



6-30-1941

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Recommended Citation

Hall, E. Raymond (1941) "Three new mammals (*Microtus* and *Ochotona*) from Utah," *Great Basin Naturalist*: Vol. 2 : No. 2 , Article 7.
Available at: <https://scholarsarchive.byu.edu/gbn/vol2/iss2/7>

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THREE NEW MAMMALS (MICROTUS AND OCHOTONA)
FROM UTAH (1)

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Recognition, several years ago, of the distinctive characters of specimens of *Microtus montanus* from central Utah led to the saving of additional specimens for the collections of the Zoology Department of Brigham Young University. Study and comparison of these specimens with topotypes and other pertinent materials in the Museum of Vertebrate Zoology of the University of California reveals the existence of two hitherto unnamed geographic races of meadow mice. Also, specimens of the pika from south-central Utah are found to belong to a previously unrecognized race. Descriptions and names for these three new subspecies are offered below:

MICROTUS MONTANUS AMOSUS Hall and Hayward, subsp. nov.

TYPE: Female, adult, skin and skull; no. 95272, Mus. Vert. Zool.; Torrey, Wayne County, Utah; June 18, 1938; collected by James W. Bee; original no. 705.

RANGE: Fremont River drainage in south-central Utah.

DIAGNOSIS: Size large; tail long (25 to 27 per cent of total length); color reddish; skull with short palate and short nasals; braincase wide across mastoidal region; auditory bullae large.

COMPARISONS: Individuals of this race are larger than those of *nanus*, *nexus*, *fusus* or *micropus* and apparently are larger even than *arizonensis*. The size is about as in *fucosus* and *rivularis*. The reddish color of the upper parts distinguishes *amosus* from *nanus*, *micropus*, *fucosus* and in lesser degree from *nexus*, but resembles that of *fusus*, *arizonensis* and *rivularis*. From *rivularis*, seemingly the closest relative of *amosus*, it is distinguished by smaller skull, with, nevertheless, much larger auditory bullae. Individuals of *arizonensis*, which is the second closest relative of *amosus*, are smaller bodied.

(1) Contribution from the Museum of Vertebrate Zoology, University of California, and the Department of Zoology and Entomology, Brigham Young University.

REMARKS: Specimens, not at this writing available for examination, from Jensen, Uintah County, Utah, were previously commented upon (Proc. Biol. Soc. Washington, vol. 51, p. 132) as intermediate in some respects between the small reddish race *fusus* from Colorado and the larger, more blackish race *micropus* from Nevada. These specimens from Jensen possess several characters which give basis for thinking that when the geographic ranges of the subspecies of *Microtus montanus* in Utah are more thoroughly worked out, the race *amosus* will be found to have an extensive range in the Colorado River drainage in that State.

MEASUREMENTS: Average and extreme measurements in millimeters of 3 adult males from Steep Creek, Garfield County, and 5 adult females from Torrey, Wayne County, are: Total length, ♂, 174 (170–179), ♀, 180 (175–185); length of tail, 44 (41.5–46), 48 (40–54); length of hind foot, 20.2 (20.0–20.5), 20.7 (20.0–21.5); weight in grams, 62.0 (57–67), 67.0 (58–76); condylobasal length, 29.2 (28.9–29.5), 29.9 (29.0–30.3); occipitonasal length, 27.8 (27.4–28.1), 28.4 (27.4–29.4); nasal length, 8.4 (8.2–8.5), 8.6 (8.3–8.9); zygomatic breadth, 16.9 (16.5–17.3), 17.3 (17.0–17.6); interorbital breadth, 3.6 (3.6–3.6), 3.7 (3.5–3.9); mastoidal breadth, 13.8 (13.2–14.6), 13.6 (13.3–13.9); alveolar length of upper molar series, 7.1 (7.0–7.2), 7.4 (7.1–7.7); breadth of rostrum measured between ventral margins of infraorbital canals, 5.3 (5.2–5.3), 5.5 (5.4–5.7); palatilar length, 14.9 (14.5–15.2), 15.6 (15.0–16.0); width of tympanic bulla between anterodorsal face of external auditory meatus and posterior opening of stapedia canal, 6.3 (6.2–6.3), 6.4 (6.2–6.5).

SPECIMENS EXAMINED: Total number, 25, as follows: WAYNE CO.: Torrey, 6,500 ft., 15. GARFIELD CO.: Steep Creek, 8,500 ft., 10. With the exception of the type, all specimens are in the collection of the Department of Zoology, Brigham Young University.

MICROTUS MONTANUS NEXUS Hall and Hayward, subsp. nov.

TYPE: Female, adult, skin and skull; no. 95271, Mus. Vert. Zool.; West Canyon, Oquirrh Range, Utah County, Utah; August 3, 1939; collected by James W. Bee; original no. 19-8-3-39.

RANGE: Valleys and mountains of central Utah from Ogden south to Fish Lake Plateau; limits of range undetermined.

DIAGNOSIS: Size medium; tail relatively long (averaging 28 per cent of total length); upper parts with some reddish and some blackish; skull small; palate and nasals short; braincase relatively narrow across mastoidal region; tympanic bullae large.

COMPARISONS AND REMARKS: Individuals of this race are small and in that respect approach *nanus* and *fuscus*. *M. m. nexus* is less reddish and more blackish than *fuscus*, blacker and less grayish than *nanus* and less blackish than the larger *micropus*. Although this subspecies is smaller than *micropus*, the auditory bullae are more inflated and actually are larger. The shorter palate, relatively shorter nasals, and relatively narrower braincase, as measured across the mastoidal processes, are other features differentiating *nexus* from *micropus*. The large bullae is a feature found also in *amosus* but it and *rivularis* can be differentiated readily from *nexus* by larger size.

The specimens from Fish Lake come from within the Colorado River drainage and therefore might be expected to be referable to *amosus*. Nevertheless they have more of the characters of *nexus* although they are not typical of that race.

MEASUREMENTS: Measurements of 3 adults, ♂ no. 1728, ♀ no. 1730, and the type are: Total length, 172, 168, 155; length of tail, 42, 46, 41; length of hind foot, 21, 20.3, 20; weight in grams, 57, 70, 50; condylobasal length, 27.8, 27.5, 27.2; occipitonasal length, 26.5, 26.2, 26.2; nasal length, 8.0, 7.5, 7.3; zygomatic breadth, 16.0, 15.9, 15.6; interorbital breadth, 3.7, 3.6, 3.6; mastoidal breadth, 12.3, 12.3, 12.0; alveolar length of upper molar series, 6.4, 6.7, 6.5; breadth of rostrum measured between ventral margins of infraorbital canals, 5.2, 5.3, 5.0; palatilar length, 14.3, 14.4, 14.2; width of tympanic bulla between anterodorsal face of external auditory meatus and posterior opening of stapedial canal, 5.9, 6.4, 6.3.

SPECIMENS EXAMINED: Total number, 16, all from Utah, as follows: WEBER CO.: Ogden, 4293 ft., 3 (M.V.Z.); UTAH CO.: West Canyon, Oquirrh Range, 8 (7 in B.Y.U.), Provo, 4510 ft., 1 (M.V.Z.); SEVIER CO.: 10 mi. N. Fish Lake, Fish Lake Mts., 10,000 ft., 4 (M.V.Z.).

OCHOTONA PRINCEPS UTAHENSIS Hall and Hayward, subsp. nov.

TYPE: Male, adult, skin and skull; no. 95273, Mus. Vert. Zool.; 2 miles west of Deer Lake, Garfield County, Utah; June 25, 1938; collected by George Stanton Cannon; original no. 73.

RANGE: Known only from the type locality.

DIAGNOSIS: Size large; hind foot of medium length; color dark grayish above; anteroposterior extent of palatal bridge equal to or more than transverse width of crown of last upper molar; interpterygoid space only slightly spatulate or parallel sided; tympanic bullae large; nasals broad posteriorly.

COMPARISONS: Among named kinds of pikas this subspecies most closely resembles *Ochotona princeps saxatilis* from the Rocky Mountains of Colorado in cranial characters. The tympanic bullae are larger in *utahensis* and this is the only distinguishing feature noted between skulls of the two. The hind foot of *utahensis*, if we may rely on collectors' measurements, is shorter and it is easily recognizable by the grayer color. The upper parts (June-taken specimens) are dark gray and lack the buffy or cinnamon color of *saxatilis* in comparable pelage; the underparts are darker cinnamon on the chest.

From *O. p. cinnamomea* and *O. p. fuscipes* which occur nearby to the westward, *utahensis* differs in larger size, grayer (less cinnamon) color, wider (anteroposteriorly) palatal bridge, and more nearly straight sides on the incisive foramina. The tympanic bullae of *utahensis* are smaller than in *fuscipes* and larger than in *cinnamomea*.

REMARKS: Specimen labels bear the notation "Private Lake, SE Aquarius Plateau." We have not found this name on any map. The place where the specimens were taken is 2 miles west of Deer Lake, shown on the United States Forest Service map of Powell National Forest. Neither has a land survey been located for the area in question but it is judged that the locality lies in Sec. 9, R. 5E, T. 32S, Salt Lake Meridian.

MEASUREMENTS: Average and extreme measurements of 5 individuals (3 ♂♂ and 2 ♀♀) from the type locality are: Total length, 191 (180-200); length of hind foot, 29.2 (28-30); occipitonasal length, 45.5 (42.8-47.4); zygomatic breadth, 22.1 (21.5-23.1); breadth of braincase, 18.5 (18.0-18.9); postorbital breadth, 14.6 (14.4-14.8); interorbital breadth, 5.4 (5.0-5.7); width of palatal bridge, 2.4 (2.1-2.8); length of nasals, 15.3 (14.8-16.3); alveolar length of upper toothrow, 9.1 (8.8-9.5).

SPECIMENS EXAMINED: Five from the type locality, four of which are deposited in the vertebrate collection at Brigham Young University.