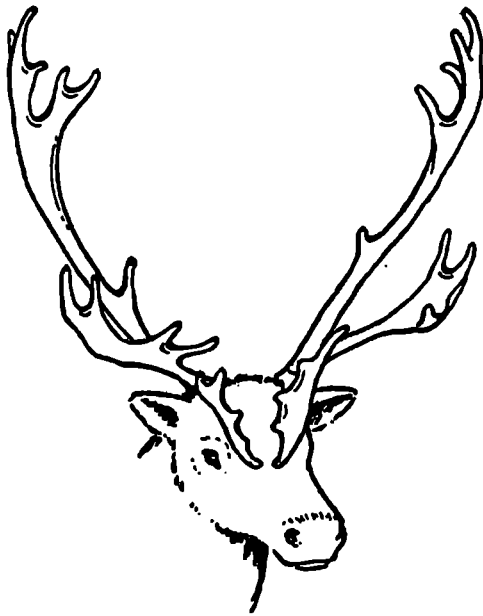


C. Mc Clellan

MAMMALS
OF
YUKON, CANADA

BY

A. L. Rind



NATIONAL MUSEUM OF CANADA
OTTAWA

C. de Clellan

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MAMMALS OF YUKON

BY

A. L. Rand



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MAMMALS OF YUKON

INTRODUCTION

This is a preliminary report intended to give a complete list of the present day mammals known to occur in Yukon and adjacent waters. It includes a summary of their distribution and status, enough data to enable identifications to be made in the field, and an indication of the life history and importance of the species in the area.

In the preparation of this paper R. M. Anderson has given much valuable help and advice. C. E. Johnson has prepared the excellent drawings illustrating the report.

Yukon territory comprises the northwest part of the mainland of Canada, with an area of about 207,076 square miles. Five main drainage systems affect it: the short fall to the Arctic Coast; the Porcupine and the Peel that drain the northern part, the former flowing to the west (joining the Yukon) and the latter flowing east and north to join the Mackenzie; the Yukon, which flows northwest draining most of the southern and central part; and the Liard River headwaters that drain the southeast part. There are three main mountain systems: Mackenzie Mountains, which seem a continuation of the Rocky Mountains north of the Liard between Mackenzie, Peel, and Porcupine Rivers and the Yukon, occupying a huge area and deeply cut with rivers, and with few peaks over 7,000 feet in altitude; St. Elias Mountains in southwest Yukon, with glacier covered crests, many rising to over 10,000 feet, and one (Mount Logan) to 19,850 feet; and the Richardson Range, which lies between Porcupine River and the Arctic Coast.

According to Halliday,¹ about half of Yukon is covered with boreal forest, in which white spruce is most common, mixed with aspen, balsam-of-gilead, and white birch; and half is arctic or alpine tundra. The forest areas follow

¹A Forest Classification for Canada, 1937; Canada, Dept. Mines and Resources, Forest Service Bull. 89, p. 23 and map.

the main river valleys, the tundra, the mountain areas and all the north slopes of the Richardson Range. This gives a



Figure 1. Map of Yukon.

sprawling pattern of forest, with a complementary tundra pattern having many isolated areas of some extent.

In relation to Merriam's Life Zones, the tundra is Arctic; the forest largely Hudsonian, with some Canadian zone influence along the main river valleys in the south.

For Yukon north of Ogilvie Mountains (a spur of Mackenzie Mountains) and Macmillan River there are no faunal reports available. Some scattered records of specimens¹ and incidental notes are available in various travel accounts and taxonomic papers, but until recently the basis of our knowledge of Yukon mammals has rested largely on three faunal reports:

Osgood (1900, North American Fauna, No. 19) on Yukon River; Osgood (1909, No. Amer. Fauna, No. 30) on Ogilvie Mountains and the Macmillan River area; Williams (1925, Can. Field-Nat., No. 39, pp. 69-72) for the area along the Alaska-Yukon boundary between Yukon and Porcupine Rivers.

In 1943 C. H. D. Clarke studied the wild life of the Alaska Highway in the Yukon, and his report, although not published, has been made available through Mr. R. A. Gibson, Director, Lands, Parks and Forests Branch, Department of Mines and Resources, under whose auspices the work was done. In the same year A. L. Rand,² of the National Museum of Canada, working on the southern half of the Alaska Highway, collected at one camp just north of the Yukon-British Columbia boundary (Irons Creek, Mile 313, north of Nelson).

In 1944 C. H. D. Clarke and T. M. Shortt worked in southwest Yukon for the Lands, Parks and Forests Branch, but their results have not yet been made available. A. L. Rand spent the period June to September studying birds and mammals on the Canol Road and, although the results of that work are being published in full, pertinent data are abstracted and credited (Rand, MS., 1944).

IMPORTANCE OF MAMMALS TO MAN

In a thinly settled country, such as Yukon, where the population in 1941, including whites, Indians, and Eskimos,

¹ See Preble, 1908: No. Amer. Fauna, 27, pp. 54-85, and bibliography.

² Nat. Mus. Canada, Bull. 98 (1944).

totalled 4,914—or about one person to every 40 square miles—there is still plenty of room for other animals. Indeed, to some of the population, mammals make life possible; some trappers live chiefly on game, and most of their income is from the sale of fur. Fur is the second most important product in Yukon, as the following figures for 1942, from the Dominion Bureau of Statistics, show.

YUKON, GROSS
Survey of Production—1941-42

—	1941	1942
	\$	\$
Forestry.....	24,132	30,280
Fisheries.....	6,652	3,056
Trapping.....	373,399	398,132
Mining.....	3,841,398	3,725,386
Electric power.....	75,486	.....
Manufacture.....	155,128	132,571

The composition of the Yukon fur production in 1942-43, according to figures put out by the Dominion Bureau of Statistics, is as follows (arranged as to number of skins).

Muskrat	41,260
Beaver	3,292
Weasel	2,815
Mink	2,043
Marten	1,573
Lynx	676
Coloured fox { red 388 cross 128 silver 79 }	595
Wolf	246
Coyote	136
Wolverine	92
Bear	90
Otter	44
Fisher	30
White fox	5
Total	52,897 pelts ¹

¹ Squirrels are not included.

It is interesting to compare this catch with that estimated by Dawson¹ for the Yukon River area only, about 1887, which was:

Marten	4,000
Mink	2,000
Beaver	1,200-1,500
Lynx	600
Coloured fox { red 300 } { cross 100 } { black 100 }	500
Bear	300
Otter	200
Wolverine	150
Wolf	100
Total	9,350 pelts

In prospecting, too, the rôle of wild life is important. In isolated areas prospecting is only possible because game animals are available for food. And further, independent prospectors may be dependent on a fur catch made during the winter to provide them with a grubstake for the next summer's prospecting.

Yukon has long been known as a big game country to which sportsmen come from afar, and this adds considerably to the income of the territory.

Mammals provide a certain amount of clothing, especially parkas and moccasins, the latter being the year-round footwear for many residents away from the towns.

Where there are credits, there are also debits: as well as animals that assist man's welfare directly there are those that detract from it. Wolves and coyotes are predators that prey on game species also preyed on by man (in this connection, Murie, *The Wolves of Mount McKinley*, should be read). Bears may destroy caches and break into cabins, and into these same places may come mice, shrews, and squirrels to destroy foodstuffs and cause other damage. Wolves and wolverines may follow a trap-

¹ Report on an Exploration in the Yukon, etc., 1888; Geol. Surv., Canada, pt. B, p. 28.

line and destroy fur held in the traps, and squirrels, mice, and shrews may damage fur in traps. Flying squirrels sometimes get into traps set for valuable fur bearers.

PLAN OF THE WORK

The species are arranged in a natural sequence showing relationships, beginning with the most primitive and following Miller's 1923 list closely.¹

Order and Family names are included, usually with paragraphs on these groups or their Yukon representatives.

Under each species there is given the common name, or names; the scientific name; and a diagnosis giving size, form, and general colour that should suffice for identification.

Many mammals have individual hairs with different bands of colour on each one, and hairs of different colours are often mixed. This gives a grizzled effect. In the species accounts diagnosis rather than descriptions are given, and only the predominating colour effect is described. Those diagnoses apply, where possible, to the species as occurring in Yukon, and do not necessarily apply to individuals of the species living elsewhere, where they may be modified considerably in appearance.

Tooth and skull characters, though often more trenchant than external characters, are used as little as possible, as these descriptions are intended for use in the field.

Under "Subspecies" is given that form to which the Yukon mammals are referable; when more than one occur, their most noticeable distinguishing features are given. Usually, however, subspecies must be identified by comparison of skins and skulls with collections available.

In the paragraph on "Distribution" is given the probable distribution in Yukon, followed by a statement as to where it has actually been found, either the localities outlining its limits, or, in the case of rare species, all the records.

¹ 1924, U. S. Nat. Mus., Bull. 128.

Under "Life History" is given a summary, of necessity drawn largely from observation outside Yukon. Studies may show that local conditions in Yukon somewhat modify these.

The "General" section is intended to point out some of the most interesting aspects of mammals in Yukon, and the importance of the animals.

Appended to the write-up of each species is a list of publications. These contain the most important, sometimes all, of the Yukon records; and accounts from which material was drawn for the write-up, or which may be consulted for further information.

It is hoped that this work, being the first of its kind for Yukon, may serve as a basis for further work and an incentive for additional observation of Yukon mammals.

Specimens of smaller mammals are sometimes difficult to identify, and new observations will throw new light on the life history, distribution, and variation in well known species.

The National Museum is ready to assist in identification, to correlate data and provide further information in such cases. It is hoped that sometime in the future, when material is available, a more exhaustive account of Yukon mammals will be possible. Correspondence should be addressed to the author, at the following address: Division of Biology, National Museum of Canada, Ottawa, Canada.

ACCOUNTS OF SPECIES

The forms treated in the following pages that have been recorded from Yukon are summarized by groups below.

Family	Number of species	Number of species and subspecies
Soricidae (shrews).....	5	5
Vespertilionidae (bats).....	1	1
		(Probably others will be recorded.)
Ursidae (bears).....	4	4
Mustelidae (weasels, etc.).....	7	9
Canidae (dogs, wolves, etc.).....	4	7
Felidae (cats, etc.).....	1	1
Phocidae (hair seals).....	2	2
Odobenidae (walruses).....	1	1
Sciuridae (squirrels, marmots, etc.).....	6	10
Castoridae (beaver).....	1	1
Muridae (rats and mice)		
Subfamily—Cricetinae (wood mice and wood rats).....	2	3
Subfamily—Microtinae (lemmings and voles).....	10	11
Zapodidae (jumping mice).....	2	2
Erethizontidae (porcupine).....	1	1
Ochotonidae (pikas).....	1	1
Leporidae (hares and rabbits).....	1	1
Cervidae (deer, moose, etc.).....	3	4
Bovidae (cattle, sheep, goats, etc.).....	3	4
Balaenidae (right whales).....	1	1
Delphinidae (porpoises, etc.).....	1	1
Total.....	57	70

ORDER—INSECTIVORA. INSECT-EATERS

This is a widespread, diversified group, with only a single family represented in Yukon.

FAMILY—SORICIDAE. SHREWS

Five species are found in Yukon. They are all small animals, easily distinguished from small mice by their pointed snouts and their jaws filled with sharply pointed, usually chestnut-tipped, teeth adapted for insect eating. Their legs are short; feet small; eyes and ears normal, but small; tail moderate.

They are terrestrial or semi-aquatic animals, often making little runways through the moss, and tiny burrows. One species spends much time swimming. They eat chiefly insects and other small invertebrate animals, which they apparently find by touch and smell, using their long flexible snout more than their eyes in finding food. Their movements are quick and active; they are savage in disposition and fight fiercely with others of their own kind, and in captivity kill and eat small mice; they are active throughout the year.

The four to eight young are born in a blind, naked condition, in a concealed nest, and are nearly full grown before they leave it.

SYNOPSIS OF SPECIES

A synopsis of the distinguishing characters will be more useful than a key for the five species involved. Although size is a good clue to identification, the identity of the four smaller animals should be checked by an examination of the unicuspid teeth in the upper jaw, for which a hand lens is usually necessary.

Cinereus Shrew. Length 96 mm. (3·7 inches); tail 39 mm. (1·5 inches); hind foot 12 mm.; brown on back, shading to grey-brown on sides, and grey on belly; 3rd unicuspid tooth larger than, or rarely equal to, 4th.

Tundra Shrew. Length 108 mm. (4·25 in.); tail 32 mm. (1·25 in.); hind foot 13 mm.; back brown, sides pale brown, underparts grey; unicuspid teeth as in cinereus shrew, i.e., 3rd larger than, rarely equal to, 4th.

Dusky Shrew. Length 115 mm. (4·5 in.); tail 48 mm. (1·9 in.); hind foot 13 mm.; brown above, grey below; 3rd unicuspid tooth distinctly smaller than 4th.

Water Shrew. Length 148 mm. (5·8 in.); tail 76 mm. (3 in.); hind foot 19 mm.; above blackish, below grey; pelage with a silvery sheen.

Pigmy Shrew. Length 83 mm. (3·27 in.); tail 27 mm. (1·1 in.); hind foot 10 mm.; above brown, below grey; 3rd unicuspid tiny, so that in a superficial lateral view there appear to be only three unicuspid teeth.

Cinereus Shrew. Sorex cinereus Kerr

Diagnosis. Length 96 mm. (3·7 in.); tail 39 mm. (1·5 in.); hind foot 12 mm. (Yukon specimen); colour greyish brown to brownish grey above; sides slightly paler to pale grey, shading to

pale grey on belly; skull, with 4th unicuspid tooth smaller in size than, or rarely equal to, the 3rd.

Subspecies. One has been recorded in Yukon: cinereus shrew, *S. c. cinereus* Kerr.

Distribution in Yukon. From the southern border north probably to Richardson Mountains, and perhaps the Arctic Coast, but recorded north only to the vicinity of Dawson, and Macmillan River.

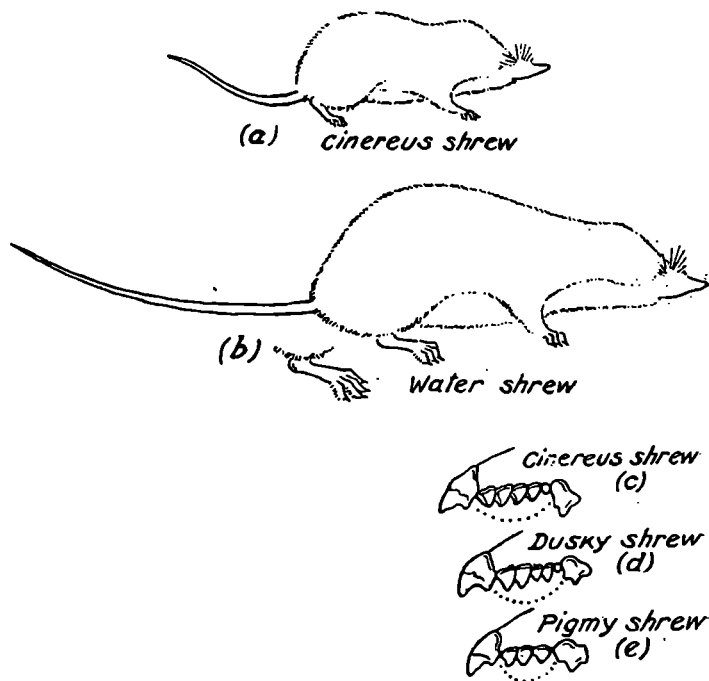


Figure 2.

- (a) Cinereus shrew.
- (b) Water shrew.
- (c) Teeth of upper jaw of cinereus shrew showing 3rd unicuspid tooth larger than 4th.
- (d) Teeth of upper jaw of dusky shrew showing 3rd unicuspid tooth smaller than 4th.
- (e) Teeth of upper jaw of pigmy shrew showing that only three unicuspid teeth are apparent in lateral view.

Life History. A litter of four to eight young born in summer months in a concealed nest; food, chiefly insects and other invertebrate animals; enemies, hawks, owls, carnivorous mammals; often killed and left uneaten by mammals, but sometimes eaten.

General. Rarely you may be fortunate enough to see one of these tiny animals foraging undisturbed on the forest floor. With its tail held up at an angle, it moves with quick, jerky action, not even pausing when devouring the insects taken; every nook and cranny is explored, and the long flexible snout is used in rummaging under twigs and leaves. Every now and then it disappears into holes, or under brush cover.

Trappers, however, know it as an invader of their cabins and caches, in winter, feeding on any meat within reach, being especially fond of bacon fat. Sometimes, trappers say, shrews damage fur animals caught in traps, by eating into the trapped animal. Recent studies have shown that these tiny insectivores are useful in controlling forest insects, and thus help protect stands of timber.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, p. 44; Yukon River area.
 Anderson, 1913: in Stefansson's "My Life with the Eskimo", p. 527; habits.
 Jackson, 1928: No. Amer. Fauna, No. 51; revision; specimens from many Yukon localities, north to Dawson and Forks of Macmillan River.
 Goodwin, 1929: Jour. Mammal., 10, p. 241; habits in the wild.
 Blossom, 1932: Jour. Mammal., 13, pp. 136-642; habits in captivity.
 Sheldon, 1936: Jour. Mammal., 17, p. 209; habits in the wild.
 Hamilton, 1941: Jour. Mammal., 22, p. 252; food.
 Clarke, 1944: MS., recorded at Burwash Landing.
 Rand, 1944: MS., Canol Road.

Tundra Shrew. *Sorex tundrensis* Merriam

Diagnosis. Length 108 mm. (4.25 in.); tail 32 mm. (1.25 in.); hind foot 13 mm.; colour, in summer, with tricolour pattern, the brown back contrasting with pale brown sides, and greyish underparts; in winter, back brown, sides and underparts grey (Jackson); the 4th unicuspid tooth smaller than 3rd.

Subspecies. None recognized.

Distribution in Yukon. Probably generally distributed over the northern part of the territory, but there are only two records: from Forty-mile (Jackson) and Coal Creek (Osgood).

Life History. Said to be similar to that of the cinereus shrew, *S. cinereus*.

General. In Alaska Osgood reports several taken under logs and drift along Yukon River from Charlie Creek to Circle, and in the mountains at the head of Seward Creek

they were very common, being found chiefly in mossy places about the roots of dwarf birch. There is not a single Canadian specimen in the National Museum.

References

Osgood, 1909: No. Amer. Fauna, No. 19, pp. 32, 58; Alaska; Coal Creek, Yukon, record.
Jackson, 1928: No. Amer. Fauna, No. 51; revision.

Dusky Shrew. *Sorex obscurus* Merriam

Diagnosis. Length 115 mm. (4.5 in.); tail 48 mm. (1.9 in.); hind foot 13 mm. (Yukon specimen); colour above, brown; below, grey; skull with 3rd unicuspid tooth distinctly smaller than 4th.

Subspecies. One occurs in Yukon: dusky shrew, *S. o. obscurus* Merriam.

Distribution in Yukon. The southern part of the territory; recorded from Teslin Lake (Jackson); Rancheria River (Clarke), and Canol Road (Rand).

Life History. Young, four to eight in number; probably only one brood a year; food, insects and other invertebrates, perhaps young rodents in the nest, and some vegetable matter (Bailey).

General. Along the Canol Road these shrews were quite common in some places, occurring in forest, bogs, meadows, and alpine grassland (Rand).

Chief References

Jackson, 1928: No. Amer. Fauna, No. 51; revision, Teslin Lake record.
Bailey, 1936: No. Amer. Fauna, No. 55, p. 361; habits.
Clarke, 1944: MS.; Rancheria River record.
Rand, 1944, MS.; Canol Road.

Water Shrew. *Sorex palustris* Richardson

Diagnosis. Length 148 mm. (5.8 in.); tail 76 mm. (3 in.); hind foot 19 mm. (Yukon specimens); colour above, greyish black; below, silvery grey, this pale colour of underparts extending onto upper lips; fur with a silvery sheen; hind feet with a conspicuous fringe of hair, for swimming. The large size and the colour of this species should be distinctive.

Subspecies. The three known Yukon specimens are referable to mountain water shrew, *S. p. navigator* (Baird).

Distribution in Yukon. Probably the southern part of the territory; there is only a single locality record for Yukon, at Nisutlin River (Rand).

Life History. Five to seven young born in summer; food, mostly insects and other small invertebrates; said to eat fish, but this has not been proved by stomach examination.

General. This long-tailed, silvery shrew is partly aquatic and is found on the margins of small streams and ponds. T. Mould of Liard River in northern British Columbia told me that in 6 years he had seen about six little animals that were evidently this species. They were usually swimming about in beaver ponds. One he watched for some time. It swam out from the bank, pursuing and catching little insects under water, and bringing them back to the bank, eating them under a little willow root, and then going out for more. Once he had one bob up in the rush of water coming up through a hole he had made in the ice.

Chief References

Jackson, 1928: No. Amer. Fauna, No. 51; revision.
Hamilton, 1930: Jour. Mammal., pp. 37, 38; food.
Bailey, 1936: No. Amer. Fauna, No. 55, pp. 355, 356; habits.
Rand, 1944: MS.; Yukon record, Canol Road.

Pigmy Shrew. *Microsorex hoyi* (Baird)

Diagnosis. Length 83 mm. (3.27 in.); tail 27 mm. (1.1 in.); hind foot 10 mm. (Yukon specimens); colour above brownish; below greyish; 3rd unicuspid tooth so small that it appears to be lacking in superficial lateral view, thus there appear to be only three unicuspids. The small size and short tail are good clues to identification that should be checked with reference to the tooth characters.

Subspecies. Yukon specimens are referable to northern pigmy shrew, *M. h. intervectus* Jackson.

Distribution in Yukon. Possibly widespread in southern Yukon, but only recorded from the Canol Road (Rand) and near Irons Creek (Rand), and Dezadeash Lake (Clarke).

Life History. Little known; presumably similar to that of *S. cinereus*.

Chief References

Jackson, 1928: No. Amer. Fauna, No. 51; revision.
Rand, 1944: Nat. Mus. Canada, Bull. 98, p. 35; Irons Creek.
Rand, 1944: MS.; Canol Road.
Clarke, 1944: MS.; Dezadeash Lake.

ORDER—CHIROPTERA. BATS

These are the only mammals that can fly. Their fore limbs are modified into wings.

FAMILY—VESPERTILIONIDAE

Little Brown Bat. *Myotis lucifugus* (Le Conte)

Diagnosis. Length 95 mm. (3.75 in.); tail 40 mm. (1.6 in.); hind foot 9 mm.; wing spread about 200-250 mm. (7.8-9.8 in.); colour above, bronzy yellowish brown to olive-brown, with a metallic sheen in adults.

Subspecies. The Yukon form is: little brown bat, *M. l. lucifugus* (Le Conte).

Distribution in Yukon. Recorded along Yukon River and its headwaters from Carcross to 50 miles below Fort Selkirk (Osgood); a specimen in National Museum from Mayo Landing.¹ Bats seen at Squanga Lake and Rancheria River in August 1943 by Clarke may have been of this species.

Life History. Nocturnal, spending the day sleeping in caves, under loose bark of trees, or in houses; one young is born in spring; food, insects caught on the wing; hibernates in caves.



Figure 3. Little brown bat at rest.

General. Dipping and circling in erratic flight, the little brown bat sweeps the air in forest glades and over ponds and marshes for its tiny insect food. Strictly noc-

¹ Collection J. Keele, Sept. 10, 1907.

turnal, it is interesting to speculate on how these little creatures get enough food during the short summer night to last them the many hours of daylight. The short night, or even lack of night in the far north, may be a limiting factor in the northward distribution of bats.

When autumn comes, and the birds migrate, these little bats congregate in caves, far enough inside so that the temperature remains at about freezing. Here they hang up by their hind feet, head downward, in groups, to sleep away the winter.

At Atlin, B.C., one of these bats was found clinging to the seat of an aeroplane at the end of a flight. This form of hitch-hiking could result in many unusual records of bats.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, p. 45; Yukon River.
 Müller and Allen, 1928: U.S. Nat. Mus., Bull. 144; revision.
 Swarth, 1936: Jour. Mammal., No. 17, p. 400; Atlin, B.C.
 Clarke, 1944: MS.; southwest Yukon.

[The long-legged bat, *Myotis volans* (Allen), has been recorded at Atlin, B.C., and can be expected in Yukon. It is similar to the little brown bat, but is darker and a richer brown in colour, lacking the metallic bronzy sheen of that species, and has a much smaller foot. (See Swarth, 1936, Jour. Mammal., p. 400.)]

ORDER—CARNIVORA. FLESH-EATERS

The carnivorous mammals in Yukon vary in size from the slender, mouse-sized least weasel to the huge, bulky grizzly bear. Many of them are important fur bearers and predators.

The young of this group are born in a more or less helpless condition and are cared for in a nest or burrow for some time.

Four families of carnivores are represented in Yukon.

FAMILY—URSIDAE. BEARS

Bears are omniverous, eating vegetable and animal matter. They hibernate in winter, and the one to four young are born during hibernation and do not reach maturity until about 3 years old.

Black Bear. *Ursus americanus* Pallas

Diagnosis. Yukon black bears are up to 1,700 mm. (66 in.) long; height at shoulder up to 711 mm. (28 in.); tail 150 mm. (6 in.); weight probably up to more than 400 pounds. A large, bulky animal; eyes small; ears conspicuous; feet plantigrade; front and hind claws about same size; tail inconspicuous; colour brown or black; a white mark may or may not be present on throat. In some areas in Yukon the brown phase predominates, in others, the black. It has been suggested that a blue colour phase occurs in southwest Yukon.

Subspecies. Eastern black bear, *Ursus americanus americanus* Pallas, is the form usually assigned to Yukon, but R. M. Anderson has a review of this species in hand.

Distribution in Yukon. Probably occurs over all timbered areas; recorded from the southern boundary north to Black River on the Yukon boundary and to the Macmillan area, but said to be absent from the vicinity of La Pierre House.

Life History. Probably mates in July; goes into hibernation in early winter; young born while female is in hibernation, in January or February; emerges from hibernation in early spring; feeds on a wide variety of animal and vegetable foods, including berries and other fruits, grass, bark, roots, insects, and any meat, carrion, or garbage available. They do not disdain carcasses of their own kind. The grizzly bear is one of its few enemies besides man.



Figure 4. Black bear; note the short claws on front feet; and lack of a well-defined hump.

- (a) Front paw.
- (b) Claw from front foot.

General. The black bear is normally a shy animal of the forest and bushland, spending most of its time eating berries, turning over rocks and logs for grubs, or otherwise getting its food. But they quickly lost their shyness when the construction camps of the Alaska Highway and the

Canol Road provided them protection and a lavish feast in the garbage piles. At some camps several bears could be seen at any time of day feeding within a few score yards of the camps. At one Canol Road camp a big brownish individual became so bold it would try to force its way past door and window into the kitchen, and when the bull-cook brought an armfull of wood into the kitchen and turned to shut the door he might find the bear had followed him in. At another camp, a gaping hole in the wall showed where a bear, startled, and not pausing to locate the door, had gone out through the flimsy wall. These instances show what may happen when bears are fed about camps.

To the dweller in the wilderness, the black bear is a potential raider of cabins and caches, destroying stores and canoes that are difficult to replace. That an inadvertent attack on a man may occur is illustrated by the following account told by Mr. U. J. Arsenault. In 1933 south of Great Bear Lake in Mackenzie District he was travelling light, and sleeping on the ground without a tent. A light sleeper, one night he was awakened by a sniffing about his head, and opened his eyes to see the great hairy paw of a black bear in front of his face. He raised his head and the bear snapped at him, grazing his head. Shouting wildly, he covered his head with the blanket, then seized his rifle and sat up. The bear stood up only a few yards away. Arsenault fired, but the blood from a scalp wound partly blinded him, and he also thinks he may have been nervous, for he missed and the bear started to run. A second shot simply speeded it on its way. The scar the bear left on Arsenault's head was a shallow, nearly hairless groove about the size of a first finger across the left forepart of the scalp, made by the upper canine. The lower canine had caught under the cheek bone and bruised without breaking the skin.

Arsenault thought, and still thinks, that the bear intended him no harm, but was simply looking for his food cache. When Arsenault moved his head the bear snapped at the sudden movement, but incidents like these cause a not unjustified prejudice against the animal. Fortunately, the black bear is well able to take care of itself. In eastern North America it is found commonly close to settlements, despite hunting and bounties on its head.

Though a game animal, it is so widespread that it is not much of a sportsman's attraction in remote areas. The flesh of the black bear may be delicious, and would be more widely used were it not for the prejudice against the flesh of clawed animals. The hide is of little value in the market, and usually is not worth the trouble of preparing it.

Chief References

- Russell, 1898: Exploration in the Far North; absent at La Pierre House.
 Osgood, 1909: No. Amer. Fauna, No. 30; Ogilvie Mountain and MacMillan Range area.
 Auer, 1917: Camp fires in the Yukon; southwest Yukon; mentions occurrence of "blue" bears.
 Williams, 1925: Can. Field-Nat., 39; occurrence, Black River.
 Seton, 1929: Lives of Game Animals; general.
 Hall, 1929: Univ. Calif. Pub. Zool., 30, pp. 231-242; taxonomy—shows blue and white colour phases belong to this species.
 Clarke, 1944: MS.; Alaska Highway.
 Rand, 1944: MS.; Canol Road.

Grizzly Bear. *Ursus horribilis* Ord

Diagnosis. A medium-sized to large bear, skins up to 2,540 mm. (8 ft. 4 in.) long; skull, over all, up to 406 mm. (16 in.); shoulders with a pronounced hump; body, especially shoulders, appears very wide, and claws of front feet much longer than those of hind feet; colour, variable, from mostly pale yellowish above, blackish on legs and underparts, to mostly blackish tipped brown or silvery on shoulders and fore-back. Some young may appear mostly silvery white above; grizzly bears' coats may fade greatly.



Figure 5. Grizzly bear; note the long claws on front feet; and pronounced hump.

- (a) Front paw.
 (b) Claw from front paw.

Subspecies. The grizzly bears of Yukon, variable in size and colour, are certainly different from the grizzly bears of the plains

to which the name *horribilis* was first applied. Merriam in 1918 listed the following grizzly bears from Yukon:

Ursus pallasi Merriam
Ursus rungiusi sagittalis Merriam
Ursus pulchellus pulchellus Merriam
Ursus oribasus Merriam
Ursus kluane kluane Merriam
Ursus pellyensis Merriam
Ursus crassodon Merriam
Ursus crassus Merriam
Ursus internationalis Merriam

However, Merriam's treatment is unsatisfactory, and until there is a satisfactory taxonomic treatment of these bears it seems advisable to record them all under the oldest name, *Ursus horribilis*, especially as R. M. Anderson has such a study in hand.

Range in Yukon. Probably over the whole area; scarcer in more wooded areas; recorded from the southern border north to 50 miles south of the Arctic Coast on the Alaska boundary.

Life History. Mates in spring and early summer (May-June); females breed every 2 or 3 years; usually hibernate in winter; one to three young born during hibernation; young follow female for 1 or 2 years; food, animal or vegetable, as available, carrion or garbage also relished, probably largely vegetable including berries, grass, horsetails (*Equisetum*), and roots of peavine, not from choice but from necessity, as it cannot catch enough animal food; digs out ground squirrels; enemies, man.

General. The hump over the shoulder and the usually paler coloration serves best to distinguish the grizzly from the black bear at a distance; specimens are easily identified by the elongate claws on the fore feet. In size, some black bears may be bigger than some grizzlies. The long claws of the front feet are usually evident in the tracks, making their identification possible.

The grizzly's home is near the edge of timber and above, but it often comes down into wooded areas. It has a home range of 10 miles or more in extent, and in Alaska a grizzly was known to have travelled in one day between two points 24 miles apart by road.

Where grizzly bears and ground squirrels occur, the furrows the bears turn up in digging out the squirrels are conspicuous evidence of their occurrence.

Grizzly bears are usually shy, inoffensive animals, fleeing when encountering man, but that they will always flee is not true.

At Swift River and along the higher altitudes at Canol Road construction camps, grizzlies came commonly to feed on the garbage dumps, and at night sometimes came into camps, but they were usually shyer than are black bears under similar conditions.

Indians at Ross Post spoke of the grizzly respectfully and, in addition to various vague accounts of men killed by bears, gave details of one that seemed authentic. An Indian known as Old Bob, and who had poor eyesight, visited a moose he had killed on his way to some marten sets. On snowshoes he had passed the moose kill, when his dog ran after a grizzly that started nearby. The grizzly quickly turned and charged the dog, which ran back to his master. The bear followed, and before Old Bob, hindered by poor sight and the snowshoes, could get out of the way the bear had killed him. It also ate him. This the Indians had seen from the tracks. It happened in the Pelly Valley about 1940. The snow indicated it was in winter, and the Indians said that although all black bears hibernate in winter, and most grizzly bears too, some of the latter do not.

It has often been argued whether or not a grizzly will make an unprovoked attack on a man. Probably it will not, but it is probably dangerous to get between a grizzly and its cubs, or its food, or too close to it. They will usually run; in rare cases of close approach they can sometimes be bluffed, but in exceptional cases they are dangerous.

The flesh of the grizzly is palatable, though probably little used. Its hide ordinarily is of little value on the market, but sold as a souvenir or as a rug brings a good price. It is one of the important game animals that lure sportsmen to this area.

In "North American Big Game" five Yukon trophies are listed, the largest with skull $15\frac{3}{8}$ inches long by $8\frac{7}{8}$ inches wide, and skin 7 feet 10 inches long and 8 feet 4 inches wide; the smallest with skull 14 inches long by 8 inches wide, and skin 6 feet $8\frac{1}{2}$ inches long by 7 feet $3\frac{1}{4}$ inches wide. Mr. Higgins' records of trophies taken from the Whitehorse area within the last two decades include three of large animals: one from Morley River with a skin

8 feet 2 inches long, and two from Generic River, both with skins (dried) 8 feet 4 inches long—one with a skull 16 inches long by 11 inches, and the other 15 inches long by 10 inches.

The importance of the grizzly as a predator on moose, caribou, and sheep is negligible.

Chief References

- Merriam, 1918: No. Amer. Fauna, No. 41; taxonomy.
 Seton, 1929: Lives of Game Animals, vol. 2; general.
 Ely *et al.*, 1939: North American Big Game; general, hunting, records of trophies.
 Murie, 1944: Wolves of Mount McKinley; habits, predator relationships.
 Rand, 1944: MS.; Canol Road.

Big Brown Bear. *Ursus middendorffi* Merriam

Diagnosis. Hunters with long experience have said they can tell a big brown bear from a grizzly only by size; skin, length 3,048 mm. (10 ft.); length of skull 457 mm. (18 in.) (Yukon specimen).

Subspecies. Though grizzly bears seem to grade into the Alaska or big brown bears, the latter at present are listed under the old specific name *U. middendorffi* that was applied to one of the largest, if not the largest, of the big brown bears.

Distribution in Yukon. A single specimen was taken at the junction of Kaskawulsh and Dezadeash Rivers in southwest Yukon by Max Hinsche, May 23, 1934.

The details of the above specimens are from the office of Mr. Higgins, the Territorial Agent in Whitehorse, who also has a photograph of the dead animal. It was probably a wanderer from Alaska.

Reference

- Merriam, 1918: No. Amer. Fauna, No. 41.

Polar Bear. *Thalarctos maritimus* (Phipps)

Diagnosis. A large white or yellowish white bear of the Arctic Coast; length up to 2,438 mm. (8 ft.); tail 127 mm. (5 in.); height at shoulder 1,220 mm. (4 ft.); weight about 900 pounds, up to 1,600 pounds (Seton). The polar bear has a rather long neck, short ears, and the soles of the feet are nearly covered with fur.

Subspecies. Several have been described, but not well characterized.

Distribution in Yukon. Occurs on the Arctic Coast.

Life History. Mate in midsummer; females at least hibernate; one to two young born in midwinter during hibernation; food chiefly seals, but also any other flesh that comes its way, and also may feed on green vegetation and roots; enemies, man.

General. The polar bear usually is not common on our coast. In winter it may be found along the coast; in summer it frequents the pack-ice, but may be swimming far out in open water (Anderson). However, the Eskimos at Herschel reported that polar bears may gather in scores about the stranded carcass of a whale (Russel).

Seals are the favourite food of this bear, which it catches while they are at rest on the ice.

Opinions vary as to the palatability of polar bear flesh, but it seems well established that the liver is mildly poisonous to humans. The Greenland Eskimo prize polar bear fur as material for pants. In Canada's Western Arctic the greatest value of the polar bear is its pelt in the tourist trade, and at the mouth of the Mackenzie the supply never equals the demand.

Chief References

- Russel, 1898: Exploration in the Far North; Arctic Coast.
 Seton, 1929: Lives of Game Animals, 2; general.
 Anderson, 1937: Canada's Western Northland; general.
 Porsild, 1944: MS.; Mackenzie Delta; general.

FAMILY—MUSTELIDAE. WEASELS AND THEIR RELATIVES

This family includes the marten, fisher, mink, otter, and wolverine, as well as the weasels.

Pine Marten. *Martes americana* (Turton)

Diagnosis. Male, length 665 mm. (26.22 in.); tail 223 mm. (8.08 in.); hind foot 109 mm. (4.36 in.) (average four adults, Fort Yukon, Osgood); weight probably about 2½ pounds; female considerably smaller; a slender-bodied, short-legged, bushy tailed animal with sharp, partly retractile claws and a rich pelt; colour light brown, tinged grey anteriorly; legs, tail, and underparts darker; head greyish, mixed with brown; an irregular patch of yellowish or orange, sometimes mixed with white, on chest.

Subspecies. Alaska pine marten, *Martes americana actiosa* (Osgood), is the form that occurs, and to which the above description applies.

Distribution in Yukon. Usually mapped to north of the Porcupine; recorded north to Macmillan River and Black River (Osgood and Williams).

Life History. Mates in July and August; one to four young born the following April; adult weight and size attained the first summer; may breed second summer, but may not breed until third summer; young weaned at 6 to 7 weeks (for *M. c. caurina*); food chiefly small mammals, including squirrels and mice; chief enemy, man.

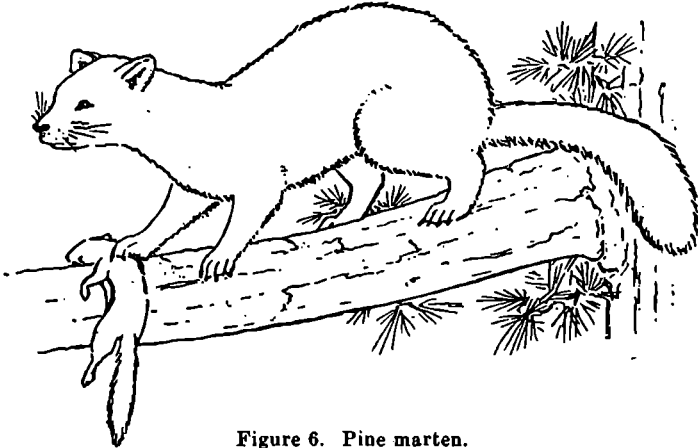


Figure 6. Pine marten.

General. The lithe, active marten is as much at home in the trees as the squirrels that it pursues through the tree tops and into their underground retreats. In the early days when it was common, it was said to peer down from the branches and spit at the humans, but in Yukon, as elsewhere in Canada, the marten is greatly reduced in numbers. The Hudson's Bay Company traded as many as 180,000 marten in a year from Canada in the middle of the last century; in the past decade the annual catch for all Canada totalled between 20,000 and 25,000 pelts. Mr. Drury of Whitehorse who trades in the Pelly River area says that the marten catch traded from the area is not as great as was that of a single trapper 35 to 40 years ago, when two men working together might take 500. Osgood in 1909 writes that in the Macmillan area a good trapper may take as many as 300 in a season.

The records indicate that there used to be periodic fluctuations in marten numbers when the catch was large, but this is not evident in recent years. It has been suggested that these fluctuations were caused by migration, but this is not widely accepted now.

Marten is one of the most valuable of Yukon furs and used to be the main catch of some trappers. In the season 1943-44 some pelts brought \$100, and many about \$50 (Rand, MS.). In the period 1920-1942 the average price per pelt varied from \$10.64 in 1933-34 to \$42.48 in 1941-42, according to the Dominion Bureau of Statistics. From the same source the Yukon catch over this period was as follows:

Year	No. of pelts	Year	No. of pelts
1919-20	4,335	1930-31	2,037
1920-21	762	1931-32	1,976
1921-22	.....	1932-33	2,263
1922-23	964	1933-34	2,154
1923-24	1,170	1934-35	2,727
1924-25	147	1935-36	2,890
1925-26	18	1936-37	1,960
1926-27	56	1937-38	3,471
1927-28	2,222	1938-39	2,418
1928-29	2,132	1939-40	3,887
1929-30	4,272	1940-41	3,191
		1941-42	2,586

The beauty and value of marten fur has caused extensive experiments with raising this animal on fur farms, but this has not yet been successful on a commercial scale.

Chief References

- Osgood, 1909: No. Amer. Fauna, 30; Ogilvie Mountain and Macmillan area.
 Hewitt, 1921: Conservation of the Wild Life of Canada; fluctuation.
 Williams, 1925: Can. Field-Nat., 39; Black River.
 Seton, 1929: Lives of Game Animals, 2; habits.
 Markley and Bassett, 1942: Am. Midl. Nat., 28, pp. 604-616; habits in captivity.
 Dom. Bur. of Statistics, 1920-1942: mimeographed releases.
 Allen, 1942: Extinct and Vanishing Mammals, etc.; status.
 Clarke, 1944: MS., Alaska Highway.
 Rand, 1944: MS., Canol Road.

Fisher. *Martes pennanti* (Erxleben)

Diagnosis, Length about 1,016 mm. (40 in.); tail about 406 mm. (16 in.); weight, male, up to 10 pounds; female, 5½ pounds; similar to the marten in shape, but much larger and with shorter ears; colour generally dark brown, grizzled greyish anteriorly, blacker ventrally, on legs and tail.

Subspecies. Northwestern fisher, *Martes pennanti columbiana* Goldman, is the form that occurs.

Distribution in Yukon. There seem to be no specimens extant supporting records of the occurrence of this animal in Yukon, though it occurs in the southeast, as usually assumed.

Life History. The one to five young are born in spring, and the female mates again about at once, the gestation period being thus about a year; food, apparently any small animal, rabbits being one of its favourites; it is well known as an eater of porcupines, and is said at times to kill foxes, lynx, and even deer; chief enemy, man.

General. In northeastern British Columbia and in southeastern Yukon the fisher appears to frequent the more heavily timbered valleys. It seems to be a solitary, wide-ranging animal that is nowhere common.

Though a costly fur, with small, fine pelts of females regularly bringing \$100 or more in recent years (coarse, large male skins are much less valuable), its range includes so little of Yukon as to be of small importance.

From 2 to 38 skins have been traded in Yukon in 11 of the years between 1920 and 1942, all of them probably from the Yukon-British Columbia area, with no assurance that any of them were actually taken within Yukon.

Chief References

- Seton, 1929: Lives of Game Animals, vol. 2; general.
 Hall, 1942: Calif. Fish and Game, 18, pp. 143-147; breeding.
 Allen, 1942: Extinct and Vanishing Mammals, etc.; status.
 Dom. Bur. of Statistics, 1920-1942: mimeographed releases on fur takes.
 Rand, 1944: Can. Field-Nat., 58, pp. 77-81; status.

Least Weasel. *Mustela rixosa* Bangs

Diagnosis. A tiny weasel, length about 203 mm. (8 in.); tail 32 mm. (1¼ in.); foot 19 mm. (¾ in.). In summer, colour above, brown, below white; no black tip to tail; in winter, completely white.

Subspecies. Northern least weasel, *Mustela rixosa rixosa* Bangs, is the form occurring.

Distribution in Yukon. Probably widely distributed, but rare; there appears to be only one record for Yukon, one in the National Museum of Canada taken at Ross Lake in 1909.

Life History. Changes from brown in summer to white in winter; four to six young; food, mice, and perhaps insects are important in its diet; enemies, probably carnivorous mammals and birds.

General. The tiny size of this animal, and the lack of a black tip to its tail, should make it conspicuous, but it appears to be scarce over the whole of its range. Little is known of its habits.

Chief References

Criddle, 1925: *Can. Field-Nat.*, 39, p. 142; predation on mice.
 Seton, 1929: *Lives of Game Animals*, vol. 2; general.
 Rand, 1944: *Nat. Mus. Canada, Bull.* 98, p. 38; Yukon record.

Short-tailed Weasel. *Mustela erminea* Linnaeus

Diagnosis. Length up to 340 mm. (13.4 in.); tail 95 mm. (3.75 in.); hind foot 46 mm. (1.8 in.). Female about a third smaller; slender-bodied, short-legged animal; colour in summer, above, brown; below, yellowish white; a conspicuous black tip to its tail. In winter pelage, white all over, sometimes stained yellow, with a black tip to the tail.

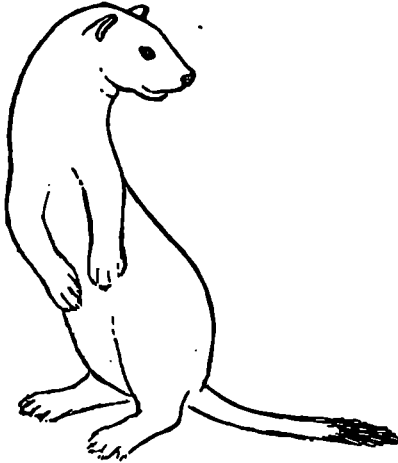


Figure 7. Short-tailed weasel.

Subspecies. Hitherto two species have been assigned to Yukon: *M. arcticus arcticus* (Merriam) over most of the area, and *M. cicognanii richardsonii* (Bonaparte) in the south. Recently Hall has shown that both are conspecific with the old world species *M. erminea* Linnaeus, so that the Yukon animals now stand as follows:

Arctic weasel, *Mustela erminea arctica* (Merriam), the northern part of the area, south at least to Ogilvie Mountains and Macmillan area (Osgood).

Richardson's weasel, *Mustela erminea richardsonii* Bonaparte, southern Yukon, north at least to Canol Road. It is distinguishable chiefly by skull characters, the forward part of the skull being less broad and less massive.

Range in Yukon. The species is probably of general occurrence and has been recorded from the southern border north to La Pierre House.

Life History. Change colour from white in winter to brown in summer; mate in summer; four to nine young born the following spring after a gestation period of about 252 days, in a nest in some cavity. Food chiefly small mammals, including mice and chipmunks; enemies, predatory birds and mammals, including man, none of which seems to exert a controlling influence.

General. Weasels are wonderfully active, covering a wide range in their restless wandering. Quite fearless, they enter cabins and tents when the occupants are present, and trappers like them to live about their cabins as they help to keep down mice. However, in a collector's tent their visits may prove disastrous if all specimens are not securely covered. One morning in northern British Columbia, waking to see a weasel on the table by the bed Rand found that it had carried off a score of specimens.

Their numbers evidently fluctuate with the years, some years they are common, other years scarce. This scarcity of weasels may occur even when mice are plentiful (Rand).

Though the weasels are sometimes common, most trappers make no special effort to catch them, preferring to go after more expensive furs.

From data furnished by the Dominion Bureau of Statistics, the average Yukon price per pelt between 1920 and 1942 has varied from 42 cents in 1933-34 to \$1.83 in 1926-27. From the same source, the total Yukon catch for this period was as follows:

Year	No. of pelts	Year	No. of pelts
1919-20	3,062	1930-31	2,339
1920-21	540	1931-32	4,951
1921-22	.....	1932-33	5,182
1922-23	2,508	1933-34	2,825
1923-24	1,689	1934-35	2,688
1924-25	1,248	1935-36	1,664
1925-26	1,421	1936-37	1,751
1926-27	792	1937-38	1,901
1927-28	1,492	1938-39	2,566
1928-29	5,051	1939-40	5,692
1929-30	3,180	1940-41	4,628
		1941-42	3,877

Chief References

- Ross, 1862: Can. Nat. and Geol., VII, pp. 137-155; La Pierre House record.
 Osgood, 1900: No. Amer. Fauna, No. 19; Yukon River.

Osgood, 1909: No. Amer. Fauna, No. 30; Ogilvie Mountains and Macmillan area.

Seton, 1929: Lives of Game Animals; general.

Hamilton, 1933: Amer. Midl. Nat., 14, pp. 289-373.

Swarth, 1936: Jour. Mammal., 17, pp. 398-405; Atlin area.

Dom. Bur. of Statistics, 1920-1942: mimeographed releases.

Kenneth, 1943: Gestation Periods, p. 16.

Clarke, 1944: MS., Alaska Highway.

Rand, 1944: MS., Canol Road.

Hall, 1944: Proc. Biol. Soc. Wash., 57, pp. 35; taxonomy.

Mink. *Mustela vison* Schreber

Diagnosis. A weasel-shaped animal with a bushy tail; size, up to length 720 mm. (28.4 in.); tail 180 mm. (7 in.); hind foot 75 mm. (3 in.). Colour dark brown all over, usually with white areas of irregular shape on throat and chest.

Subspecies. The status of Yukon mink remains to be clarified, but the following is outlined:

Northwest mink, *Mustela vison energumenos* Bangs, has been recorded from Atlin, B.C. (Swarth) and the Macmillan area. It is a very dark mink.

Alaska mink, *Mustela vison ingens* Osgood, differs from the above in lighter colour and very much larger size (length 720 mm., tail 180; hind foot 75; Osgood, original description); was described from Fort Yukon in Alaska, and is said to extend at least to the Mackenzie delta, so presumably occurs in the northern part of our area.

Osgood (1909) mentions aberrant small specimens from Ogilvie Mountains.

Distribution in Yukon. Common. The mink, probably of general occurrence, but is recorded only north to Ogilvie Mountains and Macmillan area.

Life History. Five or six (rarely two to ten) young born in spring after a gestation period of about 42 to 76 days; food, crustaceans, fish, frogs, birds, and small mammals, including mice, muskrats, and rabbits; enemies, probably larger predatory birds and mammals, but chiefly man.

General. The mink lives where land and water meet; as active on land as a weasel; as much at home in the water as an otter. In winter the mink spends much time under the ice, hunting in the air space that usually forms when the water sinks from the early winter level where ice formed. Sometimes mink prey extensively on muskrats, but the extra value of their fur in general compensates for this.

This is one of the lesser important fur animals for the whole Yukon, but is important locally. In the 1943-44

season some pelts brought \$20 each to the Indian trappers. In the period 1919-41, according to the Dominion Bureau of Statistics, the total value of the Yukon mink catch was between \$3,946 (1920-21) and \$67,704 (1936-37); the average annual price per pelt was from \$5.80 in 1931-32 to \$21 in 1936-37.

The yield over this period is as follows:

Year	No. of pelts	Year	No. of pelts
1919-20	976	1930-31	2,473
1920-21	608	1931-32	3,360
1921-22	.....	1932-33	3,562
1922-23	1,754	1933-34	3,030
1923-24	2,578	1934-35	2,914
1924-25	2,577	1935-36	3,073
1925-26	5,026	1936-37	3,224
1926-27	2,779	1937-38	2,494
1927-28	1,697	1938-39	1,646
1928-29	957	1939-40	1,293
1929-30	1,171	1940-41	1,823
		1941-42	2,377

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30; Ogilvie Mountains and Macmillan River.
 Seton, 1929: Lives of Game Animals, vol. 2.
 Dom. Bur. of Statistics: mimeographed releases on fur, 1920-1942.
 Kenneth, 1943: Gestation Periods.
 Rand, 1944: MS., Canol Road.

Wolverine. *Gulo luscus* (Linnaeus)

Diagnosis. A large, stout-bodied, short-tailed weasel; quite bear-like in shape; male, length up to 1,070 mm. (42 in.); tail 218 mm. (8.6 in.); hind foot 190 mm. (7.5 in.); weight 36 pounds (a large male from Alaska, Bailey); females somewhat smaller. Colour dark brown, shoulders yellowish brown, broad yellow band down each side and across hips; crown grey; extremities black; underparts dark brown, with white on throat and chest.

Subspecies. Several have been described, but Allen recognizes only one in the new world: American wolverine, *Gulo luscus luscus* (Linnaeus).

Distribution. In Yukon, not uncommon; probably ranges over the whole area, north to the limit of trees and beyond; definitely recorded from the southern border north to Macmillan River and Ogilvie Mountains.

Life History. Litters of two to five young born in April, May, and June; food, small and large animals, including occasionally moose and caribou (Henderson and Craig¹), carrion; frequently rob caches and trap-lines; enemies, man.

¹ Economic Mammalogy.

General. Many amazing stories are told of the strength, sagacity, and destructiveness of the wolverine, yet not all authorities agree. It is credited with great strength in opening caches and killing moose and caribou, although much of its food is probably of animals smaller than itself, or carrion. It is said to be a tireless robber of trap-lines, and almost impossible to trap, yet some men have found them fairly easy to trap and even taken them in marten traps. It is said to ransack caches and cabins,



Figure 8. Wolverine.

carrying off many objects of no use for food, and defiling with excrement what it leaves. Yet some authorities with much experience with wolverines have never encountered this habit of leaving behind filth or glandular secretions.

Probably individual wolverines vary in habits, and populations may have different habits.

In 1929 Seton wrote that it cannot be a question of many years before the wolverine is known only by musty skins and dusty records, and other writers have echoed this belief, but this appears to be a needless alarm. Its habit of robbing caches, and trap-lines, and taking man's sustenance where it is not easily replaced, makes general protection for it out of the question, and it seems to survive in Yukon very well without it. One trapper told me of seven being in traps on one trap-line (four of them escaped) near Klondike about 1940.

The fur yield for Yukon, from the Dominion Bureau of Statistics, is as follows:

Year	No. of pelts	Year	No. of pelts
1919-20	411	1930-31	372
1920-21	164	1931-32	189
1921-22	.....	1932-33	225
1922-23	271	1933-34	154
1923-24	207	1934-35	204
1924-25	213	1935-36	210
1925-26	433	1936-37	266
1926-27	495	1937-38	265
1927-28	610	1938-39	331
1928-29	516	1939-40	308
1929-30	585	1940-41	256
		1941-42	267

The average yearly value of the pelts, from the above source, varied from \$3.25 in 1933-34 to \$18.84 in 1923-24.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30; Ogilvie Mountains and Macmillan River.
 Seton, 1929: Lives of Game Animals; general.
 Bailey, 1936: No. Amer. Fauna, No. 55; p. 299ff; general.
 Allen, 1942: Extinct and Vanishing Mammals, etc.; status.
 Rand, 1944: MS., Canol Road.

Otter. *Lutra canadensis* (Schreber)

Diagnosis. Length up to 1,220 mm. (48 in.); tail 482 mm. (19 in.); weight estimated at 25 pounds, female smaller (Bailey for *L. c. canadensis*); body slender; tail strong and tapering; legs short; feet webbed; ears small. Colour dark brown, paler below with greyish on throat and cheeks.

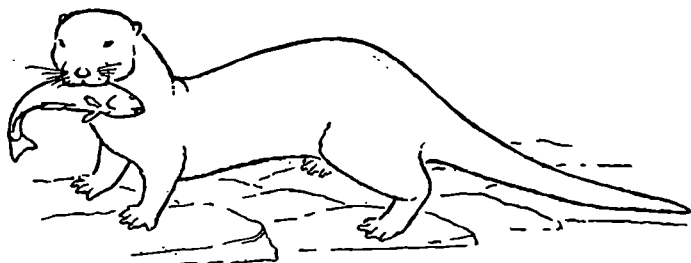


Figure 9. Otter.

Subspecies. Yukon otter, *Lutra canadensis yukonensis* Goldman, is a recently described form ascribed to Yukon.

Distribution in Yukon. Rare; from the southern border north at least to Ogilvie Mountains and Macmillan River; Goldman, when describing *L. c. yukonensis*, had a specimen from Pelly River at the mouth of Macmillan River.

Life History. The two to four young are born in early spring after a 49- to 62-day gestation period; food, largely fish and other aquatic animals, also small mammals and birds; enemies, probably unimportant, except man.

General. The otter is largely an aquatic animal, with fish its usual prey, and the paucity of fish in Yukon streams probably dictates the scarcity of otter.

Though most at home in the water, they come ashore to eat their prey, spend considerable time on the stream banks, and make long trips over land from waterway to waterway.

The yearly total value of the Yukon otter catch is not large; for the 1920-42 period it varied from \$618 in 1920-21 to \$2,571 in 1928-29. The yearly average value per pelt varied from \$11.21 in 1939-40 to \$35.22 in 1928-29. The following is the data on the Yukon yearly take:

Year	No. of pelts	Year	No. of pelts
1920-21	42	1931-32	98
1921-22 .....	.....	1932-33	107
1922-23	81	1933-34	101
1923-24	78	1934-35	102
1924-25	82	1935-36	75
1925-26	79	1936-37	62
1926-27	94	1937-38	95
1927-28	97	1938-39	63
1928-29	73	1939-40	97
1929-30	84	1940-41	70
1930-31	71	1941-42	90

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30; Ogilvie Mountains and Macmillan River.
 Bailey, 1926: No. Amer. Fauna, No. 45; general.
 Seton, 1929: Lives of Game Animals, 2; general.
 Goldman, 1935: Proc. Biol. Soc. Wash., 45, p. 178; taxonomy.
 Dom. Bur. of Statistics, 1920-42: mimeographed release on fur yield.
 Kenneth, 1943: Gestation Periods

FAMILY—CANIDAE. DOGS AND THEIR ALLIES

This family is represented in Yukon by four species: wolf, coyote, red fox, and arctic fox. Their large litters are usually brought forth in a burrow excavated by the parents, and the young, helpless at birth, stay in and about the den for a long infancy, food being brought by both parents.

Red or Coloured Fox. *Vulpes fulva* (Desmarest)

(includes the names for the various colour phases, as:
Red, Cross, Silver, and Black fox)

Diagnosis. Male, length up to 1,125 mm. (44.25 in.); tail 440 mm. (17.3 in.); hind foot 195 mm. (7.7 in.); weight probably up to 15 pounds; female slightly smaller; slender, dog-like, with a big bushy tail, especially in winter; colour varies from generally yellowish red, with backs of ears and ankles black and tip of tail white, to all black, with tip of tail white. Four main types or colour phases are usually recognized: the Red, pelage generally yellowish red; Cross, generally yellowish, but with black in the pelage tending to form a cross-shaped area on shoulders; Silver, with pelage black with many silver-tipped hairs; and (very rare) Black. However, examination of a large series of skins has shown that there is complete intergradation between the extreme conditions, and there are specimens that it is difficult to assign to one or another "colour phase". Three colour phases, red, cross, and silver, have been seen in one litter of pups.

Subspecies. All the North American red foxes are considered as subspecies of one species, *V. fulva*, by Bailey, and this is possibly conspecific with the old world red fox.

British Columbia red fox, *Vulpes fulva abietorum* Merriam, has been assigned to southern Yukon.

Alaska red fox, *Vulpes fulva alascensis* Merriam, with a broader, shorter skull, is said to range over most of the northern and central part of the area.

Distribution in Yukon. Common and probably of general occurrence north to the limit of trees, but definitely recorded north only to Porcupine River.

Life History. The five to nine young born in spring, after a 48- to 56-day gestation period, remain in and about the den until mid-summer at least; the food staple is probably small mammals, in which mice, ground squirrels, and rabbits predominate, but many other items such as birds and fruits are eaten. The chief enemy is man.

General. Though usually a forest animal, the fox may make its den in a rocky ledge far above timber.

The fox is an agile, graceful creature, with a cunning that makes it difficult to trap. Foxes seem to have periods of plenty and periods of scarcity. There have been attempts to show that these correlate into widespread cycles, but there is some evidence to show these fluctuations are local in extent and not synchronized over a wide area.

The proportion of black and cross foxes to the red phase in the catch is indicated in the table below. The total value of the fox catch in Yukon for 1932-33 was about

\$14,500, when reds averaged per pelt \$8.62, cross \$26.69, and silvers \$28.75. In 1939-40 the total value was about \$6,595, when the average value per pelt was: red \$6.20, cross \$15.11, silver \$11.90. The fall in the value of the silver fox pelt from its earlier fantastic price level is due of course to the ranching of foxes, which has greatly increased the supply and decreased the rarity of the animal.

In the following table the number of pelts sold each year from Yukon fur farms has been subtracted from each class, each year, so that the table represents the approximate wild catch.

Year	Number of pelts		
	Red phase	Cross phase	Silver phase
1932-33.....	795	262	77
1933-34.....	921	266	30
1934-35.....	1,347	400	82
1935-36.....	1,811	580	33
1936-37.....	1,457	582	69
1937-38.....	1,269	636	88
1938-39.....	912	365	11
1939-40.....	525	190	32

This gives a ratio of about 22 reds to 8 cross to 1 silver.

Chief References

- Williams, 1925: Can. Field-Nat., 39; Porcupine River.
 Bailey, 1936: Nature Magazine, 283, p. 272; subspecies.
 Cross, 1940: Jour. Mammal., 21, pp. 294-306; fluctuation in Ontario.
 Cross, 1941: Jour. Mammal., 22, pp. 25-39; colour phases.
 Soper, 1942: Jour. Mammal., 23, p. 130; general; measurements.
 Kenneth, 1943: Gestation Periods.
 Murie, 1944: Wolves of Mount McKinley; general.

Arctic Fox; White Fox; Blue Fox. *Alopex lagopus*

Diagnosis. A small fox, length 787 mm. (31 in.); tail 260 mm. (10½ in.); hind foot 115 mm. (4½ in.) (Seton); with a rather blunt muzzle; ears rather small; pelage very long (in winter) and soles of feet well furred; colour, normal phase, in summer, above brown or dark grey, below paler to whitish; winter, pure white; in blue phase, dark greyish or bluish all over summer and winter.

Subspecies. Continental arctic fox, *Alopex lagopus innuitus* (Merriam), includes the Yukon form.

Distribution in Yukon. Occurs commonly along the Arctic Coast; recorded near Herschel Island.

Life History. Young, up to ten in number, born in spring after a gestation period of about 60 days; food, smaller mammals, birds and their eggs, fish, and carrion; enemies, probably chiefly man.

General. The arctic fox is said to be common periodically everywhere along the western Canadian Arctic Coast, and, though an animal of the coast, in years of its abundance, about every 4 years, it is said to spread south to timber-line. The blue phase is scarce in Canada's western Arctic, being much more common in the eastern Arctic, Greenland, and western Alaska.

It is frequently found out on the sea ice, apparently following the polar bear, feeding on the bits of food it leaves.

The annual value of the white fox taken in Yukon in the 1920-42 period has varied from \$11 in 1938-39 to \$43,200 in 1923-24; the average annual value per pelt from \$11 in 1938-39 to \$54.15 in 1928-29.

The annual catch is listed below:

Year	No. of pelts	Year	No. of pelts
1919-20	3	1931-32	364
1920-21	nil	1932-33	690
1921-22	nil	1933-34	39
1922-23	78	1934-35	398
1923-24	1,080	1935-36	276
1924-25	783	1936-37	158
1925-26	840	1937-38	139
1926-27	434	1938-39	1
1927-28	220	1939-40	nil
1928-29	77	1940-41	nil
1929-30	63	1941-42	1
1930-31	339		

The only blue foxes listed during this period are: two in 1933-34, two the following year, and one in 1936-39.

Chief References

- Russel, 1898: Exploration in the Far North; Arctic Coast.
 Anderson, 1913: in Stefansson's "My Life with the Eskimo".
 Seton, 1929: Lives of Game Animals, 1; general.
 Anderson, 1937: in Canada's Western Northland.
 Dom. Bur. of Statistics, 1920-42: mimeographed releases on fur yield.
 Kenneth, 1943: Gestation Periods.

Coyote. *Canis latrans* Say

Diagnosis. Length 1,310 mm. (51.5 in.); tail 360 mm. (13.7 in.); hind foot 220 mm. (8.7 in.) (Soper). Wolf-like in general appearance, but smaller, with larger ears; more slender muzzle; colour

similar to that of some grey wolves; above, mixed buffy, grey, and black; below, whitish; ears fulvous; tail with small black tip.

Subspecies. Northwest coyote, *Canis latrans incolates* Hall, is the Yukon form.

Distribution in Yukon. Apparently a newcomer from the south; now common north to Pelly River and Sixtymile Creek (Rand, MS.); Hall, 1924, had specimens from the vicinity of Teslin Lake.

Life History. Mate in January; three to twelve young born in April (Oregon, Bailey); food chiefly smaller mammals, of which rabbits and ground squirrels are favourites, birds and their eggs, and occasionally insects and berries; enemies, chiefly man.

General. Most people in Yukon say the coyote is a recent addition to the fauna, appearing in Pelly Valley about 1912. In Pelly River area it was said to have been common up until a few years ago, and then became scarce. The fur yield figures below support this last. Coyotes are said to be most common in the drier, more open areas.

The total annual value of the fur catch of coyotes for Yukon in the period 1920-42 varied between \$96 (1932-33) and \$30,869 (1927-28); annual average value per pelt has varied from \$5.08 (1939-40) to \$17.38 (1927-28).

The annual yield is as follows:

Year	No. of pelts	Year	No. of pelts
1919-20	57	1931-32	28
1920-21	36	1932-33	12
1921-22	.....	1933-34	371
1922-23	112	1934-35	569
1923-24	371	1935-36	855
1924-25	519	1936-37	1,083
1925-26	584	1937-38	1,457
1926-27	1,207	1938-39	1,589
1927-28	1,776	1939-40	442
1928-29	902	1940-41	265
1929-30	437	1941-42	271
1930-31	36		

References

- Seton, 1929: Lives of Game Animals, vol. 1; general.
 Hall, 1934: Univ. Calif., Pub. Zool., 40, p. 369; taxonomy.
 Bailey, 1936: No. Amer. Fauna, No. 55; general.
 Anderson, 1937: in Canada's Western Northland; status.
 Soper, 1942: Jour. Mammal., 23, p. 131; Wood Buffalo Park.
 Dom. Bur. of Statistics, 1920-42: mimeographed releases on fur take.

Wolf; Timber Wolf. *Canis lupus* Linnaeus

Diagnosis. A big, dog-like animal; length 1,956 mm. (77 in.); tail 458 mm. (18 in.); height 864 mm. (34 in.); weight about 100

pounds for large males; colour variable, mostly white, through grey phase to black. Some wolves are very similar to some dogs, and occasionally dogs, perhaps with wolf blood, are almost indistinguishable. In general, the wolf is lankier and has longer legs than the average sled dog. Its chest is narrower, so that the front legs are much closer together than in the dog (Murie); tail always held low.

Subspecies. The old and new world wolves belong to one species, with the following in Yukon, according to Anderson:

Tundra wolf, *Canis lupus tundrarum* Miller, ranging from Porcupine River north.

Alaska wolf, *Canis lupus pambasileus* Elliot, a larger form ranging over most of the area.

British Columbia wolf, *Canis lupus columbianus* Goldman, barely entering southeast Yukon.

Distribution in Yukon. Common, probably generally distributed, but definitely recorded only north to Ogilvie Mountains and Macmillan River; said to be generally common on the Arctic Coast from Alaska to Coronation Gulf.

Life History. Mate in March, usually four to seven young born in May, in an excavated den; food, moose, caribou, sheep, rabbits, and almost any other mammal or bird of the region; also eats carrion and garbage; enemies, man.

General. In summer single wolves or small bands of them may be seen, but in autumn and winter larger bands up to twenty or twenty-five are common. These packs are probably composed of two or more families.

The question of the wolf as a predator has recently received much attention, and Murie has made an excellent study of this in Alaska, to which the reader is referred. Predator-prey relationship is a complex one. The predator may fluctuate greatly in numbers, irrespective of its prey. Normally the prey-species are adapted to withstand predation, and when the predator becomes too abundant and its prey scarce, the predator also sooner or later becomes scarce. Then the prey-species increase, perhaps until their food supply becomes depleted and a period of scarcity is indicated for them. Thus, there is no balance, but a huge pendulum swing.

Management is directed towards changing this swing to an artificial "Balance of Nature", and where there is much human hunting some control of wolf numbers may be necessary.

As a fur crop, the wolf is not important. In the 1920-42 period, according to the Dominion Bureau of Statistics, its total annual Yukon value varied from \$100

(1932-33) to \$11,460 (1935-36); average annual prices have varied from \$8 (1931-32) to \$31.07 (1928-29).

The annual take is as follows:

Year	No. of pelts	Year	No. of pelts
1919-20	106	1931-32	43
1920-21	54	1932-33	7
1921-22 .....	....	1933-34	192
1922-23	154	1934-35	468
1923-24	168	1935-36	573
1924-25	181	1936-37	545
1925-26	151	1937-38	721
1926-27	131	1938-39	326
1927-28	250	1939-40	205
1928-29	198	1940-41	239
1929-30	285	1941-42	414
1930-31	27		

Chief References

- Osgood, 1909: No. Amer. Fauna, No. 30; Ogilvie Mountains and Macmillan River.
 Anderson, 1913: in Stefansson's "My Life with the Eskimo"; general.
 Cridle, 1925: Dom. of Can., Dept. Agri., Bull. 13 N.S.; control methods.
 Seton, 1929: Lives of Game Animals; general.
 Anderson, 1943: Jour. Mammalogy; taxonomy.
 Murie, 1944: Wolves of Mount McKinley; life history.
 Dom. Bur. of Statistics: Release on fur yield, 1920-42.
 Young and Goldman, 1944: Wolves of N. America; life history, taxonomy.

FAMILY—FELIDAE. CATS

Only one cat, the lynx, is known to occur. The cougar has been taken in British Columbia on Liard River near Lower Post, and tracks reported from Toobally Lake, Yukon, indicate it may occur in southern Yukon.

The young of our cats are born in a helpless condition and cared for in a nest by one or perhaps by both parents during infancy.

Lynx. *Lynx canadensis* Kerr

Diagnosis. Size, large; male, length 954 mm. (37.5 in.); tail 100 mm. (4 in.); foot 203 mm. (8 in.); weight 28 pounds (Seton quotes weight up to 44 pounds); a long-legged, short-tailed cat with long pencils of fur on the tips of its ears. Colour in winter, above, light frosted grey, under fur buffy brown; back of inner edges of ears, ear tassels, tufts in side whiskers, and whole tip of tail black; lower parts, legs and feet buffy grey with generally little spotting; in summer browner and more spotted; young yellower and more spotted (Bailey, 1936).

Subspecies. Canada lynx, *Lynx canadensis canadensis* Kerr, is the form that occurs.

Distribution in Yukon. Probably regularly north to edge of timber north of the Porcupine; only definitely recorded north to Macmillan River area and Sixtymile Creek.

Life History. Great fluctuation in numbers over about a 10-year cycle. One to five young born after a gestation period of 63 days; food chiefly snowshoe rabbits; enemies, chiefly man.

General. The Canada lynx is usually confined to wooded regions. The year following the periodic disappearance of rabbits, about every 9 or 10 years, the lynx wander far beyond their normal range, even north to the Arctic Coast (Anderson). The size of the lynx population varies with that of the rabbit; when rabbits are scarce, so are the lynx.

The long, fluffy pelt of the lynx is a beautiful, highly prized fur.

The total annual value of the lynx taken from Yukon in the period 1919-20 to 1941-42 has varied between \$4,396 and \$162,306; the average value per pelt has varied annually from \$13.33 (1933-34) to \$51.45 (1928-29). In the 1943-44 season trappers in the Pelly River area received as much as \$75 for some skins.

The Yukon lynx yield is as follows:

Year	No. of pelts	Year	No. of pelts
1919-20	334	1930-31	785
1920-21	182	1931-32	699
1921-22	nil	1932-33	915
1922-23	1,433	1933-34	1,024
1923-24	2,526	1934-35	1,693
1924-25	3,757	1935-36	2,943
1925-26	3,503	1936-37	2,964
1926-27	3,357	1937-38	2,752
1927-28	3,786	1938-39	1,763
1928-29	2,372	1939-40	1,191
1929-30	1,436	1940-41	607
		1941-42	745

Chief References

- Osgood, 1909: No. Amer. Fauna, No. 30; Macmillan area.
 Seton, 1929: Lives of Game Animals; general.
 Bailey, 1936: No. Amer. Fauna, No. 55; general.
 Anderson, 1937: in "Canada's Western Northland", p. 108; distribution.
 Elton and Nicholson, 1942: Jour. Animal Ecology, 11, pp. 215-243; fluctuations.

ORDER—PINNIPEDIA. SEALS AND WALRUSES

The seals and walruses are close relatives of the carnivores that have become adapted to an aquatic life, and their fore and hind limbs have become modified into flippers.

Of the three families in this group, representatives of two—the hair seal family and the walrus family—occur in Yukon waters.

FAMILY—PHOCIDAE. HAIR SEALS

All the seals occurring off Yukon waters belong to this family, distinguished from the eared seals (family—Otaridae) of the Pacific Ocean by having no external ears; fore limbs much shorter than hind limbs; and hind limbs incapable of being turned forward in walking.

[The harbor seal, *Phoca vitulina* Linnaeus, has not been recorded from Yukon waters, but the Pacific race, *P. v. richardii* (Gray), may be expected to straggle eastward from Point Barrow. It is about the size of the ringed seal, up to 1,524 mm. (5 feet) long; colour yellowish grey spotted with dark brown varying to about black, spotted with yellowish. It is most likely to be confused with the ringed seal from which it differs in skull characters as follows: premolars of lower jaw crowded out of line, set obliquely, with ends overlapping; molars and premolars large and heavy; in the ringed seal the molars are small and light, and not set closely together (Anderson, 1937, p. 101¹ and 1943, p. 33²).]

Ringed Seal. *Phoca hispida* Schreber

Diagnosis. Length up to 1,651 mm. (65 in.); weight up to about 200 pounds; colour generally light buffy with numerous dull brown or blackish streaks and spots on back, forming a scattered pattern of small pale rings with dusky spots in centre; markings tending to be denser along spine, and to form a stripe on lower back; sides, flippers, and underparts unspotted.

Subspecies. Beaufort ringed seal, *Phoca hispida beaufortiana* Anderson, is the form that occurs.

Distribution in Yukon. Given as common on the Arctic Coast, but no specific records.

¹ In "Canada's Western Northland".

² Ann. Rept. Provanch. Soc. Que.

Life History. One young born in spring after a gestation period of about 276 days; food is largely planktonic crustacea; enemies, largely man, and polar bears.

General. This is the most common seal. In winter few seals come up onto the ice, only coming to their breathing holes for air. With the advent of spring they come up through the enlarged holes to lie and bask on the ice. The young are born in a cavity on the ice, but under the snow, and remain there, cared for by the mother for 2 weeks or more before taking to the water (Freuchen).

Eskimo formerly lived largely on seals in winter, eating the flesh and using the blubber for food, fuel, and light. The ordinary water boot is made of the skin of the ringed seal, usually with soles of bearded seal. The primitive Eskimo caught seals in nets or by spearing them at breathing holes, but the modern Eskimo usually shoot them with rifles, either in the water or on the ice (Anderson).

Chief References

- Anderson, 1913: in Stefansson's "My Life with the Eskimo", p. 526; occurrence, general, western Arctic.
 Freuchen, 1935: Mammals, Part II, Report of Fifth Thule Expedition, Zool. Mus., Copenhagen.
 Anderson, 1937: in Canada's Western Northland, p. 101; importance.
 Dunbar, 1941: Can. Jour. Research, 19, pp. 150-155; food, eastern Arctic.
 Doult, 1942: Annals Carnegie Museum, 29, pp. 61-125; taxonomy.
 Kenneth, 1943: Gestation Periods.
 Manning, 1943: Jour. Mammal., p. 57; habits, Baffin Island.
 Anderson, 1943: Ann. Rept., Provanch. Soc. Quebec, pp. 23-34; taxonomy.

[The harp seal, *Phoca groenlandica* Erxleben, has been recorded at the mouth of the Mackenzie (Anderson, 1937, p. 101) and may be expected off Yukon waters. Males reach a length of 1,524 to 1,828 mm. (5 to 6 ft.); colour greyish to yellowish, with dark face and dark band across shoulders and extending along sides (the "harp" mark); females somewhat smaller, and not so clearly marked, or may lack dark marking entirely.]

Bearded Seal. *Erignathus barbatus* (Erxleben)

Diagnosis. Adults up to 2,133 to 3,048 mm. (7 to 10 ft.) long; 600 to 800 pounds in weight; colour plain greyish or dull yellowish,

spotting very obscure or absent; a prominent tuft of long, flattened bristles on each side of muzzle.

Subspecies. None recognized (Anderson, 1937).

Distribution in Yukon. Not common; on the Arctic Coast; recorded at Herschel Island (Anderson).

Life History. Apparently mate in the spring or summer, and the one young born the following spring; food, bottom-living crustacea, mollusca, and fish; enemies, chiefly man and polar bears.

General. The bearded seal is seldom found far from shore, and, correlated with its bottom-feeding habits, it seems to prefer shallow water.

The skin was formerly prized by the Eskimo for covering skin boats. The skins are still in demand for boot soles and rawhide thongs (Anderson, 1937).

References

- Anderson, 1913: in Stefansson's "My Life with the Eskimo"; occurrence, Yukon.
 Freuchen, 1935: Mammals, Part II, Report of Fifth Thule Expedition, Zool. Mus., Copenhagen, pp. 1-278; habits.
 Anderson, 1937: in Canada's Western Northland, p. 102; occurrence, importance to Eskimo.
 Dunbar, 1941: Can. Jour. Research, 19, pp. 150-155; food in eastern Arctic.
 Soper, 1943: Jour. Mammal., 25, p. 240; occurrence, habits, Baffin Island.
 Anderson, 1943: Ann. Rept., 1942, Provanch. Soc. Quebec, pp. 31-32; taxonomy.

[The crested seal, *Cystophora cristata*, an Atlantic species, has been recorded at the mouth of the Mackenzie and may occur farther west. It is a fairly large seal, 2,133 to 3,438 mm. (7 to 8 ft.) long, and the males have an inflatable bag of muscular tissue on top of the head. It is dark grey or slaty black above, with sides paler and thickly spotted with whitish. It has only 30 teeth (i. $\frac{2}{1}$, c. $\frac{1}{1}$, pm. $\frac{4}{4}$, m. $\frac{1}{1}$), whereas the species listed above have 34 (i. $\frac{3}{2}$, c. $\frac{1}{1}$, pm. $\frac{4}{4}$, m. $\frac{1}{1}$). (Anderson, 1943,¹ Clarke, 1944.²)]

¹ Ann. Rept. Provanch. Soc. Quebec.

² Can. Field-Nat.

FAMILY—ODOBENIDAE. WALRUSES

The body is thick and heavy; head relatively small; blunt, broad muzzle set with thick bristles; no external ears; hind feet may be turned forward; tail rudimentary.

Pacific Walrus. *Odobenus divergens* (Illiger)

Diagnosis. Tusks removed from their sockets may be a yard or more in length; head and body of adult male up to 3,658 mm. (12 ft.) in length; weight to 3,000 pounds; females much smaller. Skin covered with yellowish hair, but this may wear off so that back and shoulders may be hairless.

Subspecies. None recognized.

Distribution in Yukon. A species of the Arctic shores of the Pacific Ocean that apparently occurred commonly from Point Barrow to Cape Bathurst; now practically absent; one was killed at Herschel Island in 1911, and one at King Point, Yukon, in October 1914 (Anderson, 1937).

Life History. One or two young born in the spring after a gestation period of 260 to 365 days; food largely shellfish, which they dig from the bottom; enemies, man, polar bears, and killer whales (Allen, 1942, p. 472).

General. The Walrus is an animal of shallow seas where it can feed on the bottom, and of ice floes on which it can "haul out" and rest, though it also rests on the beach in places. It does not make breathing holes through the ice, as do seals, so migrates north and south through Bering Sea with the seasons.

Chief References

- Anderson, 1937: in Canada's Western Northland, p. 102; Yukon records, status.
 Ely *et al.*, 1939: North American Big Game, pp. 433-437; general, hunting.
 Allen, 1942: Extinct and Vanishing Animals, etc., pp. 469-477; general, status.
 Kenneth, 1943: Gestation Periods.

ORDER—RODENTIA. RODENTS

The rodents are easily characterized by their teeth. Two upper and two lower, flat, chisel-like gnawing teeth in the front of each jaw are separated from the cheek or grinding teeth by a wide gap. There is great diversity in size and shape in this group. Being largely vegetarian,

and many of small size and succulent flesh, they are important in being the first stage in turning vegetation into flesh for use by many of the carnivorous mammals.

FAMILY—SCURIDAE. SQUIRRELS AND THEIR ALLIES

This family is a large, widespread one, being almost cosmopolitan, absent only from the Australian area and southern South America. In Yukon it is represented by five species. Their food is largely of vegetable origin, and some species store food. Some of the members of this family hibernate during the winter.

The young are born in a blind, naked, nearly helpless condition in a burrow or nest, and are dependent on the adult for some time.

Woodchuck. *Marmota monax* (Linnaeus)

Diagnosis. Size of *M. m. canadensis*, up to length of 515 mm. (20.25 in.); tail 109 mm. (4.3 in.); hind foot 78 mm. (3 in.) (Howell, 1915, p. 31); a thick-set, clumsy animal with stout, short legs, fossorial claws, densely haired tail, rather short ears, and small eyes; colour generally reddish brown, the longer hairs of the back tipped with yellowish white; nose and face blackish.

Subspecies. Yukon or ochraceous woodchuck, *Marmota monax ochracea* Swarth, is the form that occurs. It is a reddish subspecies to which the above description applies and of which no external measurements of adults are available.

Distribution in Yukon. Probably from Atlin and Teslin Lake north to Fortymile Creek; recorded from only two stations in Yukon-Thirtymile Mountains near Teslin Lake (Howell, 1915, p. 35, N.M.C.) and Nisutlin River (Rand, MS., 1944, specimens N.M.C.). Has been recorded on the headwaters of Fortymile Creek, Alaska, which appears to be the northernmost record of the species.

Life History. Hibernates during winter; about four young born in spring after a gestation period of around 30 days; food largely succulent vegetation, occasionally some bark of young trees; enemies, chiefly fox and man (for the species in New York, Hamilton, 1934).

General. In settled areas the Woodchuck makes its home in field and meadow, where it feeds near its burrows and even enters gardens and cultivated land. It was interesting to see them in primitive conditions along lower Nisutlin River where there were no settlements. Here the valley bottom and the earth banks rising sharply from it probably had been wooded, but forest fires had destroyed the growth in places; and on some of the steep, eroding

banks forest perhaps had never established itself. There open stands of aspen, with a luxuriant undergrowth of grasses, herbs, and shrubs were to be found, and it was in such habitats the woodchuck were flourishing, digging their burrows into the banks, and with abundant forage at hand.

Chief References

Howell, 1915: No. Amer. Fauna, No. 37; revision.

Hamilton, 1934: Ann. Carnegie Museum, 23, pp. 85-178; habits.

Hoary Marmot; Whistler. *Marmota caligata* (Eschscholtz)

Diagnosis. Size, length 695 mm. (27.3 in.); tail 187 mm. (7.3 in.); hind foot 95 mm. (3.74 in.) (a Yukon male); a thick-set, clumsy rodent with short, stout legs, fossorial claws, short, densely haired tail; rather short ears and small eyes; colour, adults, fore part of body greyish white, the hairs tipped black; hind part of body and tail yellowish brown, hairs tipped black; face blackish with a conspicuous white patch from above nose to over eyes; feet black; juveniles similar, but darker generally.



Figure 10. Hoary marmot.

Subspecies. Two are known to occur, and the existence of a third is suspected, as follows:

An undetermined subspecies suspected to occur in Richardson Mountains of the north.

Northern hoary marmot, *Marmota caligata caligata* (Eschscholtz), in central and southwestern Yukon (from Ogilvie Mountains and Kalzas Creek south to Atlin and westward).

Robson hoary marmot, *Marmota caligata oxytona* Hollister, a blacker form with a larger, more slender skull, in southeast Yukon (recorded from Teslin Lake, Howell, 1915, p. 64).

Distribution in Yukon. Probably occurs on suitable mountains from the southern border north to Richardson Mountains.

Life History. Hibernates; about five young born in late spring; food probably grass and herbs; enemies, grizzly bears, foxes, eagles, and man.

General. The whistler has two types of home; burrows dug in the earth in alpine meadows, and holes in jumbled masses of bare rocks.

They are fond of sunning themselves on an exposed rock from which they command a good view. Usually the first intimation one has of their presence is their long, loud whistle that can be heard over a mile. Alarmed, they sit up straight at the entrance to their burrows, like a woodchuck, from which they are easily distinguished by the white spot on their face and their generally greyish colour.

The flesh is prized, and in Alaska at least the skins are used for making robes.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 31, 32; upper Yukon.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 55-78; Ogilvie Mountains, Macmillan area.
 Howell, 1915: No. Amer. Fauna, No. 37; revision.
 Anderson, 1934: Can. Field-Nat., 48, pp. 60-63; review.
 Swarth, 1936: Jour. Mammal., 17, p. 402; Atlin, B.C.
 Clarke, 1944: MS., St. Elias Range.

Ground Squirrel. *Citellus parryi* (Richardson)

Diagnosis. Size varies with the subspecies: up to length 495 mm. (15.6 in.); tail 136 mm. (5.35 in.); hind foot 68 mm. (2.7 in.); weight up to 2½ pounds (Howell); a stout-bodied, short-legged, short-eared, rather short-tailed ground squirrel; colour, male, in summer, head tawny or cinnamon, rest of upper parts yellowish brown, flecked with whitish spots; underparts reddish brown; female, and male in winter, with much less reddish; occasionally black (melanistic) specimens are found, being especially common in some areas.

Subspecies. Two occur in Yukon, as follows:

Parry's ground squirrel, *C. p. parryi* Richardson, from the Porcupine River area northward; recorded Firth River; Joe River (Firth River); Old Crow River (north, 40 miles above Timber Creek); Rampart House; U Creek (90 miles above Rampart House) (Howell, 1939, p. 95); a large form with coarse white spots on upper parts.

Yukon ground squirrel, *C. p. plesius* (Osgood), occupying the greater part of the Yukon except the extreme north; recorded Donjek River; Livingston; Pelly Lake; Lapie River; Tantalus; Teslin Lake; Yukon River (Caribou Crossing); Fiftymile River;

Lake Laberge; Lake Marsh; Miles Canyon; Rink Rapids (Howell, 1938, p. 98); a smaller form, length up to 363 mm. (14.3 in.); tail 105 mm. (4.13 in.); hind foot 57 (2.25 in.) (Howell, 1938, p. 97) with paler colour and smaller spots.

Life History. Hibernates; one to seven young born in spring; gestation period probably short, about 4 weeks, judging by related species; food, largely of vegetable origin, including seeds, berries, mushrooms, and roots; enemies, hawks, owls, larger predators, including foxes, bears, and man.

Distribution in Yukon. Probably occurs throughout, in suitable habitats.

General. The ground squirrel lives in the open parkland country of southwest Yukon, on alpine meadows above timber-line, and on the Arctic tundra and into the edge of the forest. Where the animals are common they become very bold about camps, coming into tents in search of food. The little well-worn trails that lead from burrow to burrow are conspicuous features where the animals are numerous. Their call is a bird-like chirp repeated a number of times, and when alarmed the animals sit up at the entrance to their burrow, chirping loudly and rapidly twitching their tails.

Their flesh is said to be better than that of the hoary marmot, and their hides, although of no commercial value, are used for robes and parkas.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 29-31; orig. descr., occurrence and habits, Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 54, 55, 77, 78; occurrence, habits, Ogilvie Mountains and Macmillan area.
 Williams, 1925: Can. Field-Nat., vol. 39, p. 71; occurrence, Carmacks and Black River.
 Swarth, 1936: Jour. Mammal., 17, 402; occurrence, emerge from hibernation in April, Atlin, B.C.
 Howell, 1938: No. Amer. Fauna, 56; review.
 Clarke, 1944: MS., southwest Yukon.

Least Chipmunk. Eutamias minimus (Bachman)

Diagnosis. Size, length 216.8 mm. (8.5 in.); tail 95 mm. (3.75 in.); hind foot 33.6 mm. (1.3 in.) (av. five, Bennett, Howell); a small chipmunk with a rather long tail; colour, crown grizzled grey; a dark and a light stripe over eye and a dark line through eye; a pale and a dark line below eye; a blackish spine stripe and a pair of dark lateral stripes separated by two pairs of pale lateral stripes (i.e., five dark stripes in all, on back); sides yellowish or

reddish brown; rump grizzled greyish; underparts whitish; tail above blackish, the hairs tipped yellow; tail below yellow to rusty, sub-margined with black and fringed yellowish.

Subspecies. Only one occurs in Yukon, Yukon chipmunk, *E. m. caniceps* Osgood.

Distribution in Yukon. From the southern border north to Macmillan River area and Fort Selkirk.

Life History. Hibernates; largely terrestrial; makes burrows; stores food; four to six young born in spring; food, chiefly seeds, fruit; enemies, probably all the carnivorous mammals from weasels upward in size, and hawks and owls.



Figure 11. Least chipmunk.

General. Chipmunks appear to be nowhere very common in Yukon. They frequent more open country, aspen lands, river banks, and flood plains and openings in the forest, and wander to just above timber-line. They are extremely attractive little creatures and are often very tame.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 28, 29; orig. descr., occurrence, Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, p. 77; occurrence, Macmillan River.
 Swarth, 1936: Jour. Mammal., 17, p. 402; habitat, emerge from hibernation early March, Atlin, B.C.
 Clarke, 1944: MS., occurrence; southwest Yukon.
 Howell, 1929: No. Amer. Fauna, No. 52; revision.

Red Squirrel. *Tamiasciurus hudsonicus* (Erxleben)

Diagnosis. Size, length about 330 mm. (13 in.); tail 137 mm. (5.4 in.); hind foot 50 mm. (2 in.); a medium-sized squirrel with

a bushy, flattened tail; colour, summer, above grizzled reddish brown; below whitish, with a black stripe along each flank; tail bright reddish above, reddish olive below, sub-margined with black and fringed with yellowish white; in winter, back much redder, black flank stripes lacking, and fur much longer.

Subspecies. Three occur in the area:

Preble red squirrel, *T. h. preblei* Howell, total length 331.8 mm. (13 in.); tail 137.8 mm. (5.4 in.); hind foot 50.5 mm. (2 in.) (av. 10, Mackenzie Valley, Howell, 1936); range over Yukon south to Lake Laberge and Canol Road.

British Columbia red squirrel, *T. h. columbensis* Howell, about the size of *T. h. preblei*, but tail shorter and colour darker in winter; occurs in south-central Yukon north to Lake Laberge.

St. Elias red squirrel, *T. h. petulans* Osgood, a large dark form from southwest Yukon.

Distribution in Yukon. Probably over all the timbered country; recorded north to Ogilvie Mountains and Macmillan River area.

Life History. Arboreal and terrestrial; does not hibernate, but becomes inactive in severe weather; about two to six young born in spring after a gestation period of probably about 6 weeks; food, the most important is the seeds of conifers; also feeds on buds, fruits, and fungi; and though it probably gets little meat naturally, it will eat frozen meat readily; stores food; enemies, probably few of importance except man, and that only recently. Fluctuates in numbers from year to year.

General. The red squirrel is the most conspicuous animal of the forest. Its middens—flat heaps of the scales of pine and spruce cones, relics of former meals and places to store future ones—may cover yards of the forest floor; its globular nests are held amongst spruce twigs, and the animal itself may come to the end of a branch to inspect the intruder into its territory. Closer and closer it comes, scolding and barking, until suddenly, as though frightened at its own boldness, it scampers away up the tree, to repeat the performance.

When camp is set up squirrels come to investigate and to carry off bits of bread and bacon, and soon become tame and regular visitors if not frightened away. About cabins they may become pests, pulling the chinking from between the logs, and raiding food stores.

Trappers used to consider them a nuisance, as they come readily to meat baits, and sacrifice their lives to their appetites. But recently they have come to have a value on the fur market. In the Ross River area trappers were receiving 25 to 50 cents apiece for their pelts in 1943-44. However, Mr. Drury told the author that many Indians

consider it beneath their dignity to trap squirrels, and leave them to women and children. There are no official returns available as to the squirrel catches from Yukon.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 26, 27; occurrence, nests, storage, Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 54-77; occurrence, Ogilvie Mountains and Macmillan River.
 Hatt, 1929: Roosevelt Wild Life Annals, 2, (1); habits.
 Swarth, 1936: Jour. Mammal., 17, p. 402; slight fluctuations, Atlin, B.C.
 Howell, 1936: Proc. Biol. Soc. Wash., 49, pp. 133-136; orig. descr. of two forms occurring in Yukon.

Flying Squirrel. *Glaucomys sabrinus* (Shaw).

Diagnosis. Size, length 365 mm. (14.4 in.); tail 180 mm. (7 in.); hind foot 41 mm. (1.6 in.) (Yukon race, orig. descr.); about the size of the red squirrel; gliding membranes extending from wrist to ankle. Tail, wide and flat; eyes large; fur long, fine, and soft; colour above "pinkish cinnamon" with slaty under fur showing through when fur disarranged; below, whitish, tinged "pinkish cinnamon".

Subspecies. Few specimens are known from Yukon; one race is known to occur, and another may occur.

Yukon flying squirrel, *G. s. yukonensis* Osgood, to which the above description and measurements apply, has been recorded from Camp Davidson (near Alaska boundary), Fortymile, and Mayo Lake (Howell, 1918), Lapie River (Rand, MS.), and Frances Lake (specimen Manitoba Mus.), and probably occurs over most of central Yukon.

Richardson flying squirrel, *G. s. alpinus* (Richardson), has been recorded from Atlin (Swarth) and the Liard Valley (Rand, 1944), and may be expected in southern Yukon. It has a shorter tail and more greyish underparts than the above race.

Distribution in Yukon. Probably a fairly common species in all the heavier spruce timber.

Life History. Arboreal and gliding habits, active throughout year; young, three to six in number, born in spring after a gestation period of probably about a month; food, largely seeds, with a pronounced fondness for meat; store some food; enemies probably include weasels, marten, and owls.

General. This is an animal of the night, and of the heavy spruce forests along the streams. Even when twilight lingers until nearly midnight these squirrels wait for the darkness before venturing abroad. They do not really fly, but, spreading their limbs and stretching their gliding

membranes to form a flat, gliding surface with their body, they sail down from one tree to turn up quickly at the end of the glide to light on the trunk of another.

Though seldom seen by naturalists, trappers speak of them as commonly caught in traps set for fur bearers, and they seem to have a special liking for the meat baits. They are also accused of nibbling the fur off marten held in traps.

Chief References

- Osgood, 1900: No. Amer. Fauna, 19, pp. 25, 26; orig. descr.
 Howell, 1918: No. Amer. Fauna, 44; revision, Yukon records.
 Swarth, 1936: Jour. Mammal., 17, p. 402; Atlin, B.C.
 Rand, 1944: Nat. Mus., Canada, Bull. 98, p. 42; Liard Valley, B.C.

FAMILY—CASTORIDAE. BEAVERS

There are only two species in this family, one in the old world and one in the new.

Beavers are the second largest rodents in existence, the largest in North America, and are surpassed in size only by the South American Capybara.

Beaver. *Castor canadensis* Kuhl

Diagnosis. Length 1,016-1,143 mm. (40-45 in.); tail 304-380 mm. (12-15 in.); weight up to 60 pounds, rarely more; tail large, flattened, and scaly; hind feet large, webbed, and with a cleft claw on the second toe; colour of fur, dark brown.

Subspecies. *Castor canadensis belugae* Taylor is the one recorded.

Distribution in Yukon. From the southern boundary north to the Porcupine River drainage at least.

Life History. Largely aquatic; builds dams and houses; one to eight young born in spring after a gestation period of 94 to 128 days; food, bark of trees, aspen and willow being favourites, and herbaceous vegetation; stores food under water for winter; chief enemy, man.

General. Though beaver streams ideally seem to be those with wooded margins where aspen is available, many beavers live beyond timber-line in the mountains where shrubs and herbaceous vegetation supply material for their dams, houses, and food.

Summer is the beaver's busy time. In winter, with the streams ice-bound, it can rest quietly in its house until hunger dictates a trip to its underwater stores of food.

Beaver are one of the most important fur animals of Yukon. Due to their settled habits, with a house and dam to keep in repair, they are easily extirpated. They also respond readily to management, and trappers with an interest in their trap-lines have been able to reap an annual harvest without depleting the supply.



Figure 12. Beaver.

The Yukon beaver crop in the 1924-42 period has varied in annual value from \$15,157 (1933-34) (once down to \$163, in 1930-31) to \$99,432 (1941-42); the average annual value per skin varied from \$6.84 (1933-34) to \$29.25 in 1928-29. The number of pelts taken in this period are:

Year	No. of pelts	Year	No. of pelts
1923-24	2,581	1933-34	2,216
1924-25	2,792	1934-35	3,171
1925-26	3,570	1935-36	2,237
1926-27	2,185	1936-37	1,616
1927-28	2,955	1937-38	3,786
1928-29	1,746	1938-39	2,971
1929-30	2,774	1939-40	3,411
1930-31	11	1940-41	3,620
1931-32	3,296	1941-42	3,845
1932-33	3,174		

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, p. 32; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 78, 79; occurrence, habits, Macmillan River.
 Williams, 1925: Can. Field-Nat., 39, p. 71; common on Kandik River.
 Warren, 1927: The Beaver, etc.; habits.
 Anderson, 1934: Proc. Fifth Pacific Sci. Congress, p. 4074; maps *belugae* ranging over most of Yukon.
 Dom. Bur. Statistics, 1924-42: mimeograph releases on fur yields.
 Clarke, 1944: MS., increasing in Yukon; rare or absent in southwest part.

FAMILY—MURIDAE. RATS AND MICE

This is a huge family, of nearly world wide distribution.

Subfamily—Cricetinae. Wood Mice, Wood Rats, and Their Allies

Two representatives occur in Yukon; distinguishable from voles by their large ears and large eyes, and tail nearly as long as body.

Wood Mouse. *Persomys maniculatus* (Wagner)

Diagnosis. Length 160-192 mm. (6.25-7.6 in.); tail 71-94 mm. (2.8-3.7 in.); hind foot 20-22.5 mm.; colour, adult, above greyish brown, below whitish; young more bluish grey; typically mouse-like in shape, with a lightly haired tail.



Figure 13. Wood mouse.

Subspecies. Two occur:

Northwest wood mouse, *P. m. algidus* Osgood, occurs from Lake

Bennett to Lower Lewes River; size, total length 192 mm. (6.25 in.); tail 94 mm. (3.7 in.); hind foot 22.5 (Osgood, orig. descr.).

Northern wood mouse, *P. m. borealis* Mearns, a more dusky, shorter tailed form (measurements, length 160 mm. (6.25 in.); tail 71 mm. (2.8 in.); hind foot 20 mm. (Osgood, 1909, p. 49), occupying the rest of the area.

Distribution in Yukon. From the southern border north to Macmillan River and west to Lake Bennett and Rink Rapids, probably Atlin; accidental, man carried, at Herschel Island.

Life History. Usually a forest or rock loving animal; lives on the ground, but climbs well; active through winter; about five young born after a gestation period of probably 23 days, as in a related form; food, chiefly seeds, some insects; enemies, hawks, owls, and most carnivores, none of which exerts a controlling influence.

General. As dusk falls the wood mouse becomes active, foraging widely through forest and glade. Agile and restless, this big-eyed, big-eared little creature does not follow runways, as do so many of its northern neighbours, but wanders at random, crossing and recrossing its tracks as fancy dictates.

Chief References

- Osgood, 1900: No. Amer. Fauna, 19, p. 33; occur. Yukon River.
 Osgood, 1909: No. Amer. Fauna, 28; revision, Yukon records.
 Osgood, 1909: No. Amer. Fauna, 30, p. 77; Macmillan area.
 Swarth, 1936: Jour. Mammal., 17, p. 402; Atlin, B.C.
 Anderson, 1937: in "Canada's Western Northland," p. 110; Herschel Island record.
 Hamilton, 1941: Jour. Mammal., 21, pp. 250-263; food habits.
 Kenneth, 1943: Gestation Periods.
 Clarke, 1944: MS., none taken in Kluane area.

Bushy-tailed Wood Rat; Pack Rat. *Neotoma cinerea* (Ord)

Diagnosis. Size, length 407 mm. (16 in.); tail 170 mm. (6.7 in.); hind foot 46 mm. (1.8 in.) (a Yukon male). A big-eared, bushy tailed rat with very long, conspicuous whiskers; colour, above, greyish fawn mixed with black; less black and brighter fawn on the sides; underparts and feet white; eyelids black; tail grey above, white below.

Subspecies. One occurs: Osgood bushy-tailed wood rat, *N. c. sazamans* Osgood.

Distribution in Yukon. Probably southern Yukon, north to Pelly River and Teslin.

Life History. Active throughout year; two to four young born in spring after a gestation period of probably about 30 days, judging by related forms; food, green vegetation and mixed seeds in summer, in winter live on stores of "hay" that they make of leaves and stems of grasses and herbs.

General. On Lapie River the wood rat was found in the crevices of rocky outcrops where stick nests, old stores of vegetation, and their characteristic musky odour indicated their presence.



Figure 14. Wood rat.

They are largely nocturnal animals, but Osgood writes: "One night about 10.30 as I was returning to camp at Bennett [north B.C.] I saw one of these rats frisking about in the rocks. It was still quite light and I immediately stopped and stood motionless while it darted in and out of the rocks. Its movements were utterly noiseless, and so rapid my eye could scarcely follow them. For some time his little whiskery nose appeared and disappeared at various openings in the rocks about ten feet away. Each time he would look steadily at me for a moment or two, then silently vanish. Gradually his curiosity overcame his caution and in decreasing circles he came nearer and nearer until he bobbed out right before me, and then cautiously approached until he could snuff at the toe of my shoe. A slight grating of my gun barrel against a rock caused him to vanish like a flash, and this time he did not reappear."

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 33, 34; orig. descr., habits.
 Goldman, 1910: No. Amer. Fauna, No. 31, p. 9; revision.
 Swarth, 1936: Jour. Mammal., 17, p. 403; occurrence, Atlin, B.C.
 Clarke, 1944: MS., reports possible occurrence in Kluane area.

Subfamily—Microtinae Lemmings and Voles

This very large group of rodents is well represented in both the old world and the new.

Ten forms are known to occur in Yukon. They are all similar in shape, being stout-bodied, short-legged animals with bulky heads; tail usually short, not more than half the length of the body (though in the muskrat it is about as long as the body); ears well developed but short, about as long as the fur (except in the collared lemming that has practically no external ear); eyes small; colours usually grizzled brownish, greyish, yellowish, or blackish, but one has a chestnut-red back (red-backed mouse), and one turns white in winter (collared lemming). The muskrat, about 430 mm. (17 in.) long, is the largest, the others are all under about 220 mm. (9 in.) in length.

The muskrat is adapted for an aquatic life, the others are terrestrial and burrowing animals. Their food is vegetable, chiefly of grasses, sedges, herbs, and to a lesser extent seeds and some insects, and many will eat flesh. They are active throughout the year, and some store roots as food.

Many of this group are important as food for carnivorous animals. There are violent fluctuations in the numbers of these rodents—some years they are very abundant, other years scarce—and these fluctuations may have a bearing on the populations of fur animals. Besides carnivorous mammals, their enemies include hawks, owls, ravens, gulls, and jaegers.

They are prolific animals, usually bearing more than one litter of young a year. The young are born blind, naked, and helpless, in a nest, but they mature quickly and in some species at least it is known that they breed and bear young the year of their birth.

Some of the smaller members of this group are very similar externally, though they may have very definite, clear-cut, anatomical differences. For positive identification it is sometimes necessary to use tooth and skull characters, and where necessary these have been incorporated into the diagnosis. In cases of doubtful identification, the specimens should be forwarded to the Division of Biology, National Museum of Canada, Ottawa, to have the identification checked.

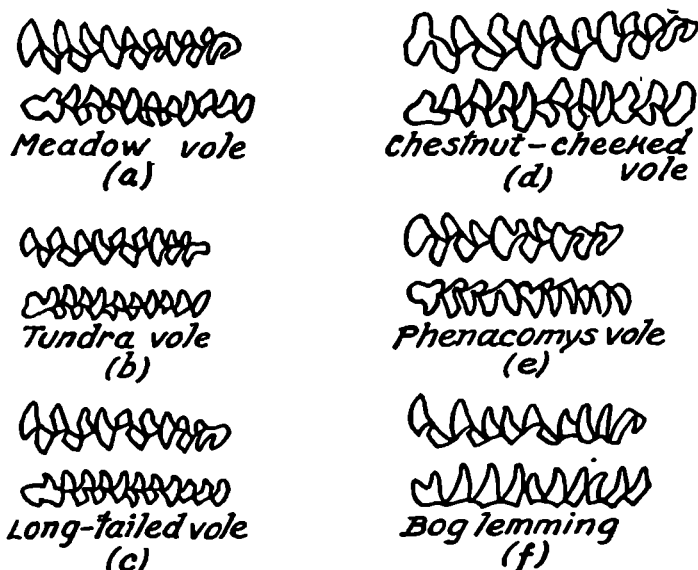


Figure 15. Enamel patterns of molar teeth of various voles and lemmings. The upper diagram of each pair is that of the upper jaw; the lower diagram is that of the lower.

- (a) Meadow vole; note posterior loop on 2nd upper molar.
- (b) Tundra vole; note only four closed triangles on 1st lower molar.
- (c) Long-tailed vole; like a meadow vole, but lacks a posterior loop on 2nd upper molar.
- (d) Chestnut-cheeked vole; much like that of the meadow vole, but middle loop of posterior lower molar often divided.
- (e) Phenacomys vole; note the lower molars have much deeper folds (re-entrant angles) on the inner than on the outer side.
- (f) Bog lemming; note the deep folds (re-entrant angles) from one side of the tooth row, in both upper and lower tooth rows.

The following synopsis of the external characters of adults of Yukon forms is provided, as being more useful than a key. The measurements of adults vary at least 10 per cent. Juveniles may be much smaller, and pelage characters less defined:

Bog lemming: length 124 mm. (4.9 in.); tail 21 mm.; hind foot 19 mm.; tail about equals hind foot; above, grizzled dull brown; adult males with white flank spot; upper incisors grooved.

Brown lemming: length 159 mm. (6.25 in.); tail 23 mm.; hind foot 21 mm.; tail about equals hind foot; above, yellowish or tawny; nail on thumb strap-shaped.

- Collared lemming: length 139 mm. (5½ in.); tail 12 mm. (½ in.); hind foot 19 mm. (¾ in.); tail shorter than hind foot; above, summer, mixed red-brown, black, and grey; winter, white; external ear practically absent.
- Phenacomys vole: length 145 mm. (5·7 in.); tail 31 mm.; hind foot 18 mm.; tail about twice length of hind foot; above, grizzled yellowish brown, brighter on rump.
- Dawson red-backed vole: length 144 mm. (5·7 in.); tail 33 mm.; hind foot 18 mm.; tail about twice length of hind foot; back bright chestnut-red.
- Meadow vole: length 160 mm. (6·3 in.); tail 45 mm.; hind foot 20 mm.; tail about twice length of hind foot; colour dull grizzled brown.
- Long-tailed vole: length 189 mm. (7·5 in.); tail 74 mm.; hind foot 21 mm.; tail about three times length of hind foot; colour grizzled greyish brown.
- Tundra vole: length 162 mm. (6·4 in.); tail 40 mm.; hind foot 18·5 mm.; tail about twice length of hind foot; above, grizzled yellowish brown; below tinged tawny.
- Chestnut-cheeked vole: length 210 mm. (8·25 in.); tail 50 mm.; hind foot 27 mm.; tail about twice length of hind foot; above, dull grizzled brown; chestnut patches each side of nose.
- Muskrat: length 530 mm. (20·9 in.); tail 232 mm. (9 in.); hind foot 74·5 mm. (2·9 in.); tail nearly as long as body, flattened laterally; colour brownish black; hind feet large, webbed.

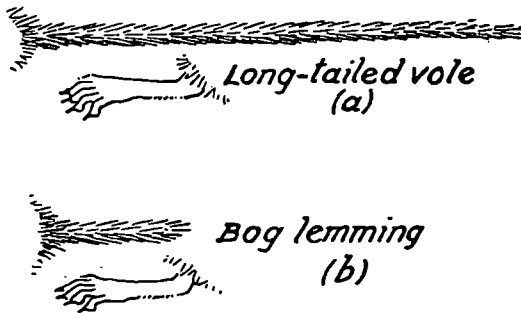


Figure 16. Tail and hind feet of:
 (a) Long-tailed vole, showing tail about three times length of hind foot.
 (b) Bog lemming, showing tail about as long as hind foot.

Northern Bog Lemming. *Synaptomys borealis* (Richardson)

Diagnosis. Size, length 124 mm. (4·9 in.); tail 21 mm.; hind foot 19 mm.; colour, dark grizzled brownish above, greyish below;

old males with whitish spot on each flank, marking site of a skin gland. The best external character for distinguishing this form is the length of the tail, which is about as long as is the hind foot, or slightly longer. The teeth show distinctive characters. The upper incisors are grooved; the angular pattern of the molars is peculiar; in the upper molars the re-entrant angles are very deep on the outer or cheek side of the teeth; in the lower jaw they are very deep on the inside or tongue side of the teeth, and are wedge-like in shape.

Subspecies. One occurs in Yukon: Dall's northern bog lemming, *S. b. dalli* Merriam.

Distribution in Yukon. From the southern border north at least to Ogilvie Mountains and Macmillan River.

Life History. Probably four to six young born in spring or summer; food, green vegetation, bulbs, and even insects (Howell, 1927, p. 2).

General. This is a rather scarce animal, found in grass and sedge areas in bogs and marshes where it makes runways, as do meadow voles.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, p. 37; taxonomy, occurrence, Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 56, 79; Ogilvie Mountains and Macmillan River.
 Howell, 1927: No. Amer. Fauna, No. 50, pp. 24, 25; taxonomy, Yukon records.
 Clarke, 1944: MS., occurrence, southwest Yukon.

Brown Lemming. *Lemmus trimucronatus* Richardson

Diagnosis. Length 149-159 mm. (5.9-6.25 in.); tail 22-23 mm.; hind foot 19-21 mm.; a stout-bodied animal, with tail little longer than hind foot; ears normal; nail on thumb flat and strap-shaped; colour varies with the season and subspecies; upper back, tawny brown lined with black; rump, tawny to dark chestnut; sides, light ochraceous to fuscous; underparts, buffy; does not turn white in winter.

Subspecies. Two occur in Yukon:

Alaska brown lemming, *L. t. alascensis* Merriam (Yukon Lemming, *L. yukonensis*, is a synonym); ranging in north Yukon south to Ogilvie Mountains; length 149 mm.; tail 22.3 mm.; hind foot 19.3 mm. (Davis, 1944, p. 24, average of fourteen specimens).

Mountain brown lemming, *L. t. helvolus* (Richardson), similar to the above, but colours brighter, more intense; upperparts heavily suffused with ochraceous. Occurs in southern Yukon, north to Teslin Lake and Tantalus (Davis, 1944, p. 22). Total length 159 mm.; tail 23 mm.; hind foot 21 mm. (Davis, 1944, p. 24, average of three specimens).

Distribution in Yukon. Apparently occurs locally throughout the area, recorded from Teslin Lake to Herschel Island.

Life History. Three to nine young born at any time during the year in a nest of grass; food probably chiefly grasses, sedges, and herbs.

General. This is the new world representative of the European lemming that takes part in immense mass migrations, some of which apparently go into the sea, where the animals concerned perish.

As well as living on the Arctic tundra, where it makes runways through the vegetation, Osgood found this lemming along the Yukon about old logs and among dry leaves in places where red-backed mice are usually found, and in *Microtus* runways under brush heaps and in sphagnum swamps.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 37, 38; occurrence, Yukon River.
 Preble, 1908: No. Amer. Fauna, No. 27, p. 182; Herschel Island records.
 Osgood, 1909: No. Amer. Fauna, No. 30, p. 80; occurrence, Macmillan River.
 Sutton and Hamilton, 1932: Mem. Carnegie Mus., 12, pt. 2; habits.
 Anderson, 1937: in *Canada's Western Northland*, p. 110; occur.; Herschel Island record.
 Davis, 1944: *Murrelet*, 25, pp. 19-25; revision.

Collared Lemming; Fork-Clawed Lemming; White Lemming.

Dicrostonyx groenlandicus (Traill)

Diagnosis. Length, 139 mm. (5½ in.); tail 12 mm. (½ in.); hind foot 19 mm. (¾ in.); a very stout-bodied animal with tail shorter than hind foot; external ear absent, or a mere rudiment; soles of feet densely haired; claws not peculiar in summer, but in winter two central claws on fore feet develop long horny processes, which are shed in the spring, and are unlike those of any other vole. Colour, winter, white all over; summer, above, mixed red-brown, grey, and black, brightest red on shoulders and flanks; underparts greyish, strongly washed red-brown.

Subspecies. The Yukon form is Alaska collared lemming, *D. g. rubricatus* (Richardson) (Anderson, 1937, p. 110).

Distribution in Yukon. The north coast, recorded from Herschel Island.

Life History. Two to eight young born any time of year in a nest of grass, in the soil in summer, in a snowbank in winter (Southampton Island); food, green vegetation, moss, lichens, willow twigs.

General. The collared lemming makes burrows in the soil, and runways through the vegetation in the summer; in winter it tunnels through the snow. At times it is extremely abundant, providing food for many of the Arctic predators; at other times it is very scarce. These periods of abundance and scarcity recur in about 4-year cycles, and this seems to correspond with fluctuations in white fox numbers.



Figure 17. Collared lemming.

Chief References

- Sutton and Hamilton, 1932: Mem. Carnegie Mus., 12, pt. 2; habits.
 Anderson, 1937: in Canada's Western Northland; occurrence, fluctuations.
 Elton, 1942: Voles, Mice, and Lemmings; fluctuations.
 Stone, 1900: Bull. Amer. Mus., 13, pp. 31-62; Herschel Island.

Phenacomys Vole. *Phenacomys intermedius* Merriam

Diagnosis. A small vole, length 145 mm. (5.7 in.); tail 31 mm.; hind foot 18 mm. (Yukon specimen); similar externally to some other voles; tail about twice the length of hind foot; colour above grizzled yellowish brown, brighter on rump; feet and underparts greyish; it recalls a red-backed vole without the red back rather than voles of the genus *Microtus*. The tundra vole is also yellowish,

but is larger. Internally it is sharply set off by several characters, including the angular pattern of the molars, in which the lower molars have the interior loops much longer than the external loops, so that the pattern looks almost comb-like.

Subspecies. Mackenzie phenacomys vole, *P. i. mackenzie* Preble, is the form that occurs.

Distribution in Yukon. Rand's specimens from the Canol Road in 1944 are the first that have been taken in Yukon; hitherto known from Mackenzie, Alberta, and British Columbia.

Life History. Four to six young are born in spring or summer, perhaps more than one litter a year; food mainly low green vegetation, bark, leaves, twigs, and seeds.

General. These voles are rare and not well known. They burrow in the ground and hide under cover of grass, heather, and old logs, and are rarely seen alive. Their nests are made of fine dry grass, thick walled and clean, with warm central cavities (Bailey, 1936, p. 201).

Chief References

- Bailey, 1936: No. Amer. Fauna, No. 55, p. 201; habits.
 Anderson, 1942: Can. Field-Nat., 56, pp. 56-60; list of Canadian forms.
 Crowe, 1943: Bull. Amer. Mus. Nat. Hist., 80, p. 403; shows *mackenzie* is a race of *intermedius*.

Dawson Red-Backed Vole. *Cleithronomys dawsoni* Merriam

Diagnosis. Length 144 mm. (5.7 in.); tail 33 mm.; hind foot 18 mm. (a Yukon adult); colour, above, bright chestnut-red; sides buffy; underparts greyish; the striking colour of this species is distinctive.

Subspecies. The form that occurs is Dawson red-backed vole, *C. d. dawsoni* Merriam.

Distribution in Yukon. From the southern border north to La Pierre House.

Life History. Several broods, each of about five young, born during the spring and summer; food, green vegetation and seeds.

General. This is one of the commonest voles of Yukon, living in the forest and into the edge of treeless country. Though largely terrestrial, they occasionally climb into trees. They are most active at night, but also are often very much about over the forest floor by day. As Osgood says, they are the vermin of the miner's larder, and frequently make a nuisance of themselves in cabins.

Chief References

- Coues, 1877: Monog., No. Amer. Rodent, p. 139; La Pierre House record.

Osgood, 1900: No. Amer. Fauna, No. 19, p. 34; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 55, 79; Ogilvie Mountains and Macmillan River.
 Clarke, 1944: MS., occurrence, southwest Yukon.

Meadow Vole. *Microtus pennsylvanicus* (Ord)

Diagnosis. Adults up to about length 160 mm. (6.3 in.); tail 45 mm.; hind foot 20 mm.; colour, above grizzled brown; below greyish. This dull brown vole with tail about twice the length of the hind foot has a trenchant character in the enamel pattern of its molars; the second upper molar has a pattern of four closed triangles and a posterior loop, this last being lacking in related forms.

Subspecies. The form that occurs is Drummond meadow vole, *M. p. drummondi* (Audubon and Bachman).

Distribution in Yukon. Probably north to limit of trees; not recorded north of Ogilvie Mountains and Macmillan Range.

Life History. Four to eight young born after a gestation period of about 20 days, in a nest of grass on the ground, or under some sheltering object; food, succulent vegetation, seeds, and some insects.



Figure 18. Meadow vole.

General. This is one of the important species in the chain of turning grass into flesh, so that our carnivores can use it. The meadow vole is sometimes very abundant. In northeastern United States, populations of 300 per acre are said to be not unusual, but like the rabbits their numbers wax and wane. In this species the rhythm approaches a 4-year cycle.

Meadow voles are adaptable in their choice of homes, and a few even live in the deep forest, but meadows with

dense grass is where they thrive best and where they are common. Evidence of their occurrence in the shape of runways, little piles of droppings, and cut-up lengths of grass can be seen easily by separating the grass. Protected by their grassy covering, they are less nocturnal, and run about day or night; Osgood found them even more active by day along Yukon River.

At higher altitudes in the mountains, and probably in the far north, this species is replaced by the tundra mouse, *Microtus operarius*.

Chief References

- Bailey, 1900: No. Amer. Fauna, No. 17, pp. 22, 23; revision, Yukon localities.
 Osgood, 1900: No. Amer. Fauna, No. 19, pp. 35, 36; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 55, 79; Ogilvie Mountains and Macmillan River.
 Bailey, 1924: Jour. Agri. Research, 27, pp. 523-535; biology.
 Hamilton, 1940: Scientific Monthly, 50, pp. 425-434; biology.
 Rand, 1943: Can. Field-Nat., 57, pp. 115-123; revision.
 Clarke, 1944: MS., abundant in July 1943 in southwest Yukon.

Tundra Vole. *Microtus operarius* (Nelson)

Diagnosis. Length 162 mm. (6.4 in.); tail 40 mm.; hind foot 18.5 mm.; colour, above yellowish brown; below greyish washed with buffy or ochraceous; the tail about twice the length of hind foot. The size, the yellowish colour above, and the yellowish tinge to the belly give good clues to identity; the tooth characters are trenchant: there is no posterior loop on the second upper molar, and the first lower molar has four closed triangles.

Subspecies. One occurs: Macfarlane tundra mouse, *M. o. macfarlanei* Merriam. (*M. o. endoecus* is a synonym.)

Distribution in Yukon. Recorded from La Pierre House and Firth River south to Ogilvie Mountains and Canol Road.

Life History. Probably about as with *M. pennsylvanicus*; two or more litters of about six young born during warmer months; food, low succulent vegetation.

General. The tundra vole appears to replace the meadow vole at higher altitudes in the mountains, and probably in the far north also. In the alpine meadows the runways and the little heaps of cut grass made by this species are very similar to those of the meadow vole; in some places their burrows, with little heaps of dirt at the entrances, are conspicuous, and in other places where they have been foraging for roots to store for winter the turf is riddled with little holes.

Chief References

- Bailey, 1900: No. Amer. Fauna, No. 17; revision.
 Osgood, 1900: No. Amer. Fauna, No. 19, p. 23; description of *M. o. endoecus*.
 Osgood, 1909: No. Amer. Fauna, No. 30, p. 55; Ogilvie Mountains, very abundant at high altitudes, may occur lower.
 Anderson, 1937: in "Canada's Western Northland," p. 112; Yukon localities; synonymizes *endoecus* with *macfarlandi*.
 Rand, 1944: MS., Canol Road.

[The record of Clarke of "Singing Mouse", *Microtus* (*Stenocranius*) sp., in MS. 1944, for the alplands of the St. Elias area and the mossy forest near timber-line, seems to indicate that some form of the *Microtus abbreviatus* group occurs there. Two species of this group that might be expected in Yukon occur in Alaska:

Microtus miurus Osgood, ranging east of Toklat River, and

Microtus muriei Nelson, from Endicott Mountains.

Another new species of this group was found by Rand in 1944 in the Mackenzie Mountains of the Northwest Territories.

These meadow voles have a short tail, only about the length of the hind foot, or slightly longer; their size is small, up to about 140-150 mm. (5.5-6 in.) long; their colour is yellowish brown or very grey; the skull is very flat and slender, with the enamel pattern of the molar teeth similar to that of the long-tailed vole, *M. longicaudus*, but with a strong tendency for two instead of three loops on the last upper molar.

New species or subspecies of this group are to be expected in Yukon mountains. Of those in the St. Elias area, Clarke writes that they had the peculiar habit of coming frequently to an entrance of a runway system, and singing.]

Long-tailed Vole. *Microtus longicaudus* (Merriam)

Diagnosis. Length 170, 189 mm. (6.7-7.5 in.); tail 63, 74 mm.; hind foot 20, 21 mm. (Atlin males); colour, greyish brown above, grey below. The grey colour and the tail, about three times the length of the hind foot, are the best clues to the identity of this species. The enamel pattern of the teeth is much as in *M. pennsylvanicus*, but the second upper molar lacks a posterior loop.

Subspecies. One occurs in Yukon: northern long-tailed vole, *M. l. vellerosus* Allen.

Distribution in Yukon. Recorded north to Rink Rapids and Canol Road.

Life History. Several litters of three to six young are born during the warmer months; food, green vegetation, roots, and bark of shrubs and trees.

General. This species appears to be a typical meadow vole in habits, but in Yukon it seems to prefer dry habitats.

Chief References

- Bailey, 1900: No. Amer. Fauna, No. 17; revision.
 Osgood, 1900: No. Amer. Fauna, No. 19, p. 35; Yukon River.
 Swarth, 1936: Jour. Mammal., 17, p. 403; habits, Atlin, B.C.
 Anderson and Rand, 1944: Can. Field-Nat., 53, pp. 19-21; review of species in Canada.
 Rand, 1944: MS., Canol Road.

Chestnut-cheeked Vole. *Microtus xanthognathus* (Leach)

Diagnosis. Length 210 mm. (8.25 in.); tail 50 mm.; hind foot 27 mm. (Bailey); colour, above dark grizzled brown and black, below grey; side of nose and ear patch bright rusty yellow or chestnut. Enamel pattern much as in *M. longicaudus* (See Figure 15d). The chestnut-coloured nose patches are unique in Yukon mammals.

Subspecies. None recognized.

Distribution in Yukon. Recorded from near Bern Creek (near Black River) and La Pierre House.

Life History. As many as eleven embryos have been reported in a pregnant female; food, probably succulent vegetation and bark; Preble records horsetail (*Equisetum*) stems as a favourite food.

General. The distribution of the chestnut-cheeked vole seems to be local, and their numbers seem to fluctuate violently. Naturalists have found large colonies of many animals, with runways and burrows much in evidence, and later collectors have been unable to find a single specimen. In the National Museum of Canada we have only two specimens.

Chief References

- Bailey, 1900: No. Amer. Fauna, No. 17; review, La Pierre House record.
 Preble, 1908: No. Amer. Fauna, No. 27; occurrence and habits, Mackenzie area.
 Williams, 1925: Can. Field-Nat., 39, p. 71; Yukon record.
 Anderson, 1937: in "Canada's Western Northland", p. 113; occurrence.

Muskrat. *Ondatra zibethica* (Linnaeus)

Diagnosis. Length 530 mm. (20.9 in.); tail 232 mm. (9 in.); hind foot 74.5 (2.9 in.) (Hollister); meadow mouse-like in shape,

but with big, webbed hind feet and a laterally flattened tail that is nearly as long as the body; colour, above dark brownish black, cheeks paler; underparts grey, tinged brownish.

Subspecies. One occurs: northwestern muskrat, *O. z. spatulata* Osgood.

Distribution in Yukon. Recorded from the southern border north to near Tent Island; Anderson's map (1934, p. 4075) omits the extreme northwest part of the Yukon, about Firth River, from the range of the species.

Life History. In more southern latitudes two or three litters of about six each are born after a gestation period of 21 days, in a nest in a house or hole in the bank; food, a wide variety of aquatic and water-side plants, including grasses, sedges, and herbs; enemies, mink, otter, hawks, owls, and, most important, man.



Figure 19. Muskrat.

General. Marshes, where vegetation is abundant, is where muskrats thrive, but a few live in the banks of streams with little marsh. In summer, when the days are long, muskrats move about in full daylight, as late as 10 or 11 o'clock in the morning, and as early as 2 or 3 in the afternoon. Though largely aquatic animals, their trails overland through sedges and even forest, from one pond to another, are common.

In the period 1922-23 to 1941-42 the annual value of the muskrat take in Yukon varied from \$18,695 in 1931-32 to \$101,037 in 1941-42; the average annual value per pelt from 45 cents in 1931-32 to \$1.97 in 1941-42.

The annual yield was as follows:

Year	No. of pelts	Year	No. of pelts
1922-23	36,960	1932-33	34,902
1923-24	34,904	1933-34	30,386
1924-25	20,929	1934-35	24,471
1925-26	18,067	1935-36	25,337
1926-27	12,382	1936-37	34,419
1927-28	46,315	1937-38	48,445
1928-29	19,282	1938-39	62,385
1929-30	92,953	1939-40	63,880
1930-31	52,158	1940-41	55,332
1931-32	41,545	1941-42	51,288

Elton and Nicholson have given data to show that there is a cycle in Canadian muskrat populations of about 10 years in length, with recent peaks about 1912, 1921-22, 1928-33.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 36, 37; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 56, 79; Ogilvie Mountains and Macmillan River.
 Hollister, 1911: No. Amer. Fauna, No. 32; revision; Yukon records at Lake Marsh.
 Anderson, 1913: in Stefansson's "My Life with the Eskimo", p. 513; occurrence near Tent Island.
 Anderson, 1934: Proc. Fifth Pacific Science Congress, p. 4075; map of range.
 Elton and Nicholson, 1942: Jour. Animal Ecol., 11, pp. 96-126; fluctuation in Canada.
 Clarke, 1944: MS., occurrence southwest Yukon.
 McCann, 1944: Jour. Mammal., 25, pp. 59-63; reproduction in Minnesota.
 Dom. Bur. of Statistics: mimeographed releases on fur yields 1922-1942.

FAMILY—ZAPODIDAE. JUMPING MICE

This family is represented only in the United States, Canada, and China. Two species occur in Yukon. They are rather bright-coloured mice, with tails longer than head and body, and long hind legs; the upper incisors are grooved. The back is dark grizzled brown, the sides grizzled tawny, and the underparts white. They are terrestrial animals, running on all fours when at ease, but

taking leaps of several feet when alarmed. Their favourite habitat is grassy plains where they feed, particularly on grass seed; the young are born in a naked, helpless condition in a grass nest on the surface of the ground. The winter is spent in hibernation.

Meadow Jumping Mouse. *Zapus hudsonius* (Zimmermann)

Diagnosis. Length 225 mm. (8.8 in.); tail 132 mm. (5.2 in.); hind foot 31 mm. (1.2 in.) (Alaska specimen of Yukon race); colour, above, back grizzled brown, sharply contrasting with tawny sides; underparts creamy white; skull slender and light, with light molars and small incisive foramen.

Subspecies. One occurs in Yukon: northwest jumping mouse, *Z. h. alascensis* Merriam.



Figure 20. Jumping mouse.

Meadow jumping mouse



Figure 21. Skulls of the two species of jumping mice found in Yukon:

- (a) Meadow jumping mouse, a smaller, more slender skull, with smaller molar teeth and incisive foramen.
 (b) Rocky Mountain jumping mouse.



Rocky Mountain jumping mouse

Distribution in Yukon. Known only from Lake Laberge.

Life History. Hibernates; one or perhaps two litters of three to six young born in spring or summer; food, succulent grasses, fruits, seeds, and some insects.

General. Osgood, who made the Yukon records, found jumping mice in a sedgy swamp near the foot of Lake Laberge.

Chief References

Preble, 1899: No. Amer. Fauna, No. 15; revision.
Osgood, 1900: No. Amer. Fauna, No. 19, p. 38; occurrence.
Hamilton, 1935: Amer. Midl. Nat., 16, pp. 187-200; habits.

Rocky Mountain Jumping Mouse. *Zapus princeps* Allen

Diagnosis. Length 237 mm. (9.3 in.); tail 146 mm. (5.7 in.); hind foot 33 mm. (1.3 in.) (a Yukon specimen); colour, above, back grizzled brown, contrasting sharply with tawny sides, below, creamy white; skull large and heavy, with large molars and incisive foramen (See Figure 21); the large size is a clue to identification, but it must be checked by skull examinations.

Subspecies. One occurs in Yukon: Stickeen Rocky Mountain jumping mouse, *Z. p. saltator* Allen.

Distribution in Yukon. Known only from Rose River, on the Canol Road.

Life History. Hibernates; habits similar to those of other species (Bailey), i.e., probably one or more litters of three to six young born in the warmer months; food, herbage, seeds, fruit, and some insects.

General. The Rose River specimens were found in grassy areas in the valley bottom.

References

Preble, 1899: No. Amer. Fauna, No. 15; revision.
Bailey, 1936: No. Amer. Fauna, No. 55, p. 234; habits.
Rand, 1944: MS., Canol Road.

FAMILY—ERETHIZONTIDAE. AMERICAN PORCUPINES

This family has its headquarters in the new world tropics, and only a single species reaches Canada.

Porcupine. *Erethizon dorsatum* (Linnaeus)

Diagnosis. Male, length 860 mm. (33.8 in.); tail 260 mm. (10.2 in.); hind foot 120 mm. (4.7 in.) (Yukon specimen); weight probably 20 to 30 pounds; a stout-bodied rodent with short legs, strong claws, a short heavy tail, and a covering of coarse fur plentifully mixed with spines; colour, variable, spines usually white with black or brown tips; fur black or brownish, the long hairs of the back extensively tipped with rusty yellow, or this yellow may be almost lacking.

Subspecies. The Yukon form is: Alaska porcupine, *E. d. myops* Merriam.

Distribution in Yukon. Generally distributed north to the limit of trees; recorded from the southern border north to Firth River near Herschel Island; common some places, scarce in others.

Life History. Arboreal and terrestrial; active throughout year; one young (sometimes more?) born in spring or summer after a 16-weeks gestation period; new-born young covered with long, dense fur thickly interspersed with spines; food, bark of trees, and in summer green vegetation; enemies, fisher, wolf, bear, and man.

General. The porcupine is largely a forest animal, but also ranges above timber-line. It may spend days or even weeks in one tree or a group of trees in midwinter, but also has a liking for crevices in rocks, as dens. It is common locally, but rare in many places.

With its slow lumbering gait the porcupine would be an easy prey for carnivores, were it not for its prickly coat. Apparently a number of animals, notably the wolf, are able to overcome the armour of the porcupine, perhaps with the technique, described by Murie, that a husky dog used. It circled the porcupine, worrying it until an opportunity came to seize it by the nose. The dog kept its hold, then as the porcupine relaxed a deeper hold was taken that was usually fatal. The dog deftly turned the porcupine over on its back, while still grasping its head, and if it was still alive, quickly killed it. The killing was so skilfully done that the quills were usually avoided.

Its habit of entering camps and chewing up saddlery, ax handles, and other things makes it disliked; the fact that pack dogs and sledge dogs attack it and get their mouths filled with spines is often a still more serious reason for disliking it. Its flesh is used for food to a certain extent by Indians.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, p. 38; Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 56, 80; Ogilvie Mountains and Macmillan River.
 Anderson, 1913: in Stefansson's "My Life with the Eskimo", p. 514; occurrence, Firth River.
 Williams, 1925: Can. Field-Nat., 39, p. 71; Black River.
 Anderson and Rand, 1943: Can. Jour. Research, 21, pp. 292-309; revision.
 Clarke, 1944: MS., scarce in southwest Yukon.
 Murie, 1944: The Wolves of Mount McKinley, pp. 7, 58; dog's technique in killing porcupine.

ORDER—LAGOMORPHA. RABBITS AND THEIR ALLIES

The gnawing animals of this order have teeth much like those of rodents, but in the upper jaw there are four instead of two incisors.

Two families are represented in Yukon.

FAMILY—OCHOTONIDAE. PIKAS

The pikas, "conies", or rock rabbits, as they are variously called, are widely distributed in Asia and extreme eastern Europe. In the new world they are found only in western North America, in the mountains.

They are small, compact animals with short legs, broad rounded ears, no external tail.

Only one species occurs in Yukon.



Figure 22. Pika.

Collared Pika. *Ochotona collaris* Nelson

Diagnosis. Length 193 mm. (7.5 in.); hind foot 33 mm. (1.3 in.) (Yukon specimen); colour, above, grizzled greyish, with a brownish tinge in fresh pelage; below, whitish; whitish marks each side of neck give a collared appearance.

Subspecies. None recognized.

Distribution in Yukon. Recorded from St. Elias Mountains and Teslin Lake north to Ogilvie Mountains and Macmillan Pass.

Life History. A litter of about four young born in early summer, in a sheltered nest deep in the rocks; food, a wide variety of green vegetation; stores food; enemies, hawks, owls, carnivorous mammals.

General. In the mountains where talus slopes give great jumbles of rocks, with interstices providing labyrinths of passageways, and where nearby meadows and patches of vegetation provide food, is where the pika makes its home.

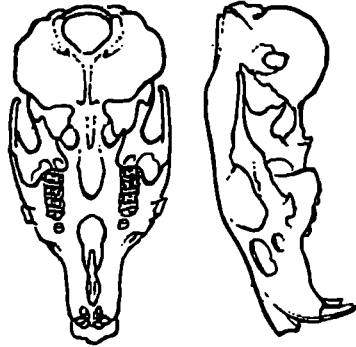


Figure 23. Skull of pika. It is rodent-like, but note the extra pair of incisors, non-functional, just behind the main pair, in upper jaw.

When venturing into its habitat, usually the first intimation of its presence is its little bleating call, given as the animal sits hunched up motionless on some boulder or from the depth of some rocky crevice into which it has retreated.

The soles of its feet are densely haired. Its gait is a half-hopping run, as it scampers over the rocky slopes.

By late summer the pika is actively engaged in collecting material for its winter store of food. Almost any of the herbs from the alpine meadows are gathered and stored in little "haystacks" on some dry rocky ledge, sheltered from above by protecting rocks. Presumably the animals are active throughout the winter under the snow, drawing on their "haystacks" for food.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 38, 39; occurrence southwest Yukon.
 Osgood, 1909: No. Amer. Fauna, No. 30, p. 56; Ogilvie Mountains.

Howell, 1924: No. Amer. Fauna, No. 47; revision; Yukon localities.
 Dixon, 1938: Birds and Mammals of Mount McKinley, etc., pp. 191-194; habits.
 Clarke, 1944: MS., occurrence southwest Yukon.
 Rand, 1944: MS., Canol Road.

FAMILY—LEPORIDAE. RABBITS AND HARES

Only hares are represented in northern Canada. The second pair of upper incisors are small and placed behind the larger pair. The young are born in a well-furred condition, and are soon able to move about. The upper grinding teeth of hares are farther apart than the lower teeth, so that in chewing they use a sidewise motion of their lower jaw.

Varying Hare; "Snowshoe Rabbit". *Lepus americanus* Erxleben

Diagnosis. Length 489 mm. (19.2 in.); tail 42 mm. (1.6 in.); hind foot 147 mm. (5.8 in.); ear 67 mm. (2.6 in.) (Nelson); weight probably about 3 to 4 pounds. A medium-sized hare with moderately long ears and legs; tail small; feet large and hairy, especially in winter; colour, in summer, grizzled dark greyish brown above, white below, with a buffy throat, ears black tipped; in winter, colour all white except for black-tipped ears; under fur greyish or dusky.

Subspecies. Only one occurs in Yukon: Macfarlane varying hare, *L. a. macfarlanei* Merriam.

Distribution in Yukon. From the southern boundary north to La Pierre House at least.

Life History. Turns white in winter; two or more litters of one to six young born in summer after a gestation period of 36 days; apparently no nest is prepared for them; food in summer, herbaceous vegetation, in winter, bark and twigs of both hard- and soft-wood trees; of enemies, the most important, probably, the lynx, fox, wolf, coyote, and great-horned owl; subject to great fluctuation over about a 10-year period, locally at least.

General. Willow thickets along streams are favourite habitats, but when rabbits are common they are seen in numbers everywhere, with a half dozen or more in sight at one time; in years of scarcity not a single one may be seen in the same area during a summer's work.

They are very undecided creatures. One may start down a trail as though in a great hurry, suddenly it stops as though it had forgotten something, and starts back as fast as it came. Halfway back, it may turn off at right angles, and in a moment be quietly nibbling at a piece of grass as though it had not a care in the world.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, pp. 39, 40; Yukon.
 Nelson, 1909: No. Amer. Fauna, No. 29; revision (many Yukon localities, north to La Pierre House).
 Osgood, 1909: No. Amer. Fauna, No. 30, pp. 56, 80; Ogilvie Mountains and Macmillan area.
 Williams, 1925: Can. Field-Nat., 39, p. 71; Yukon River and International Boundary.
 Grange, 1932: Jour. Mammal., 13, pp. 1-9, 99-116; habits and moult.
 Anderson, 1934: Proc. Fifth Pacific Science Congress, p. 4075; map of range.
 MacLulich, 1937: Univ. Toronto Studies, Biol. Ser., No. 43; fluctuations.
 Chitty, D., and M. Nicholson, 1943: Can. Field-Nat., 57, pp. 64-68; annual report on census, with references to earlier reports; valuable source material, but has not been summarized.
 Clarke, 1944: MS., southwest Yukon.

[Range of the Arctic Hare, *Lepus othus* Merriam, was mapped by Nelson (1909, No. Amer. Fauna, No. 29, p. 60) as from Alaska along the Arctic Coast to the Mackenzie Delta, but no evidence to support this was given, and the most recent revision of these hares (Howell, 1936, Jour. Mammal., 17, pp. 315-337) does not include northern Yukon in the range of any Arctic hare. R. M. Anderson says none occurs (verbal).]

ORDER—ARTIODACTYLA. EVEN-TOED,
 HOOFED MAMMALS

This is a cloven-hoofed group of grazing and browsing animals. It includes oxen, sheep, antelope, deer and their near relatives, as well as such exotic forms as hippopotamuses, pigs, and camels.

The young are born in a well-developed condition, and are active soon after birth.

The order includes forms of great economic importance, both as domestic animals and as game and food animals.

Two families are represented in Yukon, the *Cervidae*, or deer, and the *Bovidae*, cattle, sheep, goats, etc.

FAMILY—CERVIDAE. DEER

Most members of the deer family are characterized by solid, branched antlers in the males (also in females

of the caribou) that are shed and renewed annually. The gall-bladder is usually absent.

Three species occur in Yukon, the mule deer, the moose, and the caribou.

Mule Deer. *Odocoileus hemionus* (Rafinesque)

Diagnosis. A medium-sized slender deer, male, length up to 1,567 mm. (61.7 in.); tail 150 mm. (9 in.); ear 129 mm. (5.2 in.); weight probably up to 250 pounds; females somewhat smaller. Antlers only in male, up to 420 mm. long on outside curve; antlers without flattenings or palmations; colour, cinnamon to reddish brown, dark face patches; white chin and throat patches; upper side of tail like back, except tip, which is black; rump patch and under side of tail white; chest black; fawns are spotted.

Subspecies. The Yukon form, to which the above diagnosis applies, is: Sitka deer, *Odocoileus hemionus sitkensis* Merriam.

Cowan (1936) has shown that all the mule, black-tail, and Columbian deer, formerly placed in several species, belong to one species—the mule, jumping, or black-tailed deer.

Distribution in Yukon. Ranges along the coast of British Columbia and southeast Alaska, casually north to Atlin (Cowan). Clarke (1944 MS.) gives second-hand reports of their occurrence in the Teslin and little Atlin sections of southern Yukon as far north as Nisutlin River.

Life History. Probably like its southern relatives: rutting in autumn; shedding antlers in mid-winter; the one to three, usually two, young born in spring; food, grass and browse; enemies, wolf, coyote, lynx, and fox.

General. Many mule deer are somewhat migratory, and on the islands off the coast this form is concentrated along the shore in winter, but in summer is found commonly to timber-line. Seasonal movements may be expected on the mainland.

Chief References

- Cowan, 1936: Calif. Fish and Game, 22, pp. 155-246; revision and extensive bibliography.
 Clarke, 1944: MS., Yukon occurrence.

Moose. *Alces americana* (Clinton)

Diagnosis. The largest of our American deer; male, length up to 3,004 mm. (122 in.); tail 102 mm. (4 in.); height at shoulder up to 2,340 mm. (92 in.); weight up to 1,800 pounds; female one-quarter smaller; spread of antlers up to 77½ inches; largest Yukon head, spread 70½ inches (No. Amer. Game Animals); an ungainly looking animal, with large, pendulous muzzle, long ears, usually a "bell" of skin and hair on the throat in male; long legs; shoulders noticeably higher than rump; colour brownish black, greyish about

face and muzzle, with legs greyish. The males carry huge antlers with broad, heavy palmations from which the points rise. The calf is uniformly coloured reddish brown.

Subspecies. Alaska moose, *Alces americana gigas* Miller, is the form to which Osgood referred Yukon specimens (1909, No. Amer. Fauna, No. 30).

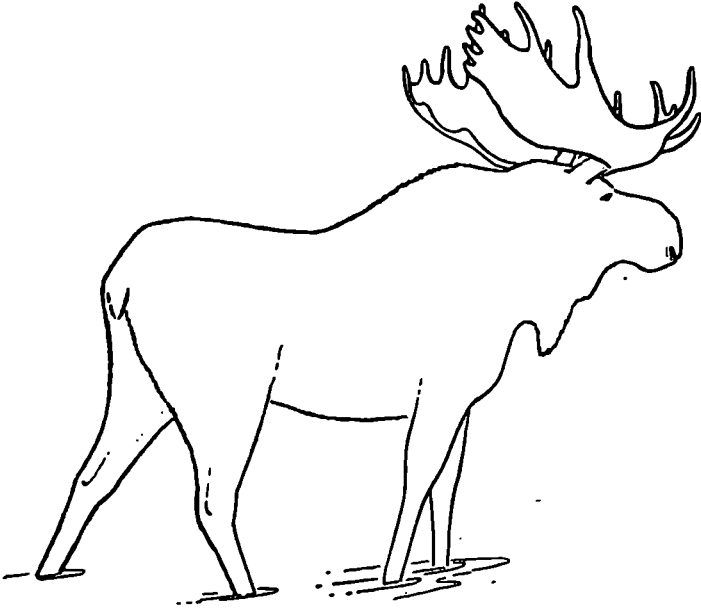


Figure 24. Bull moose.

Distribution in Yukon. Recorded north to Macmillan River and Ogilvie Mountains, and the Porcupine-Yukon boundary area; probably also north to the Porcupine River area generally, as usually mapped.

Life History. The rut starts in September and continues into October; one to three, usually two, young born the following May; young follow parent at an early age; food, aquatic plants and willow browse; enemies, bear and wolves; man.

General. Ideal moose range in the Macmillan region, where the animals were abundant, was described by Osgood. The broad flats near the river with their heavy forest, broken at frequent intervals by open swamps or grass-bordered lakes, as well as the flanking ranges and detached

groups of mountains, with their sheltered canyons and open, park-like glades alternating with thick clumps of trees, furnish all that moose desire. In early autumn they are found from the bottom of the lowest valleys to near timber-line.

The moose of Yukon average nearly as large as those from Alaska. In "North American Big Game" only two heads from Yukon are listed as having spreads of between 65 to 70½ inches; sixty-two are listed from Alaska having between 65 and 77½ inches, twenty of them being over 70 inches in spread.

Records kept by Mr. L. Higgins as to the size of nineteen moose heads exported from the Whitehorse district between 1924 and 1934 by outside big-game hunters show the spread varied from 55 to 62 inches, with an average of about 57 inches.

These animals are common in southern Yukon, from areas where we have information. There is a local belief that moose were still more abundant some years ago, but that before then there were few or no moose in the area. Moose were certainly abundant in the 1900 to 1910 period, for Selous got reports of twenty-five in sight at one time on Russell Creek, Macmillan River, in the winter of 1905; and Keele, speaking of the Pelly and its tributaries, says that with glasses, on almost any fine day in summer, from the top of a mountain, a few moose can be seen in the valleys below.

It has been held that moose of the northwest will not respond to an imitation moose call, but Carl Rungius and W. Osgood successfully called moose on Macmillan River.

Wolves are commonly said to be one of the worst enemies of the moose and to result in many cows being without calves in the summer, but precise data are lacking. In northern British Columbia Stanwell-Fletcher records wolves preying on moose when the snow is deep, but Murie found little predation on moose about Mount McKinley, where snow is not deep enough to hinder their movements. That the wolves find this hunting dangerous is indicated by reports of wolves killed or crippled by moose in north British Columbia (Stanwell-Fletcher, quoted by Murie). About the eastern British Columbia-Yukon boundary

trappers say that some grizzly bears develop the habit of killing moose, but their predations are probably minor (See Murie).

This is the main food animal of many of the wilderness dwellers. Ten Indian families at Sheldon Lake were said to have killed three hundred moose during a recent year. This supplied food for dogs as well as humans (McLennan, verbal). On Lapie River three Indian hunters, in early September 1944, had killed ten moose in 16 days. This meat was being dried for further use (Rand, MS.). A trapper and two companions on Sixtymile Creek a few winters ago took twenty-four moose for their own use one winter (R. Porsild, verbal). Moose hide is tanned by hand and used extensively for moccasins by Indians and by white men.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19, occurrence along Yukon River.
 Osgood, 1909: No. Amer. Fauna, No. 30; Ogilvie Mountains and Macmillan River areas.
 Keele, 1910: A Reconnaissance Across the Mackenzie Mountains, etc.; occurrence in Pelly River tributaries.
 Sheldon, 1911: The Wilderness of Upper Yukon; Ogilvie Mountains, and Macmillan and Ross Rivers.
 Auer, 1917: Campfires in Yukon; in southwest Yukon.
 Williams, 1925: Can. Field-Nat., 35; Yukon-Porcupine Boundary Survey.
 Seton, 1930: Lives of Game Animals, 3; monograph.
 Swarth, 1936: Jour. Mammal., 17; Atlin area.
 Ely, *et al.*, 1939: North American Big Game; general and records.
 Clarke, 1944: MS., occurrence, Alaska Highway.
 Murie, 1944: Wolves of Mount McKinley; wolf-moose relationships.
 Rand, 1944: MS., Canol Road.

Barren Ground Caribou. *Rangifer arcticus* (Richardson)

Diagnosis. A medium-sized deer; male, length 1,984-2,124 mm. (78-83½ in.); height at shoulder 1,170-1,399 mm. (46-55 in.); average weight of six males 366 pounds, of five females 213 pounds (Murie). Antlers borne by both sexes, large in the male, palmate near tips; one or both brow-tines palmate and extending over the face, bez-tines above them. Length of outside curve up to 62½ inches. A rather stocky animal, with deep neck; blunt, rounded hoofs, dew-claws often showing in the tracks. Colour, adult male in fresh autumn pelage, dark brown or blackish, with white neck and white stripes running back from it on each side of chest; white rump

patch and tail and a white ring above each hoof. This pelage fades greatly and by the following summer may be tan or nearly whitish. The white neck appears later than the dark pelage, and for a time in early autumn the animals are nearly uniformly dark brown. Fawns are reddish to dark brown, unspotted.

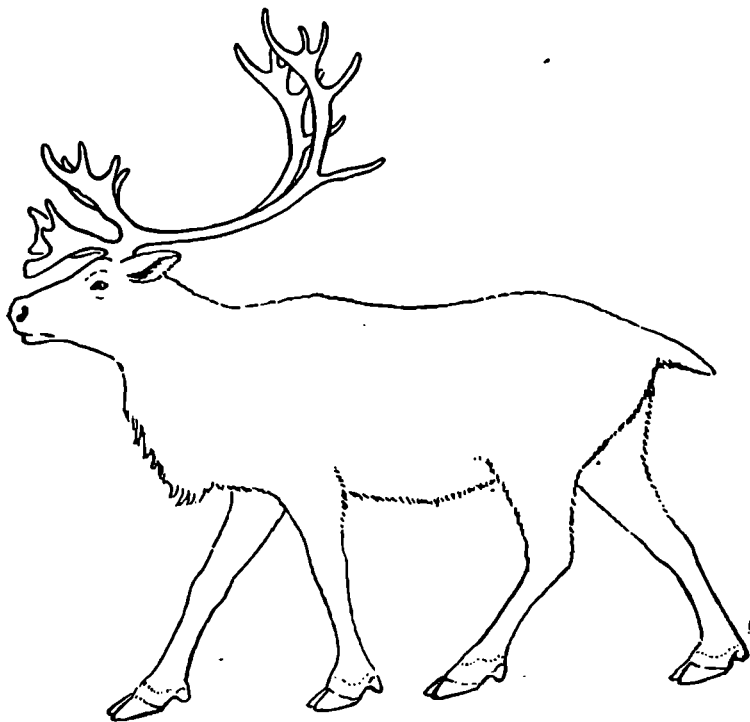


Figure 25. Bull caribou.

Subspecies. Two are recognized in the area, but their areas of distribution are not completely worked out. The following is summarized from Murie: Stone caribou, *Rangifer arcticus stonei* Allen (including the formerly named *R. mcguirei*, *R. excelsifrons*, and *R. ogilvyensis*), characterized by an upper tooth row 94 mm. in length (average of forty-four specimens ranging between 84 and 107 mm.) and a horn length of 1,125 mm. (average of fifty-eight specimens, ranging from 777 to 1,510 mm.).

Ranges over northern and western Yukon. This subspecies includes the great migratory herds that formerly, at least, ranged south to Whitehorse and Kluane Lake areas.

Klukshu too - B.K. 298 says there
were Caribou between Klukshu and
Idaia.

Osborn caribou, *Rangifer arcticus osborni* Allen, characterized by its larger size, slightly darker coloration, and more of a dusky tip to the throat fringe; upper tooth row averages 100.5 mm. (average twenty-one, varying between 83 and 106) and horn length of 912 mm. (average of nine) with a maximum of 1,300 mm. The antlers show more of a tendency to have flattened beams as in woodland caribou.

Range northern British Columbia and at least southeast Yukon: specimens have been identified from as far north as Macmillan River and west to Wolf River. Migration appears to be local.

Distribution in Yukon. Found from Herschel Island to the southern border.

Life History. The rut starts in September and continues into October. Males drop their horns in November and December, females in May or June, about the time the single young is born. Caribou lichen or "moss" (*Cladonia*) is the chief winter food. In summer a great many green plants are browsed or grazed, as well as lichen, and even in winter grasses, sedges, and willows may be eaten extensively. The wolf and man are the principal enemies; bear, wolverines, and lynx are unimportant predators.

General. The Alaska-Yukon caribou are essentially mountain dwelling animals, although in certain areas they occur in the lowlands, normally, and will indeed visit low country more or less regularly. The main areas of concentration practically outline the main divides between river systems (Murie).

The great migrating herds of caribou in northern and western Yukon, which are definitely Stone caribou, and the fact that the larger Osborn caribou in southwest Yukon (and north British Columbia) gathers into smaller herds and performs smaller migrations has led people to overlook the fact that some Stone caribou stay in small bands in summer and autumn, as in the Ogilvie Range, and appear to be as much mountain caribou as are Osborn caribou in the Macmillan area.

There are two main centres of abundance of the caribou in Yukon: one about Upper Porcupine River and headwaters of Peel River, sometimes referred to as the "Peel River herd", that has no definite migration routes; and the other—by far the largest number of caribou west of Mackenzie River—occupying the uplands between Yukon and Tanana Rivers and contiguous areas in Yukon. It is animals from the latter herd that migrate southeast in autumn to the headwaters of White River and may reach Whitehorse, as they did in 1924. Some also cross

the Yukon in the vicinity of Dawson and Stewart Rivers. In spring the migration is reversed. In 1936 they reached Kluane Lake.

In many other areas caribou occur in smaller numbers during the summer and autumn. They are said to favour especially mountains with subdued contours and broad tablelands above timber-line, but on the mountains above Rose River caribou tracks were found over high, rocky ridges and within short distances of rocky peaks.

Osgood writes that in midsummer in Ogilvie Mountains the caribou were concerned only in avoiding mosquitoes. To accomplish this they frequented high ridges exposed to every breeze, and, when not feeding, rested on the few banks of snow that remained unmelted. The dark brown animals were of course very conspicuous against the white background, and it was necessary only to ascend to some high point and scan every patch of snow within view to learn whether or not caribou were in the vicinity.

Though of keen powers of scent, caribou seem to depend little on sight, and if the wind is right it is often possible to approach them closely in full view, or to have them pass at close range.

The flesh of the caribou is an important food in Yukon, and the skin is tanned by Indians for moccasins.

Chief References

- Osgood, 1900: No. Amer. Fauna, No. 19; occurrence along Yukon.
 Selous, 1907: Recent Hunting Trips in British North America; in Macmillan area.
 Osgood, 1909: No. Amer. Fauna, No. 30; habits, taxonomy, Ogilvie and Macmillan area.
 Keele, 1910: Reconnaissance Across the Mackenzie Mountains, etc.; occurrence Pelly River tributaries.
 Sheldon, 1911: The Wilderness of the Upper Yukon; hunting, Ogilvie Mountains.
 Auer, 1917: Campfires in the Yukon; hunting in southwest Yukon.
 Williams, 1925; Can. Field-Nat., 39; occurrence, Porcupine-Yukon boundary area.
 Seton, 1929: Lives of Game Animals, III; monograph.
 Murie, 1935: No. Amer. Fauna, No. 54; monograph.
 Ely, *et al.*, 1939: North American Big Game; general, records of heads.
 Clarke, 1944: MS., occurrence, Alaska Highway.
 Murie, 1944: Wolves of Mount McKinley; wolf-caribou relation.
 Rand, 1944: MS., occurrence, Canol Road.

FAMILY—BOVIDAE. CATTLE, SHEEP, GOATS, ETC.

Cloven-hoofed animals with both sexes bearing permanent, unbranched horns growing on a bony core; gall-bladder usually present.

Only three forms have been recorded from Yukon: muskox, northern mountain sheep, and mountain goat. Many prehistoric bison remains also have been found in Yukon.

Muskox. *Ovibos moschatus* (Zimmermann)

Diagnosis. Length up to 2,300 mm. (96 in.); tail 102 mm. (4 in.); height at shoulder 1,500 mm. (59 in.); weight 900 pounds (Seton). A stocky, short-legged animal; horns with very broad bases; practically covering the top of the head and nearly meeting in old males, and sweeping downward and slightly forward, then turning upward to form a hook; tail very short; pelage with woolly underfur and very long guard hairs that form a fringe below the belly and help to give the animal its stocky appearance; colour brownish black, with paler saddle, muzzle, and legs.

Subspecies. Barren ground muskox, *Ovibos moschatus moschatus* (Zimmermann), is the form that used to occur in Yukon.

Distribution in Yukon. Probably occurred in the early part of the nineteenth century along the north coast of Yukon and westward to Point Barrow; an old skull was found at Herschel Island; now restricted to east of the Mackenzie (Allen, 1913; Hone, 1934).

Life History. Breeds at 3 years of age, and afterwards only in alternate years; breeds July-September; young born April-June; feeds on grass, other herbage, willow tips, and even moss where other food is scarce; enemies, wolf and man.

General. Relationship of the muskox with sheep has been suggested, but it seems to be a closer relative of the bison.

Many prehistoric muskox remains have been found in Pleistocene gravels of northern Yukon.

It lives on the barren grounds, in winter clearing away the snow with nose and hoofs to get at its food, not migrating as do caribou.

Though males fight fiercely at rutting time, the animals appear to go in herds throughout the year, herds that used to number up to 80 and 100 individuals. Attacked, they do not flee, but gather in a close group with heads out to ward off the enemy. This habit has been their undoing in contact with man.

Being non-migratory and with palatable flesh, it could be a reliable food supply in the Arctic, and domestication has been suggested. Formerly robes were made of its hides, and Eskimos used its horns for utensils. They have been reintroduced into Alaska.

Chief References

- Allen, J. A., 1913: Mem. Amer. Mus. Nat. Hist., N.S. 1, pp. 101-226; monograph.
 Seton, 1929: Lives of Game Animals, 3; habits.
 Hone, 1934: The Present Status of the Muskox; monograph.
 Clarke, 1940: Nat. Mus. Canada, Bull. 96, pp. 73-84; partial status and domestication.
 Allen, G. M., 1942: Extinct and Vanishing Mammals, etc., pp. 329-337; status.

Northern Mountain Sheep. *Ovis dalli* Nelson

Diagnosis. Male, length up to 1,605 mm. (64 in.); tail 102 mm. (4 in.); weight (male) 200 pounds; a slender, trim animal with loosely coiled horns; colour varies with locality from pure white to mostly black, except for light head and rump patch; female similar to male, but smaller, and with much smaller, less coiled horns.

Subspecies. Two of the three subspecies occur in Yukon.

Dall sheep, *Ovis dalli dalli* Nelson. In unstained pelage nearly pure white, ranging from the north, south to Ogilvie Mountains and St. Elias Range; intergrading in central Yukon with the following form. East of Mackenzie Mountains, in Northwest Territories, this race ranges south to Nahanni River area.

Stone sheep, *Ovis dalli stonei* Allen. A dark brown, almost black sheep with underparts and face white, neck grizzled, and rump patch white. Range from the Cassiar of British Columbia north to Pelly River; in the northern Cassiars and Pelly Mountains intergrading with Dall sheep.

Intergrades that are white sheep with dark saddles were at one time called *Ovis fannini*, Fannin sheep, but complete intergrading between the white Dall and the largely black Stone's sheep has necessitated the view that they represent only one species, and it is not advisable to recognize a name for the intergrades.

Distribution in Yukon. Over all the suitable mountain ranges from Richardson Mountains south to the border.

Life History. Breed in November and December; the one, occasionally two or three, young born in May and June; food mainly grasses and sedges, but considerable browse in which willow bulks large is also eaten; main enemies are wolves and man.

General. Northern sheep are animals of the rocky ranges and adjacent alpine pastures. They are generally found in bands that may number up to fifty or more, and

the old males are usually in smaller bands by themselves most of the year. About Mount McKinley in Alaska sheep occupy a much smaller winter than summer range, due to the depth of snow. With the coming of spring the sheep spread out, to graze on the ranges as they become snow-free, crossing wooded valleys to reach them. It has been suggested that wolf predation has been the main

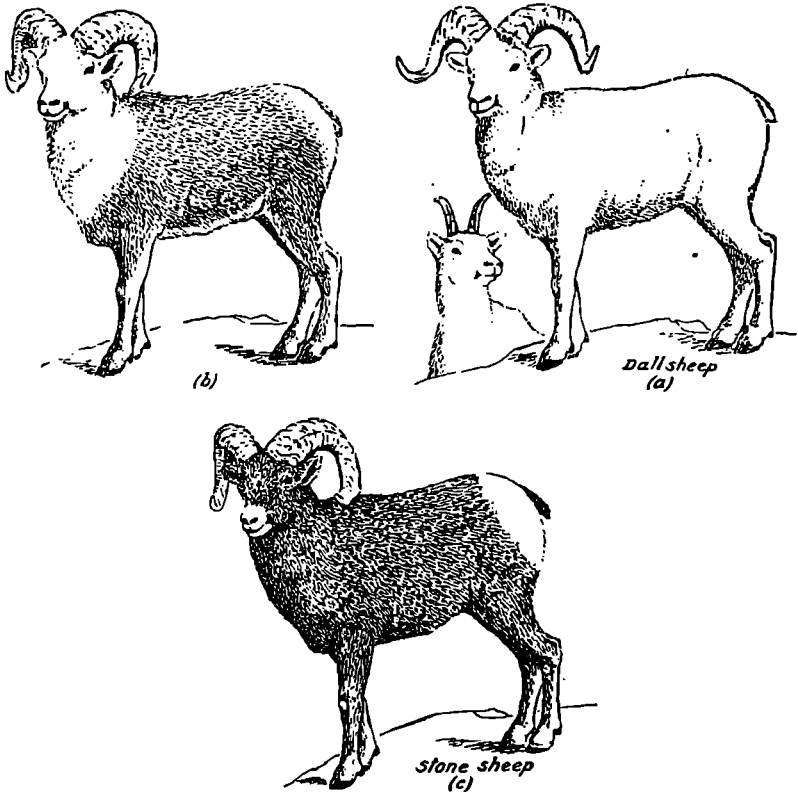


Figure 26. Northern mountain sheep, showing three types of coloration:
 (a) Dall sheep, pure white (with head of female showing);
 (b) An intermediate type of coloration; and
 (c) Stone sheep, largely dark in coloration.

factor in restricting sheep to mountains. Apparently, on steep slopes sheep easily out-run wolves and it is when wolves find sheep at a disadvantage that they capture them.

These animals are one of the important attractions to sportsmen in the Yukon. Most Stone sheep come from British Columbia, but one with 40-inch horns is recorded from Teslin, and of the ten largest heads of Dall's listed in "North American Big Game", five come from Yukon. The largest, with a curve of $46\frac{1}{2}$ inches, comes from Donjek. The record from Alaska is $47\frac{1}{2}$ inches. Of the thirty-six heads that Mr. Higgins recorded as being taken from Whitehorse district by outside big game hunters, between 1924 and 1934, fourteen were over 40 inches.

Indians and white trappers and prospectors utilize sheep flesh as food, but it is less important generally than moose and caribou.

Chief References

- Sheldon, 1911: The Wilderness of Upper Yukon; hunting, study of variation; plates of different type.
 Seton, 1929: Lives of Game Animals; habits.
 Ely, *et al.*, 1939: North American Big Game; general, record heads.
 Cowan, 1940: Amer. Midl. Nat., 24, pp. 505-580; taxonomic monograph.
 Allen, 1942: Extinct and Vanishing Mammals, etc.; status.
 Murie, 1944: Wolves of Mount McKinley; habits, enemies, and diseases.

Mountain Goat. *Oreamnos americanus* (Blainville)

Diagnosis. Male, length 1,521-1,775 mm. (60-70 in.); tail 152-203 mm. (6-8 in.); height at shoulder 1,989 mm. (39 in.) (Seton); weight probably up to about 400 pounds. A heavy-bodied, short-legged animal, high over the shoulders; hairy coat long with coarse mane, beard; and chaps on the legs; sharp, slightly recurved spike horns; colour white with black horns, hoofs, and nose.

Subspecies. The Yukon animal is referable to Columbian mountain goat, *Oreamnos americanus columbiae* Hollister.

Distribution in Yukon. Common in the mountains of the St. Elias Range; occurs on west arm of Bennett Lake¹; Little Windy Arm on Lake Tagish, and near Wolf Lake²; and in southwest Yukon (Ida Lake, 60 miles west of Glacier Lake³).

¹ Osgood, and several trophies recorded by L. Higgins in Territorial Office, Whitehorse, 1933-1938.

² One trophy, recorded by L. Higgins in Territorial Office, Whitehorse, 1929.

³ Specimens, Nat. Mus., Canada, Harry Snyder collection.

Life History. The rut takes place in November; sometimes two young are born in late April or May; food, grass, shrubs, moss, lichens. Enemies, wolves, and, of the young, eagles (Seton).



Figure 27. Mountain goat.

General. In Mackenzie Mountains there are many accounts of the occurrence of goats, but the descriptions correspond better with slender, trim, female sheep, rather than stocky, shaggy goats. A photograph of a band of the so-called goats was produced, and this was plainly a photograph of female and young sheep. However, the distribution of goats may be erratic, and the reported occurrence of these animals along Mackenzie Mountains north to La Pierre House, summarized by Preble, still needs thorough investigation.

The mountain goat is an animal of the roughest crags and peaks, living in small bands of females and kids during the summer, and assembling into larger bands late in the year. Old billies are often solitary.

The record head listed in "North American Big Game" is a female from British Columbia with length of front curve of horn $12\frac{1}{2}$ inches; the largest male, from Cassiar, B.C., is recorded as 12 inches.

The records of thirty heads taken by outside big game hunters in the Whitehorse district in the last two decades, from L. Higgins, show that twenty have horns of 9 inches or over, the largest being 11 inches.

Chief References

Preble, 1908: No. Amer. Fauna, No. 27; Mackenzie Mountains records.

Auer, 1917: Campfires in the Yukon; southwest Yukon.

Seton, 1929: Lives of Game Animals, 3; general.

Ely, *et al.*, 1939: North American Big Game; general, hunting.

Clarke, 1944: MS., Alaska Highway, southwest Yukon.

Higgins: MS., Records in Whitehorse Territorial Office.

ORDER—CETACEA. WHALES, PORPOISES, DOLPHINS

The members of this order are fish-like in shape; fore limbs are modified into flippers, hind limbs lacking, and tail modified into a single, transverse fluke.

They never willingly come ashore, and the young are born, nursed, and raised in the water.

Two families are represented in the Arctic waters of Yukon.

FAMILY—BALAENIDAE. RIGHT WHALES

Only a single species, formerly hunted extensively for its blubber and whalebone, occurs off Yukon.

Greenland Whale; Bowhead. *Balaena mysticetus* Linnaeus

Diagnosis. A large whale, up to about 18 metres (60 ft.) long; whalers roughly calculate the weight of a large whale at about 1 ton to the foot, i.e., weight up to 60 tons; head about one-third total length; no dorsal fin, no folds on throat; whalebone fringe in mouth with plates up to 12 feet long, and 10 to 12 inches wide at the

base; colour above, velvety black; variable amounts of white below.

Subspecies. None recognized.

Distribution in Yukon. Formerly common off the north coast; numbers decreased in the early part of this century, and are now increasing.

Life History. The young is nursed for about a year; food, shrimp-like crustaceans that the whale gathers by swimming along with its mouth open until it is full, then closing its mouth and forcing out the water through the sieve-like fringe of baleen that retains the food.

General. In primitive times the bowhead was perhaps the most important asset of the coast-living Eskimo. The old method of killing whales from skin-covered umiaks with hand lances died out many years ago, and now, with the increase in numbers, Alaska Eskimos hunt them with a hand harpoon with a bomb in its "nose", as well as with an old-model shoulder gun.

Commercial whaling lasted only about 25 years in the western Arctic, with the biggest catch of 309 whales in 1893, and in the winter of 1894-95 fifteen vessels with about 800 men wintered at Herschel Island.

Whales are increasing in numbers, due to the suspension of whaling operations for many years, and the most valuable use for them now seems to be as a subsidiary food and fuel supply for the Eskimo (Anderson, Allen).

Chief References

Anderson, 1937: in "Canada's Western Northland."

Allen, 1942: *Extinct and Vanishing Mammals of the Western Hemisphere with the Marine Species in All Oceans.*

FAMILY—DELPHINIDAE. PORPOISES, WHITE WHALES, ETC.

Only one of the species in this family, the white whale or beluga, is known from Yukon waters; records of the occurrence of the narwhal in western Canadian Arctic waters are vague (Anderson).

White Whale; Beluga. *Delphinapterus leucas* (Pallas)

Diagnosis. A small whale, up to 4,267 mm. (14 ft.) long; dorsal fin represented by a ridge; ten teeth in each upper, eight in each lower, jaw; adult white, calf grey, changing to brown and mottled before becoming white.

Subspecies. None recognized.

Distribution in Yukon. Common along the Arctic Coast and in the mouth of the Mackenzie in summer.

General. The belugas travel in large schools, haunting estuaries and shallow banks in search of the fish and cretaceans on which they feed. They are migratory, withdrawing through Bering Strait during the winter.

A favourite spot is between Tent Island and Escape Reef in Mackenzie Bay. Eskimo prize the beluga, and the usual method of hunting is by pursuing them in whale-boats in shallow water, striking first with the harpoon, and finishing the whale with a rifle shot.

The flesh and blubber supply food and fuel and the skin is used for boot soles, thongs, and, formerly, for boat coverings.

Chief References

- Anderson, 1937: in "Canada's Western Northland", p. 101.
Kellogg, 1940: Nat. Geog. Mag.

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<i>Odocoileus hemionus</i>	76
<i>Odocoileus divergens</i>	43
<i>Ondatra zibethica</i>	66
<i>Oreamnos americanus</i>	86
Otter	31
<i>Ovibus moschatus</i>	83
<i>Ovis dalli</i>	84
<i>Persomyscus maniculatus</i>	53
<i>Phenacomys intermedius</i>	61
<i>Phoca groenlandica</i>	41
<i>Phoca hispida</i>	40
Pika, collared	72
Porcupine	70
Rabbit, snowshoe	74
<i>Rangifer arcticus</i>	79
Rat, bushy-tailed wood	54
Pack	54
Seal, bearded	41
Crested	42
Harp	41
Ringed	40
Sheep, northern mountain	84
Shrew, cinereus	9
Dusky	12
Pigmy	13
Tundra	11
Water	12

<i>Sorex cinereus</i>	9
<i>Sorex obscurus</i>	12
<i>Sorex palustris</i>	12
<i>Sorex tundrensis</i>	11
Squirrel, flying	50
Ground	46
Red	48
<i>Synaptomys borealis</i>	58
<i>Tamiasciurus hudsonicus</i>	48
<i>Thalarcos maritimus</i>	21
<i>Ursus americanus</i>	16
<i>Ursus horribilis</i>	18
<i>Ursus middendorffi</i>	21
Vole, chestnut-cheeked	66
Dawson red-backed	62
Long-tailed	65
Meadow	63
Phenacomys	61
Tundra	64
<i>Vulpes fulva</i>	33
Walrus, Pacific	43
Weasel, least	25
Short-tailed	26
Whale, Greenland	88
White	89
Whistler	45
Wolf, timber	36
Wolverine	29
Woodchuck	44
<i>Zapus hudsonius</i>	69
<i>Zapus princeps</i>	70

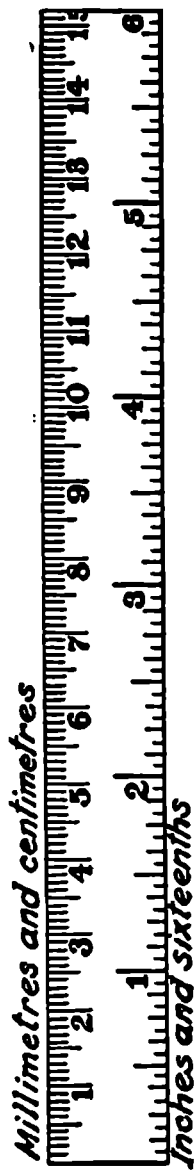


Figure 28. Scale comparing inches and millimetres.

