

PROCEEDINGS
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DESCRIPTIONS OF TWO NEW SUBGENERA AND
THREE NEW SPECIES OF *MICROTUS* FROM
MEXICO AND GUATEMALA.

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Among the mammals collected in Mexico and Guatemala by Mr. E. W. Nelson and his assistant, Mr. E. A. Goldman, are 462 specimens of Voles of the genus *Microtus*. These animals were found on most of the mountains visited and series were obtained at 34 localities.

Up to the present time only three species of *Microtus* have been described from Mexico, namely, *mexicanus* (Saussure), from Mt. Orizaba, *phæus* (Merriam), from the Sierra Nevada de Colima, Jalisco, and *quasiater* (Coues), from Jalapa, Vera Cruz. *M. mexicanus* and *phæus* belong to the subgenus *Microtus*; *M. quasiater* to the subgenus *Pitymys*. Mr. Nelson's collection contains large series of topotypes of these three species, and additional specimens from numerous new localities; it contains also three new species, one of which (*fulviventer*) belongs to the subgenus *Microtus* proper; the others differ so widely from the previously known groups and from each other that it is necessary to erect two new subgenera for their reception. The two animals agree in the character of the fur, which is long and soft, and in the number of closed triangles on the first and last lower molars; they differ in the enamel pattern of the last upper molar, the degree of inflation of the triangles and loops of all the teeth, and in striking cranial characters. One is a long-tailed vole from Mt. Zempoaltepec, Oaxaca; the other a short-tailed animal

from Todos Santos, Guatemala. Both localities are considerably farther south than the southernmost published record of any member of the genus.

Subgenus MICROTUS Schrank.

Type, *Microtus arvalis* (Pallas) from Europe.

***Microtus fulviventer* sp. nov.**

Type from Cerro San Felipe, Oaxaca, Mexico (alt. 10200 ft.). No. 68250, ♂ ad., U. S. Nat. Mus., Biological Survey Coll. Collected Aug. 22, 1894, by E. W. Nelson and E. A. Goldman. Orig. No. 6601.

Characters.—Similar to *M. mexicanus* in size and general characters, but upper parts very much 'redder' and under parts fulvous instead of whitish; tail short; ears conspicuous.

Color.—Upper parts uniform dark umber brown mixed with black hairs; under parts dark fulvous or chestnut-fulvous; tail indistinctly bicolor, blackish above, pale fulvous below, darkening toward tip.

Cranial and dental characters.—Skull and teeth similar to those of *M. mexicanus*, but slightly larger; interorbital region broader; incisive foramina longer; molars heavier.

Measurements.—Type specimen: Total length 154; tail vertebræ 38; hind foot 20.

Subgenus ORTHRIOMYS* nobis.

Type, *Microtus umbrosus* sp. nov., from Mt. Zempoaltepec, Oaxaca, Mexico.

Characters.—Palate normal; interorbital constriction rather broad; m_1 with 3 closed triangles (2 on inner and 1 on outer side) and 2 open triangles, the latter forming the wings of the anterior trefoil; m_2 with 2 completely closed triangles (1 on each side) and 2 obliquely transverse loops (anterior and posterior) both on inner side; the outer triangle immediately followed by a deep reëtrant angle which completely cuts it off from inner triangle; m_3 with 1 closed triangle on each side. Mammæ 4: pectoral $\frac{2}{2} = 4$. Fur long and soft, only extreme tip colored.

Remarks.—In the type and only known species, *M. umbrosus*, m_3 has only 2 closed triangles and a posterior open trefoil; the molars are very broad and heavy, the breadth relatively greatest posteriorly; the enamel loops and triangles are very large, full, and broadly rounded, enclosing large islands of dark osteodentine, and so crowded as to exceed the interspaces. The crowns of the molars resemble those of *Phenacomys* in the polish of the enamel, darkness of the osteodentine and of the crowns as

* ὀρθριος, early; μῦς, mouse. In many respects *Orthriomys* suggests an ancient type intermediate between *Phenacomys* and the microtine subgenera *Pedomys* and *Arvicola*; in the character of its molar crowns it is nearest *Phenacomys*.

a whole (contrasted with the whitish molars of *Microtus*); large size and fullness of the loops and triangles (in this respect exceeding *Phenacomys*); pyriform shape of anterior loop in m^2 and m^3 ; enamel pattern of upper molars, including m^3 ; only slightly modified enamel pattern of lower molars, and great breadth of molar series (above and below) posteriorly. They differ from those of *Phenacomys* in having the outer triangle of m_3 completely isolated; two less triangles on m_1 , less disparity in depth between the reëntrant angles of the two sides in the lower molars, and in the total absence of roots.

***Microtus umbrosus* sp. nov.**

Type from Mt. Zempoaltepec, Oaxaca (alt. 8200 ft.). No. 68480, ♀ ad., U. S. Nat. Mus., Biological Survey Coll. Collected July 10, 1894, by E. W. Nelson and E. A. Goldman. Orig. No. 6412.

Characters.—Size medium or rather large; tail long and scantily haired; ears rather short and nearly concealed by fur; color very dark; fur long, soft, and full; dentition peculiar.

Color.—Upper parts uniform dusky with tips of hairs brown; under parts dark slate, washed with pale dull fulvous.

Cranial and dental characters.—Skull rather long; braincase long; anterior roots of zygomata not notched in front; zygomata not widely spreading, sides parallel; jugal not expanded; audital bullæ small; palatine pits deep; postpalatal notch square; interorbital constriction broad; premaxillæ reaching posteriorly considerably beyond nasals; nasals narrowing posteriorly; incisive foramina rather short. Molars large and broad; m^3 with 1 closed triangle on each side, and a short posterior trefoil or v presenting one open salient angle on each side [remaining teeth described under subgenus].

Measurements.—Type specimen: Total length 184; tail vertebræ 65; hind foot 23. Average of 7 specimens from type locality: Total length 177; tail vertebræ 61; hind foot 23.5.

Subgenus HERPETOMYS * nobis.

Type, *Microtus guatemalensis* sp. nov., from Todos Santos, Guatemala.

Characters.—Palate normal; m_1 with 3 closed triangles (2 on inner and 1 on outer side) and 2 open triangles, the latter forming the wings of the anterior trefoil; m_3 with 2 completely closed triangles (1 on each side) and 2 obliquely transverse loops (anterior and posterior) both on inner side; m^3 with 3 closed triangles (2 on outer and 1 on inner side) and a long posterior crescentic loop with both horns projecting on inner side. Mammæ 6: pectoral $\frac{2}{2}$, inguinal $\frac{1}{1}$ (the latter not functional). Plantar tubercles 5. Fur long and soft with only extreme tip colored.

Remarks.—This animal, while agreeing with *Orthriomys* in the number of enamel loops and triangles of the lower molars, differs strikingly in

* ἑρπητης, ἑρπιδος, creeper; μῦς, mouse.

those of the last upper molar (which agrees with *Microtus* proper) and in the general appearance of the molar crowns, which resemble *Microtus* instead of *Phenacomys*.

***Microtus guatemalensis* sp. nov.**

Type from Todos Santos, Huehuetenango, Guatemala (alt. 10000 ft.). No. 76777, ♂ ad., U. S. Nat. Mus., Biological Survey Coll. Collected Dec. 30, 1895, by E. W. Nelson and E. A. Goldman. Orig. No. 8960.

Characters.—Size medium; coloration very dark; end of nose blackish; lips white; tail short and rather scantily haired; fur very long and soft, nearly hiding the ears.

Color.—Under parts everywhere slate black; extreme tips of hairs on upper parts mixed dark golden fulvous and black, the resulting color difficult to describe but near the 'mummy brown' of Ridgway's 'Nomenclature of Colors'; end of nose surrounding nose pad blackish; edges of lips white; tail concolor, blackish.

Cranial and dental characters.—General appearance of skull as in *Microtus pennsylvanicus* or *mexicanus* but less constricted interorbitally; audital bullæ very large and swollen; jugal rather broadly expanded vertically; incisive foramina very rectangular—of nearly equal breadth throughout and truncate at both ends; anterior root of zygoma rather strongly notched in front and standing out squarely so that the jugals are nearly parallel. Dentition peculiar: incisors broad and long; molars broad and heavy: m^3 with 2 completely closed triangles on outer and 1 on inner side, with open posterior loop elongated and curved to form 2 salient angles on inner side.

Measurements.—Type specimen: Total length 155; tail vertebræ 40; hind foot 21. Average of 20 specimens from type locality: Total length 150; tail vertebræ 37; hind foot 21.



Merriam, C. Hart. 1898. "Descriptions of two new subgenera and three new species of *Microtus* from Mexico and Guatemala." *Proceedings of the Biological Society of Washington* 12, 105–108.

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