

PROCEEDINGS
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FIVE NEW MAMMALS FROM ARIZONA AND COLORADO.

BY E. A. GOLDMAN.

Study of recent collections of mammals from various western States reveals the existence of five hitherto unrecognized geographic races. At least two of these present color characters which indicate strong reaction to environmental conditions.

The new forms are characterized as follows:

Sigmodon hispidus confinis, subsp. nov.
GILA COTTON RAT.

Type from Safford, Arizona (altitude 2,900 feet). No. 204241, ♂ adult (molars rather slightly worn), U. S. National Museum (Biological Survey Collection), collected by J. L. Peters, July 27, 1914. Original number 77.

Geographic distribution.—Upper part of the Gila River Valley in southeastern Arizona.

General characters.—A rather small subspecies similar in general to *Sigmodon hispidus berlandieri*, *Sigmodon h. arizonae*, and *Sigmodon h. eremicus*, but darker than any of these forms, with skull narrower, less massive and differing in important details.

Color.—Upperparts near pinkish-buff (Ridgway, 1912) heavily mixed or lined with blackish over top of head and back, the latter element thinning out along cheeks, shoulders and sides; underparts and feet dull whitish or grayish; ears usually grayish, but varying to buffy inside; tail brownish above, grayish below.

Skull.—Similar to those of *S. h. berlandieri*, *S. h. arizonae*, and *S. h. eremicus*, but narrower and less massive than any of them; rostrum narrower; much smaller than that of *S. h. arizonae*, with frontals less acutely prolonged posteriorly, and interparietal and audital bullae relatively smaller; interparietal and audital bullae small, much as in *S. h. eremicus*, but dentition lighter.

Measurements.—Type; Total length, 277; tail vertebrae, 111; hind foot, 31. *Skull*: Greatest length, 34.3; zygomatic breadth, 19.2; interorbital breadth, 4.8; nasals, 13.2; width of braincase (in front of descending process of supraoccipital), 13.2; maxillary toothrow, 6.

Remarks.—*Sigmodon hispidus confinus* appears to be a well-marked form restricted in distribution to the upper part of the Gila River Valley. Its general characters indicate as close relationship to *S. h. berlandieri* of the Rio Grande Valley as to its geographic neighbors in Arizona. In size it departs most widely from *S. h. arizonae*, which is a much larger animal confined to the upper part of the Verde River Valley.

Specimens examined.—Fourteen, all from the type locality.

***Sigmodon hispidus jacksoni*, subsp. nov.**

JACKSON'S COTTON RAT.

Type from 3 miles north of Fort Whipple (near Prescott), Arizona (altitude 5,000 feet). No. 214121, ♂ subadult (third upper molar slightly worn), U. S. National Museum (Biological Survey Collection), collected by H. H. T. Jackson, July 8, 1916. Original number 456.

Geographic distribution.—Known only from the plateau region near Prescott, Arizona.

General characters.—A pallid form, similar to *Sigmodon hispidus eremicus* in general color, but upperparts more uniform, the sides not so distinctly lighter than back as in that subspecies; skull differing in detail, especially the greater breadth of braincase. Contrasting with *Sigmodon hispidus arizonae* in smaller size, paler color and cranial features.

Color.—Type: Upperparts near light ochraceous-buff (Ridgway, 1912), finely and nearly uniformly mixed or lined with dusky, the sides scarcely paler than back; underparts and feet dull whitish or grayish; ears pale buffy inside; tail brownish above, grayish below.

Skull.—Closely resembling that of *S. h. eremicus*, but braincase broader; audital bullae more inflated; interparietal small, much as in *eremicus*. Compared with that of *S. h. arizonae* the skull is smaller; frontal region shorter, and lacking the narrow posterior prolongation on median line between parietals present in *arizonae*; interparietal and audital bullae relatively smaller.

Measurements.—*Type*: Total length, 249; tail vertebrae, 108; hind foot, 33. *Skull*: Greatest length, 31.2; zygomatic breadth, 18.2; interorbital breadth, 5; nasals, 11.4; width of braincase (in front of descending process of supraoccipital), 13.5; maxillary toothrow, 6.4.

Remarks.—This subspecies is based on a single immature specimen which differs so markedly from the considerable series of comparable examples now available of neighboring forms as to warrant recognition. The type locality is only a few miles from that of *S. h. arizonae*, but at a higher elevation and in a different life zone.

Specimens examined.—One, the type.

***Perognathus intermedius phasma*, subsp. nov.**

GILA POCKET MOUSE.

Type from Tinajas Altas, Gila Mountains, Yuma County, Arizona (altitude 1,400 feet). No. 203003, ♀ adult, U. S. National Museum (Biologi-

cal Survey Collection); collected by E. A. Goldman, November 23, 1913. Original number 22309.

Geographic distribution.—Desert mountains of extreme southwestern Arizona, and doubtless adjacent parts of Sonora, Mexico.

General characters.—Similar in general to *Perognathus intermedius intermedius*, but smaller and decidedly paler, the upperparts a lighter buff less densely mixed with black.

Color.—*Type*: Upperparts between light buff and pale ochraceous-buff (Ridgway, 1912), purest on cheeks, sides, and across hips, the top of head and back modified by rather thinly overlying dusky-tipped hairs; underparts, limbs, and feet white; tail brownish above, white below, except penciled tip which is brownish all around.

Skull.—Like that of *P. i. intermedius*, but smaller.

Measurements.—*Type*: Total length, 165; tail vertebrae, 97; hind foot, 20.5. *Skull* (type): Greatest length, 23; greatest mastoid breadth, 12.3; interorbital breadth, 5.8; nasals, 8.5; interparietal, 6.1 x 2.6; maxillary toothrow, 3.4.

Remarks.—The discovery of this geographic race materially extends the known range of *Perognathus intermedius* in southwestern Arizona. The pallid coloration of the new form, paralleled by that of a congener, *Perognathus pencillatus angustirostris*, inhabiting the same region, is apparently associated with light-colored soil conditions. Some of the other small mammals living in the restricted area appear to have yielded to similar environmental influences.

Specimens examined.—Three, all from southwestern Arizona, as follows: Tinajas Altas (type locality), 2; Tule Wells, 1.

***Perognathus apache cleomophila*,* subsp. nov.**

PLATEAU POCKET MOUSE.

Type from Winona, Coconino County, Arizona (altitude 6,400 feet). No. 226344, ♂ adult, U. S. National Museum (Biological Survey Collection). Collected by E. A. Goldman, July 19, 1917. Original number 28127.

Geographic distribution.—Lava beds region east of San Francisco Mountain, Arizona.

General characters.—Closely allied to *Perognathus apache apache*, but upperparts much darker and richer in general coloration, the ochraceous buffy element deeper or more intense, and more heavily overlaid with black. Similar to *P. a. melanotis*, but larger and darker, with skull differing in detail.

Color.—*Type*: Upperparts near ochraceous-buff (Ridgway, 1912) but slightly more tawny, this color pure along broad lateral line, but much obscured on head and back by overlying black-tipped hairs; underparts, fore limbs, and feet white; ears blackish inside; subauricular white spots conspicuous; tail brownish above, white below. In some specimens an

* From *Cleome serrulata*, the seeds of which are extensively gathered by this pocket mouse.

ochraceous buffy line extends along the outer side of the forearm; in others, including the type, the entire forelimbs are white.

Skull.—About like that of *P. a. apache*. Similar to that of *P. a. melanotis*, but larger; mastoids and audital bullae decidedly larger; interparietal relatively narrower.

Measurements.—*Type*: Total length, 138; tail vertebrae, 65; hind foot, 20.5. Average of five adult topotypes: 138 (134–143); 65 (63–69); 20.5 (19.5–21). *Skull* (type): Greatest length, 23.2; greatest mastoid breadth, 12.8; interorbital breadth, 5.2; nasals, 8.3; interparietal, 3.9 x 3.1; maxillary toothrow, 3.3.

Remarks.—While *Perognathus apache cleomophila* resembles *P. a. melanotis* in color, the skull indicates closer relationship to the pallid form, *P. a. apache*, of the Painted Desert region. The dark coloration of the upperparts harmonizes well with that of the decomposed lava or cinders of its local habitat and contrasts correspondingly with that of *P. a. apache* and the lighter sands it inhabits.

Specimens examined.—Twenty-six, all from the vicinity of the type locality.

***Perognathus apache caryi*, subsp. nov.**

COLORADO POCKET MOUSE.

Type from 8 miles west of Rifle, Garfield County, Colorado. No. 148206, ♂ adult, U. S. National Museum (Biological Survey Collection), collected by Merritt Cary, October 4, 1906. Original number 937.

Geographic distribution.—Valleys of Grand River and other affluents of the Colorado River in western and southwestern Colorado.

General characters.—Most closely allied to *Perognathus apache apache*, but larger and darker; skull more massive and differing in other details. Closely resembling *P. a. melanotis* in color, but decidedly larger and in cranial characters departing farther than from *P. a. apache*.

Color.—*Type*: Ground color of upperparts near light ochraceous-buff (Ridgway, 1912), pure along broad, conspicuous lateral line from cheeks to hips, the middle of face, top of head and back rather heavily lined with black; underparts, forelimbs and feet white; ears blackish inside; subauricular white spots distinct as in other forms of the group; tail light brownish or grayish above, white below. A specimen from Coventry is rich ochraceous-buff, this color partially suffusing the underparts.

Skull.—Similar to that of *P. a. apache*, but larger and more massive, the braincase higher, more arched; nasals longer; ascending branches of premaxillae broader; interparietal slightly larger, more extended anteroposteriorly; mastoid and audital bullae about the same. Contrasted with that of *P. a. melanotis* the skull appears still larger, with larger mastoid and audital bullae and differs otherwise in the same characters as from *P. a. apache*.

Measurements.—*Type*: Total length, 154; tail vertebrae, 73; hind foot, 21. An adult topotype, 145; 73; 19.5. *Skull* (type): Greatest length,

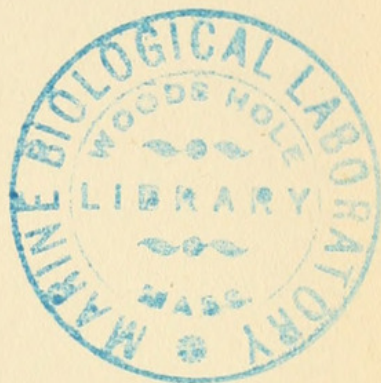
25.2; greatest mastoid breadth, 13.5; interorbital breadth, 5.6; nasals, 9.3 x 3.4; maxillary toothrow, 3.4.

Remarks.—Specimens of *Perognathus apache* from Colorado were provisionally referred by Cary* to the typical form, but reexamination of certain of them in connection with additional material from other regions reveals the rather well-marked differential characters here pointed out. Examples from Medano Springs ranch, 15 miles northeast of Mosca in the upper Rio Grande Valley in southern Colorado, also referred to *P. a. apache* by Cary, seem more properly assignable to *P. a. melanotis*.

Specimens examined.—Four, all from Colorado, as follows:

Rifle (8 miles west), 3; Coventry, 1.

* North Amer. Fauna, No. 33, p. 147, August 17, 1911.





Goldman, Edward Alphonso. 1918. "Five new mammals from Arizona and Colorado." *Proceedings of the Biological Society of Washington* 31, 21–25.

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