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A Relict Population of *Microtus pennsylvanicus* in Southwestern New Mexico

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In 1915, J. Stokley Ligon obtained two specimens of the meadow vole, *Microtus pennsylvanicus*, 7 miles southwest of Aragon, 6400 feet in elevation, Socorro County, New Mexico. This locality is approximately 98 miles south-southwest of San Rafael, Valencia County, New Mexico, the nearest locality from which the species has been reported, and the southernmost reported occurrence of the species in the western United States.

The two specimens are an adult male, No. 16666, San Diego Society of Natural History, skin and slightly damaged skull, obtained on April 12, 1915; and another adult male, A.M.N.H. No. 90873, skin only, obtained on April 11, 1915.

The external measurements in millimeters of the specimens (No. 16666 listed first) are: total length, 171, 179; length of tail, 40, 41; length of hind foot, 22, 22. The cranial measurements in millimeters of No. 16666 are: condylobasilar length, 29.7; zygomatic breadth, 18.2; lambdoidal breadth, 13.6; prelamdoidal breadth, 9.6; depth of braincase, 8.7; alveolar length of upper molar tooth row, 8.0. A comparison of these measurements with the maximum measurements of known specimens of *Microtus pennsylvanicus* from Colorado (Anderson, 1956, Univ. Kansas Publ., Mus. Nat. Hist., vol. 9, pp. 100, 101), indicates that No. 16666 is an unusually large individual. It is larger in condylobasilar length, zygomatic breadth, and alveolar length of the upper molar tooth row than any other specimen from Colorado or New Mexico that I have measured. The condylobasilar length of No. 16666 is 3.28 mm. greater than the mean condylobasilar length (26.42) of 29 topotypes of *Microtus pennsylvanicus*

modestus from Cochetopa Pass, Saguache County, Colorado. The condylo-basilar length of No. 16666 is therefore greater than the mean of the sample of *M. p. modestus* by 4.77 times the standard deviation (0.69) of the sample of *M. p. modestus*. The zygomatic breadth of No. 16666 is greater than the mean of the same sample of *M. p. modestus* by 5.32 times the standard deviation, and the alveolar length of the upper molar tooth row

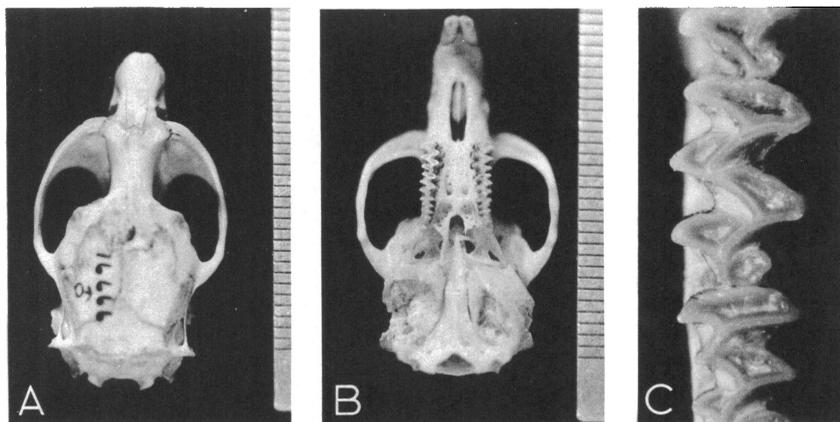


FIG. 1. Skull of No. 16666, San Diego Society of Natural History, *Microtus pennsylvanicus modestus* from 7 miles southwest of Aragon, New Mexico. A. Dorsal view. B. Ventral view. C. The central part of the right upper tooth row, showing the well-formed posterior loop on the second upper molar. The graduations on scales in A and B indicate millimeters. The teeth in C are enlarged approximately 15 times. The photographs are by the author.

of No. 16666 is greater than the mean of *M. p. modestus* by 5.40 times the standard deviation.

The specimens were taken from a population that probably differed significantly from *M. pennsylvanicus modestus* and *M. pennsylvanicus aztecus*, the geographically nearest subspecies. As only two specimens (one without a skull) have been preserved, it is not possible to characterize the population. I feel that little is to be gained by proposing a new subspecific name for the two specimens from 7 miles southwest of Aragon, and therefore I refer the two specimens to the subspecies *Microtus pennsylvanicus modestus* (Baird).

The two specimens of *M. pennsylvanicus* were compared with 16 specimens of *Microtus montanus arizonensis*, from the collection at the University of Arizona, from Black River (west fork), 8200 feet, Apache County, Arizona. The *M. pennsylvanicus* were as dark as the darkest *M. montanus*,

and had buffier venters and browner dorsal surfaces of hind feet and tail than any *M. montanus*. The specimens of *M. pennsylvanicus* were compared with *Microtus longicaudus* and *Microtus mexicanus*, the other two species of *Microtus* that occur in the area. The large size, dark pelage, short tail, elongate braincase, narrow interorbital region, and distinct posterior loops on the second upper molar teeth, considered together, are diagnostic for *Microtus pennsylvanicus*. Figure 1 shows the skull and part of the tooth row.

The place where the voles were collected was described by Ligon (*in litt.* of June 8, 1958) as the marshy bottom lands of the Tularosa River just above the place where Apache Creek empties into the Tularosa River. The marsh, in 1915, was overgrown with rank marsh grass, and the voles were there in considerable numbers. I visited the area in 1956. Owing to grazing and perhaps to drought, the vegetation in the pastures of the bottom lands was closely cropped. Only the centers of three artesian bogs supported taller grasses, sedges, and tules, and only here were the runways of *Microtus* found. Cattle could not reach the centers of the bogs because they became mired in the edges. The total ungrazed area was probably not greater than one acre. I trapped in each of the three bogs from June 18 to 20, 1956, and obtained only one species of vole, *Microtus mexicanus* (two specimens). Perhaps the relict population of *M. pennsylvanicus* that inhabited the marsh in 1915 is now extinct. The surrounding areas were searched for evidence of *Microtus* without success. An intensive search in the area between the Tularosa River and San Rafael to the north and between San Rafael and other known colonies of *Microtus pennsylvanicus* to the north and east might lead to the discovery of other localized colonies, but there is no doubt that most of the area between the known colonies in New Mexico is not suitable for *Microtus pennsylvanicus* and that the marginal colonies are relicts of a distribution that at some pluvial period of the Pleistocene was more widespread.

The local distribution and the large size of specimens of *Microtus pennsylvanicus* from 7 miles southwest of Aragon, New Mexico, and the possible extinction of the colony in the years since 1915 provide another example of a relict population of a northern species at the southern limits of its range.

