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MAMMALS OF THE OTTAWA DISTRICT [1]

By A. L. RAND

National Museum of Canada, Ottawa

THIS IS A PRELIMINARY LIST of the mammals recorded for the area within 30 miles of Ottawa, with occasional data from just outside the area, to clarify the picture.

There has been no previous list of the mammals of this area. The palaeontologist, E. Billings (1856) in writing general accounts of mammals, included some Ottawa data from personal observation. The long-time Ottawa resident, W. P. Lett, wrote an excellent series of general mammal papers for the early numbers of the Canadian Field-Naturalist 1884-90) and included some extremely interesting local data. About 1900 the zoological branch of the Ottawa Field-Naturalist Club reported various mammal items of local interest, including notes on records made by F. A. and W. E. Saunders who then lived in Ottawa. Since then only occasional items have appeared.

Dr. R. M. Anderson has been collecting information on local mammals by correspondence, interviews, and studying specimens for more than 28 years, and this information, in the files of the National Museum, has been made available to me. The late C. H. Young of the Museum staff, from 1904 to 1937, did considerable local field work, and C. E. Johnson and C. L. Patch, both of the Museum staff, have carried on field work since 1916. In recent years Dr. H. B. Hitchcock has investigated hibernating bat populations in the vicinity of Ottawa.

Much of the present paper is based on information from the above sources. I have also carried on some field work as opportunity offered, have interviewed local fur buyers and gathered bits of scattered data from many people.

I am indebted to many people for help in compiling this paper. To Dr. Anderson who has placed his manuscript notes at my disposal: to Mr. C. L. Patch and Mr. C. E. Johnson for their information; to Dr. H. B. Hitchcock for unpublished data on bats; to Mr. Wayne Robinson, local Ontario game officer, who aided me in making contacts; to Mr. E. Black and Mr. Robert Kizell, local fur buyers, for information; to Dr. R. T. D. Wickenden and Mr. James Windsor for their help in supplying carcasses for study. To these gentlemen, and to the many others mentioned in the text, I am deeply indebted.

The Ottawa area, with its 30-mile radius, has its northern half in Quebec, its southern part in Ontario. The Ottawa River, a 600 yard stream flowing east and west, is the boundary between the provinces. The southern half of the area is part of the undulating St. Lawrence lowlands with an altitude of 200-300 feet above sea level. A few miles north of the Ottawa River these lowlands meet the abrupt edge of the Gatineau Hills, the edge of the Laurentian Shield, that rise to 1125 feet above sea level in King Mountain, the highest point in our area.

There are many lakes in the Gatineau Hills, and the swift Gatineau and Lievre Rivers flow through these hills into the Ottawa. From the south the slow-flowing Rideau River enters the Ottawa.

The original forest cover on the St. Lawrence lowlands was probably mixed hard woods; birch, maple, oak, elm, and basswood; on sandy flats were white pine stands, and cedar and tamarack swamps were common. Now much of this country is fertile farmlands, abundantly interspersed with wood lots and areas of second growth. In the Gatineau Hills the original vegetation of the more humid north-facing slopes was composed of spruce, hemlock, and yellow birch; elsewhere were mixed areas of hardwoods of white birch, sugar maple, and beech. Now logging and fires have destroyed much of this forest cover, and it is given over largely to second growth. There are few occupied farms except along the river valleys.

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The climate of Ottawa is characterized by cold winters with much snow, and hot summers: the following data are from information over the last ten years supplied by the Dominion Meteorological Service.

The first killing frosts come between September 13th and October 3rd; the freeze-up comes between November 14th and December 7th, and the first snow between October 18th and December 6th. Snow lingers into late April, and occasionally into May, even in the city; and the last killing frosts during the past ten years occurred from April 23rd to May 23rd. Sub-zero weather is from December to March, with an extreme of-36° F.; in July and August short periods of 90° F. are of regular occurrence, with an extreme of 100° F.

Snowfall, occurring from November to April, has varied between 50 and 90 inches; total annual precipitation varied from about 30 to 40 inches.

The zonal concept of Merriam lately has been much criticised but, until a more workable hypothesis is put forward, I prefer to use it. The northern part of our area, roughly the Gatineau hills, is strongly Canadian Life Zone; that south of the Gatineau hills is Transition Life Zone.

Northern ranging mammals that occur (or used to occur) in the area are:

Smoky Shrew *Sorex fumeus*
Pigmy Shrew *Microsorex hoyi*
Hoary Bat *Lasiurus cinereus*
Marten *Martes americana* (formerly)
Fisher *Martes pennanti* (formerly)
Lynx *Lynx canadensis* (formerly)
Red Squirrel *Tamiasciurus hudsonicus*
Northern Flying Squirrel *Glaucomys sabrinus*
Wood Mouse *Peromyscus maniculatus*
Red-backed Mouse *Clethrionomys gapperi*
Porcupine *Erethizon dorsatum*
Woodland Jumping Mouse *Napaeozapus insignus*
Varying Hare *Lepus americanus*
Moose *Alces americanus*
Caribou *Rangifer caribou* (formerly)

Mammals with a more southern range, nearing their northern limits in this area are:

Brewer's Mole *Parascalops breweri*
Masked Bat *Myotis subulatus*
Pipistrelle Bat *Pipistrellus subflavus*
Raccoon *Procyon lotor*
Long-tailed Weasel *Mustela frenata*
Black Squirrel *Sciurus carolinensis*
White-footed Mouse *Peromyscus leucopus*
Cottontail Rabbit *Sylvilagus floridanus*
Virginia Deer *Odocoileus virginianus*

For a number of species this is an area in which the change occurs from one subspecies to another as follows:

Species	Northern form	Southern form
Tamias striatus	*griseus*	*lysteri*
Microtus pennsylvanicus	*fontigenus*	*pennsylvanicus*
Lepus americanus	*americanus*	*virginianus*

With the change in conditions attending settlement, many changes occurred in the composition of the mammal fauna. Trapping has eliminated the marten, fisher, wolverine, and lynx from our area; the otter has decreased in numbers, and the beaver was exterminated and reintroduced. The cougar, elk and caribou are completely gone from the whole region, and now the moose only straggles into our area occasionally.

There are recent additions to our fauna: House rats and house mice have been introduced; coyotes and cottontail rabbits have spread naturally from the south. The black squirrel, once only a straggler, has become common (aided in part by introduction?).

We still have many larger mammals about, and even into the city; deer are common within ten miles of the Parliament buildings. Bears, wolves and coyotes still occur; as do muskrats, mink, weasel, skunk and fox.

Intensive study recently has shown that some small mammals, which were formerly not suspected, such as the pigmy and smoky shrews and the woodland jumping mouse, occur hereabout, and Dr. Hitchcock's work on bat hibernation has revealed several additional species of bats. By searching of old records there are other species such as cougar, and wolverine, that we may be able to establish definitely as having occurred. Additional field work will undoubtedly add records of other species, now only suspected to occur, such as the water shrew, least weasel, and lemming mouse.

In such a settled area as this, about the nation's capital, one would not expect the importance of mammals to bulk large, and yet they do have an importance. Every year the local press carries stories of the depredations of wolves and bears, depredations whose significance is hard to assess. House mice and rats undoubtedly destroy goods of more value than the damage done by bears and wolves; meadow mice injure shrubbery, and there are occasional cases of black squirrels injuring gardens, and red squirrels proving an annoyance in the walls of houses.

Game animals, deer and rabbits, supply sport for many hunters. Foxes supply both sport and fur; and that a considerable harvest of fur is taken annually is shown by the following estimate of the amount of fur taken in the Ontario portion of our area, purchased by some local dealers in the 1943-44 season. (This would be only part of the local catch, as that from the Quebec side of the Ottawa River is not figured).

Animal	*Number taken*	*Total Value*
Raccoon	400	$ 1,200
Weasel	350	350
Mink	125	1,875
Skunk	1,300	2,600
Red Fox	1,700	25,500
Muskrat	4,000	10,000
	Total —	$41,525

This total fur yield, an estimated part of the total fur catch of the Ontario part of our area, gives the surprisingly high yield of $30 per square mile, which is a much higher yield of fur value per unit area than the average of the whole of Ontario, or of the Northwest Territories in recent years. It is evident that the fur yield, though each trapper gets but a few skins, still is of importance in this well-settled area.

ANNOTATED LIST

The material in the National Museum of Canada listed in this paper has been studied by Dr. R. M. Anderson in connection with his work on the Mammals of Quebec. I have accepted his determinations, and no taxonomic data are included. I have attempted to summarize the literature and other data available from this area as to occurrence, abundance, habitat preference, time of breeding, number of young, food, cyclic changes in numbers, and importance, so that this paper will serve as a starting point from which to write a comprehensive paper on the Mammals of the Ottawa district.

For a general account of the mammals of Quebec, see R. M. Anderson's "Mammals of the Province of Quebec" published in 1939 in the Annual Report of the Provancher Society for 1938, (reprinted the following year in French, with revisions and additions).

For a general account of Ontario mammals, see E. C. Cross and J. R. Dymond's "The Mammals of Ontario", published by the Royal Ontario Museum of Zoology, Toronto, in 1929.

Brewer's Mole ; Hairy-tailed Mole.
Parascalops breweri (Bachman).— An uncommon species, that reaches the northern limits of its range in our area, barely extending into the edge of the Gatineau Hills. Patch, who collected this species in Frontenac County, country similar to that of the southern part of our area, found it burrowing in hardwood ridges and in the edges of grassy meadows (Patch MS.).

It was first recorded from our area by Whiteaves (1889, p. 36). Jackson (1915, No. Amer. Fauna, No. 38, p. 82) examined a specimen from the National Museum of Canada taken at Meach Lake, and Anderson (1939, p. 54, mentions this locality.

We have specimens in the National Museum from Meach Lake (2, C.H. Young, 1914, 1934); one from Kingsmere (Y. H. Williamson, 1935); and Ottawa River between Stead's Mills and Britannia (E. Brown, 1888). This last is presumably the basis of the early records.

Star-nosed Mole.
Condylura cristata cristata (Linnaeus).— This is a fairly common species here, inhabiting wooded swamps and marshy ground, where it burrows in the black soil. Their presence is indicated by the mounds of earth they throw up. Dow's swamp is a favoured locality. (C. E. Johnson).

Mr. Johnson found a nest near Britannia in July, 1916. It was under a half-rotten stump, that when pushed over exposed the nest of dead grass. It contained 5 half-grown young that are now on exhibition with part of the nest in the National Museum.

Jackson (1915, No. Amer. Fauna, No. 38, p. 19) examined 4 specimens from Ottawa.

In the National Museum are 16 other specimens from the Ontario part of our area, in-

cluding Rockcliffe and Dow's swamp, collected since 1894; and from the Quebec part we have 3 specimens from Aylmer and 1 from Meach Lake.

Cinereus Shrew.

Sorex cinereus cinereus Kerr.— This little shrew is fairly common, inhabiting both dry and wet forest, and brush, and has been taken in Dow's swamp and the Rideau gardens. Some years ago Johnson pushed over a half-rotten stump in the hardwood area near Billing's Bridge and disclosed a grass-and-leaf nest the size of his fist, that contained a single adult shrew (Johnson, verbal).

Jackson, in his revision of this species (1928, No. Amer. Fauna, No. 51, p. 49), had specimens from the Ottawa area.

In the National Museum are 9 specimens from the Ontario side of the Ottawa area, collected since 1919 (mostly by Johnson); and from the Quebec part, 2 from Aylmer and 1 from Larrimac Golf Links 12 miles up the Gatineau River.

Smoky Shrew.

Sorex fumeus fumeus Miller.— The only record for the Ottawa district appears to be the specimen examined by Anderson (1939, p. 57) from west of Hull. This specimen is in Mr. Hoyes Lloyd's private collection.

[2] **[Water Shrew.**

Sorex palustris albibarbis Richardson.— Jackson (1928, No. Amer. Fauna, No. 51, p. 177) maps the range of this form as including the Ottawa Valley. There appear to be no records for this area, but Saunders and Davis (1931, pp. 193, 194) took one by Whitefish Lake (Kazabazua) and another near Danford Lake, just north of the Ottawa district.]

Pigmy Shrew.

Microsorex hoyi intervectus Jackson.— Evidently a rare species, as but one has been recorded, a specimen taken near Leitrim, 28 Sept. 1929 (1930 Baker and La Rocque, p. 20) and now in the National Collection.

Short-tailed Shrew.

Blarina brevicauda talpoides (Gapper).— One of the commonest and most widespread species; found in most habitats.

Billings (1856, f., p. 219) recorded two shrews, probably this species, in the mouth of a fox he shot near Ottawa, and Ballantyne and Lett (1890, a, p. 92) record this species, as does Anderson (1943, p. 50).

Patch trapped about 45 specimens in the fall of 1943 in a few weeks near Beechwood Cemetery. The same fall these shrews were very common in Dow's swamp, as indicated by a little random trapping, when about every trap held a shrew each morning, but the next spring, 1944, shrews were very scarce in the same area, indicating a heavy over-winter loss (they were not trapped out in the fall).

Patch took a female at St. Charles (Maxwell) Lake near Farrellton, Quebec, on Aug. 29, 1942, that contained 5 large embryos.

There are many specimens from this area in the National Collection dating back to 1907.

Little Brown Bat.

Myotis lucifugus lucifugus (Le Conte).— A common species, flying about forest, field, and town, during the summer, and known to hibernate in LaFlèche cave in winter, where Hitchcock has banded a number.

Scott reported that 14 out of 15 bats he secured in 1884 were *Vespertilio subulatus* [*M. keenii*] (1884, Small and Lett, b, p. 282), but early identifications in this group were uncertain and they were more likely this form. Taverner's record (1924, p. 76) of this species active in winter in Ottawa surely refers to *Eptesicus fuscus*. In December 1938, C. G. MacKay visited LaFlèche cave and found 51 bats (sp?) in hibernation; one of them, sent to the National Museum, was this species. In 1939 Hitchcock (1940, p. 56) found 5 of this species hibernating there on Nov. 24th; and on Jan. 18, 1941, found them in hibernation there again (1941, p. 46). In 1942 I accompanied Dr. Hitchcock to LaFlèche cave on Dec. 19, and we found but a single individual of this species in hibernation.

Miller and Allen (1928, U.S. Nat. Mus., Bull, 144, p. 46) in their revision list Ottawa specimens in the U.S. Nat. Mus. Our National Museum has a series from both the Ontario and Quebec portions of our area, the earliest collected being in 1889 (labelled *Vespertilio subulatus*).

Eastern Masked Bat.

Myotis subulatus leibii (Audubon and Bachman).— An uncommon bat; known to hibernate in LaFlèche cave. Until 1941 there was but a single record of this bat for Canada, one taken in southern Ontario and

2. —Species for which there are no definite records, but of probable occurrence, are placed in square brackets.

recorded in 1931. In 1941 Hitchcock (1941, p. 46) found this species in Hastings county, Ontario, and on Jan. 18, 1941, found 4 hibernating in LaFlèche cave. Anderson (1941, pp. 23-27) comments on this record, discusses its occurrence, and says it can be expected in other caves. In 1942, Dec. 19, I accompanied Dr. Hitchcock to this locality and we found one of this species.

The National Collection contains two specimens from LaFlèche cave (1941, H. B. Hitchcock).

Long-eared Bat ; Keen's Bat.

Myotis keenii septentrionalis (Trouessart).— Evidently not a very common species; known to hibernate in LaFlèche cave in the Gatineau area. Dr. Hitchcock has banded a number of this species there.

In their revision of this genus Miller and Allen (1928, U.S. Nat. Mus. Bull. 144, p. 106) list an alcoholic specimen from Ottawa in the U.S. National Museum.

On Nov. 25, 1939, Hitchcock found 17 individuals hibernating in LaFlèche cave, and again on Jan. 18, 1941, he found this species hibernating there. On Dec. 19, 1942, I accompanied Dr. Hitchcock to LaFlèche cave and we found 10 of these bats, mostly hanging singly in the inner part of the cave.

In the National collection are two specimens from this area, a skin and skull and an alcoholic both from LaFlèche cave, 1942.

Northern Pipistrelle Bat.

Pipistrellus subflavus obscurus Miller.— Evidently a rare species; known to hibernate in LaFlèche cave.

F. A. and W. E. Saunders took a bat in "Clark's woods" just north of the Experimental Farm on July 10, 1890, and this specimen lay unidentified in the latter's collection for about 30 years, when it was found to be this species and to represent the first record for Canada (Saunders, 1920, p. 17, and 1932, p. 279). Up until 1941 there had been two other records of this bat in Canada; then Hitchcock found it hibernating in LaFlèche cave (1941, Hitchcock, p. 46).

Anderson comments on this record, the 5th for Canada, and summarizes the other records (1941, pp. 27-29).

In 1942, on Dec. 19, I accompanied Dr. Hitchcock to LaFlèche cave and we found a single individual in hibernation, that we collected, the only specimen from this area in the National Collection.

Silver-haired Bat.

Lasionycteris noctivagans (Le Conte).— An uncommon summer resident, migrating southward in winter; earliest date, June; latest, Aug. 27 (of 7 specimens, N.M.C.).

During an excursion of the Ottawa Field-Naturalist's Club to Casselman in 1884, Mr. Fletcher secured one of these bats (1884, Small and Lett, b, p. 282).

F. A. and W. E. Saunders collected this bat at Ottawa in July 1890 (1890, Ballantyne and Lett, b, p. 198), and Saunders (1932, p. 279) says that most of the specimens he has met with were at Ottawa.

In the National Collection are seven specimens, from Ottawa, Hull, and Aylmer, the two earliest specimens being taken in 1885 by E.F.G. White and W. E. T. Lowtens.

Big Brown Bat.

Eptesicus fuscus fuscus (Beauvois).— This is the bat most commonly taken in Ottawa, often being taken in buildings. It hibernates singly in buildings, as well as in numbers in LaFlèche cave, and is the species that frequently is active in winter, both in buildings and, in mild spells of weather, outdoors. A number have been banded.

On Dec. 16, 1884, one was found in the Parliament Buildings and identified by C. H. Merriam under the name of *Vespertilio serotinus fuscus* (1884, Small and Lett, b, p. 282). On Apr. 18, 1896, one was seen flying about, a day on which the temperature reached 82° F. (1896, Small, p. 45). On Feb. 24, one was caught flying about a corridor of the Parliament Buildings and reported by Macoun (1908, p. 266) who says it is common at Ottawa. The bats active in winter recorded as *M. l. lucifugus* by Taverner (1924, p. 76) were surely this species.

Hitchcock found 23 hibernating in LaFlèche cave on Nov. 25 (1940, p. 56) and on Jan. 18, 1941 he found the species there again (1941, Hitchcock, p. 46). On. Dec. 19, 1942 I visited this cave with Dr. Hitchcock and we found 36 of this species hibernating. One bunch of 16, and one of 8 were hanging to the roof of the outer chamber where the temperature was about 32° F. (it was below zero outside).

Others, were found, singly or in smaller groups, hanging up, or in small crevices farth-

er back in the cave. The numbers of the various species found in the cave were as follows: *E. fuscus*, 36; *M. keenii*, 10; *M. lucifugus*, 1; *M. subulatus*, 1; *Pipistrellus subflavus*, 1.

Banding operations were carried out on all Dr. Hitchcock's visits to this and other caves, and he is preparing a detailed account of his work and its results.

The winter of 1943-44 at Ottawa was rather mild, and the following is a summary of the big brown bats seen during the winter in Ottawa, that came to my attention: Nov. 20, with freezing weather and before the snow came, one was flying about Aylmer Avenue at dusk, as though feeding; one in December and one on Jan. 4 that had been picked up were brought to me; about Jan. 20, during a spell of mild weather, one appeared flying about the Museum lecture hall during a Ottawa Field-Naturalists' Club meeting, and Mr. V. Goodwill told me he had seen one fly up from the snow ahead of him that afternoon; a number of other people spoke of seeing bats in the few days preceding. On. Feb. 5, in weather that was just freezing, I saw one fly strongly, 30 feet to 40 feet up, from Dow's swamp, across the canal, and disappear toward the houses on the far side. On March 11, with 10° of frost, A. S. Rand saw one fly by and light under the eaves of a house, and go into a crevice.

April 18, a lovely sunny spring day with a maximum temperature of 52°, was the first day bats flew about commonly; at least 3 were over our yard in Ottawa, and a number were continually in sight over the nearby canal at dusk.

Perhaps the mild winter accounted in part for the large number of bats that came to my attention; but during the preceding severe winter one was picked up frozen and brought to me when the temperature had been 25° and more below zero for several days. Evidently they sometimes come out in severe weather, even if they do not survive.

In the National Collection are series from both the Quebec and the Ontario part of our area; the earliest specimen from Hull, 1888, by Brother Secordian.

Red Bat.

Lasiurus borealis borealis (Muller).— A rare summer resident, migrating southward in winter.

Dr. C. H. D. Clarke saw one about his residence in Ottawa during the fall migration a few years ago.

The National Collection contains 3 specimens; two caught in the Victoria Memorial Museum, Sept. 13, 1922 (W. Manchester) and one caught in W. P. Lett's cellar, March 11, 1924.

Hoary Bat.

Lasiurus cinereus (Beauvois).— A rare summer resident, migrating southward in winter.

According to Ballantyne and Lett (1890, b, p. 198) the bats shot by F. A. and W. E. Saunders in July 1890, about Ottawa, included the Hoary Bat, but Saunders, 1932, does not mention Ottawa as a locality.

In the National Collection are three specimens; an adult collected 14 August, 1903 by W. P. Kirby in Hull, and two half-grown young from Ottawa. These last, attached to their mother, were found on the lawn of the Central Experimental Farm on July 3, 1925, by Dr. R. E. DeLury. They were being attacked by a crow. Placed in an open-fronted box, the parent deserted during the night and DeLury was unable to raise the young.

Black Bear.

Ursus americanus americanus Pallas.—Common in the less settled country north of the Ottawa River, frequently coming about settlements in the fall; scarce in the more settled part south of the Ottawa River. Hibernates from early in December to early in April (1887, Lett, b, pp. 306-314).

Billings, (1856, d, p. 100) in a general account of the species, mentions two skulls of bears from the Township of Huntley, killed about 1854, and (1856, e, pp. 114-115) mentions a brown bear from the Chats, on the Ottawa River somewhat west of our area, that he refers provisionally to *U. cinnamomum*[3], the cinnamon bear, evidently a specimen in the brown phase. Small and Lett (1884, b, p. 281) record Mr. Devlin as saying that this species occurs in our area.

Lett (1887, b, pp. 306-314) gives an extended account of the black bear, with many local details. He tells of Mr. Billings and a companion returning home one evening in 1825 or 1826

3. —A form now restricted to the black bear of the Rocky Mountain region under the subspecific name **Ursus americanus cinnamomum** Audubon and Bachman (1854, Quadr. N. Amer., Vol. 3, p. 125). The brown or "Cinnamon" colour phase is found more commonly among black bears in the west, and is very rare in the east. — R. M. Anderson.

from Hull to Billing's Bridge and meeting a bear between Sparks Street and the Rideau River (probably in the vicinity of Bank Street). The men had but an axe. Billings cut and sharpened a stake that his companion thrust into the chest of the bear; while the bear was occupied with this, Billings despatched it with a blow of the axe on its head. Lett also mentions shooting a bear on the south side of Rideau Street, near Nicholas Street, and comments favorably on the quality of its flesh.

About 1875 one frequented the bush on the MacKay estate, New Edinburgh, for several weeks;and another was seen, until snow came, about Brigham's(now Brewery) Creek in Hull.

Lett says it is a native of the Ottawa Valley, still to be found within 8 or 10 miles of Ottawa, and quite abundant the season of 1885.

Bears were quite common on the Lievre River in October 1904 (Lemieux, 1905, p. 123), and Prince (1907, p. 100) recorded them at Hammond.

Black bears are still common in the country north of the Ottawa River, correlated with the sparse settlement in the Gatineau Hills. This abundance is well illustrated by a brief survey of the newspaper clippings from local papers that Dr. Anderson has collected from 1931 to 1944.

In the fall of 1931 bears were reported as not unusually numerous in the immediate vicinity of Ottawa and Hull, but in the more remote parts they were much more in evidence, and bolder, than normal. This was said to be correlated with a dry year, and a failure of the berry and nut crop on which the bears ordinarily depend for food. A bear was reported at Aylmer dump; two were shot on the Mountain Road, one north of Aylmer and one north of Deschênes; three were seen about Kingsmere. (Mr. T. Lawson told Dr. Anderson 11 had been killed about Wakefield that fall). Between Wakefield and Maniwaki, (25 to 80 miles north of Ottawa) bears were reported as particularly destructive to sheep. A $15 bounty was said to be in effect.

In 1933 bears were reported to be increasing, but we have few clippings besides one telling of 3 that came on the Glenlea golf course.

In 1934 they were common from Wakefield north, killing many sheep, calves and pigs.

In 1936 one was reported on the Chaudière golf course, Aylmer Road; in 1937 one came into Main Street, Aylmer; in 1940 one was shot in the outskirts of Aylmer, one on Aylmer dump, and one in the cemetery on the outskirts of Hull; in 1941 they were reported plentiful about Wakefield, and one man was said to have lost 8 lambs in a night; and in 1943 one man had 40 beehives ruined in a night.

There are few recent records for our area south of the Ottawa; one is of a bear shot at Moose Creek in 1924. This scarcity is correlated with denser settlement.

The following from just west of our area (Ashdad, near Renfrew) is of interest. On March 17, 1944, a female with young was discovered in hibernation under the clay-covered roots of an upturned tree, which formed a cavern about 6 feet deep. A dog roused the female, that charged out and was shot. The three young in the cave were estimated to be 5 or 6 weeks old. Fifty yards away was the den of another animal that had left hibernation some time earlier.

The weights of some of the bears were given (whether actually weighed or not is not stated; but they sound reasonable). Some of these are: 125, 150, 165 (the mother of the 3 young), 220, 302, 350 pounds.

There are old accounts of wounded or trapped bears mauling and even killing people from near our area (Lett, l.c.). One newspaper account from Blue Sea Lake (1934), just north of our area, tells of a man encountering a female bear with two cubs in June, and being charged by the bear. He climbed a tree, the bear after him. Finally he succeeded in kicking the bear down out of the tree.

Lett gives, apparently as local information, that bears hibernate under roots of large trees or in rocky caves from early December to early April; are in good condition by October, and the skins are prime after mid-November. Lett also records a very pale coloured bear, very like a polar bear in color, killed in the Gatineau about 1837, that was evidently at least a partial albino.

One of the oldest specimens in the National Collection is the cranium of a black bear killed in Osgoode, Canada W., 1838, (near Osgoode, Carleton County, Ont., about 20 miles south east of Ottawa).

Raccoon.

Procyon lotor lotor (Linnaeus).— A not uncommon species.

In 1884 Small and Lett write (b, p. 281) that Mr. Devlin says raccoons occur in the area; in

the fall of 1884 they noted an unusually large number of raccoons on the Ottawa market, some of them being very fat.

In 1931 Mr. T. Lawson told Dr. Anderson that two were killed at Kirk's Ferry (Gatineau River) on Sept. 27, and several had been seen there during the summer.

In the summer of 1943 Mr. J. Stoddard told me raccoon were plentiful about Meach Lake, causing annoyance by disturbing provisions placed in a spring for refrigeration. Mr. E. S. Richards, Superintendent of Gatineau Park, reported them common in the park in 1944.

In recent years they have been taken just outside the city limits of Ottawa, in Rideau Park.

Some local fur buyers estimated that in 1943-44 they had purchased about 400 skins of the local crop, and that 5 to 7 skins were the largest catches for single individuals. The average price paid the trapper was about $3.

In the National Collection are 4 local specimens from the Ontario part of our area, the earliest being taken in 1909.

Marten.

Martes americana americana (Turton).— Formerly probably throughout our area, especially in the spruce forests of the northern part, now probably extirpated.

Our only information about it from the area is Devlin's saying it occurred, (1884, Small and Lett, b, p. 281), and the trapping of one about 1840 near the present village of Carp (Lett, 1890, p. 79).

Fisher.

Martes pennanti pennanti (Erxleben). —Probably formerly occurred throughout our area, and now probably extinct.

Our only information from this area is Mr. Devlin's saying that it occurred (1884, Small and Lett, b, p. 281); and three trapped near the present village of Carp by W. P. Lett about 1840 (Lett, 1890, p. 79).

Short-tailed Weasel.; Bonaparte Weasel.

Mustela erminea cicognanii Bonaparte.— A fairly common animal, that comes into the outskirts of Ottawa.

Small and Lett (1884, b, p. 281) reported that Devlin said weasels (probably referring to this species), occurred. Saunders (1910,p.16) reported taking one near Ottawa. The following notes by Percival (1910, pp. 59, 60) from Burritt's Rapids, Rideau River, probably refer to this species. In removing straw from a mow, a weasel was seen to appear repeatedly in the mow. Its nest was found about halfway down. It was the size of a water pail, lined throughout with soft mouse fur, and on the floor was the skin of what had been a pet kitten. A winding passage led to another "room" that must have been the "commissariat", being strewn with the bodies of dead mice, etc. From both "rooms" passages led in all directions. Also included is a second-hand account of 5 weasels that is interpreted as 4 adults moving a young one, but was more likely a female and 4 young.

We have records from Eastview; the edge of Ottawa south; and McKellar Township on the western outskirts of Ottawa. This last was brought to the Museum by Mr. W. Anderson who had taken it in his kitchen in December.

Some Ottawa fur-buyers said that their purchases of pelts taken in the Ontario part of the Ottawa district totalled only an estimated 350, in the 1942-43 season; that people paid them little attention; and that 4 or 5 skins were the most taken by individuals. The average price paid trappers was about $1. These figures may include some *M. f. noveboracensis.*

In the National Collection are recorded 8 skins from the Ontario part of our area, and one from Wrightville (Que.); the earliest is labelled 8 Aug. 1902, W. S. Odell.

[Least Weasel.

Mustela rixosa (Bangs).— Not definitely recorded from this area, but can be expected, as the race *M. r. allegheniensis* (Rhoads) has been recorded in Quebec as far westward as Ste. Veronique (1939, Anderson, p. 64), and *M. r. rixosa* (Bangs) has been taken in various parts of Ontario, east to Heaslip, near Englehart, Timiskaming district, and there is some circumstantial evidence of the species occurring in south-eastern Ontario (Cross and Dymond, 1929, p. 14, and Saunders, 1932, pp. 282, 283).]

Long-tailed Weasel.

Mustela frenata noveboracensis (Emmons).— Uncommon; the Ottawa district is near the northern limit of its range.

The National Museum records show a specimen from Ottawa, by Dr. DeLury, 1935; one from Meach Lake, by C. H. Young, 1912; one from Grand Lake, Gatineau County by A. Hamilton, Oct. 28, 1943; and one from near Ottawa's eastern limits, November 11, 1944, by Rowley Frith.

Mink.

Mustela vison vison Schreber.— Only a fairly common animal; sometimes comes into the city itself.

Devlin said that it occurred in the area (1884, Small and Lett, b, p. 281).

On August 31, 1932, two boys brought into the Museum a mink that they had killed the previous evening at 180 Isabella Street, the Glebe, Ottawa. It had killed 26 chickens, and wounded another, without eating any of them before it was killed.

Local fur-buyers told me that their purchases of mink from the Ontario section of our area totalled about 125 skins in 1943-44, and that 1 or 2 skins were the biggest catch of individual trappers. The skins were purchased for an average of about $15.

In the National Collection is a specimen from Hurdman's Bridge, Ottawa, taken in 1905; and one from Black Rapids, Rideau River, taken in 1917 by C. E. Johnson.

[**Wolverine.**

Gulo luscus luscus (Linnaeus).— Probably occurred in our area, but there are no definite records.

In 1884 Lett and Small (1884, b, p. 281) say that settlers confuse lynx, wildcat, and wolverine, but a specimen of wolverine was secured from the Desert (north of our area) and exhibited in Ottawa as a rarity.]

Otter.

Lutra canadensis canadensis (Schreber).— Probably uncommon in the southern part of our area; more common northward.

At a meeting of the Ottawa Naturalists' Club in 1884 Mr. Scott showed a series of skins loaned by Mr. Devlin, a local fur-buyer. Devlin brought most of his pelts from a hundred miles north of Ottawa. In quality they were exceeded only by those from Northern British Columbia. Skins from the upper Ottawa were not as dark and rich as those from the upper Gatineau, while those from south of us were light and poor, and worth but half as much. Devlin annually bought 400 to 500 skins (most of them evidently from outside our area), at prices ranging from $4 to $15. (1884, Scott, p. 187).

Lett (1884) gives an interesting account of two tame otter he had at Ottawa.

Johnson tells me that about 1920 there were items in the local press about otter seen in the Ottawa River at Ottawa, and at Constance Bay in the winter; and that C. H. Young showed him an old otter slide at Meach Lake about the same time.

A local fur-buyer told me he purchased a few from within the Ontario part of our area during the season 1943-44; and Mr. Richards reported to the Ottawa Journal (April 17, 1944) that otter were occasionally seen in Gatineau Park by the park staff on their patrols.

We have no local specimens in the National Collection.

Eastern Canada Skunk.

Mephitis mephitis mephitis Schreber.— A common animal in the Ottawa district, often venturing into Ottawa itself.

Billings (1856, g, p. 362) reported one found dead in the Rideau Canal; Mr. Lett shooting one at Ottawa; and the species being rather common in Upper Canada. On the authority of Devlin, Small and Lett (1884, b, p. 281), record it from the area. In his general account of the species, Lett speaks of one caught in a fox trap near Carp (1889, p. 19).

In July 1933 Dr. Anderson received reports of skunks digging holes in Fairmont golf course near Hull, and C. H. Young and A. LaRocque investigated this to find they were digging up the roots of plantain (*Plantago* sp.) and biting a piece out of the fleshy bottom of the root. Examining a skunk stomach, Anderson found parts of such roots in it.

Their unpopular invasions of the City of Ottawa are well illustrated by a survey of newspaper clippings, which tell of the police shooting, in the vicinity of Carruthers and Scott Streets, one that had its head caught in a can; and of their being seen at various other places, including New Edinburgh, Rockcliffe, and Loretta Avenue, Ottawa.

Mr. Richards reports skunks common in the Gatineau Park (1944).

Local fur-buyers told me their estimated purchase of skunks from the Ontario part of our area was about 1300 pelts in 1943-44, and that the highest catches of individual trappers was about 20 to 30 pelts. The average price paid was about $2 apiece.

A fat female skunk weighing 5.5 pounds was found floating in the Rideau Canal last October (1943) and was brought to me. Probably it had fallen into the canal, and unable to scale the vertical walls had drowned, as had the individual Billings mentioned in 1856 (loc. cit.).

In the National Collection are a series of specimens from the Ontario part of our area, the oldest specimen dating back to 1917 (C. L. Patch). All have long narrow white stripes. The young specimens, about one-quarter grown, are dated July, and July 5.

Red Fox.

Vulpes fulva (Desmarest).— Very common some years; apparently less so in other years; occurs generally over the area, into the edge of the city of Ottawa.

In 1840 Lett caught 27 foxes in a small area near Carp village in Huntley Township (1890, Lett, p. 79).

Billings (1856, f, p. 219) tells of shooting a female fox, with 7 meadow mice and 2 shrews in its mouth, during May in Gloucester Township near Ottawa, and gives details of digging out a burrow in Osgoode Township.

In 1903 Macoun *et al.* (1903, p. 35) record a live silver fox from Coulonge district exhibited in Ottawa.

Foxes were unusually abundant the winter of 1941-42 (R. T. D. Wickenden) and the open season was prolonged for two weeks, with the reason given that foxes were destructive to poultry (clipping, local press).

In 1942-43 foxes were plentiful, but hard weather conditions and deep snow prevented fox hunters from securing many.

In 1943-44 foxes were very common in the Ottawa district and Mr. E. S. Richards reported them common in Gatineau Park.

Years ago a local Hunt Club used to ride to hounds, but now most foxes taken in the Ontario section of our area are shot ahead of hounds. Three fox hunting groups which I know shot 20, 36, and 60 foxes during the season in our area south of the Ottawa River. Local fox-buyers told me that they estimated their purchase of pelts from the Ontario part of our district amounted to about 1700 foxes; bought at an average price of $14 to $15 apiece (1943-44).

Cross and silver foxes are very scarce in this area. Billings (op. cit., p. 222) tells of two young being captured in Osgoode Township, one nearly black and one silver gray. They were kept alive for a time, and later their two pelts were sold for £30 (a better price than they would bring today). Johnson shot a cross fox twenty miles west of Ottawa about 1920; a cross fox was said to have been taken in the outskirts of Ottawa in 1944.

A litter of 5 quarter-grown young red foxes was taken for a Museum group, five miles west of Ottawa on May 21, 1917.

With the cooperation of Dr. R. T. D. Wickenden and Mr. James Windsor in 1943-44 I was able to examine a number of fox carcasses. They had been skinned, with the hind toes removed: 10 males weighed between 8.5 and 11.5, averaging 9.5 pounds; 6 females weighed between 6 and 9 pounds, averaging 7.8 pounds. All these animals were in good condition; most of them had some fat at least about the loins and shoulders, and a few had a thin layer over much of the body. The heaviest animal, the male weighing 11.5 pounds, had a well-filled stomach that, removed intact, weighed 1.5 pounds.

The stomach contents of 23 foxes, and some other notes on their food in this area follows:

October, 1920, a specimen collected for the Museum had its stomach filled with crickets, grasshoppers, and part of a wasp-nest (C. E. Johnson).

Dec. 18 to 27, 1943: Of 8 stomachs, seven contained meadow mice (*Microtus pennsylvanicus*); the number of mice and remains per stomach varied from an estimated 4 to 12 (average 5.3). The only other food present was a small amount of white gristle-like matter (carrion?) in one stomach; one stomach was empty.

January 4 to 25, 1944: Of 10 stomachs examined two contained remains of cottontail rabbits (*Sylvilagus floridanus*), presumably of one individual each; 6 contained meadow mice remains, varying from 1 to 5 mice (average 2.3) per stomach; 1 contained a piece of pigskin (carrion, surely); 2 contained chicken feathers; and 2 were empty.

In late January a fox was reported to have entered a chicken house on the outskirts of Ottawa and to have killed 11 fowl in the night. The animal, said to be a magnificent cross fox, was found in the fowl-house, thus establishing his identity.

February 5 to 29, 1944: Of 5 stomachs examined, one contained six meadow mice and the fur of perhaps as many more, plus a small amount of white suety matter (carrion); and of 2 females taken late in the month, each had a considerable quantity of dead grass in its stomach; and 2 stomachs were empty.

May: Billings (*l. c.*) reported a female fox with 7 meadow mice and 2 shrews in its mouth.

There was an evident change in the food supply correlated with the weather. In December, with shallow snow, mice were easily taken, and it was usual for the stomachs to have 4 to 5 mice in them, and only once was there anything else. In January, with increased snow and crust, fewer mice were found in each stomach, — rabbits appeared in their diet and also chicken feathers, and one was reported to have raided a chicken house. The later February records, — 2 stomachs empty and 2 with considerable grass in them — perhaps correlate with the breeding season. However, food was plentiful enough to keep some fat on the flesh of the foxes throughout the winter.

In the National Collection are many specimens from the area, the oldest being from Chelsea, dated March 20, 1887.

Eastern Timber Wolf.

Canis lupus lycaon Schreber.— Apparently fairly common in the northern half of our area, but some reports of depredations may refer to those of dogs, and there is the possibility of confusion with coyotes.

Small and Lett, (1884, b, p. 281), report that Mr. Devlin says the wolf occurs in rare instances in the Ottawa area.

Lett, in a general account of the wolf (1890, pp. 75-91), says that in the early days the wolf was dangerously abundant in the Ottawa Valley. During the first years of the settlement of Hull they were very numerous and destructive, killing sheep and disturbing the minds of timid people. A trapper caught one, partly skinned it, put a bell and a collar on it, and allowed this "rather cruelly treated wolf" to go, and it was said after that wolves became scarce about Hull for a number of years.

The old stony swamp west of Bell's Corners on the Richmond Road was infested with wolves at one time. A farmer, driving to Ottawa one night, had his dog seized and carried off by wolves.

In October 1839 on the Goodwood River (near the Duke of Richmond's Estate) Lett heard a pack hunting.

In 1840, near the present village of Carp, wolves killed a number of sheep and young cattle, and after much effort Lett caught three of a pack.

In the winter of 1868, when wolves were plentiful within ten miles of Ottawa, Dr. Bell of New Edinburgh was driving through the long swamp east of Eastman's Springs when eleven wolves chased a deer across the road in front of him.

About 1878, when Lett was camping on Bear Brook, 12 miles from Ottawa, he was awakened by the howling of wolves, and wolves chased a deer through the snow by their camp.

Wolves were very numerous in the Township of Gloucester up to a few years ago, and doubtless many still exist in the solitudes of vast swamps within 25 miles of Ottawa (written 1890).

The following story concerning an Algonquin, Clouthier, and his encounter with wolves near Hull was considered authentic by the old inhabitants of Hull and Bytown. Lett considered that wolves ordinarily dreaded humans, and that if the following were true it was the only case he had heard of in which wolves had attacked a man in this part of Canada. Clouthier disappeared, and when his remains were found, surrounded by those of 14 wolves, it was deduced that he had been attacked by a band of wolves, had shot one with his muzzle loader, and had killed the others with his tomahawk before being pulled down and devoured by the rest of the pack. The dead wolves had also been eaten by their fellows.

Lemieux (1905, p. 123) says wolves were reported to be quite common about White Fish Lake in the fall of 1904.

Prince (1907, p. 100) reports a pack heard howling near Pembina Lake in the Upper Lievre River valley even in the daytime.

Dr. Anderson has accumulated clippings from the local press with headings such as "Shot monster wolf near Carp, had killed sheep worth $500." (Ottawa Evening Journal, Apr. 3, 1943); "Wolves and Bears work havoc in Gatineau Valley" (Ottawa Journal, Sept. 21, 1943); "Killed 100 sheep, Wolf is slain" in Meach Lake area (Ottawa Journal, Oct. 27, 1932); and "An Ottawa man Beset by Wolves" — pack of more than a dozen wolves surounded him while holidaying at Maniwaki and he "shot his way out". (Ottawa Journal, 26, Aug. 1930).

However, other clippings give a different version. One quotes D. J. Taylor, of the Ontario Game & Fisheries Department, as saying he believes dogs, not wolves, are responsible for the sheep killing (Ottawa Journal, Oct. 21, 1941); and another by G. Bryan Curran (a letter to Editor, Ottawa Journal, 22-9-43) thinks that most of these records are of dogs in the Gatineau district in the fall.

That wolves still occur in the Gatineau, however, is vouched for by Mr. E. S. Richards, who reported in the local press that wolves were seen in Gatineau Park in the winter of 1943-44, the first time this has occurred since the park was established.

In the National Museum Collection is a specimen from Ironsides, P.Q., dated March 1900, from David Roland; we also have two specimens from just outside our area, in Quebec, one from the Township of Low (1908-9) and one from Point Comfort, 31-Mile Lake, P.Q., (1925).

Coyote ; Brush Wolf.

Canis latrans latrans Say.— Uncommon in the southern part of our area; probably becoming more common as part of an eastward movement of the species.

The first Ontario record appears to be a specimen in the National Collection from north of Thedford, Lambton County, taken Oct. 10, 1919, by G. A. Martelle; our first local specimen is one from near Dunrobin (about 25 miles west of Ottawa) Nov. 12, 1943, killed by Eldon Neeley; though Cross and Dymond (1929, p. 19) record it in Ontario eastward to Ottawa.

The National Museum has secured a specimen from near Luskville, Gatineau County, Quebec, taken Oct. 29, 1944, apparently the first record for Quebec.

In the summer and fall of 1944 many sheep were reported killed by "wolves" in the area just west of the City of Ottawa. About 100 sheep were said to have been killed from the flock belonging to the Dominion Experimental Farm and pastured about the Connaught Rifle Range. Organized hunts resulted in the killing of one coyote and one dog, which, probably properly allocates the blame.

Lynx.

Lynx canadensis Kerr.— Formerly occurred; now extirpated.

Small and Lett (1884, b, p. 281) report Devlin as saying the lynx occurs.

C. E. Johnson tells me that about 1917 one was captured near the Experimental Farm and exhibited for a time in Devlin's Store.

There are no local specimens in the National Collection.

[Panther.

Felis concolor couguar Kerr.— Probably occurred in our area in colonial days, though there are no definite records. The species had been extinct in Ontario for nearly fifty years according to Cross and Dymond (1929, p. 19).

Lett, writing in 1887 (a, pp. 127 ff.), says it occurred at one time in the valley of the Ottawa in considerable numbers, and that about 100 years earlier (before 1887) the panther was found in every part of Ontario and Quebec].

[Atlantic Harbor Seal.

Phoca vitulina concolor (DeKay).— There are old circumstantial accounts of the occurrence of seals in the Ottawa River at Ottawa.

The "Ottawa Citizen" of August 15, 1936, quotes a report from "The Quebec Mercury" of Dec. 16, 1865, that a seal was killed in the Gatineau River a day or two earlier, and that strange as it may seem these animals ascend the Ottawa every winter, remaining about air-holes in the ice to watch for fish.

Small and Lett (1884, b, p. 282) say a seal was reported as shot recently off Gatineau Point in 1884; that two years earlier one was shot off New Edinburgh by Mr. Askwith, and that solidary individuals have been seen from time to time in former years in the Ottawa.

Dr. Anderson (MS.) says harbor seals occur frequently at the head of tide water at Montreal and (1930, p. 169 and 1939, p. 70) that they straggle up the Ottawa as far as Hull; and that there are old records (referring to the above data).]

Woodchuck ; Groundhog.

Marmota monax rufescens Howell.— A common animal in the more open country; hibernates in winter.

In 1939 Anderson (p. 73) says specimens from the lower Gatineau are distinctly referable to *M. m. rufescens;* and in 1943 (p. 54) records specimens from Carleton County, Ont.

The following data are on the seasonal period of activity that appears to be from late March to late September: Spring dates of first individuals recorded in seven different years between 1920-1939 are: Apr. 10, Apr. 8, Mar. 31, Mar. 30, Mar. 29, Mar. 19, Mar. 18 (Johnson); the earliest I saw tracks in 1944 was Mar. 24. Latest fall dates for two years are Sept. 6; Sept. 28 (one filling in his back door entrance with grass and leaves.

The following are the available data on time of reproduction; June 18, 1933, 3 half-grown young basking at entrance to den; July 14,

1935, one half-grown young caught. A family of woodchucks, one-third grown, was taken locally July 3, 1924, and is now on exhibition in our Museum.

C. E. Johnson has seen several woodchucks some 15 feet up in large trees.

Mr. Dunn tells me that a number of years ago, when he was raising mink, he used to shoot woodchucks for mink food. He said that he found woodchucks very wary along travelled roads, but along bush roads they were less so, and he sometimes bagged six in an afternoon. As mink food they were not especially relished, and the bones were difficult to grind, being hard and splintery.

In the National Museum is a local series from both sides of the Ottawa River, the oldest specimen being dated 1889 (J. Herring). One of these specimens is an albino, and Johnson saw a black woodchuck on the outskirts of Ottawa a few years ago.

Northeastern Chipmunk.

Tamias striatus lysteri (Richardson).— Generally common in the densely wooded and bush areas; hibernates; occasionally active in winter.

In 1888 Ballantyne (pp. 38-41) says this is a common species, and mentions a tame one in his garden.

Lloyd (1923, p. 118) quotes reports of chipmunks killing nestling house wrens and chipping sparrows.

The following data on seasonal activity are supplied by Mr. and Mrs. Hoyes Lloyd and Mr. C. E. Johnson. First spring records, March 6 - Apr. 10 (average, Mar. 22) for 12 years records between 1921 and 1944. Johnson supplies the following fall dates: chipmunks active Nov. 2, 3, 4, and 5, 1920; seen Nov. 1, 1922; Oct. 25, 1930; Oct. 29, 1932, and an unusual record of one active Dec. 26, 1932.

Among the food being gathered in the fall for storage, Johnson has observed basswood seeds, hazel nuts, and beech nuts; in the spring he found one with the sprouting keys of sugar maple in its cheek pouches.

There is a series of locally-taken specimens in the National Collection; the earliest dated 1884.

Two female specimens were carrying 4 embryos each on April 25, and another on April 26.

A Kingsmere specimen is melanistic, and albinos have been recorded at Rockcliffe (H. Lloyd).

Anderson (1939, p. 74) says the form about Ottawa intergrades with *T. s. griseus* in the upper Gatineau Valley just north of our area.

Red Squirrel.

Tamiasciurus hudsonicus loquax Bangs.— Common; not confined to the vicinity of conifers, but more common there.

This was one of our common squirrels in 1888 according to Ballantyne (1888, pp. 35-38; the chipmunk was the other) who gave a general account of the species.

He says 3 or 4 young are born in early June, and mentions a nest in a hollow stump on the edge of a pine woodlot. About his home one fall they fed exclusively on apples, and stored crabapples in forks of branches, and buried plum pits in the ground. At the onset of cold weather they built a nest in the wall of an out building. During cold, stormy winter weather they were not seen for several days at a time. In late fall and winter they ate their arboreal store of apples (possibly eating only the seeds). After the apples were used up they ate spruce buds; with flower buds of maples. Larch buds were especially prized.

At Meach Lake Ballantyne saw one swim across a stream, when it could have crossed easily on a bridge.

At Angers, P. Q., a young sparrow, old enough to fly, was seen being devoured by a squirrel (undoubtedly this species). The squirrel was driven from its prey, and the bird found to be still warm (1908, Michaud, p. 188).

At Black Rapids, Rideau River, one was recorded with a white-tipped tail (1923, McElhinney, p. 77).

Odell (1925 and 1926) found mushrooms, including the deadly (to humans) *Amanita muscaria*, in such places and condition as to justify the assumption that red squirrels had stored them temporarily, and had eaten them with impunity.

Just north of our area Davis (1931, p. 193) found this squirrel very common, and estimated the population in hardwood country in September at a pair to the acre.

Anderson, (1939, p. 75), gives the form *loquax* as extending into the lower Gatineau Valley at least, but identified specimens from just north of our area as *gymnicus* (in Davis, 1931, p. 193), but the range of *gymnicus* was considered as extending farther west at that time and some immature summer specimens are as small and dark as typical *gymnicus*.

Anderson, 1942, p. 33, lists specimens of this form from Meach Lake and Wakefield.

Dr. R. E. DeLury reported a late litter of young; 5 left their nest prematurely about Oct. 7 (M.S.).

Today they come into the outskirts of the city, and during the winter of 1943-44 two lived in the walls of a neighbor's house and caused some annoyance by chewing articles stored in an attic. For days at a time they were not active during our coldest weather, as Ballantyne had reported in 1888.

In the National Museum of Canada is a local series from both Ontario and Quebec.

Black Squirrel ; Grey Squirrel.

Sciurus carolinensis leucotis (Gapper).— A common species in and about Ottawa; and straggles into the southern end of the Gatineau Valley. The proportion of gray phased animals to black phased is perhaps 1 of the former to 6 of the latter.

It is currently held that black squirrels were absent until introduced into Rockcliffe between 1920 and 1930, as Anderson (1939, p. 76) records. However, it has a much longer history in the Ottawa area, though it has become common only in the last decade or so.

In 1856 when it was considered that the grey and the black squirrels were different species, Billings wrote (1856, h, p. 437) that the grey squirrel was never seen in the Ottawa Valley, while the black squirrel was only occasionally found there. He writes that it was unknown in the city of Ottawa for the first 30 years of white settlement; of late a few were seen every year, but it was not thoroughly established.

In 1888 Ballantyne (pp. 41, 42) writes that the black squirrel was seldom seen in the vicinity of Ottawa, and that he had seen only two or three individuals, all in the neighborhood of Beechwood Cemetery. A few years earlier he found them plentiful at Smith's Falls, about 40 miles south of Ottawa. As the country was cleared they gradually disappeared. Of the grey phase, he had only one record for the Ottawa area, and had seen one at Smith's Falls.

In 1890 Ballantyne and Lett (b, p. 199) give a report of a black squirrel caught near Britannia in October; and say there has been no other report for the area for several years.

In 1903 Macoun *et al* (pp. 34-36) report a black squirrel from the Gatineau district exhibited in Ottawa.

Though outside our area to the west, Seton's 1911 (p. 175) report of specimens and sight records at Pembroke, where it was then rare, helps to round out the picture of their northern distribution.

C. E. Johnson and A. LaRocque tell me that from 1920 to about 1930 black squirrels were scarce, and mostly confined to the area about Beechwood Cemetery (as they had been in Ballantyne's time). Since that time, and shortly after a rumored introduction, they have become common through most of Ottawa and in the hardwood forest immediately to the south.

Outside summer nests are common sights well up in maple and elm trees in Ottawa South, and it is common to see 4 or 5 squirrels along the Driveway. They are occasionally seen in the centre of the city. Judging by the animals I have seen in the last two years, there is about one grey to 6 black pelaged squirrels.

Mr. P. A. Taverner, who regularly feeds this species, had a pair of squirrels pass the severe winter of 1942-43 in an outside nest on a ledge by his window. For days at a time during below-zero weather they would not stir out of their nest.

Motor traffic is perhaps the most important hazard of the grey squirrels in towns. In two years I have seen about 6 squirrels that have been killed by traffic.

These squirrels do a certain amount of damage by digging up tulips and other bulbs and eating parts of them, and by eating rosebuds.

We have in the National Museum a small series of this species from Ottawa, and one, the earliest local specimen, from Ironsides, P.Q. (1927).

Mearns' Flying Squirrel.

Glaucomys sabrinus macrotis (Mearns).— The actual abundance of this nocturnal animal remains to be established; presumably it is not uncommon.

In 1888 Ballantyne (p. 42) wrote that this species had been seen in tthe neighborhood, and that a member of the Ottawa Field-Naturalists' Club used to have one as a pet. In 1890 Ballantyne and Lett (b, p. 198) reported F. A. Saunders seeing one in July.

In 1930 Dr. Anderson (p. 94) reported finding one in a nest 8 feet up in a thickly-branched white cedar in the outskirts of Hull; in 1939 (p. 76) he wrote that this subspecies occurs at least 70 miles north of Ottawa in the Gatineau Valley.

Patch gave me several records of its occurrence in the Rockcliffe area, and he raised part of a family of 5 young that came from near Wakefield.

In the National Collection is a small series of local Ontario specimens, the oldest, dated 1886, from C. H. Pinkey.

Beaver.

Castor canadensis canadensis (Kuhl). — Probably abundant over the whole area when it was first settled by whites. It was later almost or quite extirpated, but has recently been introduced into Gatineau Park and has become common there.

In 1884 Small and Lett (b, p. 281) reported beaver occurring in the Blanche and the Lièvre Rivers. In 1906 Prince *et al.* (p. 58) reported a colony established at Green creek some distance east of Ottawa.

In 1917 C. L. Patch and C. E. Johnson saw an old beaver dam and old beaver work at Constance Bay. In 1929 Mr. J. A. Machado told Dr. Anderson of remains of an old beaver dam, about a quarter of a mile long, on Barnard's Lake, near North Wakefield. An old local resident was reported as saying that the last beaver in the region had been killed about 70 years earlier.

In 1931 Davis (p. 94) saw fresh work and tracks at Danford Lake, just north of our area, and was told of the presence of beavers nearby.

Mr. E. S. Richards reports in the local press (1944) that about 30 pairs of beaver had been introduced into Gatineau Park a few years ago; that they thrived and multiplied and are now to be found on almost every lake.

Beaver occurrence and beaver houses reported at Billing's Bridge in the local press recently refer to muskrats.

Deer Mouse ; White-footed Mouse.

Peromyscus maniculatus gracilis (Le Conte).— A common species of woodlands and brush, probably becoming scarcer southward.

Patch found a late nest, probably of this species, with 5 very small young, under a log September 8, 1917 (Patch, 1917, p. 63). C. H. Young, on visiting his summer home at Meach Lake, in November 1932 found two of these mice in a box in the cabin, and with them a quantity of shelled beechnut kernels weighing three pounds, that they had stored.

In the National collection is a local series from both north and south of the Ottawa River.

White-footed Mouse.

Peromyscus leucopus noveboracensis (Fischer).- A common species, probably becoming scarce toward the northern edge of its range, which is about 40 miles north of Ottawa in the Gatineau Valley (Anderson, 1939, p. 79).

The early records of Small and Lett (1884, p. 150) and Ballantyne and Lett (1890, b, p. 198) tell of its occurrence and entering Ottawa houses (under the name *Hesperomys leucopus*). In recent winters several have been taken in houses in the Glebe, Ottawa.

The local habitat relations and relative abundance of this species and *P. m. gracilis* need to be worked out.

The National Museum has a series of local specimens.

[Cooper Lemming Mouse.

Synaptomys cooperi cooperi Baird.— Not recorded from within our area, but probably occurs, as Davis and Saunders (1931, Davis, p. 193) collected a female with 4 embryos in early September at Whitefish Lake about 50 miles north of Ottawa.]

Red-backed Mouse.

Clethrionomys gapperi gapperi (Vigors).— One of the common forest animals in the northern part of our area, becoming rarer and more local in the southern part.

In 1890 Saunders took this species in Dow's swamp (1890, Ballantyne and Lett, b, p. 198, and Saunders, 1932, p. 297).

In the National Collection are specimens from both the Ontario and Quebec part of our area.

Meadow Mouse.

Microtus pennsylvanicus pennsylvanicus=fontigenus.— This is the common mouse of the fields and grasslands, and is sometimes found in the forest, some distance from any clearing.

In 1856 Billings (f, p. 219) writes of finding 7 meadow mice in the mouth of a fox. In 1884 Small and Lett (a, p. 150) under the name *Arvicola riparia* refer to this mouse as being troublesome in cellars and gardens. In the latter, especially in the early spring, they are said to eat the tender shoots of plants. In winter they eat the bark from that portion of the young orchard trees that is below the snow. Later in the same volume (p. 281) they comment on the unusual depredations of this species in the winter of 1884; in places the undergrowth was destroyed for 25 to 30 yards, and

trees 6 inches in diameter were girdled and killed. Maples were mentioned in this connection. In 1890 Ballantyne and Lett (a, p. 92) report one taken in a house in February, after it had eaten off a yard of lace curtain, possibly for the starch.

In 1936 Dr. Anderson noted considerable damage to young trees the previous winter by these mice girdling them, the species most affected being sugar maple, ash, and white cedar (MS.).

In the spring of 1943 and 1944 near Ottawa, when the snow had melted it revealed many runs of this mouse that had been cut through the matted grass. Where the mat had not been deep, the runs showed as shallow troughs; where deeper, they were covered with grass, but everywhere were holes gnawed through the grass mat, evidently where the mice passed from grassy to snow tunnels. Here and there were little grass nests, flattened oval in shape, about 6 to 8 inches across, and resting on little pedestals of ice that were slow in melting. The bark of the wild apple tree was the tree they had most commonly used for food.

The meadow mouse is an important food of the red fox (which see); and Johnson reported a great-horned owl from Mooney's Bay, Ottawa River, that had eaten two of these mice (Johnson, 1923, p. 118).

A study of a series in the National Museum from this area showed that they were intermediate between the race *pennsylvanicus* to the south and *fontigenus* to the north, and the line dividing these two races was drawn somewhat arbitrarily along the Ottawa River (Rand, 1943, Can. Field-Nat., 57, p. 117).

Muskrat.

Ondatra zibethica zibethica (Linnaeus).— The muskrat is fairly common in the marshes and edges of the waterways about Ottawa, and enters the edge of the city, but its numbers are rather strictly controlled by trapping, which is now limited to a period in the spring.

Besides Devlin's statement that the species occurs in the district (1884, Small and Lett, b, p. 281), and that the Saunders brothers saw it in 1890 (1890, Ballantyne and Lett, b, p. 198), the references in the literature are to freaks; an albinistic specimen from the Rideau River near St. Patrick's bridge (Prince *et al.*, 1906, p. 61), and a black muskrat from near Ottawa (Prince, 1907, p. 100).

The muskrat is still trapped for fur on the edge of Ottawa. Local fur buyers told me that from the Ontario part of our area they purchased an estimated 4000 muskrats annually, and that in the spring of 1944 they were paying an average of $2.50 a skin. Many trappers bring in 60 to 100 pelts, and a few as many as 200 or 300 for the season.

The National Museum has a small series of locally caught specimens.

House Mouse.

Mus musculus Linnaeus.— A common species about dwellings, and probably into the neighboring fields.

The National Collection has a locally taken series, the register showing that the earliest was taken in 1900 by William Spreadborough, though the specimen appears to be no longer extant.

House Rat.

Rattus norvegicus (Erxleben).— A common species in Ottawa and other towns; and in the adjacent garbage dumps.

That it has predatory habits is illustrated by what Johnson (1923, p. 97) wrote of one near Hogsback that he saw descending a small hawthorne bush with a young song sparrow; and one night in Ottawa he heard a scuffle and the alarm call of an English sparrow, suggesting that one of these rats had captured a sparrow in the eaves.

That it is preyed upon is shown by its presence in the stomach of a great-horned owl, taken at Mooney's Bay (Johnson, 1923, p. 118).

In the National Museum are local specimens, the earliest taken in 1890 by F. A. Saunders.

American Porcupine.

Erethizon dorsatum dorsatum (Linnaeus).— A rather uncommon forest animal.

In 1910 Lemieux (p. 16) writes of the abundance of porcupine near Upper Lièvre Lakes. In 1918 Macnamara (pp. 113-118) gives a general account of the appearance and habits of the species, and some personal experiences, presumably about Arnprior; and in 1921 (pp. 70-72) tells of seeing at Lake des Chats, Ottawa River, an adult and a young one that he tried to raise by hand.

In 1939 Anderson (p. 89) writes that the porcupine was still found within a few miles of Ottawa, and that one was killed within a short distance of Hull several years ago.

The National Museum has a series of locally-taken specimens, the earliest dated 1886. One adult male from Kingsmere weighed 17 pounds,

10 ounces. We have one local albinistic specimen; it is white with a slight grey tinge in the pelage of the dorsum, and the claws are whitish.

Eifrig (1910) records a great horned owl with many porcupine quills in its flesh.

Meadow Jumping Mouse.

Zapus hudsonicus ontarioensis Anderson.— A not uncommon species of meadows and grassland; hibernates.

In 1884 Small and Lett (a, p. 151) report this species from Prescott (outside our area) and say they heard of a pair taken on the Aylmer road a few years previously.

Fletcher (1884, p. 151) tells of one found near Ottawa; and Small and Lett (1884, b, p. 281) say that Prof. Macoun reports one taken in Major Hill Park in 1884, - the first positive record for the district. In 1890 Ballantyne and Lett (a, p. 92) report a specimen from near Billing's Bridge.

In 1943 Dr. Anderson (pp. 59-61) described *ontarioensis*, the form to which our animal belongs.

In the National Collection is a series of locally-taken specimens, the earliest taken in 1889 by J. H. Bartlett.

Woodland Jumping Mouse.

Napaeozapus insignis algonquinensis Prince.— A forest animal, probably more common in the northern part of our area; hibernates.

There appears to be but a single record for our area, a specimen taken at Meach Lake, 1935, by C. H. Young.

In 1942 Anderson (p. 39) referred this specimen to the newly described subspecies *algonquinensis*.

It will probably be found to be not uncommon locally, as Davis (1931, p. 194) reports taking 16 of them from Whitefish Lake and Danford Lake, just north of our area, in a few days. The principal habitats frequented by them were along streams in both coniferous and hardwood forests.

Snowshoe Hare.

Lepus americanus virginianus Harlan.— Variable in numbers, depending on the stage of its 10 year cycle; in some years common, and occurs in the Experimental Farm and about the Parliament Buildings.

In 1890 Ballantyne and Lett (b, p. 198) mention its occurrence; in 1909 Eifrig (p. 56) mentions one at the Experimental Farm; in 1903 E. F. G. White saw a very nice black hare, [a melanistic specimen]taken near Ottawa, brought into the market (Anderson, MS.).

Anderson (1939, p. 90) writes that our subspecies *L. a. virginianus* intergrades with the more northern *L. a. americanus* some distance north of the Ottawa River.

There are very few local specimens in the National Collection, the earliest being taken by Patch in 1916.

Mearns' Cottontail Rabbit.

Sylvilagus floridanus mearnsi (Allen).— A common animal of the bushlands, north to the Gatineau hills. A recent arrival from the south, and this is the northern limit of its range.

Before historic times the cottontail occurred only in southern Ontario (Wintemberg, 1928, Nat. Mus. Can., Bull. 51, p. 6); by 1908 it had spread northward to a line drawn from Lake Simcoe to Trenton, Prince Edward County, and in 1939 it reached Ottawa and shortly afterward spread to the north side of the river (Anderson, 1939, p. 92; 1940, b, pp. 70-72).

Though the cottontail was not detected in Ottawa until 1931, its increase was rapid. The first specimen to come to the Museum was brought in on April 24, 1932, by Gifford Johnson; four others were brought in that year. By April 1933 H. Lloyd reported that cottontails were abundant about his place at Rockcliffe, and by 1934 the local press carried items as to rabbits causing damage to shrubbery, and their destructon by shooting be allowed in what was otherwise the wild life preserve of Rockcliffe.

The cottontail is now a well established part of our fauna, and though it may do some damage to shrubbery and gardens this is very local.

Evidently several litters are born yearly. A specimen taken April 3, 1944, carried 6 embryos; Lloyd sent us a 20-day-old young August 26, 1942.

The National Collection has a series of local specimens.

Elk.

Cervus canadensis canadensis Erxleben.— Formerly common on the south side of the Ottawa River, and probably ranged to the edge of the Gatineau hills; has been extinct since about 1800.

In 1856 Billings (b, pp. 81 ff.) wrote that according to tradition among the Indians the elk was not uncommon in the valley of the Ottawa, within 120 years. When he wrote it was

known only from remains of horn and bone, and Billings thought the horns found had not been lying on the ground for 100 years. In excavating the Rideau Canal a perfect skeleton was found at Hog's Back, about 1825. The antlers, still attached to the skull, were five feet long. Billings heard reports of elk still existing in the western counties of the Upper Province (Ontario).

In 1884 Lett (pp. 107 ff.) wrote that elk had been quite numerous in the Ottawa Valley, found more generally on the south side, and that the hardwood forests were its favorite haunts. Antlers were still frequently turned up by the plough in the vicinity of Ottawa; when a boy Lett found them on the ground about the village of Richmond; he exhibited an antler (at an Ottawa Field-Naturalists' Club meeting) from Eastman's Springs, and 8 years earlier (before 1884) one was found within 2 miles of the city limits of Ottawa. He wrote that Mr. Rice Honeywell, one of the earliest settlers, said that within 70 years he had seen elk, alive and dead, within 4 miles of Ottawa.

Saunders (1932, p. 306) says elk became extinct in Ontario perhaps about 1750. From the above evidence we may conclude that elk were present in the Ottawa district up until about 1800.

Dr. Anderson (1939, p. 93) was unable to find any definite records from the north side of the Ottawa River.

The National Museum has no local specimens.

Northern White-tailed Deer ; Virginia Deer.

Odocoileus virginianus borealis Miller.— A common animal over our whole area, to within a few miles of Ottawa.

Generally the deer has extended its range northward, probably following lumbering operations and settlements that provide more hardwood second growth and better deer forage But there appear to have been deer throughout our area during historic times.

In 1856 Billings (c, p. 91) wrote that the deer was found throughout Upper Canada west of Montreal and in the tract of hilly country north of the great River Ottawa it extended 150 miles north of that stream. Fur traders reported its presence rarely near the height of land. In Renfrew County Billings says it was very abundant, though 25 years earlier it was rarely seen there.

In 1884 Lett (pp. 110 ff.) gives an extended account of the species. It was common in all parts of the Ottawa Valley and common about Ottawa, roaming hardwood and hemlock ridges in summer, and establishing yards in tamarack swamps in winter. About 30 years earlier Lett saw a yard in Osgoode Township that was four miles square and must have held hundreds of deer. At the time of writing deer had decreased somewhat, and a well-beaten deer yard of 10 acres in extent within 12 miles of Ottawa was no mean representation of the species. He writes that the antlers are full grown by August; the velvet is rubbed off by October and they are shed by January.

In 1904 W.H.H. on a hike from Ottawa to Kirk's Ferry in October saw 4 deer. In 1907 deer were reported at the Experimental Farm, and in Rockcliffe (Saunders, 1907, p. 164; Prince, 1907, p. 100).

In 1939 Anderson (p. 93) writes that in early times the deer was seldom seen north of the Ottawa River, but as forests were cut and second growth grew up they extended their range northward.

E. S. Richards, writing up the Gatineau Park in 1944 (local press), says the deer are very plentiful in Gatineau Park, and it is almost overstocked. In one cedar swamp not far from Meach Lake he counted 28 deer, and all the cedar swamps are well stocked. He says deer have increased greatly in recent years, being scarce in the park in 1938.

Deer are now common within ten miles of Ottawa city, and provide good hunting. In the last few years they have been reported as coming into towns in our area.

The National Collection contains a number of local specimens.

Lett (op. cit.) writes of seeing 2 does with spike horns brought into the Ottawa market. Though the season was late they were still in velvet. Lett recorded an albino buck from this area, and we have one local albino, as well as the record of another.

Moose.

Alces americana americana (Clinton).— Once common in the northern part of our area, and still not uncommon 100 miles north of us, but now only a straggler in the Ottawa district.

In 1856 Billings (a, p. 70) in a general account of the moose says it occurs on the north shore of the Ottawa River, but occurs only as a straggler on the south shores of the river.

In 1884 Lett (pp. 101-117) writes that the moose is diminishing in numbers each year, but are still comparatively plentiful far back on the north side of the Ottawa River. He writes of two tame moose in the possession of the Marquis of Lorne, one of which was trained to drive in harness.

Lett writes that moose and Virginia deer are not found together, and inclines to the belief that the buck deer attack and drive out the larger moose; [it is more probably due to a habitat difference, a difference in tolerance to settlement and a difference in ability to withstand hunting]. Lett writes that the horns sprout in April, attain their growth by August and fall off in February.

A clipping from the Ottawa Citizen of Sept. 28, 1931, tells of a moose near Aylmer, P.Q., and one shot at nearby Wychwood a few years earlier.

Mr. E. S. Richards does not mention the moose as occurring in the Gatineau Park in 1944, in his release to the local press.

The National Museum does not have any local specimens.

[**Woodland Caribou.**

Rangifer caribou caribou (Gmelin).— Probably fairly common in the northern part of our area at least, less than 50 years ago; now absent.

Though we have no definite records from within our area, Lett's account (1884, pp. 107 ff.) of its status just outside of our area is worthy of mention.

At a meeting of the Ottawa Naturalists' Club in 1884 he exhibited 2 sets of antlers from Kakabouga Lake above the Desert on the Gatineau. He had heard of Indians killing 14 in a few minutes, while the caribou were crossing the Rivière des Lièvres; and wrote that they were still found in considerable numbers on the river as close as 60 to 70 miles from its confluence with the Ottawa, and were still present on the Gatineau above the Desert. He knew of no historical records of its having been found in numbers south of the Ottawa. He concluded that formerly it was undoubtedly common to within a few miles of the north bank of the Ottawa, and occasionally straggled to the south bank.]

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Can. Nat. & Geol., Vol. 1, pp. 60-70.
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op. cit., pp. 81-87.
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(c) On the Common Deer, (*Cervus virginianus*).
op. cit., pp. 87-92.
Mostly compiled, but with some local distributional data.

(d) On the American or Black Bear (*Ursus Americanus*).
op. cit., pp. 100-104.
Mostly a compiled account, but some data on local occurrence.

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The Deer of the Ottawa Valley.
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Ann. Rept. Dept. Interior, Canada, for 1888, Pt. 3, (Geol. Survey), p. 36.
Parascalops breweri recorded for "near Ottawa".

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Ottawa Nat., Vol. 4, pp. 75-91.
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(a) Ottawa Nat., Vol. 4, pp. 92, 93.
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