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## Three New Cotton Rats from Tehuantepec, Mexico

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In a collection of the 120 cotton rats recently made by Thomas MacDougall in the general area of the Isthmus of Tehuantepec are six forms. Three of them belong in the *fulviventer* group and appear to be new.

The majority of the specimens are referable to *Sigmodon hispidus mascotensis*. This large series shows a remarkable range of individual, as well as geographical, variation. The individuals vary in size from that of *S. h. major*, with equally large skull and teeth and coarse hispid pelage, to relatively small ones, with small teeth and comparatively soft pelage. The color of individuals ranges from pale buff, lightly mixed with black, to warm buff, heavily mixed with black. Specimens from the Chiapas-Tehuantepec border can be referred to *S. h. tonalensis* on the basis of a slightly deeper shade of buff in the coloration, but size and length of tail are not determining factors.

*Sigmodon h. saturatus* is represented by specimens from the lower regions of the northeastern section of the isthmus. The species of the *fulviventer* group described below occur in the mountains of southwestern Tehuantepec where their ranges not only overlap one another but overlap the range of *hispidus mascotensis*.

*Sigmodon planifrons minor*,<sup>1</sup> new subspecies

TYPE: A.M.N.H. No. 143429, skin and skull, adult female, Santa Lucía, 4000 feet elevation, 12 kilometers northeast of Tenango, District of Tehuantepec, Oaxaca, Mexico; collector, Thomas MacDougall; Feb-

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<sup>1</sup> Refers to small size.

ruary 6, 1944; original number 107. The skin of the type, the only known specimen, is in good condition, and the skull is complete, with teeth showing considerable wear.

**GENERAL CHARACTERS:** A very small, short-tailed cotton rat with soft, uniformly dark-colored pelage, small ears, and small teeth. About the size of typical *planifrons* from Juquila, Oaxaca, but color much darker and duller; skull slightly smaller with shorter rostrum; flatter brain case; larger bullae; more strongly recurved upper incisors, and slightly smaller molariform teeth.

**DESCRIPTION OF TYPE:** Color in fresh, unworn pelage: upper parts Light Ochraceous-Buff,<sup>1</sup> heavily mixed with black and becoming slightly suffused with Ochraceous-Tawny on rump; under parts white, the hair broadly Dark Plumbeous from base; tail bicolor, Mummy Brown above, the hairs buffy white below; feet buffy white to wrists and ankles; ears Mummy Brown and sparsely covered with black and buffy banded hairs as on body; extreme tip of nose almost clear Ochraceous-Buff.

Skull small, low, with broad, flattened brain case; rostrum short and slender; nasals slender, tapered evenly backward, drawn out to a relatively sharp point anteriorly and squarely emarginate posteriorly; supra-orbital and temporal ridges well defined anteriorly but abruptly reduced to a fine line at the angle of the parietals; interorbital space narrow; supraoccipital smoothly rounded, without sharp median ridge, and sloping slightly forward at the expense of the interparietal; interparietal narrow (anteroposteriorly), wide, and pointed (transversely); zygomatic arches wide and evenly bowed; molariform teeth very small and tooth row short; palate wide; upper incisors strongly recurved; audital bullae small and widely separated; zygomatic plate normal.

**MEASUREMENTS OF TYPE:** Skin: total length, 220 mm.; length of tail, 111; length of hind foot, 29; length of ear from notch after dampening, 13.7. Skull: greatest length, 29.4; condylobasal length, 27.9; zygomatic breadth, 16.7; interorbital breadth, 4.5; length of nasals, 10.8; width of brain case (immediately in front of descending processes of supraoccipital), 12.2; width of rostrum (maxillae at antorbital notch), 3.7; length of interparietal (at median line), 1.6; width of interparietal, 10.5; zygomatic plate, 3.3; width of palate across molariform tooth rows, 6.5; alveolar length of maxillary tooth row, 5.4; width of first upper molar, 1.65.

**REMARKS:** *Sigmodon p. minor* can readily be distinguished from other local forms by its small size, dark color, and small skull and teeth. It seems

<sup>1</sup> Capitalized color terms are after Ridgway, "Color standards and color nomenclature," Washington, D. C., 1912.

to differ sufficiently from typical *planifrons* in external and cranial characters to warrant subspecific recognition.

*Sigmodon macdougalli*,<sup>1</sup> new species

TYPE: A.M.N.H. No. 149122, skin and skull, adult female; Santo Tomás Teipán (rain forest above village), 7000 feet elevation, 12 kilometers south of Yautepec, Oaxaca; collector, Thomas MacDougall; March 17, 1950; original number 908. The skin of the type is in good condition, and the skull is complete. Besides the type there are 20 other specimens from the mountains of southwestern Tehuantepec referable to this species.

GENERAL CHARACTERS: A medium-sized, light, buffy-colored, long-tailed cotton rat with long, thick, soft pelage, resembling *S. alleni* of Jalisco, but larger and color paler, more buffy, skull differing in detail. Similar to *S. vulcani* of the Volcán de Fuego, but smaller, of paler color, and with more slender skull.

DESCRIPTION OF TYPE: Color: upper parts Warm Buff finely mixed with black, darkest on head and shoulders, becoming tinged with Ochraceous-Tawny on rump; the fur on entire under parts broadly Blackish Plumbeous from base and heavily overlain with white; tip of nose blackish; ears Mummy Brown, sparsely covered with black and Light Buff banded hairs; tail sharply bicolor, Mummy Brown above, hairs white below; fore feet white; hind feet white, the hairs Mummy Brown at base.

Skull similar to *alleni* but less angular and larger, upper incisors strongly recurved; supraorbital and temporal ridges finely developed; brain case low and moderately broad; rostrum slender; nasals flattened and depressed along median line, rounded anteriorly and truncate posteriorly; interparietal narrow anteroposteriorly; supraoccipital rising nearly perpendicularly, with a slight median ridge. Molariform teeth small, decreasing in size and spreading posteriorly; palatine slits extending posteriorly beyond line across anterior border of molars.

MEASUREMENTS OF TYPE: Skin: total length, 262 mm., tail vertebrae, 125; length of hind foot, 33; length of ear from notch after dampening, 16. Skull: greatest length, 32; condylobasal length, 30; zygomatic breadth, 17.8; interorbital breadth, 5.1; length of nasals, 12.5; width of brain case (immediately in front of descending process of supraoccipital), 12.75; width of rostrum (maxillae at antorbital notch), 4.6; zygomatic plate, 3.8; width of palate across molars, 7.2; alveolar length of maxillary tooth row, 6.2.

REMARKS: *Sigmodon macdougalli* appears to be a rather variable

<sup>1</sup> Named in honor of Thomas MacDougall.

species. The difference between specimens from each mountain range and peak is so marked that it would almost seem that three different forms are represented here. Specimens from the lower elevations average darker in color than those from higher altitudes, and closely resemble *S. vulcani* in this respect.

*Sigmodon macrodon*,<sup>1</sup> new species

TYPE: A.M.N.H. No. 142536, skin and skull, adult female; Cerro San Pedro (rocky summit), altitude 3600 feet, 20 kilometers west of Mixtequilla, District of Tehuantepec, Oaxaca, Mexico; collector, Thomas MacDougall; May 16, 1943; original number 7135. The skin of the type, the only known specimen, is in worn, faded pelage. The skull is complete, with molariform teeth, the last molars especially, showing considerable wear.

GENERAL CHARACTERS: A rather small, light-colored cotton rat with a moderately long, slender tail, rather thin, long pelage, large, light-colored ears, and short, broad skull, with relatively heavy molar teeth. Possibly allied to *Sigmodon alticola* of the high mountains of central Oaxaca, but color paler, tail longer, and cranial characters distinctive.

DESCRIPTION OF TYPE: Color: upper parts dull Cinnamon-*Buff* mixed with Cinnamon-*Brown* hairs, slightly darker on head and shoulders, becoming paler towards rump; ears Tawny-*Olive*, sparsely covered with Cinnamon-*Buff* hairs; ring around eye Cinnamon-*Buff*; tip of nose Ochraceous-*Buff*; under parts buffy white, the hairs white to roots on throat and plumbeous at base over rest of under parts; fore feet Cinnamon-*Buff*; hind feet white; tail indistinctly bicolor, Cinnamon-*Brown* above, Cinnamon-*Buff* below.

Skull short, broad, and low; superior outline arched; rostrum broad; zygomatic notch deep, the lateral spur extending well forward and inclined strongly inward; nasals flattened, rounded in front and truncate posteriorly; brain case broad and rounded; palatine slits ending posteriorly on a line across anterior border of molars; supraorbital and temporal ridges weakly developed, with a sharp angle at frontal parietal suture; interparietal rather narrow, with a dividing suture in middle, which is not necessarily significant, as the divided interparietal occurs in a specimen of *macdougalli*; supraoccipital with a low, median ridge and inclined slightly forward; molariform tooth row short but teeth relatively broad and large; upper incisors recurved as in *macdougalli*; bullae moderately large; zygomatic arches strong and widely spreading. The skull is much

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<sup>1</sup> Refers to its relatively large molar teeth.

like that of *S. alticola*, but it is smaller, with a longer interparietal, and the supraoccipital does not slope so strongly forward.

MEASUREMENTS OF TYPE: Skin: total length, 250 mm.; tail vertebrae, 120; length of hind foot, 32; length of ear from notch after dampening, 16.4. Skull: greatest length, 30.8; condylobasal length, 28.7; zygomatic breadth, 17.9; interorbital breadth, 4.7; width of rostrum (maxillae at antorbital notch), 4.3; length of nasals, 11.5; length of interparietal, 2; width of interparietal, 10.2; width of brain case immediately in front of descending branches of supraoccipital, 12.8; zygomatic plate; 3.8; width of palate across molariform teeth, 7.6; alveolar length of maxillary tooth row, 5.9; width of first upper molar, 2.05.

REMARKS: *Sigmodon macrodon* seems to combine some characters of *S. planifrons*, *alticola*, and *macdougalli*, but apparently is not closely related to any of them. Externally this type is not unlike immature specimens of *mascotensis* from high elevations, but its small size and specialized cranial characters seem to rule out the possibility of its being a variant individual of this form.

