Sigmodon alleni. By Karl A. Shump, Jr., and Rollin H. Baker

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Sigmodon alleni Bailey, 1902

Brown Cotton Rat

Sigmodon alleni Bailey, 1902:112. Type locality San Sebastian, Mascota, Jalisco.

Sigmodon vulcani Allen, 1906:247. Type locality Volcán de Fuego, 3050 m, Jalisco.

Sigmodon guerrerensis Nelson and Goldman, 1933:196. Type locality Omitlame, 2440 m, Guerrero.

Sigmodon planifrons Nelson and Goldman, 1933:197. Type locality Zapula, 1525 m, Oaxaca.

Sigmodon maccourelli Goodwin, 1955:3. Type locality Santo Tomas Teapan, 2135 m, 12 km S San Bartolo Yautpec, Yautpec, Oaxaca.

Sigmodon macrodon Goodwin, 1955:4. Type locality Cerro San Pedro, 1098 m, 20 km W Mixtequilla, Tehuantepec, Oaxaca.

CONTEXT AND CONTENT. Order Rodentia, Suborder Myomorpha, Family Muridae, Subfamily Cricetinae. The genus Sigmodon now includes at least seven species. A key to them is presented in Baker and Shump, 1977. Three subspecies of Sigmodon alleni are recognized (Baker, 1969) as follows:

S. a. alleni Bailey, 1902:112, see above.

S. a. vulcani Allen, 1906:247, see above (guerrerensis Nelson and Goldman a synonym).

S. a. planifrons Nelson and Goldman, 1933:197, see above (maccourelli Goodwin and macrodon Goodwin are synonyms).

DIAGNOSIS. A rich, brownish dorsum together with medium size (for captive animals, maximum weights are 180 g for nonpregnant females and 178 g for males; maximum lengths of head and body are 185 mm and 173 mm, respectively) and strongly recurved incisors (opisthodont) distinguish S. alleni from other species in the S. fulviventris group (that is, S. fulviventris, S. ochrognathus, and S. leucotis). Distinguishing cranial characters are: skull with flattened appearance when viewed laterally; bulge of capsular projections for the upper incisors slight; and paroccipital processes, when viewed from below, slightly hooked rather than straight or curved (Baker, 1969).

Sigmodon alleni differs from the S. hispidus group (S. hispidus, S. arizonae, and S. mascoatensis) by possessing small tail scales, 0.50 mm wide rather than 0.75 mm wide; tail heavily haired instead of sparsely haired; incisors usually more strongly recurved (opisthodont); basioccipital short in relation to breadth rather than long; paroccipital processes, viewed ventrally, slightly hooked instead of generally straight; and palatal pits moderately deep rather than shallow (Baker, 1969; Zimmerman, 1970).

GENERAL CHARACTERS. No sexual dimorphism in size was found in the brown cotton rat (Baker, 1969; Jiménez, 1971, 1972), and the following measurements (in mm, N = 8, from Baker, 1969) include representatives of both sexes of wild-taken adults from northern Jalisco. External measurements are: length of head and body, 145 (139 to 152); hind foot, 30 (27 to 32); height of ear from notch, 21 (20 to 22). Cranial measurements are: condylopremaxillary length, 31.2 (30.3 to 31.9); zygomatic breadth, 19.3 (18.4 to 19.6); least interorbital constriction, 5.1 (4.9 to 5.3); depth of cranium, 9.3 (9.6 to 9.7); length of nasals, 12.6 (12.3 to 13.1); alveolar length of maxillary toothrow, 6.1 (5.9 to 6.4). The skull is shown in Figure 1.

DISTRIBUTION. The brown cotton rat is the most tropical member of the S. fulviventris group. It occurs along the Pacific-facing mountains and foothills from southern Sinaloa southeastward to eastern Oaxaca at the Isthmus of Tehuantepec (see figure 2). This species is most commonly found living in

Figure 1. Dorsal, ventral, and lateral views of cranium, and lateral and occlusal views of mandible of Sigmodon alleni (MSU 9621, male from 13 km SSW Juachatengo, 1939 m, Oaxaca). Scale represents 10 mm.
of the pine-oak belt and the tropical habitat on the western slopes of the Sierra Madre Occidental in Durango. It is also possible that $S. \text{alleni}$ and $S. \text{fulviventris}$ occupy somewhat the same areas near Patrúcuaro in Michoacán, where Nelson and Goldman caught a series of the latter in the 1890’s and Hall and Villa-R. (1949) took the former species (which they mistakenly identified as $S. \text{melanotis}$) as well as $S. \text{hispidus}$. In the vicinity of Patrúcuaro, $S. \text{alleni}$ may occupy brushy areas and $S. \text{fulviventris}$ and $S. \text{hispidus}$ the grassy parts. However, $S. \text{hispidus}$ has been captured near Santa Lucia in Sinaloa in a runway under dense vegetation on a moist, tropical hillside near where the brown cotton rat was taken a few years previously (Baker, 1969).

**GENETICS.** Sex chromosomes are subteloentric, X, and subteloacentric, Y, with sex determination being of the XXXY type. The dipliod chromosomal number of $S. \text{alleni}$ was found to be 52 with FN of 64 (Zimmerman, 1970). This chromosomal number was based on a sample size of two from one locality in Michoacán.

**REMARKS.** The precise phylegetic relationship of $S. \text{alleni}$ to other members of the genus is still in doubt. Morphological considerations (Baker, 1969) together with serological evidence (Dalby and Lillevik, 1969) show the brown cotton rat to be closely related to $S. \text{fulviventris}$. However, a cytological study (Zimmerman, 1970) indicates this species to be most closely related to $S. \text{ochrognathus}$ and distantly related to $S. \text{fulviventris}$. A laboratory colony maintained in the Division of Vertébrates of The Museum at Michigan State University was docile, thrived, but was less productive of offspring in captivity than colonies of $S. \text{fulviventris}$, $S. \text{hispidus}$, or $S. \text{macrotis}$.

**LITERATURE CITED**


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