

OCCASIONAL PAPERS OF THE MUSEUM OF
ZOOLOGY

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

UNIVERSITY OF MICHIGAN PRESS

GEOGRAPHIC VARIATION IN THE EASTERN CHIP-
MUNK, *TAMIAS STRIATUS*, IN MICHIGAN

BY EMMET T. HOOPER

A REVIEW of the specimens of *Tamias striatus* in the Museum of Zoology, University of Michigan, has led to an interpretation of the geographic variation in the species which differs somewhat from that given by Howell.¹ As I see it, the species in Michigan is represented not by one geographic race, *lysteri*, but, instead, is divisible into several races, none of which is *lysteri* in its characteristic form. The chipmunks in the Upper Peninsula of the state are morphologically and geographically between *griseus* to the west and a bright colored race to the east and south. Those in the southern part of the Lower Peninsula likewise are not *lysteri* but are "intergrades" between the dark, reddish *fisheri*, the grayish *griseus* (in the extreme southwestern part of the state), and a pallid, copper-colored race, heretofore unrecognized, which ranges over the upper part of the Lower Peninsula.

Tamias striatus peninsulae, new subspecies

TYPE.—Adult male, skin and skull; University of Michigan Museum of Zoology No. 82610; Michigan, Presque Isle County,

¹ Arthur H. Howell, "Revision of the American Chipmunks (Genera *Tamias* and *Eutamias*)," *N. Amer. Fauna*, No. 52 (1929): 15, Fig. 2. *Idem*, "Notes on Range of the Eastern Chipmunks in Ohio, Indiana, and Quebec," *Journ. Mammalogy*, 13 (1932): 166-67.

three miles southeast of Millersburg, Barnhart Lake; collected September 3, 1939, by William H. Burt; collector's number 4519.

DISTRIBUTION.—The Lower Peninsula of Michigan, from Muskegon and northern Montcalm counties northward to the Straits of Mackinac. Distribution limits essentially those of the sandy, "Jack-pine" or high plains of Michigan.

CHARACTERS AND COMPARISONS.—A subspecies of *Tamias striatus* characterized by moderate size, pallid, coppery coloration in summer, relatively broad interorbital space, short nasals, and a relatively short, broad rostrum.

Similar to *lysteri*, but in summer pelage paler and brighter in tone, the dorsal surface and sides suffused with ochraceous-buff, the lateral dark stripes brownish and less contrasted with adjoining areas and the crown ochraceous (not rufous or cinnamon); rostrum and nasals shorter and the interorbital space broader (its breadth averages 80 per cent of the length of the nasals, compared with 72 per cent in eleven specimens of *lysteri* from near the type locality of that race). *T. s. peninsulae* is slightly smaller than *T. s. griseus* and, in both summer and winter pelages, is much paler and more ochraceous over the entire dorsal surface; it lacks the dark gray and tawny appearance of *griseus*; the lateral dark stripes are less distinct, the nasals are actually and relatively shorter, and the rostrum is relatively broader. Compared with *fisheri*, *peninsulae* in summer pelage is much paler and more ochraceous, not tawny, dorsally (well seen on the crown and rump), the subterminal black bands of the tail hairs are narrower, the interorbital breadth is relatively less, the nasals are actually and relatively shorter, and the bullae are relatively larger. *T. s. peninsulae* is smaller than *T. s. striatus*, much paler and more ochraceous on the back, sides, feet, and tail; the dorsal and lateral stripes are less distinct and are suffused with a hue nearer ochraceous than tawny; the ventral surface is white; the interorbital constriction is actually and relatively less, and the nasals are actually, but not relatively, shorter.

COLOR²—Summer pelage: as given by Howell³ for *lysteri*, except that the top of head is between Tawny-Olive and Sayal Brown; the lower cheeks and sides of neck are nearer Ochraceous-Buff; sides are Light Ochraceous-Buff; the median dorsal bands are Pale Smoke Gray, faintly tinged with Light Pinkish Cinnamon; the lateralmost dark dorsal stripes are near Natal Brown or Fuscous; the rump and thighs are nearer Ochraceous-Tawny than Russet or Tawny; the tail beneath is Ochraceous-Buff or Tawny bordered with Fuscous-Black and edged with Pale Ochraceous-Buff. Winter pelage: similar to summer pelage, but darker and more grayish, less ochraceous, dorsally, particularly on the back and sides.

MEASUREMENTS (in mm.).—Averages and extremes of ten adults from the type locality: total length, 242 (232–252); tail, 93 (81–112); hind foot, 36 (34–37); ear from notch, fresh skin, 19.0 (17.5–21.0); greatest length of skull, 40.1 (39.0–40.8); zygomatic breadth, 22.3 (21.6–23.2); cranial breadth, measured on squamosals just posterior to each glenoid fossa, 16.5 (16.0–17.0); least interorbital breadth, 10.1 (9.6–10.6); postorbital breadth, 11.5 (10.8–12.3); length of nasals (excluding attenuated projections posteriorly), 12.7 (12.3–13.7).

REMARKS.—South of the southern border of the high plains, which extend over the Lower Peninsula of Michigan approximately from the Straits of Mackinac southward to Muskegon and Isabella counties, *peninsulae* intergrades with *fisheri*. The transition from *peninsulae* to *fisheri* occurs rapidly near the plains (specimens from Allegan, Clinton, and Shiawassee counties average considerably darker than specimens from more northern Muskegon County), thence gradually on southward. Thus, specimens from Washtenaw County in southern Michigan show better the characters of *fisheri* than do specimens from Shiawassee County, fifty miles to the north; and,

² Capitalized color terms are from Robert Ridgway, *Color Standards and Color Nomenclature* (Washington, D. C.: Published by the author, 1912), 44 pp., 53 pls.

³ “Revision of the American Chipmunks (Genera *Tamias* and *Eutamias*),” p. 18.

likewise, specimens from central Ohio are more characteristic of *fisheri* than are specimens from Washtenaw County.

Five specimens from South Fox Island, in Lake Michigan, resemble *griseus* and are herewith referred to that race.

Specimens from extreme southwestern Michigan, in Berrien and Allegan counties, definitely grade toward *griseus*, and with propriety might be included with that race. Herein they are referred to *fisheri*.

Specimens from the Upper Peninsula of Michigan are variously intermediate in color, but not in cranial characters, between *griseus* and *peninsulae*. The gradation between the two races progresses rather evenly from northwest to south and east. The specimens from the northwestern counties, Gogebic, Ontonogon, and Dickinson, are nearer *griseus* in characters of coloration; those from the eastern and southern counties, Luce, Delta, and Menominee, and the specimen from Beaver Island in Lake Michigan, are perhaps nearer *peninsulae*. A line separating the chipmunks of the Upper Peninsula might be drawn somewhere between the northwestern and southern and eastern counties. To me it seems better to refrain from making an arbitrary separation in this way, and, instead, to refer all the Upper Peninsula specimens to *griseus*.

SPECIMENS EXAMINED.—Topotypes or specimens from near the type locality of each of the subspecies with which *peninsulae* is compared are at hand. For practical purposes all of the localities represented are not listed below. Only those in Michigan, the area primarily involved in the present paper, are given in detail. I am indebted to the authorities of the Field Museum of Natural History for the loan of specimens from near the type locality of *lysteri*.

Tamias striatus griseus.—Michigan: Alger Co., West Branch of Fox River, 1; Alger Co., 2. Chippewa Co., Whitefish Point, 1. Delta Co., two miles northwest of Fairport, 2. Dickinson Co., Brown Lake, 5. Gogebic Co., Fish Hawk Lake, 2; vicinity of Little Girl's Point, 5. Leelanau Co., South Fox Island, 5. Luce Co., Two Hearted River, eighteen miles north of Newberry, 2; Bass Lake, eight miles north of McMillan, 3.

Marquette Co., Huron Mountains, 3; Marquette Co., 1. Menominee Co., eight miles northwest of Banat, 3; six miles northwest of Banat, 1; thirteen miles west-southwest of Stephenson, 2; seven miles east of Stephenson, 5; eight miles north of Hermansville, 16. Ontonogan Co., Porcupine Mountains, 9; vicinity of Gogebic Lake, 5. Schoolcraft Co., Floodwood, 2.

Tamias striatus peninsulae.—Michigan: Alpena Co., Osineke, 2. Antrim Co., Wetzel Lake, 1. Clare Co., ten miles northwest of Harrison, 1; Harrison, 1. Charlevoix Co., Thumb Lake, 2; Beaver Island, 1. Cheboygan Co., Douglas Lake, 8. Crawford Co., eight miles northeast of Grayling, 3. Leelanau Co., two miles south of Leland, 1; Leland, 1; mouth of Traverse Creek, 1. Manistee Co., junction of Pine Creek and Big Manistee River, 3. Montcalm Co., Bass Lake, 1; Montcalm County, 1. Muskegon Co., near Lake Michigan, north of Muskegon State Park, 2. Ogemaw Co., north shore of Sage Lake, 2. Osceola Co., LeRoy, 2. Oscoda Co., Luzerne, 1. Otsego Co., three miles east of Vanderbilt, 1; headquarters, Pigeon River State Forest, 1; five miles south of Elmira, 1. Presque Isle Co., Barnhart Lake, 10. Roscommon Co., eight miles northeast of Roscommon, 1.

Tamias striatus fisheri.—Michigan: Allegan Co., Swan Creek, near Kalamazoo River, 3. Berrien Co., Warren Woods, 2. Clinton Co., one mile east of DeWitt, 1. Huron Co., Rush Lake, 3; Sand Point, 3. Jackson Co., Waterloo, 2; Portage Lake, 2. Kalamazoo Co., twelve miles west of Battle Creek, 1. Livingston Co., Iosco, 1; George Reserve, near Pinckney, 8. Oakland Co., Groveland Township, 1. Shiawassee Co., vicinity of Byron, 8. Washtenaw Co., vicinity of Ann Arbor, 19; Ypsilanti, 1; Portage Lake, 1.

