga (photos seen by LB and JK) and L. Wadaga; second record for B. 29 Sep, 2 Oct 2005 (1 adult male) Arnheim, MDNR field, B, JY. 3 Oct 2005 (1 female) Arnheim, MDNR field, B and flying into adjacent H, RH, JK. 31 Oct-4 Nov 2005 (1) near Copper City, H, M. and F. Schmitt (photos). Third, fourth, and fifth fall (and latest fall) records for Peninsula; third and fourth (and first fall) records for B.

Rusty Blackbird. 7 Apr 2006 (1) Cooper Harbor, TA; third earliest spring arrival date for Peninsula.

Common Grackle. 31 Dec 2005-28 Jan 2006 (1) Copper Harbor, RH, JK. 18 Dec 2005-22 Jan 2006 (1) Pequaming, B, RH, JK, K. Tischler, Keweenaw Bay Christmas Bird Count. First late winter records for B and K and second and third for Peninsula.

Pine Siskin. 17 Jan 2006 (100) Gay, K, JK; highest single-party count for late winter; during a major irruption year.

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Included here are English and Latin bird names. Boldfaced numbers refer to the primary Species Account.