OCCASIONAL PAPERS
THE MUSEUM
TEXAS TECH UNIVERSITY

NUMBER 148 21 JULY 1992

DESCRIPTION OF A NEW SUBSPECIES OF THE SOUTHERN GRASSHOPPER MOUSE, ONYCHOMYS TORRIDUS, FROM WESTERN MEXICO

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During the process of examining patterns of geographic variation in the southern grasshopper mouse (*Onychomys torridus yakiensis* Merriam, 1904) from the México state of Sinaloa, we observed two distinct color morphs, a pale morph in the more xeric northern parts of the state and a darker one in the subtropical southern areas. Cranial and external characteristics of these color morphs were examined to determine if any morphological characters exhibited geographic affinities similar to those of pelage.

Mensural data were obtained from 116 individuals following the methods described by Van Cura and Hoffmeister (1966). Four external characters (total length, length of tail, length of hind foot, and length of ear) were taken directly from specimen labels, whereas 11 cranial characters (greatest length of skull, condylobasal length, zygomatic breadth, postorbital constriction, rostral breadth, breadth of braincase, length of rostrum, depth of skull, palatal breadth, length of diastema, and length of maxillary toothrow) were taken to the nearest 0.01 mm using Fowler digital calipers. Individuals were classified into six age-groups based on tooth wear patterns (Van Cura and Hoffmeister, *loc. cit.*). All statistical analyses were performed using the statistical package for the social sciences (SPSS Inc., 1986) and the SPSSx advanced statistics guide (Norusis, 1985).

Side-by-side comparisons of individual pelage color were made. Specimens were characterized by the presence of a dark dorsal band

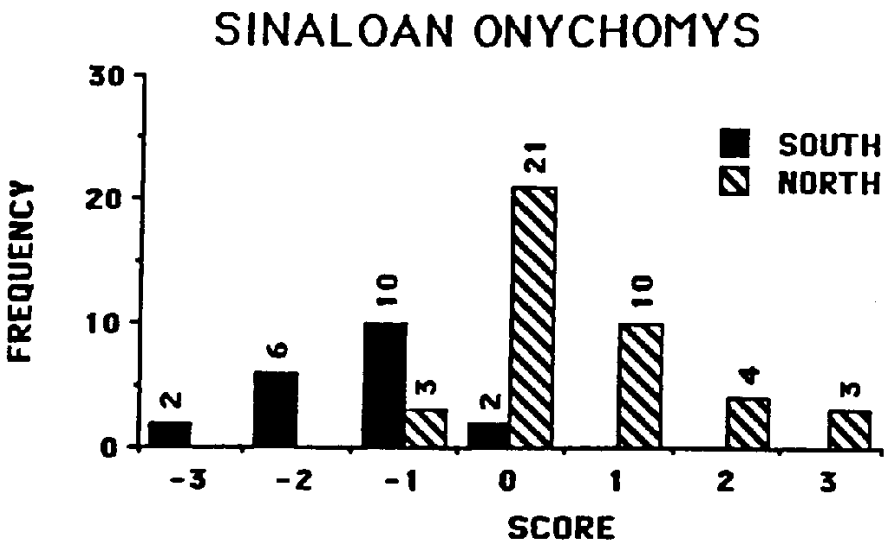

FIG. 1.—Plot of the discriminant function scores of individuals from north and south of the Río Sinaloa. Frequency of individuals within a score range are indicated.

extending to the nose, with no buffy patch at the base of the ear, or by having a pale face, with a buffy patch at the base of the ear.

Two *a priori* groups were formed on the basis of color and geographic locality (pale northern mice and dark southern mice). The break between the distinctive color morphs occurred in the vicinity of the Río Sinaloa. Localities from the vicinity of the river were treated as unknowns during the analyses to prevent the bias of heterogeneous groups. A two-way multivariate analysis of covariance (MANCOVA) was performed on the two *a priori* groups with sex and locality as the main effects and age as the covariate. Highly significant geographic variation ($P < 0.001$) was detected. No significant secondary sexual variation was observed. Discriminant function analysis then was employed to establish a suite of characters that best discriminate between the groups. Eight characters (total length, ear, greatest length of skull, zygomatic breadth, rostral breadth, length of rostrum, depth of skull, and length of maxillary toothrow) were selected by discriminat function analysis. A plot of the discriminate function scores (Fig. 1) demonstrates the limited overlap between the two color morphs. These results indicate the presence of an heretofore unrecognized taxon, which is named and described as follows:

Onychomys torridus knoxjonesi, new subspecies

Holotype.—Adult female, skin and skull, Museum of Natural History, University of Kansas no. 100608, from 12 mi. NE Presa Sanalona, 600 ft., Sinaloa, México; obtained on 25 February 1965 by Percy L. Clifton, original no. 7981.

External and cranial measurements of the holotype are as follows: total length, 140; length of tail, 51; length of hind foot, 21.5; length of ear, 20; weight, 21.5 grams; greatest length of skull, 25.28; condylobasal length, 23.49; zygomatic breadth, 13.13; postorbital constriction, 4.37; rostral breadth, 4.84; breadth of braincase, 11.18; rostral length, 9.05; depth of skull, 9.12; palatal breadth, 4.81; length of diastema, 6.20; length of maxillary toothrow, 3.94.

Distribution.—South of the Río Sinaloa and west of the Sierra Madre Occidental in central Sinaloa, south along the costal plain to the southern limit of the species in western México (Wilson, 1985).

Description.—Medium-sized subspecies, dark in color, with short, broad rostrum and a shallow, long skull relative to *O. t. yakiensis*; dark pelage characterized by broad dark dorsal band that extends to nose and lacking conspicuous buffy patch at base of ear.

Comparison.—This new taxon needs to be compared only to *O. t. yakiensis* from northern Sinaloa and southern Sonora. From the northern Sinaloa population, *knoxjonesi* differs most markedly in pelage color, having a distinct, dark, dorsal band that extends onto the face to the nose, and in lacking the conspicuous buffy patch at the base of the ear that is present in *yakiensis*. Cranially, *knoxjonesi* differs from *yakiensis* in averaging larger in eight of the 11 characters analyzed, and in having a distinctly shallower skull and shorter rostrum. Externally, *knoxjonesi* possesses significantly longer ears than does *yakiensis* but has slightly shorter hind feet.

Remarks.—From topotypic material of *O. t. yakiensis* (southern Sonora), *knoxjonesi* differs markedly in pelage characteristics as discussed for the Sinaloan population. However, there is much greater morphological similarity between these samples. The preliminary evidence suggests some type of clinal variation present in *yakiensis*, with a gradual decrease in size from southern Sonora to northern Sinaloa. This pattern does not persist into southern Sinaloa (*knoxjonesi*); moreover, there is a significant increase in size that is associated with change in pelage color. These changes take place abruptly in the

vicinity of the Río Sinaloa, which may serve as a barrier to gene flow between *yakiensis* and *knoxjonesi*.

Etymology.—It gives us great pleasure to name this taxon in honor of J. Knox Jones, Jr. Dr. Jones has produced more than 350 contributions to the scientific literature, many of which have dealt with neotropical and Mexican faunas.

Specimens examined (all KU unless otherwise noted).—A total of 45 *O. t. knoxjonesi* from Sinaloa as follows: 8 km. N, 22 km. E Sinaloa, 400 ft., 4; 1 mi. E Sinaloa, 180 ft., 5; 24 km. S Guasave, 20 ft., 4; 1.5 mi. N Badiraguato, 750 ft., 1; 1 mi. S Pericos, 3; 12 mi. N Culiacán, 2; 3 mi. E San Pedro, 550 ft., 6; 1 mi E Altata, 5 ft., 1; 12 mi. NE Presa Sanalona, 600 ft., 6; 7 mi. ENE Presa Sanalona, 600 ft., 1; 2 mi. E Costa Rica, 100 ft., 2; 6 mi. N, 1.5 mi. E Eldorado, 7; 5 km. SW San Ignacio, 200 m, 3.

A total of 71 *O. t. yakiensis* from Sonora and Sinaloa as follows. Sonora: 15 km. N Hermosillo, 2 (MSB); 15.4 mi. S Guaymas, 1 (MSB); Alamos, 4 (USNM); 12 mi. E Alamos, Río Cuchujaqui, 2 (MSB); 7.6 mi. SE Alamos, 3 (MSB); Camoa, Río Mayo, 4 (USNM). Sinaloa: 13 km. NNE Vaca, 1300 ft., 2; 16 km. NNE Choix 1700 ft., 7; Laguna, 17 km. SW Choix, 500 ft., 9; 3 mi. NE El Fuerte, 200 ft., 24; 2.5 mi. N El Fuerte, 1; 7 mi. SW Los Mochis, 20 ft., 5; 44 km. ENE Sinaloa, 600 ft., 7.

Acknowledgments

For loan of specimens in their care, we are especially grateful to R. M. Timm, Museum of Natural History, University of Kansas (KU), T. L. Yates, Museum of Southwestern Biology, University of New Mexico (MSB), and D. E. Wilson and R. Fisher, National Museum of Natural History (USNM).

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