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A New Subspecies of *Zygodontomys* *brevicauda* from Soldado Rock, Trinidad, the West Indies (Rodentia, Cricetidae)

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In a collection of small rodents recently received for identification from the Trinidad Regional Virus Laboratory is a series of *Zygodontomys* from Soldado Rock that represents an unnamed form of *Zygodontomys brevicauda*, herein described as a new subspecies.

All measurements are given in millimeters. Capitalized color terms are from Ridgway (1912). Abbreviations representing names of museums and laboratories are:

A.M.N.H., the American Museum of Natural History

B.M., British Museum (Natural History)

C.N.H.M., Chicago Natural History Museum

T.R.V.L., Trinidad Regional Virus Laboratory

Thanks are due to Dr. Thomas H. G. Aitken, entomologist of the Trinidad Regional Virus Laboratory, for information on the flora, fauna, and geology, and for photographs of Soldado Rock. Identifications of plants were made by Prof. J. W. Purseglove, Department of Botany, University of the West Indies, St. Augustine, Trinidad. Information on

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the bird population was supplied mainly by Dr. Richard Ffrench, amateur ornithologist at Texaco Trinidad, Inc. Dr. John B. Saunders, geologist, Texaco Trinidad, Inc., supplied Dr. Aitkin with geologic information.

Thanks are also expressed to Mr. Philip Hershkovitz of the Chicago Natural History Museum for the loan of specimens from Surinam. The photographs of the skulls were made by Mr. Robert E. Logan, Chief Photographer of the American Museum of Natural History.

***Zygodontomys brevicauda soldadoensis*, new subspecies**

Figures 1A, 2A

TYPE: A.M.N.H. No. 206654, skin, skull, and skeleton, adult male; Soldado Rock, latitude $10^{\circ} 4' 25''$ N., longitude $62^{\circ} 0' 56''$ W., an island 6 miles west of the southwestern tip of Trinidad, the West Indies, and 7 miles from the nearest point on the Venezuelan coast; collectors, Thomas H. G. Aitken and E. Tikasingh; original label T.R.V.L. No. 5803; taken June 16, 1963. The skin is in fair condition and was prepared at the American Museum from a frozen specimen. The skull is complete. In addition to the type there are 20 topotypes, including seven adult males, six adult females, four subadult males, two subadult females, and one juvenile male. The crowns of the molar teeth in 80 per cent of the adult specimens show considerable or excessive wear.

DIAGNOSIS: Size medium for the species; total length, adult males 200–285, adult females 210–235; pelage relatively coarse; color dark; skull angular and narrow, superior outline convex; rostrum short and broad; braincase narrow; zygomatic arches not greatly expanded laterally, sides almost parallel; molariform teeth relatively small; anterior palatine foramina wide and extending posteriorly to plane of front of anterior molars.

DESCRIPTION OF TYPE: Color of upper parts Ochraceous-Tawny heavily mixed with black, the tawny hairs Dark Mouse Gray from base for most of their length; under parts Light Buff, this color scarcely covering dark gray basal color of hair; forefeet and hind feet to wrists and ankles soiled Light Buff; tail Mummy Brown above, paler below; ears Mummy Brown. Skull slightly elevated above rostrum and braincase in interorbital region; zygomatic arches widely expanded anteriorly, sides nearly parallel; supraorbital ridges well developed and extending as raised ridges, backward across parietals to lambdoidal crest; medial occipital crest moderately well developed.

MEASUREMENTS OF TYPE: Total length, 235; length of tail, 100; hind

TABLE 1
MEASUREMENTS (IN MILLIMETERS) OF SUBSPECIES OF *Zygodontomys brevicauda* FROM TRINIDAD, SURINAM, VENEZUELA, AND COLOMBIA

Species, Museum, and Number	Locality	Sex and Age	Total Length	Tail Length	Hind Foot	Skull, Greatest Length	Condyllobasal Length	Nasal Length	Zygomatic Breadth	Interorbital Breadth	Rostrum, Breadth at Base	Palate, Width across Molars	Braincase Breadth	Maxillary Tooth Row Alveoli
<i>Z. b. soldadoensis</i>														
TRINIDAD														
A.M.N.H. No. 203449	Soldado Rock	♂ ad	226	102	26.0	29.3	27.8	12.2	15.0	5.0	3.9	6.0	12.2	4.5
A.M.N.H. No. 206641	Soldado Rock	♂ ad	220	105	28.0	30.5	28.7	11.5	15.2	5.2	4.1	6.3	12.7	4.5
A.M.N.H. No. 206642	Soldado Rock	♀ ad	230	85	29.0	32.3	30.1	13.1	15.6	5.2	4.3	6.1	12.7	4.5
A.M.N.H. No. 206643	Soldado Rock	♀ ad	235	105	27.0	30.9	29.0	13.0	14.9	5.1	3.9	6.1	12.5	4.3
A.M.N.H. No. 206644	Soldado Rock	♂ ad	205	95	28.0	31.5	29.9	12.9	15.6	5.0	4.1	5.9	12.7	4.3
A.M.N.H. No. 206654 ^a	Soldado Rock	♂ ad	235	100	28.0	33.0	31.5	14.0	15.9	5.1	4.2	6.4	12.6	4.5
A.M.N.H. No. 206658	Soldado Rock	♂ ad	215	105	26.0	29.2	26.9	11.5	14.3	4.7	4.1	5.9	11.7	4.2
<i>Z. b. microtinus</i>														
SURINAM														
B.M. No. 66.8.11.16 ^a	Surinam	♂ ad	199	84	24.5	29.7	—	13.0	16.0	4.7	—	—	—	4.1
C.N.H.M. No. 95654	Carolinakreek	♂ ad	254	102	27.0	—	—	13.9	16.7	5.0	4.5	6.5	—	4.6
C.N.H.M. No. 95656	Loksie Hatti	♂ ad	245	101	28.0	—	—	13.2	16.5	5.3	4.3	6.2	—	4.5
C.N.H.M. No. 95661	Loksie Hatti	♂ ad	232	86	25.0	30.7	28.9	13.0	16.0	5.1	4.5	6.1	13.0	4.5
C.N.H.M. No. 95681	La Poule	♂ ad	244	98	28.0	33.2	30.5	14.9	17.0	5.4	4.2	6.5	13.1	4.7
C.N.H.M. No. 95683	Dirkshoop	♂ ad	238	95	27.0	31.5	29.5	12.0	16.5	5.5	4.4	6.3	12.8	4.5

TABLE 1—(Continued)

Species, Museum, and Number	Locality	Sex and Age	Total Length	Tail Length	Hind Foot	Skull, Greatest Length	Condylobasal Length	Nasal Length	Zygomatic Breadth	Interorbital Breadth	Rostrum, Breadth at Base	Palate, Width across Molars	Braincase Breadth	Maxillary Tooth Row Alveoli
<i>Z. b. breviceuda</i>														
TRINIDAD														
A.M.N.H. No. 5965/4692	Princes Town	♂ ad	262	106	28.0	33.6	30.7	14.5	16.8	5.4	4.3	6.7	13.6	4.7
A.M.N.H. No. 5962/4695	Princes Town	♂ ad	238	88	30.0	31.7	29.5	12.8	16.3	5.3	3.9	6.0	13.2	5.2
A.M.N.H. No. 5975/4702	Princes Town	♂ ad	256	115	27.0	31.7	29.7	11.7	16.3	5.0	4.1	6.5	13.0	4.8
A.M.N.H. No. 5977/4704	Princes Town	♂ ad	265	108	25.0	32.5	30.3	14.0	16.4	5.1	4.4	6.7	13.1	5.0
A.M.N.H. No. 5981/4708 ^a	Princes Town	♂ ad	258	104	28.0	32.2	30.0	13.5	16.3	5.3	3.9	6.5	13.2	5.3
A.M.N.H. No. 5983/4710	Princes Town	♂ ad	230	83	28.0	31.5	30.0	—	16.5	5.1	4.5	6.5	13.0	4.7
A.M.N.H. No. 5987/4714	Princes Town	♂ ad	280	120	30.0	34.1	32.1	14.2	17.3	5.4	4.5	7.0	13.5	5.0
<i>Z. b. thomasi</i>														
VENEZUELA														
B.M. ^a	Sucre	♀ ad	224	99	23.0	—	—	—	16.0	5.0	—	—	—	4.0
A.M.N.H. No. 36186	Cristobal	♂ ad	220	95	25.0	29.5	27.8	12.2	15.5	4.6	3.7	5.6	12.4	4.2
A.M.N.H. No. 36191	Cristobal	♂ ad	210	85	25.0	31.0	—	12.8	15.2	4.9	4.5	5.7	12.4	4.5
A.M.N.H. No. 14731 ^b	Quebara Secca	♂ ad	217	101	27.6	28.8	27.3	11.5	13.8	4.7	4.3	5.4	12.3	4.1
<i>Z. b. brumeus</i>														
COLOMBIA														
B.M. No. 98.7.34 ^a	El Saibal	♀ ad	269	117	25.0	—	—	—	—	—	—	—	—	—
B.M. ^c	El Saibal	—	—	—	—	34.0	—	—	17.7	5.0	—	—	—	5.0
A.M.N.H. No. 33773	Huila	♂ ad	230	120	28.0	32.5	29.6	11.7	16.5	5.0	4.5	6.7	13.2	5.4

TABLE 1—(Continued)

Species, Museum, and Number	Locality	Sex and Age	Total Length	Tail Length	Hind Foot	Skull, Greatest Length	Condylobasal Length	Nasal Length	Zygomatic Breadth	Interorbital Breadth	Rostrum, Breadth at Base	Palate, Width across Molars	Braincase Breadth	Maxillary Tooth Row Alveoli	
<i>Z. b. sanctaemartae</i>	COLOMBIA														
A.M.N.H. No. 15312 ^a	Bonda	♂	sub	235	100	27.0	30.0	28.4	12.2	14.5	4.8	5.1	5.8	12.1	4.6

^a Type.
^b Paratype.
^c Cotype.

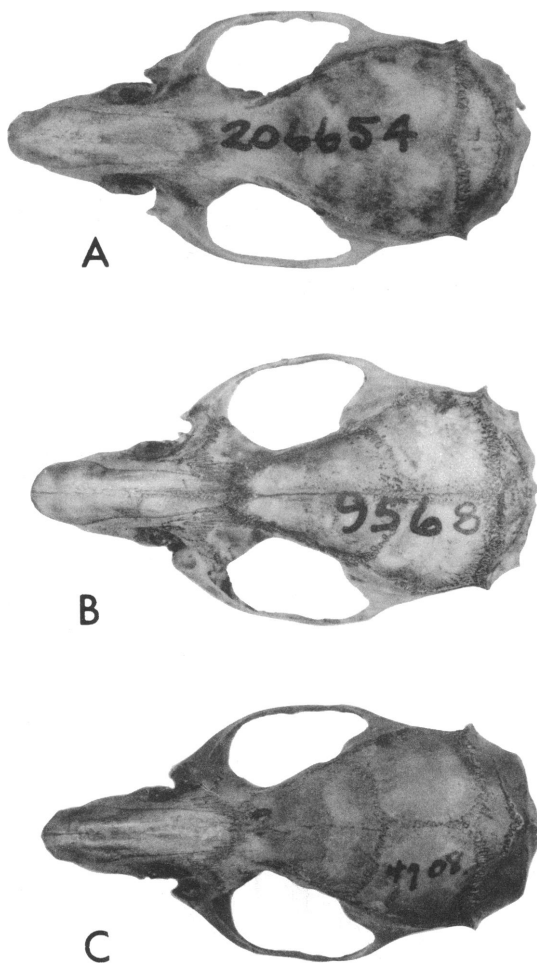


FIG. 1. Dorsal view of cranium. A. *Zygodontomys b. soldadoensis*, adult male, A.M.N.H. No. 206654, type, from Soldado Rock, Trinidad. B. *Z. b. brevicauda*, adult male, A.M.N.H. No. 5981/4708, type, from Princes Town, Trinidad. C. *Z. b. microtinus*, adult male, C.N.H.M. No. 956081, from La Poule, Surinam. All $\times 2$.

foot, 28.6. Skull: greatest length, 33.0; condylobasal length, 31.5; length of nasals, 14; zygomatic breadth, 15.9; interorbital breadth, 5.1; breadth of rostrum in front of zygomatic notch, 4.2; breadth of braincase, 12.6; breadth of palate across molars, 6.4; alveolar length of maxillary tooth row, 4.5. Measurements of other specimens are given in table 1.

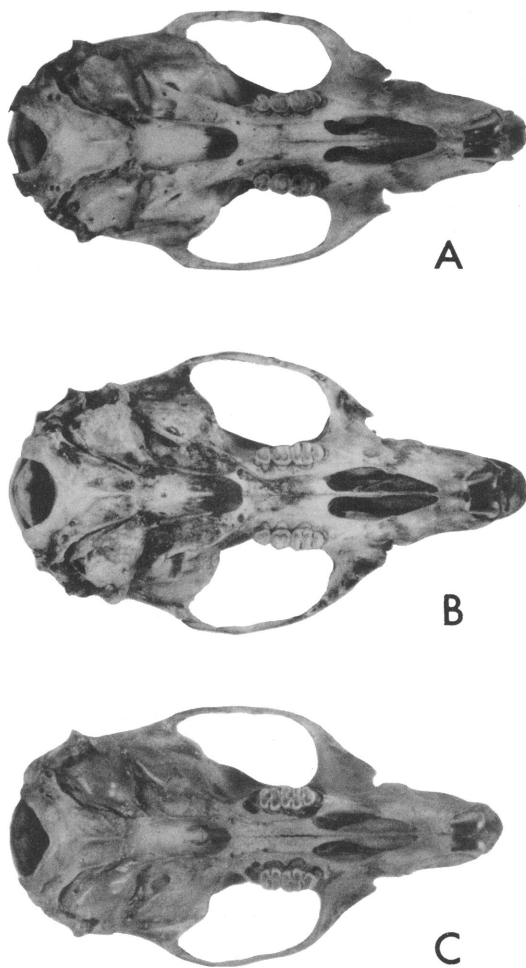


FIG. 2. Ventral view of cranium. A. *Zygodontomys b. soldadoensis*, adult male, A.M.N.H. No. 206654, type, from Soldado Rock, Trinidad. B. *Z. b. brevicauda*, adult male, A.M.N.H. No. 5981/4708, type, from Princes Town, Trinidad. C. *Z. b. microtinus*, adult male, C.N.H.M. No. 956081 from La Poule, Surinam. All $\times 2$.

COMPARISONS: *Zygodontomys b. soldadoensis* is about the same size and color as *Z. b. microtinus* Thomas from Surinam and has similar short, harsh hair. However, *Zygodontomys b. soldadoensis* is distinguished from *Z. b. microtinus* by having a relatively longer skull that is less elevated in the interorbital region, a narrower and more elongate braincase, less

spreading zygomatic arches, and relatively longer anterior palatine foramina. Compared with *Z. b. brevicauda* from Princes Town, Trinidad, *Z. b. soldadoensis* has coarser, darker, and duller pelage, a noticeably narrower and more angular skull that is more convex in superior outline, a braincase that is narrower, a rostrum that is relatively broader, molari-form teeth that are smaller, supraorbital ridges that are more strongly beaded, and zygomatic arches that are more nearly parallel sided in-

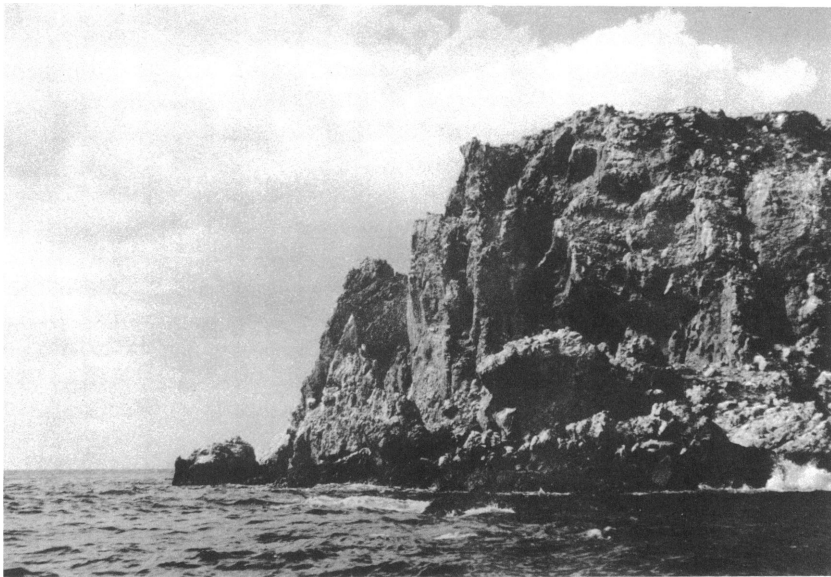


FIG. 3. Soldado Rock, steep western face, largely devoid of vegetation.

stead of strongly bowed outward as in the nominate form. *Zygodontomys b. thomasi* J. A. Allen from Sucre, Venezuela, the nearest geographical form on the mainland and considered by Hershkovitz (1962, p. 205) as doubtfully distinct from the nominate form, has pelage that is softer, longer, and paler and a skull that is relatively shorter and that has more widely spreading zygomatic arches than in *Z. b. soldadoensis*. *Zygodontomys b. soldadoensis* differs from *Z. b. brunneus* Thomas from El Saibal, Colombia, in much the same way, except for even smaller teeth, in which it differs from typical *Z. brevicauda*. Compared with *Z. b. sanctaemartae* J. A. Allen from Bonda, considered by Hershkovitz (1962, p. 205) as doubtfully distinct from *Z. b. brunneus*, *Z. b. soldadoensis* differs in much the same way as it does from *Z. b. brunneus*.

REMARKS: Soldado Rock has an area of about 2 acres and at the high-

est point has an altitude of 117 feet. Geologically it is mainly limestone, with some silts in the "saddle," a relatively low area on the ridge connecting the two main rock masses of Soldado Rock. The rocks originated largely in shallow water and range in age from Paleocene to Upper Eocene. On the north side are two or three blocks of sandstone separated by water from the island which are probably younger than Upper Eocene age. The island is probably a rootless mass lying in younger beds,



FIG. 4. Soldado Rock, looking south; Venezuela is to the right, in direction of the cloud bank. View of the "saddle" on top of the rock. The vegetation is *Plumbago scandens* (dark), *Eleusine indica* (dry grass), and some *Portulaca oleracea* in right foreground. During tern-nesting season these exposed surfaces are covered with eggs and chicks. The first specimen of *Zygodontomys* was taken under a can at this camp-site.

probably Miocene. There are no trees on the Rock, but there are some low brush-covered areas in places. Bare limestone characterizes much of the island and rich guano-laden silts occur in the "saddle" and on some of the other slopes. There is a heavy growth of the shrub *Plumbago scandens* in the "saddle" and a few tufts of the grasses *Eleusine indica* and *Cynodon dactylon*, a sedge (*Mariscus ligularis*), and occasional plants of purslane (*Portulaca oleracea*). The annual rainfall on Soldado Rock is probably less than 50 inches. The bird population is largely oceanic and includes three nesting species, Sooty Tern (*Sterna fuscata*), Noddy

Tern (*Anous stolidus*), and Grey-breasted Martin (*Progne chalybea*); seven regular visitors, Magnificent Frigate-bird (*Fregata magnificens*), Brown Pelican (*Pelecanus occidentalis*), Brown Booby (*Sula leucogaster*), Ruddy Turnstone (*Arenaria interpres*), Spotted Sandpiper (*Actitis macularia*), Laughing Gull (*Larus atricilla*), and Common Tern (*Sterna hirundo*); and three occasional visitors, Bulwer's Petrel (*Bulweria bulweri*), White-shouldered Water Tyrant (*Fluvicola pica*), and *Elaenia* sp. In addition, the island supports a small colony of *Iguana iguana* and *Bufo marinus*.

The specimens of *Zygodotomys* were taken on the lower *Portulaca*-covered slopes and on top of the Rock.

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