4-15-1950

Notes on Microtine Rodents from the Brooks Range, Arctic Alaska

Robert L. Rausch  
Arctic Health Research Center, rausch@u.washington.edu  

David H. Johnson  
Arctic Health Research Center

Follow this and additional works at: https://digitalcommons.unl.edu/parasitologyfacpubs

Part of the Parasitology Commons

Rausch, Robert L. and Johnson, David H., "Notes on Microtine Rodents from the Brooks Range, Arctic Alaska" (1950). Faculty Publications from the Harold W. Manter Laboratory of Parasitology. 548.  
https://digitalcommons.unl.edu/parasitologyfacpubs/548

This Article is brought to you for free and open access by the Parasitology, Harold W. Manter Laboratory of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Faculty Publications from the Harold W. Manter Laboratory of Parasitology by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
MAMMALOGY.—Notes on microtine rodents from the Brooks Range, Arctic Alaska.¹

ROBERT RAUSCH, U. S. Public Health Service, Anchorage, Alaska. (Communicated by DAVID H. JOHNSON.)

In connection with parasitological studies carried on during 1949 for the U. S. Public Health Service, the writer collected a considerable number of mammals from the northern edge of the “Endicott” section of the Brooks Range, in Arctic Alaska. The mammalian fauna of this region is poorly known, since apparently no previous collecting has been done here. About 200 microtine rodents were collected, mostly near Tolugak Lake (lat. 68° 24’ N., long. 151° 26’ W.), near the head of the Anaktuvuk River Valley. A few specimens were also taken at Umiat, on the Colville River, about 80 miles north of Tolugak Lake (lat. 69° 23’ N., long. 152° 10’ W.). Five species are represented. More complete details concerning their ecology and reproduction will be presented in a later paper, at which time the other mammals obtained will also be considered. The specimens have been deposited in the U. S. National Museum.

¹Received January 18, 1950.
The writer wishes to express appreciation of the kind cooperation of Drs. Remington Kellogg, David H. Johnson, and Henry W. Setzer in making available working space and facilities at the U. S. National Museum, and of their helpful suggestions.

Clethrionomys rutillus dawsoni (Merriam)

Red-backed voles were collected at the northern edge of the Brooks Range, at altitudes from 2,000 to 3,500 feet, and at Umiat, at the edge of the Arctic Coastal Plain, at altitudes from 300 to 500 feet.

In connection with the identification of the species of Brooks Range Clethrionomys, it seemed advisable to study all available material in order to reach some conclusion as to the actual species involved. The rather extensive material from both Eurasia and North America in the collections of the U. S. National Museum was utilized in making this study, with the conclusion that the Neartic C. dawsoni (Merriam) is conspecific with the Palearctic C. rutillus Pallus.

A series of more than 20 specimens of Clethrionomys was obtained near Tolugak Lake, and 5 others were collected at Umiat. In addition, 24 specimens from northern Alaska, in the U. S. National Museum collection, were compared in detail with Eurasian material. Of the latter, 92 specimens of C. rutillus jochelsoni Allen were studied, along with smaller series of C. rutillus rutillus Pallus, C. rutillus russatus Hadie, and C. rutillus hintoni Vinogradov. The distribution of the Siberian species of Clethrionomys was shown by Bobrinskoy, Kuznetzow, and Kuzyakin (1944, map no. 55). Clethrionomys r. jochelsoni, described from Verkhne Kolymsk, Kolyma River, northeastern Siberia, is the form most closely related to that found in Alaska.

The Alaskan specimens were closely compared with the large series of C. rutillus jochelsoni and were found to be very similar. Cranially, the Alaskan material shows a slightly heavier and longer rostrum, although this character is somewhat variable in both series. The nasal bones are longer in the Alaskan material. Some of the Alaskan specimens show a slightly greater arching of the cranium than is seen in the Siberian specimens. The zygomata are variable in both series; some show an anterior narrowing, some a posterior narrowing, and in some the zygomatic width is the same throughout. The molar pattern, though somewhat variable, is very nearly identical in the two series. A summary of cranial measurements is given in Table 1.

Externally the Alaskan specimens from Tolugak Lake are hardly distinguishable from specimens from northern Siberia (Kolyma River). The Tolugak Lake specimens show a dark-rufous dorsal color, which becomes lighter and more tawny on the sides. The sides show a rather olive tinge during the spring and summer but become much more tawny and the dorsal color becomes brighter in the winter pelage, when fewer inter­spersed dark hairs are present. Ventrally the Alaskan specimens range from grayish to buffy. In winter pelage the tail is very hairy and is rufous above and buffy below. The specimens from Tolugak Lake and Umiat are considerably darker in color than those from farther south in Alaska (Chignik, on the Alaskan Peninsula, and Charlie Creek, near the Alaska-Yukon boundary). The specimens from the southern localities show a more yellowish cast throughout, and in dorsal coloration the Chignik specimens are indistinguishable from specimens of C. r. jochelsoni from the Lesser Annu River, Siberia. The latter are more yellowish below, however. Certain of the Siberian specimens of C. r. jochelsoni, from Nijn Kolinsk, show less dorsal rufous coloring.

A small series of specimens of C. r. rutillus from Tandy, oriental Siberia, is very similar to the northern Alaskan specimens, having also grayish underparts. Specimens from Lappmark, Sweden, show more tawny coloration, being very similar to the Alaskan specimens from Chignik. The animals from Dapucha, in the Altai, central Siberia, show a tendency toward grayness when compared with northern Siberian and with Alaskan specimens.

C. rutillus hintoni, from the Einanachi River, Greater Kingham Mountains, northern Man­churia, shows a general paleness of color when compared with northern Siberian and Alaskan specimens. There is less tendency toward taw­niness, and the underparts are whitish without any buffy tinge.

It has long been recognized that the north Alaskan species of Clethrionomys (C. dawsoni auct.) is very closely related to the Palearctic C. rutillus. Bailey (1897), speaking of the genus Ecotomys (= Clethrionomys), stated: "The only circumpolar species is the Arctic E. rutillus, which does not undergo any considerable change throughout the circumference of the Arctic Zone," and further, that "boreal species are far more stable and persistent than those inhabiting..."
warmer countries. In view of this fact, it is not surprising that the circumapolar *E. rutilus* presents but one phase throughout its entire range (specimens from Scandinavia, Siberia, and Arctic America being practically indistinguishable)." Zimmermann (1942), in regard to *C. rutilus*, stated that "Unter den europäischen kleinsäugern ist *M. oeconomicus* nicht der einzige, der zur Zeit mit Unrecht als palaearktisch gilt. Soweit ich aus eigener Anschauung sehe, haben die Rotenmause (*C. rutilus*, vielleicht auch *glareolus*), ... ebenso ihre amerikanischen Unterarten, nur sind diese Zusammenhänge zur Zeit durch nomenkatastrische Schwierigkeiten verschleiert." Recent American workers have considered *C. dawsoni* to be specifically distinct from *C. rutilus*. In his study of the *C. dawsoni* group, Orr (1945, p. 69) pointed out the similarities of the two forms, but his material was apparently inadequate to allow the comparisons necessary to better understand the relationships involved.

In the opinion of the writer, there is no further justification to consider *Clethrionomys dawsoni* as having full specific rank, since all differences from *C. rutilus* are so slight as to be subspecific in nature. The American races should stand as follows:

*Clethrionomys rutilus dawsoni* (Merriam)
*Clethrionomys rutilus glareolus* Orr
*Clethrionomys rutilus incisarlis* (Heller)
*Clethrionomys rutilus area* (Merriam)
*Clethrionomys rutilus sasoi* Orr

*Micrurus oeconomicus macfarlani* Merriam

Tundra voles were trapped rather commonly in certain habitats, usually in wet tundra areas, at altitudes up to 2,000 feet. They were never so abundant, where observations were made, as was *Microtus miurus*. *Microtus oeconomicus macfarlani* was collected both at Tolugak Lake and at Umiat; it probably occurs in all suitable habitat in this region. In general, the summer specimens were darker in color than is considered typical for this subspecies. Two subadult specimens, collected during early June, showed a peculiar buffy color dorsally—apparently a characteristic of the winter pelage, since molting was in evidence. They were cranially identical with the present species. A total of more than 30 specimens was obtained.

According to the work of Zimmermann (1942), with which the writer agrees after having examined pertinent material, the Alaskan *Microtus operarius* is conspecific with *M. oeconomicus* of Eurasia. Gilmore (1946) regarded *M. operarius* as conspecific with *M. kamtschaticus* of Siberia; however, according to Zimmermann, *kamtschaticus* is a subspecies of *M. oeconomicus*. Several subspecies were previously assigned to the Alaskan *M. operarius*; of these, according to Anderson (1937), *M. operarius endoeus* is identical with *M. o. macfarlani*, the latter name having priority. With this one change, Zimmermann’s classification of the *Microtus oeconomicus* group of Alaskan voles is as follows:

*Microtus oeconomicus operarius* Nelson
*Microtus oeconomicus macfarlani* Merriam (syn. *endoeus* Osgood)
*Microtus oeconomicus yakutensis* Merriam
*Microtus oeconomicus kadiacensis* Merriam
*Microtus oeconomicus unalascensis* Merriam
*Microtus oeconomicus popofensis* Merriam
*Microtus oeconomicus sitkensis* Merriam
*Microtus oeconomicus inuitalis* Merriam
*Microtus oeconomicus panukensis* Hall and Gilmore
*Microtus oeconomicus elynocetes* Osgood

*Microtus miurus panasiki*, n. subsp.

Voles of the subgenus *Stenocranius*, apparently representing a new subspecies of *Microtus miurus*, occurred very commonly near Tolugak Lake, and also were collected at Umiat.

**Type.**—Skin and skull, young adult male, U.S. N. M. no. 290296; collected at Tolugak Lake (lat. 68° 24' N., long. 152° 10' W.), Brooks Range, Alaska, June 2, 1949, by Robert Rausch, original no. 21.

**Range.**—Type locality and vicinity; also taken at Umiat, on the Colville River.

**Diagnosis.**—Size medium. Five adult males measured: Total length 151 (140–170); tail 26 (23–30); hind foot 20 (19–21) mm. Five adult females measured: Total length 151 (146–155); tail 25 (22–29); hind foot 20 (20–21) mm. The males averaged 39.2 (32.3–46.1) grams in weight; the females (all pregnant) averaged 40.9 (32.2–51.2) grams. Dorsal ground color between Ochreous-Tawny and Yellow-Ocher (capitalized terms are from Ridgway, *Color standards and color nomenclature*, 1912). Purest color on rump and flanks. Entire dorsal surface with heavy admixture of dark brown to black hairs, resulting in general grayish appearance. Ear patches ochreous-buff, similar to rump. Sides tawny, shading into grayish on underparts and into ochreous-buff on flanks. Some specimens more buffy on underparts. Dorsal surface of tail ochreous-buff, with pale buff underneath. Feet gray. Skull long and narrow as typical of subgenus. Molar pattern as typical for species.
Comparison.—*Microtus miurus paneaki* is differentiated from *M. miurus oreas* Osgood by more grayish color, strongly contrasting lateral streaks, and less over-all ochraceous coloring. The skull of *paneaki* averages larger than that of *oreas* and is slightly narrower cranially. The molar patterns are identical. From *M. miurus miurus* Osgood, *paneaki* differs in more grayish color, presence of a contrasting ochraceous flank streak, larger and more massive skull, longer and heavier rostrum, larger and more inflated bullae, and much heavier molars. Compared with the type specimen of *Microtus miurus* Nelson, the present form differs in much heavier and broader skull, wider zygomatics, more inflated bullae, and more widely separated tooth rows. The molars are much heavier, and the interorbital depression is slighter in both immature and adult specimens. Two other obviously related species, *Microtus andersoni* Rand, 1945, and *M. cantator* Anderson, 1916, are both smaller than *M. miurus paneaki* and differ cranially and externally. Specimens of *andersoni* and *cantator* in the Collection of the National Museum of Canada have been examined by the writer.

More than a hundred voles of this species were collected near Tolugak Lake, employing the writer. Although not so abundant as along the Arctic coast during 1949, the brown lemming was not uncommon at Tolugak Lake during September; about 15 specimens were taken during this time. Only a single specimen was captured there previously. An immature specimen was captured at Umiat, and the skull of an adult was taken from the stomach of a rough-legged hawk (*Buteo lagopus*), which was nesting on the bluffs of the Colville River near Umiat.

**Dicrostonyx groenlandicus rubricatus** (Richardson)

Only six specimens of this lemming were collected in the Brooks Mountains during 1949, and none was observed at Umiat. Additional observations would indicate that this species was generally uncommon during 1949 over the whole of the Arctic Slope. About 15 specimens were collected near Point Barrow, during a time when the brown lemming was exceedingly abundant.

**REFERENCES**


---

**TABLE 1.—CRANIAL MEASUREMENTS (AVERAGE) OF VARIOUS SUBSPECIES OF CLETHRIONOMYS RUTULUS**

<table>
<thead>
<tr>
<th>Subspecies and locality</th>
<th>Number examined</th>
<th>Sex</th>
<th>Length of tooth row</th>
<th>Condylar length</th>
<th>Zygomatic width</th>
<th>Interorbital width</th>
<th>Maxillary width</th>
<th>Length of nasals</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Clethrionomys r. rutulius</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lappmark</td>
<td>8</td>
<td>?</td>
<td>4.6</td>
<td>23.5</td>
<td>12.0</td>
<td>3.9</td>
<td>11.1</td>
<td>6.8</td>
</tr>
<tr>
<td>Siberia</td>
<td>9</td>
<td>?</td>
<td>4.5</td>
<td>22.7</td>
<td>13.1</td>
<td>3.7</td>
<td>11.1</td>
<td>6.9</td>
</tr>
<tr>
<td><em>Clethrionomys r. paneaki</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolugak Lake, Alaska</td>
<td>6</td>
<td>?</td>
<td>5.1</td>
<td>23.4</td>
<td>13.0</td>
<td>3.9</td>
<td>11.1</td>
<td>7.2</td>
</tr>
<tr>
<td>Do</td>
<td>6</td>
<td>?</td>
<td>5.1</td>
<td>23.6</td>
<td>13.0</td>
<td>4.0</td>
<td>11.4</td>
<td>7.3</td>
</tr>
<tr>
<td>Chignik and Charlie Creek, Alaska</td>
<td>14</td>
<td>?</td>
<td>4.9</td>
<td>23.7</td>
<td>13.3</td>
<td>3.9</td>
<td>11.4</td>
<td>6.9</td>
</tr>
<tr>
<td>Do</td>
<td>10</td>
<td>?</td>
<td>4.9</td>
<td>23.6</td>
<td>13.3</td>
<td>3.8</td>
<td>11.4</td>
<td>7.4</td>
</tr>
</tbody>
</table>