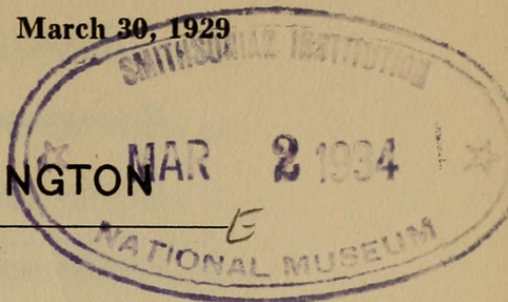


PROCEEDINGS  
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FOUR NEW POCKET GOPHERS OF THE GENUS  
HETEROGEOMYS FROM MEXICO.

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In "Monographic Revision of the Pocket Gophers" (North Amer. Fauna, No. 8, January 31, 1895) Merriam named the genus *Heterogeomys*, to which he assigned *H. hispidus* and *H. torridus* as distinct species, with type localities only a few miles apart, but at different altitudes, and in differing general faunal areas. *H. hispidus* inhabits the humid "cloud" forest region on the seaward slope of the lofty Cofre de Perote, while the type locality of *H. torridus* is on the adjoining arid tropical coastal plain. *Heterogeomys lanius* Elliot (Proc. Biol. Soc. Washington, vol. 18, p. 235, Dec. 9, 1905) was later described from a high altitude on the southeastern side of Mount Orizaba, about 50 miles southwest of the type locality of *hispidus*. Comparatively few specimens of this genus were available for study by Merriam. Subsequent field work has resulted in the accumulation of specimens from a number of localities extending the known range of the genus northward to eastern San Luis Potosi, and into several other Mexican states.

Study of material now at hand has resulted in the conclusion that *H. hispidus* and *H. torridus* are very closely related subspecies. *H. lanius* is imperfectly known and may be retained for the present, with full specific rank. Four new subspecies are described here, and the forms assignable to the genus, with type localities, are as follows:

- Heterogeomys hispidus hispidus* (Le Conte).....  
Near Jalapa, Vera Cruz, Mexico.  
*Heterogeomys hispidus torridus* Merriam.....  
Chichicaxtle, Vera Cruz, Mexico.



- Heterogeomys hispidus concavus*, subsp. nov. ....  
Pinal de Amoles, Queretaro, Mexico.  
*Heterogeomys hispidus isthmicus*, subsp. nov. ....  
Jaltipan, Vera Cruz, Mexico.  
*Heterogeomys hispidus yucatanensis*, subsp. nov. ....  
Campeche, Campeche, Mexico.  
*Heterogeomys hispidus chiapensis*, subsp. nov. ....  
Tenejapa, 16 miles northeast of San Cristobal, Chiapas, Mexico.  
*Heterogeomys lanius* Elliot. .... Xuchil, Vera Cruz, Mexico.

***Heterogeomys hispidus concavus*, subsp. nov.**

**QUERETARO POCKET GOPHER.**

*Type*.—From Pinal de Amoles, Queretaro, Mexico (altitude 5,500 feet). No. 81227, ♂ adult, U. S. National Museum (Biological Survey collection), collected by E. W. Nelson and E. A. Goldman, September 9, 1896. Original number 10130.

*Distribution*.—Eastern slope of the tableland and mountains to 7,000 feet in Queretaro, and lower elevations in San Luis Potosi.

*General characters*.—A large subspecies, allied to *H. h. hispidus* and *H. h. torridus*, but upper parts in fresh pelage near chestnut brown (near Mars brown in *hispidus* and *torridus*) and underparts a lighter, russet brownish tone; skull more angular and massive, the upper outline decidedly concave in adult males, and differing in details of structure. Pelage similar to that of *hispidus* in density and texture, denser especially on under parts, and softer than in *torridus*.

*Color*.—*Type* (partly worn pelage): Upper parts and outer sides of limbs near Prout's brown; under parts light cinnamon brownish; feet and tail scantily clothed with brownish hairs, the tail becoming naked at tip. Specimens in fresh pelage near chestnut brown above, and dull russet brownish below.

*Skull*.—Similar in size and general form to that of *H. h. torridus*, but more angular and massive; frontal region in adult males more depressed, the upper outline concave; zygomatics broader and heavier, the squamosal arm overlapping jugal strongly developed, with a prominent knob-like end (end more tapering in *torridus*); lambdoid crest higher, more abruptly upturned, the squamosal portion heavier, more strongly inclined forward; auditory bullae rather broad, but usually less extended below level of surface of basioccipital; dentition about the same. Compared with that of *H. h. hispidus* the skull is shorter and broader, with rostrum more flattened, zygomatics more widely and squarely spreading anteriorly, and it differs otherwise in about the same details as from *torridus*.

*Measurements*.—*Type*: Total length, 343 mm.; tail vertebrae, 84; hind foot, 48. Two adult male topotypes, respectively: 315–340; 75–74; 47.5–47. Average and extremes of four female topotypes: 332 (330–335); 77 (75–79); 48.1 (48–48.5). *Skull* (type): Condylbasal length, 64.2; length of nasals, 25; zygomatic breadth, 45.8; greatest breadth across squamo-



sals (over mastoids), 43.1; interorbital breadth, 11.5; alveolar length of upper molar series, 14.9.

*Remarks.*—*Heterogeomys h. concavus* occupies a northern extension of the range of the species. It appears to be most closely allied to *H. h. torridus* in cranial characters, but the pelage in density and softness is more like that in typical *hispidus* which also inhabits mountain slopes at altitudes above 5,000 feet. Denser, softer pelage is apparently associated with the lower temperatures prevailing at the higher levels, while thinner, harsher pelage characterizes typical *torridus* which is found at low elevations. Specimens from the lowlands of San Luis Potosi are similar to *torridus* in thinness and harshness of pelage, but in color and cranial characters are nearer to the present form to which they are referred.

*Specimens examined.*—Total number, 9, as follows:

Queretaro: Pinal de Amoles (type locality), 7.

San Luis Potosi: Tancanhuitz, 1; Valles, 1.

***Heterogeomys hispidus isthmicus*, subsp. nov.**

ISTHMIAN POCKET GOPHER.

*Type.*—From Jaltipan, Vera Cruz, Mexico (altitude 100 feet). No. 78062, ♂ adult, U. S. National Museum (Biological Survey collection), collected by E. W. Nelson and E. A. Goldman, May 2, 1896. Original number 9574.

*Distribution.*—Semi-forested coastal plains on the Gulf side of the Isthmus of Tehuantepec, in southern Vera Cruz, Mexico.

*General characters.*—A large subspecies most closely allied to *H. hispidus torridus*, but color lighter brown, and cranial characters, especially the remarkable sinuosity of the lambdoid crest, distinctive. Similar to typical *hispidus*, but skull with shorter rostrum, and differing otherwise in about the same characters as from *torridus*.

*Color.*—*Type* (fresh coat replacing worn pelage on anterior part of body and along median line of back): Upper parts in fresh pelage near chestnut brown, worn portions a lighter cinnamon brownish tone; a narrow transverse white stripe extending from median line on lower part of back to upper part of left flank where it is interrupted, and appears again as a stripe below across abdomen; under parts in general, limbs, and feet thinly haired, light brownish; tail naked, dull flesh-colored.

*Skull.*—Similar to that of *H. h. torridus*, but median part of lambdoid crest with a marked crescent-shaped anterior deflection, maxillary arm of zygoma heavier, encroaching upon premaxillae which are correspondingly narrowed posteriorly; nasals usually longer; dentition about the same. Compared with that of typical *hispidus*, the rostrum is shorter and flatter, and the skull differs otherwise about as from *torridus*.

*Measurements.*—*Type*: Total length, 325 mm.; tail vertebrae, 86; hind foot, 46. Average and extremes of four adult male topotypes: 320 (309–334); 89 (82–99); 46. Average and extremes of four adult female topotypes: 308 (292–317); 81 (76–85); 45 (43.5–46). *Skull* (type): Condylorbasal length, 59; length of nasals, 24.4; zygomatic breadth, 41.5; greatest



breadth across squamosals (over mastoids), 38.7; interorbital breadth, 11; alveolar length of upper molar series, 13.5.

*Remarks.*—This subspecies is known only from the low, Gulf coastal plains on the Isthmus of Tehuantepec, the adjoining coastal regions to the east and west, as well as the interior, being occupied by other forms. While close relationship is evident it is readily distinguished from the other subspecies of *hispidus* by the abrupt, median, crescent-shaped, forward deflection of the lambdoid crest. The distance from Jalapa and Chicaxtle, Vera Cruz, the type localities of *hispidus* and *torridus* respectively, is not great, and the form on the peninsula of Yucatan is different. The differentiation of *isthmicus* from *torridus* may be due to its isolation between the Papaloapam and the Grijalva rivers which, although not long, drain excessively humid regions and are of sufficient size to present effective barriers. Three specimens have a narrow white stripe extending from the median line on the lower part of the back down one of the flanks to a whitish area on the abdomen. In two of these it is on the left and in the third example on the right side. A similar marking is present in the type specimen on the left side, but is interrupted or faintly indicated on the middle of the flank. White markings occur sporadically in pocket gophers, but usually lack the regularity noted in this instance. In an adult male (No. 78061) the outer squamosal border, on both sides of the skull, bears a tapering, pointed process about 3.5 millimeters in length, directed upward and forward over the auditory meatus. These peculiar processes, evidently affording additional muscular attachment, are not present in the other specimens from the same locality, and have not been observed in other pocket gophers.

*Specimens examined.*—Sixteen, from localities as follows:

Vera Cruz: Catemaco, 1; Jatipan (type locality), 15.

***Heterogeomys hispidus yucatanensis*, subsp. nov.**

YUCATAN POCKET GOPHER.

*Type.*—From Campeche, Campeche, Mexico (altitude 50 feet). No. 100344, ♂ adult, U. S. National Museum (Biological Survey collection), collected by E. W. Nelson and E. A. Goldman, June 7, 1900. Original number 14233.

*Distribution.*—Lowlands of the Yucatan peninsula and northern Guatemala.

*General characters.*—A rather small subspecies, similar to *H. h. hispidus* and *H. h. torridus*, but smaller, with relatively longer tail; pelage thinner, under parts nearly naked; color lighter, light chestnut-brown, or inclining toward cinnamon brown (near seal brown in *hispidus* and *torridus*); skull differing in detail, especially the relatively broader and heavier maxillary arm of zygoma. Similar in color to *H. h. isthmicus*, but smaller and cranial characters distinctive.

*Color.*—*Type*: Upper parts (moderately worn pelage) near chestnut brown; under parts, limbs and feet nearly naked, the scattered hairs light brownish; tail dull flesh colored, with a few brownish hairs on proximal half, becoming naked distally.



*Skull*.—Similar in general form to those of *H. h. hispidus* and *H. h. torridus*, but smaller; maxillary arm of zygoma relatively broader, heavier, more decurved, the anterior margin turning more abruptly outward from rostrum and curving slightly backward to external angle; dentition much lighter, molariform toothrows decidedly shorter; premaxillae broad posteriorly as in *torridus*, with little or no encroachment by maxilla. Compared with that of *H. h. isthmicus* the skull is smaller and lacks the deep, median anterior deflection of the lambdoid crest distinctive of that form; molariform toothrows shorter; nasals broader posteriorly.

*Measurements*.—*Type*: Total length, 328 mm.; tail vertebrae, 101; hind foot, 47. Two adult female topotypes respectively: 308–303; 93–95; 45–44. *Skull* (type): Condylbasal length, 58.5; length of nasals, 22.3; zygomatic breadth, 38.5; greatest breadth across squamosals (over mastoids), 36.8; interorbital breadth, 11.2; alveolar length of upper molar series, 11.7.

*Remarks*.—The Yucatan pocket gopher has an extensive general range at very low elevations, probably embracing the whole of the peninsula for which it is named, and reaching southward to undetermined limits. The skulls examined from various localities indicate small bodily size which is not so evident from external measurements, owing to apparently greater length of tail and hind foot.

*Specimens examined*.—Total number, 22, as follows:

Campeche: Apazote (near Yohaltun), 1; Campeche, 5.

Yucatan: Chichen Itza, 2; Yaxcach, 10.

Guatemala, Department of Peten: Chuntuqui, 2; Libertad, 1; Nuevo Pueblo, 1.

***Heterogeomys hispidus chiapensis*, subsp. nov.**

CHIAPAS POCKET GOPHER.

*Type*.—From Tenejapa, about 16 miles northeast of San Cristobal, Chiapas, Mexico (altitude 7,800 feet). No. 76737, ♀ adult, U. S. National Museum (Biological Survey collection); collected by E. W. Nelson and E. A. Goldman, November 28, 1895. Original number 8682.

*Distribution*.—Highlands of Chiapas and Guatemala from about 3,000 to 8,000 feet altitude, and descending to lower elevations in southern Tabasco.

*General characters*.—Size large, color dark, pelage rather short, soft and velvety for a *Heterogeomys*. Similar to *H. h. hispidus* and *H. h. torridus* in size and color, but pelage shorter and softer, and cranial characters distinctive. Similar to *H. h. isthmicus* in size, but color darker, pelage softer, and skull differing in detail, especially the straighter outline of lamboid crest (deeply indented in *isthmicus*). Distinguished from *H. h. yucatanensis* by larger size, softer pelage, and cranial features, notably the relatively narrower rostrum.

*Color*.—*Type*: Upper parts, and outer surfaces of limbs, near seal brown; under parts thinly haired, cinnamon brownish; hind feet and toes of front feet scantily clothed with brownish hairs; tail nearly naked beyond



base, becoming entirely bare near tip, the dried skin dull flesh-colored. In one specimen a white spot, irregular in shape, appears on the middle of the abdomen.

*Skull*.—Similar in general contour to that of *H. h. torridus*, but rostrum narrower, less flattened, the nasals rising more prominently above the level of the premaxillae; maxillary arm of zygoma heavier, more broadly expanded at outer angle; auditory bullae smaller, less inflated, not usually extending below plane of basioccipital; dentition lighter, molariform tooth-rows shorter. Differing from that of *H. h. isthmicus* in straighter, less deeply sinuous lambdoid crest, narrower rostrum, and lighter dentition. Contrasted with that of *H. h. yucatanensis* the skull is decidedly larger, with relatively slenderer rostrum, and less inflated auditory bullae.

*Measurements*.—*Type*: Total length, 323 mm.; tail vertebrae, 86; hind foot, 48. Two adult female topotypes, respectively: 322–320; 84–79; 48–48. *Skull* (type): Condylbasal length, 58.5; length of nasals, 22.1; zygomatic breadth, 39.3; greatest breadth across squamosals (over mastoids), 37; interorbital breadth, 11.8; alveolar length of upper molar series, 12.8.

*Remarks*.—The range of this subspecies is in a region varying greatly in elevation and general topography. Specimens from the type locality and at the higher elevations elsewhere have softer, somewhat denser pelage than those from lower elevations as at Montecristo, Tabasco, but the latter do not appear to be satisfactorily separable. Two specimens of *Heterogeomys* from Guatemala were referred by Merriam (North Amer. Fauna, No. 8, p. 185, Jan. 31, 1895) to *H. torridus*, although he pointed out an apparent difference. These specimens are referred by us to the form here described, from which they appear indistinguishable.

*Specimens examined*.—Total number, 14, as follows:

Chiapas: Ocuilapa, 2; Tenejapa (type locality), 3; Tumbala, 1; Yajalon, 1.

Tabasco: Montecristo, 2; Teapa, 3.

Guatemala: Guatemala City, 1; without locality, 1.



Nelson, Edward William and Goldman, Edward Alphonso. 1929. "Four new pocket gophers of the genus *Heterogeomys* from Mexico." *Proceedings of the Biological Society of Washington* 42, 147–152.

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