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THE MAMMALS OF WASHTENAW COUNTY,
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Three natural physiographic divisions cross Washtenaw County from northwest to southeast. The northwestern part of the county is occupied by the rough interlobate moraine of loose-textured soil, the Interlobate Lake District; a broad Clay Morainic Belt occupies most of the central part of the county; and in the southeastern corner of the county is found a low Lake Plain, once the bed of glacial Lake Maumee.

The Interlobate Lake District has a conspicuous system of moraines, making up a most irregular land surface. Steep knolls 100 to 200 feet in height are closely associated with basins, which are often deep, and some of which are occupied by lakes. Small, undrained depressions occur everywhere, producing thousands of acres of swamp and marsh land.

The Clay Morainic Belt occupies the region from just below Portage Lake to Ypsilanti. It is composed of glacial till plains

and clay moraines extending from northeast to southwest. This area includes the highest land in the county, one hill exceeding and several approaching 1100 feet in altitude. Most of the area is high and rolling.

The old beach, marking the limits of the Lake Plain District, runs northeast from Ypsilanti to the county line above Cherry Hill, and southwest through Stony Creek to a point on the county line about eight miles west of Milan.

The native upland forests of the Interlobate Moraine District were composed chiefly of red, yellow, and white oak, with some smooth-bark hickory and sugar maple and a few shag-bark hickories. Here were also large areas of creeping juniper and a few small patches of ground hemlock (yew). On the flood-plains of the rivers and lakes were quite extensive swampy forests of soft maple, black ash, and white elm. Swamp oak and whitewood grew commonly in the drier situations toward the edge of the swamp conditions. The red-bud and red cedar were characteristic of the river banks. White pine probably never grew in the county, although a few trees occur on the south bank of the Huron River near Hamburg, a few miles north of the county line.

Tamarack bogs, some of large size, are abundant in the Interlobate Moraine District and occur commonly also in the Clay Morainic District, but are practically wanting in the Lake Plain District.

The Clay Morainic District was originally dominated by forests of oak and hickory. Several kinds of oaks, white ash, and several species of hickories, with shagbark most characteristic, were most abundant. Mixed with these were elm, beech, sugar maple, black walnut, and butternut. On the higher ground many stands of quaking aspen were found. The forest was quite dense and little underbrush normally

occurred. Tamarack bogs were common, and a small stand of black spruce occurred at the edge of Independence Lake. There are few flood-plains along the Huron River in this district, but along the river's edge were a few cottonwoods and sycamores, and many willows, some of large size. On the steep bluffs along the river was often a heavy growth of red cedar; and some large areas of procumbent juniper occurred. In this district were several open, level, sandy plains covered with a scattered growth of white and bur oaks and an undergrowth of hazel brush. These were known to the pioneers as "oak openings" or "plains." Lodi Plains in Lodi Township, Bur Oak Plains in Manchester Township, Sharon Plains in Sharon Township, and Boyden's Plains in Webster Township were the largest of these natural openings in Washtenaw County.

On the low lands of the Lake Plain District great forests of black ash, elm, whitewood, soft maple, red-bud, swamp oak, and bur oak were found by the early settlers. Large sycamore trees were found along the river banks, these following the Huron River up a short distance beyond Ann Arbor and occurring all along the Raisin and Saline rivers. The paw paw and pin oak were found rarely in the southeastern part of the county. Along the small streams in this district were extensive marshes which were evidently old beaver meadows. About the edges of the marshes were fringes of tamaracks.

At the beginning of the nineteenth century Washtenaw County was an unbroken wilderness, and deer, wolves, bear, and other large and small fur-bearing animals were abundant. A few white trappers were in the region, and the Indians frequently passed through on the old Tecumseh Trail to Detroit, where they went to trade.

In 1809 three Frenchmen established a trading-post at

Ypsilanti, where the Tecumseh Trail crossed the Huron River, and for several years they traded here with the Indians. In 1823 the first permanent settlement in the county was made by Benjamin Woodruff and two others at Woodruff's Grove, not far from the present site of Ypsilanti. A settlement was made at Ann Arbor in 1824, and many pioneers arrived in the county during the next few years.

With the coming of the settlers and the clearing of the forests the natural mammal habitats were greatly altered or destroyed. This, together with the hunting by the settlers, caused the gradual disappearance of the larger mammals, such as the cougar, bear, wolf, lynx, and deer. The clearings of the settlers created new habitats which were gradually occupied by species better adapted to civilization, such as the mole, woodchuck, ground squirrel, fox squirrel, and skunk, and also the house mouse and Norway rat, which were brought in unintentionally by the settlers.

For sixty-five years I have lived almost constantly in Washtenaw County and I have seen the latter part of the exploitation of the forests of the county and the extermination of most of the larger mammals. From my father, who settled in the county in 1836, and other old pioneers I have drawn extensively for information about the early mammals of the county. Much use has also been made of information contained in the Michigan Historical Collections. The specimens on which the records here are based are mostly preserved in the Museum of Zoology.

For considerable assistance in the preparation of the manuscript of this paper I am indebted to L. R. Dice, Curator of Mammals in the Museum of Zoology, University of Michigan.

LIST OF SPECIES

Didelphis virginiana virginiana. Virginia Opossum.—This species is rare in the county. One was taken by my father, Jessup S. Wood, in 1845, in Lodi Township. We have later records for Ann Arbor, Dexter, Manchester, Saline, and Scio Township. The last recorded specimen was taken by some boys in November, 1921, just south of the Oakland County line.

February 5, 1912, a trapper took a specimen near Ann Arbor on a night when the temperature was about 10° F. below zero.

Scalopus aquaticus machrinus. Prairie Mole.—The mole was rare or absent from the county when first settled, but it has gradually increased and has spread over most of the cultivated lands. It is most common in sandy or gravelly loams, and is absent from the hard clay soils. I remember the first appearance of the species on the old Wood homestead in Lodi Township about 1870. It soon became common.

Condylura cristata. Star-nosed Mole.—Although not very rare in this county, it is seldom seen. We have records for Lodi Township, Ann Arbor, Webster Township, Ypsilanti, and Chelsea. It prefers low, marshy land near the water, and much of its food consists of aquatic insects, which it secures by swimming. It is not as well adapted for burrowing as the preceding species, so it lives in softer soil.

May 8, 1913, a nest containing six half-grown young was found by Kitt Cobb in marshy ground beside the Huron River at Portage Lake. The nest was in a good-sized cavity near the surface of the ground and was lined with dried grass. This species sometimes comes out on the surface of the ground, where I have found several individuals in early spring, most of them dead. February 10, 1907, near Ann Arbor, A. D. Tinker heard one tunneling in the snow and dug it out.

Sorex personatus. Masked Shrew.—In this county the masked shrew is usually found in sphagnum and tamarack bogs. There are records for a tamarack bog, three miles south of Ann Arbor, and for Honey Creek, three miles west of Ann Arbor. I have found it mostly under old logs and in stumps in rather moist situations.

Blarina brevicauda talpoides. Short-tailed Shrew.—Common in swamps, woodlands, and even in meadows, where it has its own runways and also uses those of the meadow mouse, on which it largely feeds.

This shrew is diurnal as well as nocturnal, and I have often seen it in its runways. It is active all winter, and its tunnels may often be seen in the snow. While trapping in Steere's Swamp, south of Ann Arbor, a *Synaptomys cooperi* in a trap was eaten by one of these shrews, which was later caught in the same trap.

Cryptotis parva. Small Shrew.—The first record for the county was obtained in 1902 at Ann Arbor. In February, 1904, one was found in a barn three miles east of Ann Arbor. At Portage Lake, in 1916, a house cat brought two individuals to her kittens on October 29 and 31, respectively. The specimens taken by me were found in grassy places, usually where briars and shrubs were intermingled with the grass, but not in the woods.

Myotis lucifugus lucifugus. Little Brown Bat.—Almost every winter individuals have been found in the building of the Museum of Zoology, at Ann Arbor, where they have been awakened by the heat long before insects were flying about. Max Peet took one at Ypsilanti June 6, 1904.

Myotis subulatus subulatus. Say Bat.—In 1902 one was found alive in one of the buildings of the University of Mich-

igan at Ann Arbor and was kept in a cage from February 26 to March 6, when it died.

Lasionycteris noctivagans. Silver-haired Bat.—A female which seemed to have an injured wing was picked up at Ann Arbor by A. G. Ruthven, June 13, 1910. It contained two large embryos. This species is rare in this county.

Eptesicus fuscus fuscus. Large Brown Bat.—Common at Ann Arbor and Ypsilanti. It is often found in buildings in winter. We have records for Ann Arbor every month except September, October, and November. Of all the bats this one is the most common about dwellings, and it is the one that most often enters houses at night in search of insects. Perhaps it is attracted by the light, as I have often seen it feeding about the street lights.

Nycteris borealis borealis. Red Bat.—Common at Ann Arbor, and there is one record for Ypsilanti. At Ann Arbor there are records from April 30, in 1919, to July 4, in 1921. Also one was taken in November, 1917. On June 12, 1903, a female with two young attached to the underside was found hanging in a tree in Ann Arbor. The young were naked and blind and quite small. June 10, 1908, another female was found in a similar situation with three half-grown young attached.

Nycteris cinerea. Hoary Bat.—We have records for Ann Arbor, Bridgewater Township, Manchester, and Portage Lake. Our dates run from September 5 to October 15; but in December, 1891, one was found in a barn and was kept alive for several weeks.

Ursus americanus. Black Bear.—Formerly common, and one of the last of the larger animals of the county to be exterminated. The last one known to be in the county was

killed in October, 1875, in the big marsh west of Saline. Mr. George Inman, one of the pioneers of Lodi Township, told me that he had seen one just killed a few miles west of Ypsilanti in 1852. One was killed in Pittsfield Township in 1835. Black or brown is the normal color in this state, but I have heard of one albino which was taken in Bay County not many years ago.

Canis lycaon. Timber Wolf.—When the county was first settled the wolves were so destructive that it was difficult to keep any domestic animals. As late as 1840, 30 sheep were killed for a neighbor of my father's in Lodi Township; and another neighbor was himself chased by a pack in the winter of 1836. In October, 1834, a large wolf was seen by Mr. S. P. Allen near Ypsilanti. In looking over the county records I find that in 1837 a bounty of five dollars each was paid to four residents for eight wolf scalps; in 1838 eight more bounties of eight dollars each were paid; and up to 1839 bounties to a total amount of \$178 had been paid. The records for the next twelve years are not available, but as late as 1853 two wolf bounties of eight dollars each were paid to residents of the county. Some of these probably refer to coyotes. We have one record of a black wolf for the county.

Canis latrans. Brush Wolf, Coyote.—In the History of Washtenaw County¹ there is a full-page picture of hunting the prairie wolves in an early day, which shows men on horseback in oak openings, rounding up the wolves. In the same volume is an account by Mrs. H. L. Noble, saying that the wolves would "come at evening and stay about the cabin all night, keeping up a serenade that would almost chill the blood in my veins." These were no doubt coyotes. In 1905 I

¹ History of Washtenaw County, Michigan, p. 67, 1881.

mounted a large male, weighing 45 pounds, which had been shot in Sharon Township, March 10, by Mr. Keeler. Another is reported to have been seen in the same township in 1910.

Vulpes fulva. Red Fox.—The early settlers report the red fox as being quite common and destructive to small lambs, poultry, and game. Owing to its cunning this species has been able to live and increase in spite of much hunting and trapping. It is nocturnal as a rule, though I have seen them often in the daytime catching mice on the marshes. In April, 1883, a den was found in Lodi Township, and by careful watching the young could be seen playing about the entrance to the den while waiting for their mother to bring them food. The young in this den were moved to other dens every week or so, and to my certain knowledge were moved three times before they were dug out by a friend and myself. One transfer was for more than one-third of a mile. There were six of them about the size of small cats. These dens seem to have been woodchuck holes dug out and enlarged. Some were in hillsides, but some were on level ground. The den dug out was an old woodchuck hole. It extended about 25 feet into a bank, with a large nest chamber at the end about six feet from the top of the ground. A second entrance to the tunnel led down from the top of the bank and joined the tunnel about 12 feet from the nest. Some dried grass was noted in the nest chamber. A black fox was taken in Pittsfield Township in 1878, and I have heard of another being seen at a later date.

Urocyon cinereoargenteus cinereoargenteus. Gray Fox.—This small fox persisted in this county for many years. I saw one in Lodi Township in 1866 which had been treed by a dog. In October, 1866, two were shot near Saline by J. H. Bortle. The last one known to me in the county was taken

in Steere's Swamp, near Ann Arbor, in the winter of 1882. The species is very local, living in swamps and woods, which it rarely leaves. It has a sharp bark which is heavier than that of the red fox.

Procyon lotor lotor. Raccoon.—In this county the raccoon was formerly very common, according to the early settlers, and did much damage to poultry and to the corn when in the milk. In return it served as food and its skin was both an article of dress and a medium of exchange, a coon-skin being valued at 25 cents. It was still very common in Lodi Township in 1870-80 and furnished the sport of "cooning," when it often led both dogs and men a tiresome chase through woods and swamps and often escaped to its den in some big hollow tree.

When taken young it makes an interesting but very mischievous pet, and cannot be allowed loose in the house. I once had three as pets, and nearly all kinds of food given them were treated to a bath before eaten. It is omnivorous in its food habits and eats all kinds of fish, flesh, eggs, apples, berries, and is especially fond of green corn. On this food the coon grows fat, and when winter comes curls up in some den tree and sleeps through the winter, sometimes alone, and sometimes with several others. I have known of seven being found in a big hollow tree in Lodi Township. The latter part of the winter, during the warm spells, I have found tracks in the snow and have followed the tracks for miles as they visited other dens. The species is not strictly nocturnal, and I have often seen coons sunning themselves on limbs and have also found them on the ground feeding in the daytime. I once found a small one in the water of a little brook, where it was nearly drowned and was uttering a shrill, piteous cry. It had probably fallen from a log into the stream.

The young grow slowly and generally stay with the parents until a year old. They do not obtain their full growth until about the third year. They vary much in size, weighing from 15 to 40 pounds. One caught near Ann Arbor in November, 1905, weighed 30 pounds, and the blanket of fat under the skin weighed five pounds. The heaviest Michigan raccoon known to me was taken near Edmore, Montcalm County, May 10, 1904, and weighed 56 pounds.

The call is a shrill tremulo cry, almost like a whistle, and on a still night may be heard for a long distance. When caught by a dog it sometimes utters a snarling cry, from rage or pain. The color varies in shades of gray and black, and we have a dozen records of white or albino raccoons from this county, and half that number of black or melanistic ones.

Mustela pennantii pennantii. Fisher.—Henry Wilson, an old pioneer of Dexter, told me that he killed a large male in February, 1862, near Independence Lake, Webster Township. Other old trappers report that it has been taken in the county, but are not able to give exact data.

Mustela noveboracensis noveboracensis. New York Weasel.—This species is quite commonly distributed over the county even now. One summer day in Lodi Township I heard the excited squawking of a setting hen that was confined in a box coop; on raising the cover the hen was seen to have a weasel attached to her leg. With a stick I attempted to hit the weasel, which was dragged about by the hen, but only succeeded in causing it to run under a shed, from which place it soon stuck its head out of a hole. I again tried to hit it with a stick, but it always dodged the blow. Finally I went to the house for the gun, and when I returned found the weasel out chasing the hen again. A shot soon finished it.

In this county only about 75 per cent of the weasels change to the white coat in winter.

Mustela vison mink. Northeastern Mink.—In this county the mink has been so closely trapped that it is almost, if not quite, exterminated in some townships where it was formerly common. The mink is not so perfectly aquatic as the otter, but it also travels on land quite fast and far. I have found them a half-mile from water hunting for mice, birds, and even cottontails. I once shot one in Lodi Township that came to the chicken house and killed a fully grown hen, which it dragged a rod or so away, where it ate all it wanted. Another time I followed on the snow one that had run five miles in a night, and finally found it only a short distance from the place it started from. The mink is generally nocturnal, but I have often found it out on dark days. Once while fishing I saw one catch and carry away a good-sized trout. It is a poor climber, but once while hunting raccoons a dog chased one up a tree, where it was shot from a limb 20 feet above the ground. Albinos are rare, but we have in the Museum collections a mounted specimen which was taken at Ann Arbor. Melanistic specimens are rarer still, and I have seen but one, which was caught in Lodi Township in 1875.

Mephitis nigra. Eastern Skunk.—The skunk was common when the first settlers arrived in this county. With the clearing of the forests it became abundant. Altogether I have seen hundreds about my old home in Lodi Township. Here in one winter, about 1870, more than 30 were taken in one trap under an old barn.

Although it usually passes most of the winter months in a state of hibernation, it occasionally comes out during warm spells and wanders from one den to another. I have seen its

tracks every winter month. It is mainly nocturnal, but it also travels in the early evening and later morning, and I once saw a mother and six young pass through the dooryard just at dusk. The skunk is not a climber, as a rule, but I have found it a few feet up the inside of small hollow trees. Once I saw one enter a small stream and swim across; it was not forced, but went into the water of its own volition.

Taxidea taxus taxus. Badger.—The early settlers state that the badger was found in this county, but was not common. We have records from 1883 to 1919, including Saline Township, Superior Township, Lyndon Township, Ann Arbor, Chelsea, and Bass Lake. The species hibernates, but I have known it to come out on the snow, and I have records for every winter month.

Lutra canadensis canadensis. Canada Otter.—Formerly the otter was not rare in all the river systems of the county, and we know of a number being taken on the Huron, Raisin, and Saline rivers from 1856 to 1910, but none have been reported since that date. Three were seen and one shot by Edwin Hawley near Munith, Jackson County, not far from the county line, March 25, 1909. One was reported seen in a small mud lake in Lodi Township in 1910. At this same lake in 1886 two were taken by J. H. Bortle, of Saline. In May, 1908, John Staebler, a farmer, saw one at close range near Fleming Creek, two miles east of Ann Arbor, and in the spring of 1900 he saw another near the same place.

Felis cougar.—L. D. Watkins, of Manchester, records this animal as often passing through Manchester, about 1835, generally going southwest; the last one was seen in 1870. Hon. Henry S. Dean, of Ann Arbor, stated that one was reported in the county by hunters in 1838. Miss Julia Dexter Stan-

nard² tells of a panther that in 1830 chased her mother at dusk one evening while she was returning home, to Webster Township, from Ann Arbor on horseback. The panther followed almost to the house, when the lights in the window scared it off.

Lynx canadensis. Canada Lynx.—L. D. Watkins reports that he killed one in this county in 1842, and Hon. Henry S. Dean, of Ann Arbor, told me that old hunters reported it in the county in 1838.

Lynx ruffus ruffus. Bob-cat, Bay Lynx.—This species was always more common in the county than the Canada lynx, but it has been extinct here for fifty years. The early settlers often recorded it as common. In 1850 J. S. Wood, of Lodi Township, treed one with a dog. In 1870 Henry Wilson, of Dexter, saw one near Independence Lake.

Peromyscus maniculatus bairdii. Prairie Deer Mouse.—Specimens were taken September 28, 1909, in open fields near Manchester by F. M. Gaige. In the fall of the same year Dr. J. B. Steere took it on the big marsh four miles south of Ann Arbor; this, he states, is his first record for the species. In 1920 it was taken near Cavanaugh Lake, and is numerous near Ann Arbor and Portage Lake. It probably formerly occurred on the open prairies and oak openings, but now it is found in open fields and in grassy meadows.

Peromyscus leucopus noveboracensis. Northern Deer Mouse.—This mouse is abundant in forests over the county, and is found in adjoining fields, especially in those containing corn.

Synaptomys cooperi cooperi. Cooper Lemming-vole.—In October, 1883, George B. Sudworth took one near Ann Arbor.

² *Mich. Pioneer Coll.*, v. 28, p. 565.

February 13, 1903, E. H. Frothingham found one under a corn shock about four miles south of Ann Arbor. In a runway in a small tamarack stand in Steere's Swamp, near the same place, I trapped an adult female and four nearly grown young, October 8 and 9, 1903. In February, March, and April, 1921, H. B. Sherman trapped six in a field containing a little brush, a short distance south of Ann Arbor. A number of their remains were found by J. Van Tyne in the winters of 1921 and 1922 near Ann Arbor, in pellets of the long-eared owl.

Microtus pennsylvanicus pennsylvanicus. Pennsylvania Vole.—Was formerly found in beaver meadows, but with the clearing of the forests it has extended its range to the fields of grass and grain, and has become the most numerous of all the mammals of the county. Records are at hand for Ann Arbor, Pittsfield Township, and Portage Lake.

Microtus pinetorum scalopsoides. Pine Vole.—July 15, 1921, A. G. Ruthven found an adult male in the oak-hickory woods on his grounds near the outskirts of Ann Arbor.

Fiber zibethicus zibethicus. Muskrat.—In spite of persistent trapping, muskrats are still numerous in the county. Records are at hand for Ann Arbor, Pittsfield Township, Portage Lake, Saline, and Ypsilanti.

Rattus norvegicus. Norway Rat.—This injurious rodent became common soon after the settlement of the county. Its omnivorous food habits and adaptability have enabled it to increase greatly.

Mus musculus musculus. House Mouse.—The house mouse did not reach Washtenaw County until several years after the settlement of the district. It has become a serious pest, not only to household effects and stored food, but it has taken to

the grassy fields and the woods bordering grain fields, and is commonly found in shocks of corn. The amount of damage done by it in this county must be very great.

Zapus hudsonius hudsonius. Jumping Mouse.—A few occur in the county. We have records for Ann Arbor, Portage Lake, and Whitmore Lake. In October, about 1880, in Lodi Township, a female jumped from a shock of corn that was pulled over, and when caught, after several jumps of two feet or more, was found to have three small young attached to her teats.

Erethizon dorsatum dorsatum. Canada Porcupine.—The first settlers found porcupines were common in the county. My father killed one in 1855 in Lodi Township, and the last one known in the county was killed near Saline in October, 1868, by John H. Bortle.

The porcupine lives on the buds and bark of several species of trees, and also eats the stems and leaves of water lilies. It is a clumsy and stupid animal, knowing under natural conditions neither fear nor haste. Its coat of sharp-barbed quills affords almost complete protection from nearly all enemies except man, who alone is responsible for its extinction in the county. Although large and clumsy, it climbs readily, and often lives in the same tree for days. It also swims quite readily, sometimes entering the water voluntarily. It makes a number of noises; it sniffs, grunts, whines, chatters, and sometimes shrieks and cries like a child.

Marmota monax rufescens. Woodchuck.—Before the settlement of the county woodchucks were not very common, a few living on the prairies as well as in the woods. With the clearing of the forests it found a congenial habitat about the fields and gardens of the settlers, and there found also choice

food easily gathered. With these conditions it has greatly increased and has become a pest, so that many townships in southern Michigan pay a bounty of 25 to 50 cents each for woodchucks.

On the Wood homestead of 400 acres in Lodi Township this animal was rarely seen in 1865, but in the next twenty years it became so common that in the years 1881-82 I killed more than 100 and my brother and his helper 125 more, all of them on this one small tract, and even then some were left.

Its flesh is good when properly prepared, but most people are so prejudiced that they will not eat it.

Albinos are not rare; I know of one taken near Saline about 1885.

When alarmed it utters a shrill whistle; and when angry it chatters its teeth. I have often seen it climb trees, and have shot it from heights of 10 to 30 feet. It climbs when chased by dogs and also of its own free will.

Citellus tridecemlineatus tridecemlineatus. Striped Ground-squirrel.—This animal (erroneously called "gopher" by many people) was formerly common only in the southern part of the Lower Peninsula, where its natural habitat was the prairies or oak openings. Here it occurred in great numbers, as stated by the first settlers. As the state became settled and the timber cut off it gradually extended its range until at present it occurs in most of the cultivated areas of the Lower Peninsula.

This squirrel rarely climbs in bushes or small trees. It has a sharp whistle of alarm and a lower chirping call while feeding in company.

Tamias striatus lysteri. Northeastern Chipmunk.—Formerly abundant in the county, living in the forests. With the cutting of the forests it has become scarce, but is now sometimes found along brushy roadsides as well as in woods.

It occasionally climbs trees, but usually lives under stumps or logs in or at the edge of woods. It stores up quantities of food, and is seldom seen in the winter months.

We have an albino at the Museum of Zoology which was caught near Ann Arbor by a cat, and I know of one other seen near the city.

The call of the chipmunk is a loud chirp or chuck, regularly repeated and audible for a half-mile on still, frosty mornings. It also has a bird-like chirp or rapid call.

Sciurus hudsonicus loquax. Southeastern Red-squirrel.— This is the most abundant squirrel in the county. Owing to its small size it was formerly not hunted; it also easily adapted itself to civilization and increased so rapidly that in places it became a nuisance. It has been accused of driving off the fox and gray squirrels, for which reason it was exterminated from the University campus, where it formerly occurred.

The red-squirrel is very noisy and has a number of calls, chatters, and a whining cough which easily distinguishes it from other squirrels.

Several albinos have been taken in Washtenaw County, one pure albino in Dexter Township in 1908, and one nearly pure white, but with brownish dorsal stripe and tail, near Ann Arbor in 1912.

Sciurus carolinensis leucotis. Northern Gray Squirrel.— Abundant in the county for many years after its settlement. To the early settlers it was an injurious species, as it destroyed much of their scanty corn crop; but in later years it furnished much sport as well as a choice food for the table. Its chosen habitat was the heavy forest of beech and sugar maples, and with the cutting of these woods the gray squirrel has gradually become rare, only a few now being found in the county.

As late as 1875 I saw many of the species, about one-half of the black phase.

Its call is a high, shrill chatter, which may be heard quite a distance, and which is distinguished by hunters from the call of the red squirrel or fox squirrel. J. Austin Scott witnessed a migration in the fall of 1840, when hundreds of gray and black squirrels crossed the Raisin River near Adrian. They came from the south and were so exhausted from swimming across the river that the boys killed many with clubs. He counted 30 in one small tree near the water's edge.

Sciurus niger rufiventer. Western Fox Squirrel.—When Michigan was first settled the species was rare and was confined chiefly to the southern part of the state, where it occurred in the oak openings, which seem to be its favorite habitat.³ With the cutting of the heavy timber it has gradually extended its range, occupying all of the more open forests, and it has become very common, even entering the cities, where it has become semi-domesticated.

W. J. Beal⁴ states that in Lenawee County there were no fox squirrels in the early days, but later they came in from the south. At my home in Lodi Township I never saw one until about 1875, and they were rare for several years after that.

This is our largest squirrel, furnishing sport and food for hunters. One albino taken in the county is in the collection of the Museum of Zoology; and one partly melanistic individual, taken near Ann Arbor, November 12, 1910, has the whole underside jet black.

The call is hoarser than that of the gray squirrel, but although not so high in pitch may be heard for some distance.

³ Robert Kennicott, *U. S. Patent Office Report*, p. 56, 1856.

⁴ *Mich. Pioneer Coll.*

It occasionally swims; I know of one which swam across a part of Portage Lake, one-half mile, on a hot summer day, about 1910.

Glaucomys volans volans. Southern Flying Squirrel.—This species may still be found in some numbers in suitable habitats in the county. They are usually found in woods, although I have found them in houses both in Ann Arbor and at Portage Lake. They nest and live in tree cavities, and in winter are gregarious. In late December, about 1890, in Lodi Township I found 20 or more in a hollow butternut stub. The call is a high, bird-like chirp or long squeak, which I have often heard from the tree tops while in the woods on moonlight nights.

Castor canadensis michiganensis. Woods Beaver.—The first settlers of this county found this species to be nearly extinct, although dams and old beaver meadows were very common. It probably became scarce about 1800. Hon. Henry S. Dean, of Ann Arbor, told me that in 1837 at "Gravel Run," a few miles north of Ann Arbor, he saw a dam in good shape, although not used at that time. Remains of other dams still exist. S. D. Allen, of Ann Arbor, told me that in 1835 he saw a live beaver in the Huron River near Ypsilanti. This is the last record for the county.

Lepus americanus americanus. Snowshoe Hare.—This hare was formerly common over all the southern peninsula of Michigan. In Washtenaw County it persisted for a long time in the tamarack bogs, but when these were mostly drained or destroyed the hares became extinct. It was last taken in Steere's Swamp, four miles south of Ann Arbor, in 1875. One was taken in a swamp near Whitmore Lake in 1890. L. D.

Watkins, of Manchester, reports shooting one in a large swamp near Pleasant Lake in the fall of 1907.

Sylvilagus floridanus mearnsii. Mearns Cottontail.—The cottontail was formerly common only in the southern part of Michigan, but it now occurs over all the cultivated area of the Lower Peninsula. It has increased with and followed the civilization that furnished an abundance of food and destroyed many of its enemies.

I have several times found nests in meadows and cultivated fields. The nest is built in a deep form and is lined with fur from the mother's body and fine grass. The young are completely hidden when left by the mother. April 16, 1920, I found a nest containing five young in a stubblefield at Portage Lake. The young were well covered with hair, but the eyes were not open. April 20, 1920, I found another nest containing young on the lawn of an unoccupied house near the shore of Portage Lake. The number of young was not determined. May 5 the young were gone and the nest was deserted. May 16, 1920, L. R. Dice saw four young cottontails with their eyes open in the possession of a boy. They were taken from a nest near Ann Arbor.

About May 10, some years ago, I saw a cottontail jump into and swim across Mill Creek in this county. The animal was not pursued nor driven in any way into the water. Sometimes when caught alive the cottontail utters a loud, shrill cry.

Bison bison bison. American Bison.—According to the reports of the early explorers, this large mammal, in the eighteenth century, occupied, or at least visited, the southern border of the state of Michigan. Although we have no record of its occurrence in this county, its remains have been found just over the western border of the county by L. D. Watkins, who

in 1835 picked up three skulls near Norvell, Jackson County (Township 4 south, Range 2 east, Section 22). Two of these skulls were sent to Hillsdale College, where one still remains, though the data with it were lost during a fire; the other skull was sent to Albion College, but cannot now be found. At the time these specimens were collected other bones were plentiful on the surface of the ground.

Cervus canadensis canadensis. Eastern American Elk.—Probably common over most of the Southern Peninsula of Michigan up until the time of the settlements. I have found no record of live elk seen in the county, and the species probably was extinct in the district before 1800. Bones and antlers are common in the marshes and swamps of the county.

Odocoileus virginianus borealis. Northern White-tailed Deer.—Abundant in the county when the first settlers arrived, and continued common for many years. It quickly learned to adapt itself to civilization, feeding by night where it formerly fed by day. Some early settlers report much damage done to gardens and crops, of which the deer soon learned the location. The last deer known to me in the county was seen in Saline Township in 1875 by William Gordon, who reported it to me at the time. Covert⁵ records one seen in the county in 1879.

Hypothetical List

The mammals included in this list have been reported as occurring in Washtenaw County, but I can find no specimens with authentic data nor descriptions satisfactory for identification, and consider the records doubtful.

⁵ Covert, A. B., in *History of Washtenaw County*, p. 194, 1881.

Rattus rattus rattus. Black Rat.—Covert^o states that the species is “very rare. I have but one specimen, which was caught at the Michigan Central R. R. Depot.”

Mustela allegheniensis. Least Weasel.—Covert says, “The only specimens of this mammal I have had were brought in this winter” (1881). I have not been able to find these specimens, which were doubtless small females of *Mustela noveboracensis*.

^o Covert, A. B., in History of Washtenaw County, pp. 193-194, 1881.

