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\*\*\* START OF THE PROJECT GUTENBERG EBOOK MAMMALS OBTAINED BY DR. CURT VON WEDEL FROM THE BARRIER BEACH OF TAMAULIPAS, MEXICO \*\*\*

Mammals Obtained by Dr. Curt von Wedel  
from  
the Barrier Beach of Tamaulipas, Mexico

[Pg 33]

BY

E. RAYMOND HALL

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## Mammals Obtained by Dr. Curt von Wedel from the Barrier Beach of Tamaulipas, Mexico

[Pg 35]

BY

E. RAYMOND HALL

WHAT species of mammals occur on the "coastal island", barrier beach, of Tamaulipas? Are the closest relatives of these mammals on Padre and Mustang islands of Texas, instead of on the mainland of Tamaulipas, or are the mammals on the barrier beach distinct from all others? These were questions that Dr. von Wedel of Oklahoma City and I asked ourselves in March of 1950 when we were in southern Texas. With the aim in mind of answering these questions, Dr. von Wedel arranged round-trip transportation, by air, for the two of us between Brownsville, Texas, and Boca Jesús María. The latter place is a "pass", tidal inlet, through the long barrier beach. The waters of the Gulf of Mexico and of the lagoon behind the beach flow back and forth with the changing tides through the inlet.

We arrived at Boca Jesús María on March 18, 1950, and left on March 22, 1950. Our headquarters there were in one of the four one-story buildings immediately north of the inlet. This place is approximately 89½ miles south, and 10 miles west, of Matamoros, Mexico. Most of our collecting was done on the sand dunes one and one-half miles north of the buildings but on the evening of March 20 we made a round-trip, by boat of course, to the sand dunes on the south side of the inlet to set traps; these traps, and the *Dipodomys* that were caught in them, were picked up the following morning.

At the time of our visit, the part of the barrier beach south of the tidal inlet was connected with the mainland. The connection was far to the southward, according to our pilot, Mr. Kagy of Brownsville, and also according to the testimony of the Mexicans at the fishing camp where we stayed on the north side of the inlet. The barrier beach which lay to the north of the inlet extended sixty-odd miles northward to the delta of the Río Grande and had, we were told, eight "passes," including Paso Jesús María. At the time of our visit, however, only three of these tidal inlets were open, it was said; the five others were thought to be filled in with sand, which permitted terrestrial animals to move from one part of the beach to another. Dr. von Wedel and I saw two tidal inlets that were open when we were being flown back to Brownsville.

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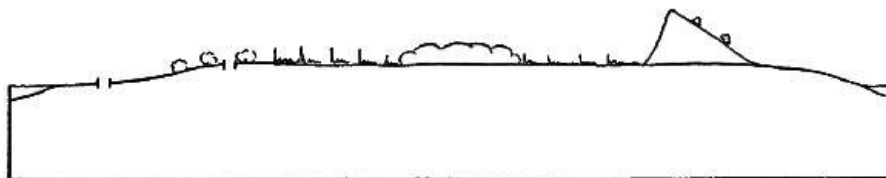
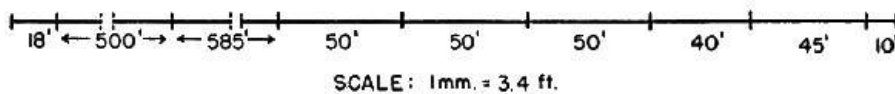
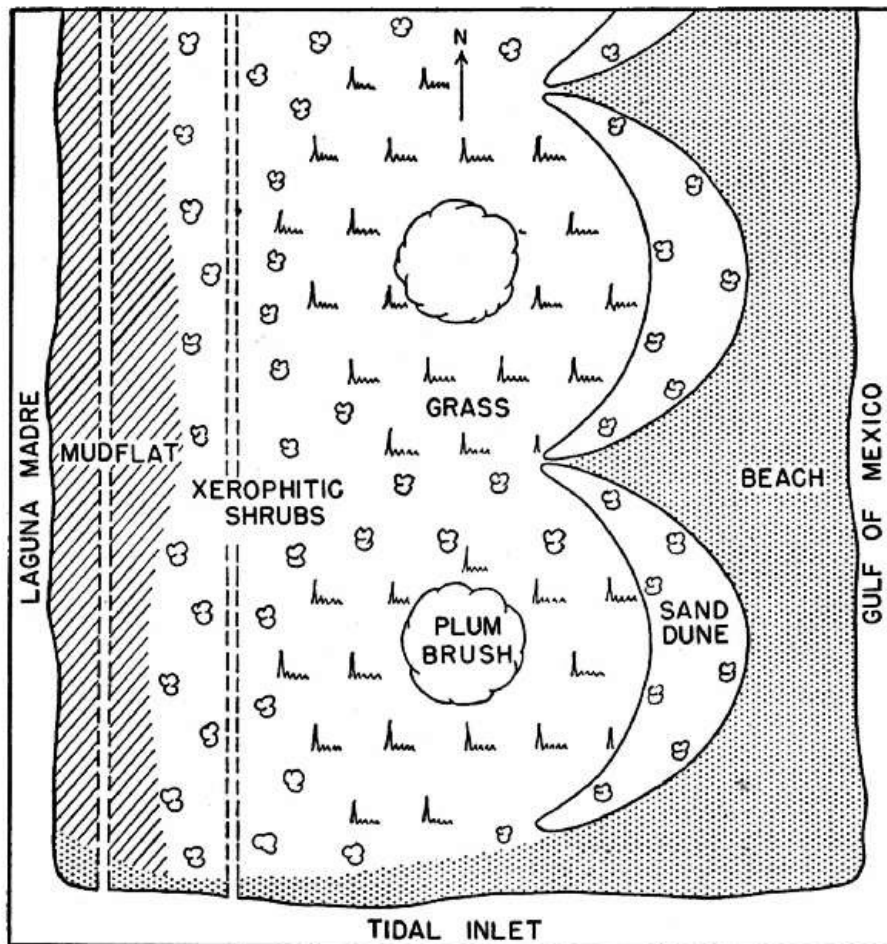


FIG. 1. Diagram of physiographic features of the barrier beach of Tamaulipas. Top view looking down, as from an airplane, on the beach. Bottom view is profile.

The long, low, sandy island, technically a barrier beach, irrespective of tide varied in width from a quarter of a mile to as much as a mile and was separated from the mainland by the Laguna Madre, which was four miles wide opposite our trapping station. To the northward the width of the lagoon gradually increased until, at a place thirty miles north of our trapping station, the lagoon was almost 20 miles wide.

The island was perhaps four feet above high tide. Superimposed on this, in places, there were sand dunes, technically barchans, so arranged that the end of one touched the end of the next. The tops of some were as much as 20 feet above high tides and the chain of these connected-dunes on which we trapped was approximately a mile long. Incipient tidal inlets were frequent; they were where storm-driven waves of high tides had broken across the island between the adjacent ends of two dunes. The windward side of a dune was toward the Gulf and the slope of that side was gentler than that on the leeward side. According to the cycle described by Davis (Proc. Amer. Acad. Arts and Sciences, 22:303-332, 1896) and recently figured on page 364 by Lobeck (Geomorphology, 1st ed., xii + 731 pp., 1939, McGraw Hill Book Co., Inc., New York) the barrier beach concerned was in the early part of the "Middle Youth Stage".

Typically, on the center of the area in the lee of a dune there was a patch of plum brush, almost five feet tall and so dense that a person could not penetrate it. A belt of grass, 20 to 100 feet wide, surrounded the plum brush. The grass was approximately 20 inches high. Outside the area of grass, there were widely-spaced xerophytic shrubs which grew also on the dunes. The diagram (fig. 1) shows these prominent features as a person might see them if he looked directly down from an airplane.

We obtained specimens of the spotted ground squirrel (*Citellus spilosoma*), Ord kangaroo rat (*Dipodomys ordii*), hispid cotton rat (*Sigmodon hispidus*) and black-tailed jack rabbit (*Lepus californicus*). Tracks and other sign of the coyote (*Canis latrans*) were seen. So far as we could ascertain, by our own investigations and from our Mexican hosts at the fishing camp, no other kinds of native mammals lived on the island. The ground squirrel and kangaroo rat were found by us on only the sandy areas where there were xerophitic shrubs. The cotton rat was found only in the grass. The jack rabbit and coyote ranged over the whole of the island excepting the areas of plum brush in which we saw no sign of any mammal.

To answer the second of our initial questions: The affinities of the mammals of the barrier beach of Tamaulipas are approximately equally divided between those of the mainland and those of Padre Island. The ground squirrel is indistinguishable from the subspecies which occurs both on the mainland and Padre Island to the northward; the other three kinds of mammals of which we obtained specimens prove to be subspecifically distinct from any previously named kinds and seem to be confined to the off-shore beach. Accounts of these four mammals and of a previously unnamed subspecies of kangaroo rat on Mustang Island, Texas, follow.

### ***Citellus spilosoma annectens* (Merriam)**

#### Spotted Ground Squirrel

1893. *Spermophilus spilosoma annectens* Merriam, Proc. Biol. Soc. Washington, 8:132, December 28, type from "The Tanks," 12 mi. from Point Isabel, Padre Island, Texas.

1904. [*Citellus spilosoma*] *annectens*, Trouessart, Catalogus Mammalium ..., p. 340.

Thirteen specimens (Nos. 35441-35453) were collected. All are from the north side of the tidal inlet. Although the ground squirrels were easily trapped, it was difficult to obtain a perfect skin because the gulls (*Larus* sp.) pulled the skin off of the distal part of the tail as soon as a squirrel was secured in a trap. The specimens seem not to differ from Texan specimens from the type locality and Mustang Island.

### ***Dipodomys ordii parvabullatus* new subspecies**

#### Ord Kangaroo Rat

*Type*.—Male, adult, skull and skin, No. 35454, Mus. Nat. Hist. Univ. Kansas, from island, 88 miles south and 10 miles west of Matamoros, Tamaulipas, Mexico; obtained 19 March 1950 by E.R. Hall and Curt von Wedel; original No. 6778 E.R. Hall.

*Range*.—Islands along coast of Tamaulipas, Mexico.

*Diagnosis*.—Size small (see measurements). Color pale; entire dorsal surface Light Ochraceous-Buff (Capitalized color terms according to Ridgway: Color Standards and Color Nomenclature, Washington, D.C., 1912), purest on sides and flanks, upper parts lightly suffused with black; cheeks white; plantar surfaces of hind feet, dorsal and ventral stripe of tail, and anterior face of ear brownish. Skull small; auditory bullae smaller (actually and relative to remainder of skull) than in any other known kind of *Dipodomys*, excepting the one from Mustang Island, Texas (named beyond) in which the breadth is approximately the same; rostrum and interorbital region narrow.

*Comparisons*.—From *Dipodomys ordii sennetti* (Allen), of the mainland of Texas, *D. o. parvabullatus* differs in: Color paler on pigmented areas; white areas more extensive; skull smaller, in all parts measured, except the nasals which are slightly longer. From *Dipodomys ordii compactus* of Padre Island, Texas, *D. o. parvabullatus* differs in: Tail and hind foot shorter; skull smaller in all parts measured, especially so in breadth across maxillary processes of zygomatic arches.

*Remarks*.—*D. o. parvabullatus* resembles *D. o. sennetti* in external proportions and *D. o. compactus* in cranial proportions.

No difference was detected between specimens from the two sides of the tidal inlet 89 miles south of Matamoros. Only one of the 14 specimens is of the light color phase (upper parts Cartridge Buff). This pale specimen is from the north side of the inlet. The brownish stripe on the ventral side of the tail is absent on the distal two-fifths of the tail and the specimens are uniform in this respect. On the occlusal surfaces of the cheek-teeth, the enamel surrounding the dentine is incomplete on both the lingual and labial sides of the teeth of five individuals and is incomplete on the labial side of some of the teeth of a sixth specimen.

In the snap traps, all of which were baited with rolled oats, more than twice as many land crabs as kangaroo rats were taken. Judging from tracks in the sand, land crabs greatly outnumbered kangaroo rats. The parietal bones in two of the 13 skulls are much eroded by some parasite (seemingly nematode worms) and in one of these two specimens the roof of the left tympanic cavity is perforated. As regards life-zones, the occurrence of *Dipodomys ordii* in the lower part of the Lower Sonoran Life-zone on the off-shore beach 88 and 90 miles south of Matamoros is low zonally and perhaps is at or near the zonal margin of the range of the species. The crabs and worms conceivably are two of the environmental features inhospitable to the rats.

*Specimens examined.*—Total, 14, all from Tamaulipas, Mexico, as follows: 88 mi. S and 10 mi. W Matamoros, 7; 90 mi. S and 10 mi. W Matamoros, 7.

When Setzer (Univ. Kansas Publ., Mus. Nat. Hist., 1:473-573, December 27, 1949) reviewed the subspecies of *Dipodomys ordii* he lacked specimens of *Dipodomys ordii compactus* from the type locality or from anywhere else on Padre Island. He used as representative of *D. o. compactus* specimens from Mustang Island, Texas, the island next northeast of Padre Island. Through the courtesy of Mr. Stanley P. Young, Dr. Hartley H.T. Jackson and Miss Viola S. Schantz, of the United States Biological Surveys Collection, I have examined topotypes of *D. o. compactus* from Padre Island. This examination discloses that the kangaroo rats on Padre Island and Mustang Island are significantly different. Those from Mustang Island may be named and described as follows:

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MEASUREMENTS (IN MILLIMETERS) OF ADULT MALES OF FOUR SUBSPECIES OF  
DIPODOMYS ORDII

		Key:									
A Total length		F Breadth across maxillary arches									
B Length of tail		G Width of rostrum									
C Length of hind foot		H Length of nasals									
D Greatest length of skull		I Least interorbital width									
E Greatest breadth across bullae		J Basilar length									
	A	B	C	D	E	F	G	H	I	J	
<i>D. o. largus</i> , type locality (K.U.)											
Mean (9)	226	117	35.8	36.3	21.5	19.2	3.6	13.7	12.6	23.2	
Maximum	241	128	37	37.2	22.0	19.9	3.7	14.2	13.9	23.9	
Minimum	212	105	35	35.2	20.7	18.6	3.5	13.5	11.6	22.3	
<i>D. o. compactus</i> , type locality (U.S.N.M.)											
Mean (10)	230	126	37.7	36.6	22.1	20.0	3.8	14.0	12.5	23.8	
Maximum	241	135	40	37.8	23.2	21.4	4.0	14.5	13.1	24.4	
Minimum	208	118	35	35.5	21.6	19.2	3.6	13.1	11.3	23.1	
<i>D. o. parvabullatus</i> , type locality and 2 mi. S of same (K.U.)											
Mean (7)	216	111	35.9	36.4	21.7	19.6	3.6	13.8	12.1	23.0	
Maximum	222	113	37	36.9	22.1	20.7	3.8	14.2	12.5	23.5	
Minimum	210	109	34	35.9	21.3	19.1	3.3	13.4	11.6	22.1	
<i>D. o. sennetti</i> , 2 mi. S Riviera, Texas (after Setzer, op. cit. :565)											
Mean (5)	218	112	35.8	37.2	23.4	20.1	4.0	13.6	13.1	24.2	
Maximum	222	115	38	38.2	24.1	20.7	4.3	14.4	13.2	24.6	
Minimum	208	104	34	36.3	23.0	19.4	3.8	13.0	12.6	23.8	

***Dipodomys ordii largus* new subspecies**

Ord Kangaroo Rat

*Type.*—Female, adult, skull and skin, No. 27234, Mus. Nat. Hist., Univ. Kansas, from Mustang Island, 14 mi. SW Port Aransas, Aransas County, Texas; obtained 30 June 1948 by W.K. Clark; original No. 543.

*Range.*—Known from Mustang Island only.

*Diagnosis.*—Size medium (see measurements). Color pale, and as described for *D. o. parvabullatus*. Skull small; auditory bullae (actually and relative to remainder of skull) smaller than in any other known kind of *Dipodomys*, except *D. o. parvabullatus* in which breadth across bullae is approximately the same; notably narrow across maxillary processes of zygomatic arches.

*Comparisons.*—From *Dipodomys ordii sennetti* (J.A. Allen) of the mainland, *D. o. largus* differs in: Color paler on pigmented areas; white areas more extensive; skull averaging smaller except in basilar length and length of nasals which are approximately the same as in *D. o. sennetti*. From *Dipodomys ordii compactus* True of Padre Island, *D. o. largus* differs in: Body longer; tail shorter; skull narrower across tympanic bullae and across maxillary processes of zygomatic arches; nasals shorter. From *Dipodomys ordii parvabullatus* of the coastal island south of Padre Island, along the gulf coast of Tamaulipas, *D. o. largus* differs in: Body and tail longer; basilar length of skull averaging less; breadth across maxillary processes of zygomatic arches greater; premaxillae not extending so far behind nasals.

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*Remarks.*—*D. o. largus* resembles *D. o. compactus* in external proportions and *D. o. parvabullatus* in cranial proportions. The degree of difference between *D. o. compactus* and *D. o. largus* is less than between *D. o. compactus* and *D. o. parvabullatus*. To me, the three subspecies mentioned in the preceding sentence are indistinguishable in color.

Two of the eleven specimens of *D. o. largus* are of the light color phase (upper parts Cartridge



Buff) whereas all but two of the eleven specimens of *D. o. compactus* are of the light color phase. Each of the cheek-teeth of the upper jaw of *D. o. largus* has a complete ring of enamel around the dentine of the occlusal surface, as described by Setzer (Univ. Kansas Publ., Mus. Nat. Hist., 1:517, December 27, 1949) for *D. o. compactus*. The upper dentitions of ten specimens of *D. o. compactus* examined by me in this respect reveal a total of only five teeth (in four individual animals) that have the enamel ring incomplete; one premolar and three molars are incomplete on the lingual side and one molar is incomplete on the labial side.

Two specimens from Bagdad, Tamaulipas, in the delta of the Río Grande (Nos. 116485 and 11487, U.S.N.M., Biol. Surv. Coll.), are referred to *D. o. compactus* on basis of long body and long tail. The specimens, both Light Ochraceous-Buff, are so young that not all of the enamel is worn off the crowns of the cheek-teeth. Specimens of *D. o. compactus*, *D. o. parvabullatus* and *D. o. sennetti* of comparable age are not available, and it, therefore, is impossible to know whether size and shape of the skull in the population at Bagdad are the same as they are in *D. o. compactus* of Padre Island.

*Specimens examined*.—Total, 11, all from Texas. Aransas County: Mustang Island, 14 mi. SW Port Aransas.

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### ***Sigmodon hispidus solus* new subspecies**

#### Hispid Cotton Rat

*Type*.—Male, adult, skull and skin; No. 35468, Mus. Nat. Hist., Univ. Kansas; from island, 88 mi. S and 10 mi. W Matamoros, Tamaulipas, Mexico; 22 March 1950; obtained by E.R. Hall and Curt von Wedel; original No. 6806 E.R. Hall.

*Range*.—Known from the type locality only but probably occurring on most of the chain of islands off the coast of Tamaulipas.

*Diagnosis*.—Small; hind foot short; rostrum broad.

*Comparison*.—From its nearest relative, geographically and morphologically, *Sigmodon hispidus berlandieri* Baird of the adjacent mainland, *S. h. solus* differs in smaller size, and a rostrum that is broader in relation to the length of the skull.

*Remarks*.—On the last night of our stay on the island, traps set in grass approximately 20 inches high, yielded one pair of *Sigmodon*. The color is lighter than in the average of specimens from the mainland (for instance those from Victoria and Soto la Marina) but can be matched by selected specimens. In animals of equal age, the hind foot and basilar length are shorter in *S. h. solus* than in *berlandieri*. The broadening of the rostrum, which occurs with advanced age, is attained in *solus* when the skull is yet short; the maximum breadth of the rostrum in the adults is more, instead of less, than a fourth of the basilar length.

*Measurements*.—The following measurements are of specimens in which the occlusal face of each molar tooth is worn flat. The first measurement is of the holotype followed by the corresponding measurement of a male of *T. b. berlandieri*, No. 116466 from Camargo, Tamaulipas, in parentheses. The third measurement is that of the female from the type locality of *S. h. solus* and it is followed by the corresponding measurement of a female of *T. b. berlandieri*, No. 116462 from Camargo, Tamaulipas. Total length, 266 (298),—(293); length of tail, 113 (135),—(137); length of head and body, 153 (163), 155 (156); length of hind foot, 30 (35), 30 (33); basilar length of Hensel, 28.2 (28.9); 27.9 (29.0); zygomatic breadth, 19.5 (—), 19.0 (20.8); mastoidal breadth, 13.9 (14.4), 13.9 (14.8); greatest breadth of rostrum, 7.2 (7.3), 7.8 (7.2); length of nasals, 14.6 (14.1), 13.4 (14.2); crown length of upper molar teeth, 6.3 (6.1), 6.3 (5.9).

*Specimens examined*.—Two from the type locality.

### ***Lepus californicus curti* new subspecies**

#### Black-tailed Jack Rabbit

*Type*.—Female, adult, skull and skin, No. 35470, Mus. Nat. Hist., Univ. Kansas; from island, 88 miles south and 10 miles west of Matamoros, Tamaulipas, Mexico; obtained 19 March 1950 by E.R. Hall; original No. 6783.

*Range*.—Islands along coast of Tamaulipas, Mexico.

*Diagnosis*.—Color pale; size small; ears short; tympanic bullae small.

*Comparisons*.—From *Lepus californicus merriami* Mearns (specimens from Fort Clark, Brownsville and intermediate localities), *L. c. curti* differs in paler color, lesser size except ear that is of almost same length and except interorbital breadth that is approximately same in the two subspecies; tympanic bullae notably smaller. From *Lepus californicus altamirae* Nelson, *L. c. curti* differs in having the black patch on the nape less definitely divided by a median, longitudinal band of buffy color, and lesser size. Exception is to be made for the ear and tympanic bullae, which are of approximately the same size in the two subspecies.

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*Remarks*.—The subspecific part of the name *Lepus californicus curti* is proposed in honor of Dr. Curt von Wedel who shared the pleasure of collecting on the islands where this handsome

hare lives.

The specimens of *L. c. curti* are all females, which, in the genus *Lepus*, average larger than the males. Comparison of the measurements recorded below with those in the account by Nelson (N. Amer. Fauna, 29:129, 1909) may not reveal the full measure of difference in size between *L. c. curti* and other subspecies because Nelson (*op. cit.*) pooled males and females in obtaining the average measurements that he records. For example, he used three males and two females of *Lepus altamirae* in obtaining an average (*op. cit.*:117). The specimens of *L. c. curti* here recorded are thought to be of full size inasmuch as the degree of fusion of bones in the skull, and the density of the cranial bones indicate full adulthood for each specimen. Reproductive-wise, there is no question as to adulthood; each of the four females was pregnant. One specimen had two embryos (each 30 millimeters long in crown-rump measurement) and each of the other specimens contained one embryo. These three embryos were 55, 60, and 105 mm. long.

Three of our specimens, including the holotype, were obtained north of the eighth pass and the other specimen, No. 35473, was obtained a few hundred yards south of the pass. Because the part of the barrier beach south of the pass was connected to the mainland, it is likely that the newly named subspecies occurs also on the adjacent mainland; however, we have examined no specimens of *Lepus californicus* from the opposite mainland except from Matamoros, ninety miles to the north, and from Altamira, approximately one hundred and fifty miles south of our collecting locality. A specimen from Matamoros, Tamaulipas, and several from Brownsville, Texas, in size of auditory bullae, larger overall size and darker color clearly are *L. c. merriami* and not *L. c. curti*.

The small tympanic bullae of the specimens from Padre Island were commented upon by Nelson (*op. cit.*:149) who found smallness of bullae to characterize many of the specimens from the eastern part of the geographic range of *L. c. merriami*. In the northeastern part of the geographic range of *L. c. merriami*, as Nelson pointed out, the small size of the tympanic bullae was one of several evidences of intergradation there with *Lepus californicus melanotis*, the subspecies next adjacent to the north. In the light of present information, it seems that the smallness of the tympanic bullae in the specimens (3) from Padre Island may be an independent development—an adaptation to environmental conditions that reaches its fullest development on the same chain of islands eighty-odd miles southward of Matamoros. The specimens from Padre Island, although possessing small bullae, in other features, for example, larger size of other parts, are *merriami*.

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The four specimens of *L. c. curti* are in worn winter pelage and the new pelage is coming in on the thighs. Most of the specimens (6) of the *L. c. altamirae* are in the same condition of pelage. In color and color pattern, the two subspecies are, to me, indistinguishable except that the black patch on the nape is less widely and less definitely separated into two parts by a median, longitudinal, band of buffy color.

*Lepus californicus altamirae* was named by Nelson (Proc. Biol. Soc. Washington, 17:109, May 18, 1904) as a black-tailed jack rabbit, *Lepus merriami altamirae*, but was later transferred by Nelson (N. Amer. Fauna, 29:124, 1909) to the white-sided section of the genus and arranged as a full species, *Lepus altamirae*. In making this transfer, Nelson (*op. cit.*:125) wrote that in "This well marked species ... the lack of a black patch on the posterior half of the ear at the tip and the white flanks (somewhat obscured in some of the original specimens) are strong characters which place it in the *callotis* group." "Posterior half of ears white without any trace of black at tip", was the way Nelson (*op. cit.*:124) described the ears in *L. altamirae*. My examination of the original series including the type, reveals that the ears do have some black at the tip of the posterior half in three of the specimens, some brown in one other specimen, and only a dusky tinge in two others. In the four specimens of *L. c. curti* the tip of the ear is faintly brownish in one animal and dusky in three. The extent of the white flanks seems to be identical in the two series. Fortunately they are in the same pelage and same stage of molt on the hind legs. The one difference that I can detect is in the coloration of the nape. In each of the specimens of *L. altamirae* the coloration is as described by Nelson (*op. cit.*:124): "nape with two lateral black bands extending back from base of ears, and separated by a median band of buffy." In *L. c. curti* the nape is all black in one specimen and the median band of buffy is present in the other three but is narrower and more dusky than in *L. altamirae*. Since the characters (color of tip of ear and extent of white on the flank) relied upon by Nelson for placing *L. altamirae* in the *callotis* group are duplicated in the *californicus* group, in *L. c. curti*, there is reason for questioning whether *altamirae* is correctly placed, taxonomically, in the *L. callotis* group.

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Cursory examination of skulls of the *callotis* group and the *californicus* group indicates that the prepalatal spine (the part of the palate which extends anteriorly toward the vomer) is longer in *L. californicus* than in *L. callotis*, *L. gaillardi* and *L. alleni*. In this feature, *L. altamirae* agrees with *Lepus californicus* and differs from members of the *Lepus callotis* group. Furthermore, the newly named *L. c. curti*, in color of ear and color of nape, is intermediate between *L. altamirae* and *L. c. merriami*. Consequently, *Lepus merriami altamirae* Nelson, it seems, should stand as *Lepus californicus altamirae*.

Mention should be made here of the view of Shamel (Proc. Biol. Soc. Washington, 55:25-26, May 12, 1942) that the *californicus* group should be divided into two groups (each group possibly

amounting to something more than a species and something less than a subgenus) on the basis of a white rump and complex infolding of the enamel layer of the front of the first upper incisor *versus* a dark rump and simple infolding of the mentioned layer of enamel. He placed *Lepus californicus merriami* Mearns, among other subspecies, in a group different from the one in which he placed several other subspecies of *Lepus californicus*.

Specimens (skulls with accompanying skins) of the species *Lepus californicus* in the Biological Surveys Collection of the United States National Museum, representative of a gradual transition from the dark rump and simple fold in the enamel to the white rump and complex fold in the enamel are as follows: *L. c. deserticola*, No. 29733/41808, Paharanagat Valley, Nevada; Nos. 117463 and 156744, Beals Spring, Arizona. *L. c. texianus*, No. 24635/32031, Springerville, Arizona; No. 97453, Roswell, New Mexico; No. 118751, Toyah, Texas; No. 118749, Valentine, Texas; and No. 108700, Terlingua Creek, Texas. In the continuously distributed species *Lepus californicus*, along the northwest to southeast line provided by the localities of occurrence listed immediately above, there is a gradual transition from one kind of fold to the other kind and from one color of rump to the other color. It is clear that Shamel (*op. cit.*) was in error in his conclusions; the kinds of black-tailed jack rabbits to which Shamel (*op. cit.*) applied the name *Macrotolagus* should stand as given below.

Correct names:	<i>Lepus flavigularis</i> Wagner
<i>Lepus alleni alleni</i> Mearns	<i>Lepus californicus altamirae</i> Nelson
<i>Lepus alleni palitans</i> Bangs	<i>Lepus californicus melanotis</i> Mearns
<i>Lepus alleni tiburonensis</i> Townsend	<i>Lepus californicus merriami</i> Mearns
<i>Lepus gaillardi gaillardi</i> Mearns	<i>Lepus californicus asellus</i> Miller
<i>Lepus gaillardi battyi</i> J.A. Allen	<i>Lepus californicus festinus</i> Nelson
<i>Lepus callotis</i> Wagler	<i>Lepus californicus texianus</i> Waterhouse

MEASUREMENTS (IN MILLIMETERS) OF ADULTS OF TWO SUBSPECIES OF  
LEPUS CALIFORNICUS

Key:

<b>A</b> Total length	<b>G</b> Breadth of rostrum above premolars
<b>B</b> Tail-vertebrae	<b>H</b> Depth of rostrum in front of premolars
<b>C</b> Hind foot	<b>I</b> Interorbital breadth
<b>D</b> Ear from notch in dried skin	<b>J</b> Parietal breadth
<b>E</b> Basilar length	<b>K</b> Diameter of bulla
<b>F</b> Length of nasals	

	A	B	C	D	E	F	G	H	I	J	K
<i>L. c. curti</i> , type locality (K.U.)											
♀ 35470	565	55	125	115	72.0	37.1	25.9	21.2	27.4	29.8	13.5
♀ 35471	566	57	122	122	72.8	39.0	25.5	22.0	26.2	29.2	13.9
♀ 35472	520	50	115	105	69.5	38.6	26.0	19.0	24.4	30.2	13.5
♀ 35473	587	53	124	118	72.0	40.9	26.7	22.2	27.4	29.0	13.0
Average	560	54	122	115	71.6	38.9	26.0	21.1	26.4	29.6	13.5
<i>L. c. altamirae</i> , type locality (U.S.N.M., Biol. Surv. Coll.)											
♂ 93691	605	96	137	112	76.5	44.5	26.6	24.6	....	32.0	13.0
♀ 93692	595	71	137	114	77.1	42.5	26.3	23.1	27.0	29.5	13.4
♂ 93693	590	93	137	110	77.8	43.8	27.6	22.5	27.2	30.7	14.2
♀ 93694	605	70	142	118	78.0	45.9	26.8	23.4	28.7	32.0	14.3
♂ 92982	556	59	136	114	75.9	46.5	26.1	22.3	25.8	....	14.0
Average	590	78	138	114	77.1	44.6	26.7	23.2	27.2	31.1	13.8

1. In each specimen of *L. c. curti* the length of the ear measured from the notch when the animal was in the flesh was eight millimeters more than in the dried skin.

The cranial measurements given above are taken, in so far as possible, in the same way that the measurements recorded by Nelson in his North American Fauna (No. 29, 1909) were taken. In that publication he records mostly average measurements but he records also some measurements of individual specimens. Two of these specimens are the holotypes of *Sylvilagus mansuetus* Nelson and *Romerolagus nelsoni* Merriam. By attempting to duplicate Nelson's measurements on these specimens, the following opinions were formed.

"Basilar length" is basilar length of Hensel and the anterior point probably was the posterior border of the alveolus of incisor two. There is some evidence of lack of consistency with respect to the anterior control point.

"Length of nasals" is the overall length, of the two nasal bones, but in *Romerolagus* the shorter (right) nasal alone seems to have been measured.

"Breadth of rostrum above premolars" is easily duplicated in *Lepus* but in *Sylvilagus* the control points are difficult to find. Two other persons and I obtained three different



measurements, all different from Nelson's measurements, and we thought that Nelson would have obtained different measurements by measuring the same specimen of *Sylvilagus* at different times.

"Depth of rostrum in front of premolars" seems to have been taken perpendicular to the inferior longitudinal line of the rostrum, approximately one-half millimeter anterior to the alveolus of the anteriormost cheek tooth.

"Interorbital breadth" was taken across the supraorbital processes, at the narrowest place, but *not* from the notches medial to the antorbital projections of the supraorbital processes.

"Parietal breadth" is the breadth, across the braincase, taken approximately half way between the squamosal root of the zygoma and the external auditory meatus, where there is a lateral bulge in the squamosal bone. On each side of the skull, the calipers rest on the squamosal bone, not on the parietal bone.

"Diameter of bullae" excludes the paroccipital process and was taken from the anteriormost part of a tympanic bulla, posterolaterally to the part of that same bulla, that is exposed at the lateral side of the base of the paroccipital process.

*Specimens examined.*—Total, four, all from Tamaulipas, Mexico, as follows: 88 mi. S and 10 mi. W Matamoros, 3; 90 mi. S and 10 mi. W Matamoros, 1.

*Transmitted February 20, 1951.*

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