

## THE LONG-TAILED MEADOW MOUSE

(Microtus longicaudus) IN CANADA<sup>1, 2</sup>

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BAILEY (1900, *No. Amer. Fauna*, No. 17, pp. 48-50) listed two species of this group in Canada *M. mordax* and *M. macrurus*. Swarth (1933, *Proc. Biol. Soc. Wash.*, 46, pp. 207-211) suggested that there might be a close relationship between *macrurus* and *tetramerus* of Vancouver Island, but we have already shown (1943, *Can. Field-Nat.* 57, pp. 73-74) that this is not the case and *tetramerus* is really a race of *townsendi*. Racey and Cowan (1936, *Prov. of B. C., Report of the Prov. Mus. for 1935*, p. 26) showed that *macrurus* and *mordax* intergrade in southern British Columbia. Goldman (1938, *Journ. Mammal.*, 19, pp. 491, 492) has brought together the forms that are best grouped in the species *longicaudus*, including *mordax* and *macrurus*. It is a western species, ranging from the southwestern United States through Alberta and British Columbia to Yukon and Alaska.

The species in Canada is characterized by its medium size, relatively long tail, rather sparse, harsh fur, lack of well-developed hip glands, rather flat skull with medium-sized bullae, wide incisive foramina and the second upper molar lacking a posterior loop. Though this species has no well-developed hip glands, occasional specimens of old males show glands of some size.

Of other Canadian forms it most closely approaches *M. townsendi* in the subspecies *M. l. macrurus*; this last differs from *townsendi* in the longer tail, lack of well-developed hip glands, wider incisive foramina, larger, more rounded bullae, and lack of a tendency toward an interior posterior point on the second upper molar.

In color the race *M. l. macrurus* is paler, and slightly greyer than the races *M. t. townsendi*, and *M. t. tetramerus*, and greyer, less brownish than *M. t. laingi* Anderson and Rand (1943).

Hitherto two subspecies have been recognized as occurring in Canada: *mordax* over

most of the Rocky Mountains west to the eastern side of the Cascades; and *macrurus* of the British Columbia coast.

Study of the material in the National Museum of Canada indicates that another form is recognizable from northern and eastern British Columbia, and the possibility of another form in southeastern Alberta. A discussion of these forms follows.

We are indebted to the Washington State Museum, Seattle, through the kindness of Mrs. Martha R. Flahaut, the United States Fish and Wildlife Service through the kindness of Dr. H. H. T. Jackson and the American Museum of Natural History, through the kindness of Mr. G. G. Goodwin, for loan of pertinent material. A total of 379 specimens were examined in the present study.

*Microtus longicaudus macrurus* Merriam

*Microtus macrurus* Merriam, 1898, *Proc. Acad. Nat. Sci., Phil.*, p. 353, -Lake Cushman, Olympic Mountains, Washington.

This is a large, brownish-black, dark-coloured form.

*Measurements.* — Horseshoe Lake to Loughborough Inlet; 5 males, total length 191-202 mm. (av. 197.6); tail 70-81 (av. 77.0); hind foot 21.5-23.5 (av. 22.7); skull, basal length 25.5-26.5 (av. 26.1); zygomatic breadth 15-16 (av. 15.2); Dean Channel and King Island, average 5 males; 211; 81.4; 23.4; 27.1; 16; Hagensborg, average 4 males, 199; 73.8; 23.2; 26.1; 15.6; Mt. Brilliant, 5000 + ft., average 5 males, 184.6; 66.2; 21.8; 25.6; 14.9.

*Range.* — Olympic Mountains, Washington, and along the British Columbia coast from the Fraser River to at least Dean Channel; inland to Alta Lake and Hagensborg, Stuie and Mt. Brilliant, Rainbow Mountains.

*Remarks.* — There is little variation in our material from along the coast. The three specimens from Washington (Clallam and Pierce Counties) without skulls, are indistinguishable from our British Columbia material. Racey and Cowan (1936, *Report of the Provincial Museum, British Columbia*, for

1. —Published by authority of the Director, Mines and Geology Branch, Department of Mines and Resources, Ottawa.

2. —Received for publication January 27, 1944.



1935, p. 26) show that going inland from the coast in the southern part of the range this form intergrades with *mordax* but that specimens from Alta Lake are *macrurus*. Specimens from the mountains above Hagensborg are intermediate between coastal *macrurus* and the interior form in size, but are like *macrurus* in colour and are best referred to that form. *Macrurus* appears to increase slightly in size with increase in latitude, but decreases in size with altitude.

*Material examined*<sup>3</sup>. — BRITISH COLUMBIA: Brackendale, 1; Upper Pitt River, 1; Horse-shoe Lake, 10; Powell River, 6; Bute Inlet, 3; Loughborough Inlet, 9; Stuart Island, 12; Kingcome Inlet, 2; Rivers Inlet, 15; Hot Springs, Dean Channel, 14; Kimsquit, 2; Port John, King Island, 9; Hagensborg, 24; Stuie, 454 ft., 1; Stuie, Caribou Mts., 4700 ft., 2; Stuie, Caribou Mts., 6500 ft., 5; Mt. Brilliant, Rainbow Mts., 16. WASHINGTON:<sup>4</sup> Clallam Co., Slip Point, 1; Pierce Co., Paradise Park, 2. Total 135 specimens.

*Microtus longicaudus mordax* (Merriam)  
*Arvicola* (*Mynomes*) *mordax* Merriam 1891, *No. Amer. Fauna* No. 5, p. 61—Sawtooth (or Alturas) Lake, east foot Sawtooth Mts., Idaho.  
*Diagnosis*. — Smaller than *macrurus*, considerably paler and with a yellowish to rusty tinge to the upperparts.

*Measurements*. — (ten adult males from the Osoyoos-Princeton area), total length 171-191 (av. 178.3 mm.); tail 59-70 (av. 64.7); hind foot, 19-21.5 (av. 20.1); skull, basal length, 24-25.75 (av. 24.8); zygomatic breadth 14-15.75 (av. 14.7); (three males, type locality) t.l. 180, 180, 167; t. 67, 63, 57; h.f. 23, 22, 21; skull, b.l. 24.5, 25.2, 25.5; z.b. 14.25, 15, 15.1; (three adult females, type locality) t.l. 174, 180, 181; t. 62, 62, 64; h.f. 21, 22, 22.5; skull, b.l. 25, 25.2; z.b. 14.2, 14.75, 14.75.

*Range*. — Extending north from Washington and Idaho into the dry interior belt of southern British Columbia, and intergrading with the next form in the vicinity of Rossland, B.C. and Waterton Lakes Park, Alberta.

*Remarks* — A large series from Osoyoos, Osoyoos-Bridesville Summit, Fairview-Keremeos Summit, Keremeos, Westbridge and Oliver agree well in color with six topotypical *mordax*, though averaging perhaps slightly paler and more buffy grey. There is no difference in the skulls. Specimens from near Princeton, Cascade and Hedley are slightly darker, as are the McGillivray Creek specimens, but from the rusty tinge to the upperparts are referable to this form. One specimen from Chilliwack and one of the Cultus Lake specimens (the other is immature) are considerably darker, but browner and smaller than *macrurus* and are tentatively referred here; specimens from Midway are approaching the next form.

*Specimens examined*. — BRITISH COLUMBIA: Cascade, 3; Midway, 8; Westbridge, 6; Osoyoos, 7; Osoyoos-Bridesville Summit, 17; Oliver, 4; Keremeos, 11; Fairview-Keremeos Summit, 28; Stevenson Creek, Princeton, 7; Stirling Creek, Hedley, 5; Chilliwack, 1; Cultus Lake, 2; McGillivray Creek, 4; Spence's Bridge, 1. IDAHO<sup>5</sup>: Sawtooth Lake, 3; Sawtooth, 3; Lost River Mts., 2; Dickey, 1; Feather-ville, 1; Kooskia, 1; American Falls, 1; Blue Spring Hills, 1; Mullan, 1. Total, 118 specimens.

*Microtus longicaudus vellerosus* Allen  
*Microtus vellerosus* Allen, 1899, *Bull. Amer. Mus. Nat. Hist.*, 12, p. 7 - Liard River, Northwest Territories.

*Diagnosis*. — Differs from *mordax* in largely lacking the buff and rusty tones and being duller, darker grey-brown above. Differs from *macrurus* in being smaller in size, and slightly paler and greyer in colour.

*Microtus longicaudus vellerosus* —

<i>Measurements</i> <sup>6</sup> . —	No. of specimens	Sex	Total length	Tail	Hind foot	Skull Basal length	Skull zygo-matic breadth
Atlin .....	2	♂	170, 189	63, 74	20, 21	24, 25.5	14, 14.5
.....	1	♀	182	67	21	25	14
Nahanni Gate and Glacier Lake, Mack. District .....	5	♂	175-180 av. 176	50-60 av. 54	21-22 av. 21.6	24.5-26.3 av. 25.6	14.75-15.5 av. 15.3
Yahk, New Gate area, B. C. ....	6	♂	172-195 av. 184	61-71 av. 66.3	19.5-21.5 av. 20.3	23.5-25 av. 24.5	14.25-15.5 av. 14.7

3. — Material in National Museum of Canada unless otherwise indicated.  
4. — Washington State Museum.  
5. — All Idaho specimens, U.S. Fish and Wildlife Service Collection.  
6. — in millimeters.



*Range.* — Southern Yukon and adjacent Alaska, southwestern Mackenzie, and southward over British Columbia (excluding the coastal mountains and the dry belt) and the mountains of Alberta to Yahk and Banff, intergrading with *mordax* in the vicinity of Rossland, B.C., and Waterton Lakes Park, Alta.

*Remarks.* — In 1899 Allen described *Microtus vellerosus* from the Liard River, N.W.T. (*Bull. Amer. Mus. Nat. Hist.*, 12, p. 7, and *Microtus cautus* from Hell's Gate, Liard River (*l.c.*). In 1903 Allen listed *vellerosus* as a race of *mordax*, and relegated *cautus* to synonymy (*Bull. Amer. Mus. Nat. Hist.*, 19, pp. 548-549). In 1900, in reviewing the genus *Microtus*, Bailey examined the types on which both of these names were founded and concluded that they were inseparable from topotypical *mordax*.

However our material (see below) shows that this area is inhabited by a form separable from *mordax*, and the name *vellerosus* is available.

All the material included in this form is not uniform; the northern animals are greyer, the Chitina Glacier, Alaska specimen is still greyer than Atlin and Teslin Lake specimens. Most of the population from the southern part of the area are darker and browner. However it seems inadvisable to separate them, and together they stand out from the paler, more buff and reddish-tinged specimens from the Okanagan Valley area. Yahk specimens are uniformly dark brown, rather different from Osoyoos specimens. The Rossland and Waterton Lake Park specimens are more reddish-brown tinged, an approach to *mordax*, but are best referred to *vellerosus*.

From the northern edge of the Sweet Grass Hills near the southeastern boundary of Alberta we have one very large specimen with a heavy, spreading skull (measurements, t.l. 213; t. 76; h.f. 22; b.l. 26.5; z.b. 16.25), and with a pale, buffy gray coat. A second skull from the same locality, without skin, is somewhat larger, but badly broken. This suggests

that a different, larger and paler form inhabits this area, but more material is needed.

Osgood (1900, *No. Amer. Fauna*, No. 19, p. 35) recorded specimens of this species at Bennett, Lake Marsh, Lake Labarge, Rink Rapids and near Charlie Village that probably belong to this form. The Charlie Village and Circle (1900, Bailey, *No. Amer. Fauna*, No. 17, p. 50) records are the most northerly for the species. The specimens collected by Mr. G. G. Goodwin of the Harry Snyder Expedition of 1937 on the Nahanni River and Glacier Lake and here reported on for the first time represent the most northeastern record for the species.

*Specimens examined.* — 126.

ALASKA: Chitina Glacier, 1; ALBERTA: Banff, 11; Burmis, 3; Crowsnest Pass, 4; Jasper Park, 10; Miette River, 1; Moose Mountain, 2; Mountain Park, 3; Sweet Grass Hills, 2; Waterton Lakes Park, 17. BRITISH COLUMBIA: Atlin, 6; Crowsnest Pass, 2; Fernie, 1; Goatfell, 2; Morrissey, 3; Newgate, 5; Pend d'Oreille, 1; Rossland, 16; Summit Lake, 104 miles northwest of Fort Nelson, 7; Tuchodi Lake, 17; Yahk, 13. NORTHWEST TERRITORIES: Mackenzie District, Nahanni Gates, 37; Nahanni River, 17; Glacier Lake (upper Nahanni River), 37. YUKON TERRITORY: Teslin Lake, 8.

*Microtus longicaudus littoralis* Swarth

*Microtus mordax littoralis* Swarth, 1933, *Proc. Biol. Soc. Washington*, vol. 46, pp. 207-212. Shakan, Prince of Wales Island, Alaska.

*Range.* — Mainland coast and most of the islands of southeastern Alaska. On the coast from Yakutat south at least to Bradford Canal. On most of the islands of the Alexander Archipelago that lie east of Chatham Strait and to the southward.

In the northwest coast region *M. l. vellerosus* intergrades with the reddish-brown *littoralis* Swarth in the valley of the Stikine River (See Swarth, *Ibid.*, 57; 207; and *Univ. of Calif. Publ. Zool.*, 24, 175-178.).

7. — American Mus. Nat. Hist. coll.





Anderson, Rudolph Martin and Rand, Austin Loomer. 1944. "The Long-tailed Meadow Mouse (*Microtus longicaudus*) in Canada." *The Canadian field-naturalist* 58(1), 19–21. <https://doi.org/10.5962/p.340689>.

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**DOI:** <https://doi.org/10.5962/p.340689>

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