Article III. — ON THE SPECIES OF THE GENUS REITHRODONTOMYS.

By J. A. Allen.

Introductory Note.

The American Museum of Natural History has recently acquired a large number of specimens of the genus *Reithrodontomys*. In attempting to determine them it was found necessary to consider the status of several obscurely known species, particularly the *Reithrodon montanus* and *R. megalotis* of Baird. The original purpose of the present paper was to settle, if possible, the character and relationships of these species, and to record several apparently new forms of the genus, the material at hand being too limited for a detailed revision of the group. The paper was originally prepared on these lines, and on the basis of the specimens belonging to the Museum collection.

After the first draft was practically completed, Dr. C. Hart Merriam, Chief of the Division of Ornithology and Mammalogy of the United States Department of Agriculture, hearing of my work on the group, most generously and without solicitation, placed in my hands for use in this connection all of the United States specimens of this genus belonging to the collection of the Department of Agriculture, collected under his direction, and also those contained in his own collection. These number altogether about 700 specimens, representing nearly the whole United States range of the genus, so that the total number of specimens available for study is not far from 925.[1] This large amount of material throws much light upon the geographic distribution of the genus, and the manner of its representation over the diverse

[1] Besides the Museum Collection and the specimens furnished by Dr. Merriam, I am indebted to Prof. L. L. Dyche, of the University of Kansas, for a series of nearly 40 specimens from the vicinity of Lawrence, Kansas, and to Mr. Gerrit S. Miller, Jr., of Peterboro, N. Y., for small series from central Kansas and northeastern Colorado. I am also indebted to Mr. F. W. True, Curator of Mammals in the United States National Museum, for kindly sending me the type and only known specimen of *Reithrodon montanus* Baird, and also for other historic material mentioned *passim* in the present paper.

climatic areas embraced within its range. It is, however, insufficient for a final revision of the subject, so that the conclusions here presented must be considered as tentative, and the paper as merely a contribution toward a better knowledge of the group.

Historical Summary.

The history of the group is, in brief, as follows: In the days of Audubon and Bachman the genus was known only from the vicinity of Charleston, South Carolina, and Liberty County, Georgia. The first species commonly referred to this genus was described by Audubon and Bachman in 1841, under the name *Mus humulis* (changed by them to *humilis* in 1851). Whether this species is correctly referable here, or is even certainly determinable, will be considered later. In the following year the same authors redescribed their *Mus humulis*, and added *Mus lecontii* and *Mus carolinensis*. The pertinency of *Mus lecontii* to what is now recognized as *Reithrodontomys* is beyond question, and it is the first name that can be unequivocally applied to the south Atlantic coast form of the genus. *Mus carolinensis* has never been certainly identified, having proved a stumbling block to all subsequent writers on the group. The probabilities are that it was based on an immature example of *Peromyscus*[1] (late *Sitomys*, late *Vesperimus*, = *Hesperomys* of earlier writers), probably *P. leucopus*[2] *gossypinus*, and not at all referable to *Reithrodontomys*. (See more at length on these points beyond.)

In 1853 John Leconte referred *Mus humulis* and *Mus carolinensis* to *Hesperomys*, and *Mus lecontii* (for the first time) to the

[1] *Cf.* Thomas, Ann. and Mag. Nat. Hist. (6), XV, Feb., 1895, p. 192.

[2] In June, 1894, I discussed (this Bulletin, III, pp. 294–7) the question of *americanus* Kerr (1792) vs. *leucopus* Rafinesque (1818) raised previously by Dr. Coues, but left by him unsettled, owing to his inability to consult Kerr's work. I was formerly familiar with Kerr's work (Animal Kingdom, etc., 1792), and presumed that a transcript of Kerr's description of his *Mus agrarius americanus* would decide all doubts in the matter. The work not being in any library in New York City, I sent to a friend in Boston for an exact copy of the passage in question. This settled beyond doubt the pertinency of Kerr's name *americanus* to the White-footed Mouse of the northeastern United States, usually known previously as *leucopus* Rafinesque, whereupon (l. c.) I adopted Kerr's name. Mr. Oldfield Thomas, on the authority of Mr. Gerrit S. Miller, Jr., has recently stated (Ann. and Mag. Nat. Hist., Feb. 1894, p. 192) that the name *americanus* is preoccupied by a *Mus americanus* occurring four pages earlier in the same work. Through the kindness of my friend Mr. Samuel Henshaw, Secretary of the Boston Society of Natural History, I have in hand the copy of Kerr's work belonging to the Society, from which it appears that Mr. Miller's statement is well founded. The *Mus americanus* Kerr (l. c., p. 227) is not identifiable, but probably relates primarily to some introduced species of *Mus*, though conjectured by Kerr to be probably the Rat referred to by Kalm as living "among stones and clefts of rocks in the Blue Mountains of Virginia." In any case the name *americanus* is untenable for any form of the White-footed Mouse.

genus *Reithrodon*, at the same time claiming personal acquaintance with each.

The next important reference to the group is by the late Professor Baird, who, in 1855, described a second species as *Reithrodon montanus*, based on a single specimen from the mountains of Colorado (exact locality unknown). In 1857 the same writer treated the group monographically, describing as new *Reithrodron megalotis* from near San Luis Springs, Sonora, and *R. longicauda* from Petaluma, California, and recognizing four species as valid (the three described by himself and the old *Mus humulis* of Audubon and Bachman), and a fifth (*R. carolinensis* ex Aud. & Bach.) provisionally.

In 1860 De Saussure added, from the mountains of Vera Cruz, Mexico, still another, under the name *R. mexicanus*, and in 1861 described a second, under the name *R. sumichrasti*, also from Mexico.

The next important original work on the group is Coues's revision of the genus in 1874, and his more extended monograph of the group in 1877. The genus *Reithrodon* is here shown to be exclusively South American, and for the North American species heretofore referred to *Reithrodon* be proposed the generic name *Ochetodon*. The species recognized by Coues in 1874 were (1) *O. humilis* (Aud. & Bach.), to which he referred *R. megalotis* Baird, and provisionally *Mus carolinensis* Aud. & Bach.; (2) *O. longicauda* (Baird); (3) *O. mexicanus* (De Sauss.), to which he referred provisionally specimens from Louisiana, thus for the first time recognizing this type of the genus as occurring in the United States. He also recognized provisionally (4) *O. montanus* (Baird), and (5) *O. sumichrasti*. In the later monograph the same allocations are repeated, except that no reference is made, even in synonymy, to *R. sumichrasti*.

In 1892 Merriam called attention to the fact that the name *Ochetodon* Coues was antedated by one year by the name *Reithrodontomys* Giglioli; upon which showing this latter name quickly became current among North American mammalogists.

In 1893 the present writer revived both *R. megalotis* and *R. montanus* of Baird, the latter, however, with some reservation, and gave the alternative name *R. aztecus* for specimens from

northwestern New Mexico provisionally referred to *R. megalotis*. Later the same writer described as a new subspecies *Reithrodontomys mexicanus fulvescens* from Oposura, Sonora.

In 1893 Mr. Rhoads described as a new species *Reithrodontomys pallidus* from Santa Ysabel, San Diego Co., California.

Excluding as of doubtful reference to this group both *Mus carolinensis* and *Mus humulus* of Audubon and Bachman (see beyond), the following nine species and subspecies have been described:

1841.	*Reithrodontomys lecontii*	(Aud. and Bach.).
1855.	"	*montanus* (Bd.).
1857.	"	*megalotis* (Bd.).
1857.	"	*longicauda* (Bd.).
1860.	"	*mexicanus* (De Sauss.).
1861.	"	*sumichrasti* (De Sauss.).
1893.	"	*aztecus* Allen (provisional name).
1893.	"	*pallidus* Rhoads.
1894.	"	*mexicanus fulvescens* Allen.

Prior to 1855 the group was known only from the coast region of South Carolina and Georgia. In this year Baird described a species from the "Rocky Mountains, lat. 38°," and in 1857 extended the range of the genus to northern Sonora and California, recording also specimens from St. Louis, Missouri. In 1860 (as above stated) a form was made known from the State of Vera Cruz, Mexico. In 1874 Coues referred to specimens from Louisiana, Kansas, Iowa, Nebraska and Utah, and in 1877 gave the detailed records of his material, which included also localities in California and in southern Mexico additional to those mentioned by Baird.

Alston, in 1880, recorded specimens from Coban and Dueñas in Guatemala. During the last two years the published additional records include San Diego Co., California (Rhoads), Texas (Allen), Florida (Chapman and Rhoads) and Arizona (Allen).

To show the increase in material, as well as in our knowledge of the geographic range of the group, the following may be of interest.

In 1857 Baird's material consisted of 32 specimens, representing 7 localities; 12 of the specimens were from South Carolina and Georgia, and 15 of the remaining twenty from the vicinity of San Francisco, California; in other words, nearly all of Baird's material came from two small areas on opposite sides of the continent. In 1877 Coues recorded 57 specimens, representing 16 localities, the 25 specimens additional to those examined by Baird including 9 from southern Mexico, 3 from Louisiana, 4 from the coast region of central California, 6 from eastern Kansas, 2 from Utah, and 1 each from Iowa and Nebraska.

Material Examined.

The material on which the present paper is based numbers 920 specimens, representing 166 localities, distributed about as follows: California, 87 localities and 471 specimens; northern Lower California, 4 localities and 8 specimens; Nevada, 7 localities and 66 specimens; Arizona, 3 localities and 25 specimens; northern Sonora, 2 localities and 5 specimens; Utah, 10 localities and 53 specimens; New Mexico, 4 localities and 78 specimens; Colorado, 3 localities and 15 specimens; Nebraska, 8 localities and 27 specimens; Montana and South Dakota, 2 specimens each; Kansas, 6 localities and 53 specimens; Arkansas, 1 locality and 2 specimens; Louisiana, 3 localities and 13 specimens; Texas, 18 localities and 67 specimens; Tamaulipas, Mexico, 2 specimens; Florida, 1 specimen; Riceboro, Georgia, 6 specimens; Raleigh, North Carolina, 61 specimens; Southern Mexico, 2 localities and 2 specimens (Mazatlan and Tehuacan); Costa Rica, 1 locality and 17 specimens.

The material in hand, while so extensive and covering such a wide range of country, is far from sufficient to properly represent the genus throughout its range, large areas where it probably occurs being wholly unrepresented, while other portions of great extent are very inadequately represented, and only small sections of the general habitat with any great degree of fullness—mainly those areas covered by the Biological Surveys carried on by Dr. Merriam under the Department of Agriculture.

General Remarks.

Geographical Distribution.—The genus is not as yet known to occur in the Gulf States between Florida and Louisiana; but this region has thus far been too imperfectly explored to render it safe to assume that it is absent from this coast belt, where the conditions are apparently highly favorable to its presence. Neither is it known to occur in the area to the northward between the coast region of the Carolinas and the Mississippi River. With this exception the genus is now known to have a practically continuous distribution from the coast of the Carolinas across the continent to the coast of California, and from the mouth of the Big Horn River in Montana southward to central Costa Rica, including both coasts of Mexico. From St. Louis, Missouri, westward to the Pacific coast the genus is apparently represented almost continuously, the higher altitudes in the mountains being of course excepted. It also occurs across southern Texas, from about the mouth of the Pecos River eastward to the coast.

List of Forms Recognized.—In the present paper fifteen forms are recognized, as given in the following list, which also states the number of specimens of each examined.

1. *Reithrodontomys lecontii* (Aud. & Bach.). Coast region of the South Atlantic States. Specimens examined, 69.
2. *R. merriami*, sp. nov. Coast region of western Louisiana and eastern Texas. Specimens examined, 10.
3. *R. dychei*, sp. nov. Eastern Kansas and southeastern Nebraska, east to St. Louis, Mo. Specimens examined, 51.
4. *R. dychei nebrascensis*, subsp. nov. Colorado east of the Rocky Mountains, western Kansas, and north to southeastern Montana. Specimens examined, 43.
5. *R. montanus* (Baird). Head of San Luis Valley, Colorado. Specimens examined, 1 (type of the species).
6. *R. megalotis* (Baird). Western New Mexico, eastern Arizona, and north to northern Utah. Specimens examined, 126.
7. *R. megalotis deserti*, subsp. nov. Death Valley region of southern Nevada and Inyo Co., California. Specimens examined, 189.
8. *R. longicauda* (Baird). Central California, west of the Sierra Nevada. Specimens examined, 175.

9. *R. longicauda pallidus* (Rhoads). Southern California and northern Lower California. Specimens examined, 157.

10. *R. arizonensis*, sp. nov. Chiricahua Mountains, Arizona. Specimens examined, 5.

11. *R. mexicanus* (De Saussure). Southeastern Mexico.

12. *R. mexicanus intermedius*, subsp. nov. Valley of the Lower Rio Grande and adjoining coast region of Texas and Mexico. Specimens examined, 36.

13. *R. mexicanus aurantius*, subsp. nov. Western Louisiana and eastern Texas. Specimens examined, 34.

14. *R. fulvescens* Allen. Northern Sonora. Specimens examined, 3.

15. *R. costaricensis*, sp. nov. Central Costa Rica. Specimens examined, 17.

These forms present wide extremes as regards size, coloration, size and form of the ear, and ratio of tail length to total length; but the connecting stages are so minutely graduated that none of these features, or any combinations of them, are serviceable as a basis for a sharp division of the genus into minor groups. Nor do the cranial or dental characters prove any more satisfactory as a basis for minor divisions; and no attempt is made in the present paper to make use of them for the discrimination of species and subspecies, as on measuring a considerable series of skulls it soon becomes evident that the range of individual variation considerably overlaps the average differences between closely allied forms. The length of the skull varies, in different species, from 18 to 24 mm., but the conformation is practically the same in all the species.

The *average* total length of the animal varies in the different species from about 110 mm. to about 190 mm.; the extremes carry the total range from about 100 to 200 mm. In some species (as shown in the subjoined synopsis) the tail vertebræ form decidedly less than half (from 46 to 48 per cent.) of the total length; in others they constitute more than half (from 52 to 58 per cent.) of the total length; in others still the two measurements are practically equal, specimens from the same locality falling either side of the line.

In the smaller, short-tailed South Atlantic and Gulf coast forms the general color above is dusky brown; the larger short-tailed interior forms are grayish brown with a tinge of fulvous; the

longer-tailed forms (*longicauda* and *mexicanus* groups) are darker and more or less washed with bright fulvous, sometimes approaching golden rufous, while the largest and longest-tailed form of the group is nearly as golden rufous as the Golden Mouse (*Peromyscus aureolus*) of the South Atlantic States.

In *R. megalotis* the ear is very large in comparison with most of the other species, the increase being not only in length, but more especially in breadth, and hence is quite different in form from the narrow and more pointed ear in *R. lecontii*, *R. merriami*, *R. longicauda*, etc. In *R. dychei* the ear is somewhat intermediate in size and form, making in *R. dychei nebrascensis* a decided approach to that of *R. megalotis.*

The following synopsis may aid in the determination of the species and subspecies, and serve to show, to some extent, their mutual relationships.

Synopsis of the Species and Subspecies.[1]

A. Tail vertebræ less than half the total length. Ears small.

a. Size small. Total length, 120; tail vertebræ, 56; ear, 9.5. Above dark brown with a light wash of dark cinnamon brown, generally slightly darker along the median line; below dingy gray, sometimes with a slight wash of yellowish; lateral line usually indistinct or obsolete. . . . . *R. lecontii.*

b. Size less than in the last. Length, 112; tail vertebræ, 52; ear, 8.5. Above darker, prevailing color above dusky brown, with a prominent blackish median area; sides yellowish gray brown, with an indistinct fulvous lateral line; below gray with a slight suffusion of yellowish brown . . . . . *R. merriami.*

c. Larger. Length, 130; tail vertebræ, 60; ear, 10. Above fulvous gray lined with black, deeping on the sides to an indistinct fulvous lateral band; below grayish white . . . . . *R. dychei.*

d. Slightly larger, and more strongly suffused with fulvous. Length, 135; tail vertebræ, 64; ear, 11 . . . . . *L. dychei nebrascensis.*

e. Very small. Length, 102; tail vertebræ, 51; ear, 10. Above pale yellowish gray brown, more yellowish on sides; below dull whitish. *R. montanus.*

B. Tail vertebræ about one-half the total length. Ears large.

a. Size medium. Length, 136; tail vertebræ, 63; ear, 12.5. Above yellowish gray, lined with darker; lower border of sides more fulvous; below white . . . . . *R. megalotis.*

b. Resembling the last, but with relatively longer tail. Length, 136; tail vertebræ, 70; ear, 12.5. . . . . *R. megalotis deserti.*

[1] Measurements in millimeters. Unless otherwise stated, all measurements given in this paper are the collector's measurements from fresh specimens, except those of the ear, which are always from the dry skins. The measurement for the ear is the height from the notch.

C. Tail vertebræ slightly more than half the total length. Ears smaller than in *B.*

a. Size medium. Length, 140; tail vertebræ, 74; ear, 11. Above yellowish brown, lined with blackish, with generally a darker median dorsal area; sides brighter, the lower border forming a prominent bright fulvous lateral line; below clear grayish white, occasionally with a yellowish cast..... *R. longicauda.*

b. Slightly larger than the last; coloration paler... *R. longicauda pallidus.*

c. Larger. Length, 150; tail vertebræ, 78. In coloration most resembling *R. longicauda*... ..... *R. arizonensis.*

D. Tail vertebræ much more than half the total length.

a. Large. Total length, 150; tail vertebræ, 87; ear, 12.7. Above dull ferrugineous brown, becoming bright orange tawny on lower edge of sides; below white with usually a yellowish cast..... *R. mexicanus.*

b. Larger and colors much paler. Length, 176; tail vertebræ, 99; ear, 12. Above grayish brown with a yellowish wash; sides strong yellowish fulvous; below dull whitish.... *R. mexicanus intermedius.*

c. About the size of the last, or slightly smaller; colors much stronger. Length, 168; tail, 94; ear, 11.5. Above strongly yellowish brown, with a blackish median area; sides rich orange rufous; below white with a faint yellowish tinge... ..... *R. mexicanus aurantius.*

d. Rather larger than the preceding. Length, 176; tail vertebræ, 100; ear, 11.5. Above pale yellowish gray, lined with black, with a blackish median area; sides light yellowish; below white. *R. fulvescens.*

e. Largest of the genus. Length, 191; tail vertebræ, 114; ear, 12. Above bright ferrugineous brown, finely lined with blackish, but with no distinctly darker median area; sides orange rufous; below white, generally with a slight tinge of yellow ....*R. costaricensis.*

Descriptions of the Species and Subspecies.

Genus **Reithrodontomys** *Giglioli.*

Mus Aud. & Bach. (1841–51).
Hesperomys Wagner, Wiegm. Arch. 1843 (2), p. 51 (simply referring Audubon and Bachman's "fünf neue arten" of *Mus* to *Hesperomys*).
Reithrodon Leconte, Proc. Acad. Nat. Sci. Phila. 1853, pp. 410, 413 (merely refers *Mus lecontii* of Aud. and Bach. to *Reithrodon;* not *Reithrodon* Waterhouse, 1837).
Reithrodon Baird, Mam. N. Am. 1857, p. 447 (not of Waterhouse).
"*Reithrodontomys* Giglioli, Richer. intorn. alla Distrib. Geog. Gener. 1873, p. 60." (*Apud* Merriam, Proc. Biol. Soc. Wash. VII, 1892, p. 26, footnote.)
Ochetodon Coues, Proc. Acad. Nat. Sci. Phila. 1874, p. 184 (=*Reithrodon* Baird, *nec* Waterhouse.

Reithrodontomys is the only North American genus of Muridæ having grooved upper incisors. In other respects the cranial and dental characters are much as in *Peromyscus.* Externally the species also greatly resemble those of this latter genus, but are

generally smaller, except *R. costaricensis*, which has more resemblance externally to some of the smaller species of *Oryzomys*.

I have to regret that Giglioli's work wherein he established the genus *Reithrodontomys* is not accessible to me, and hence take the name on Dr. Merriam's authority, as cited above.

Reithrodontomys lecontii (*Aud. & Bach.*).

LECONTE'S HARVEST MOUSE.

? Mus humulis AUD. & BACH. Proc. Acad. Nat. Sci. Phila. I, 1841, p. 97; Journ. Acad. Nat. Sci. Phila. VIII, 1842, p. 300. Vicinity of Charleston, S. C. (Not satisfactorily determinable; probably not *Reithrodontomys*.)

? Mus humilis AUD. & BACH. Quad. N. Am. II, 1851, p. 103. (Habitat extended to vicinity of New York City.)

? H[esperomys] humilis LECONTE, Proc. Acad. Nat. Sci. Phila. 1853, p. 413 (in text).

Reithrodon humilis BAIRD, Mam. N. Am. 1857, p. 448.

Ochetodon humilis COUES, Proc. Acad. Nat. Sci. Phila. 1874, p. 185; Mon. N. Am. Roden. 1877, p. 123. (The Atlantic coast specimens and references only.)

?? Mus carolinensis AUD. & BACH. Journ. Acad. Nat. Sci. Phila. VIII, 1842, p. 306. "Maritime districts of South Carolina." (Not determinable; probably a young *Peromyscus*.)

?? H[esperomys] carolinensis LECONTE, Proc. Acad. Nat. Sci. Phila. 1853, p. 413 (in text).

?? Reithrodon carolinensis BAIRD, Mam. N. Am. 1857, p. 452 (from Aud. & Bach.).

Mus lecontii AUD. & BACH. Journ. Acad. Nat. Sci. Phila. VIII, 1842, p. 307. Georgia; Ashapoo, S. C.

Reithrodon lecontei LECONTE, Proc. Acad. Nat. Sci. Phila. VI, 1853, p. 413. "*Hab.* In Georgia."—BAIRD, Rep. U. S. and Mex. Bound. Surv. II, Mamm. 1859, p. 43 (in text).

Reithrodontomys humilis RHOADS, Proc. Acad. Nat. Sci. Phila. 1894, p. 161. (Tarpon Springs, Fla.)—CHAPMAN, Bull. Am. Mus. Nat. Hist. VI, 1894, p. 338. (Enterprise, Fla.)

Adult.—Above ruddy fuscous brown, usually a little darker along the median line of the back, lighter and more fulvous on the sides, forming an ill-defined fulvous border at the junction of the dorsal and ventral areas. Below dingy gray, usually with a tinge of fulvous, particularly over the pectoral region, where there is a tendency to an ill-defined chest-mark. (The plumbeous basal portion of the fur shows more or less through the grayish tips of the hairs, which, as already said, often present a distinct wash of brownish fulvous.) Feet whitish; ears more or less dusky; tail more or less distinctly bicolor, dusky above, grayish white below, thinly haired.

Immature.—Darker and more plumbeous above, with little or none of the brownish wash of the adults; below plumbeous, washed with whitish gray. Very young specimens are much darker and more plumbeous than those nearly full grown.

Measurements.—Tail slightly less than half (about 48 per cent.) of the total length. Length, 120; tail vertebræ, 56; hind foot, 15.5; ear, 9.5. (For measurements of additional specimens see Table I, p. 141.)

Geographic Distribution.—Coast district of South Carolina and Georgia, and southward into Florida (Enterprise, *Chapman;* Tarpon Springs, *Rhoads*).

SPECIMENS EXAMINED.

No. of specimens.	Locality.	Date.	Collector.
7	Riceboro, Ga ..	April 12–14.....	V. Bailey & R. J. Thompson.[1]
1	Enterprise, Fla	Feb. 27.....	C. L. Brownell.[2]
13	Raleigh, N. C..	Nov. 11–Dec. 15. ..	H. H. and C. S. Brimley.[2]
20	" " .	Nov. 7–Jan. 20....	" " 1
28	" " .	Dec., Feb., March, April and July. ..	" " 3
69			

[1] Received from U. S. Dept. Agr. [2] Collection Am. Mus. Nat. Hist.
[3] Received from Dr. C. Hart Merriam.

There is considerable seasonal variation in color and condition of pelage, most adult November and December examples being in short, thin pelage and of a lighter, more chestnut-brownish hue than February and March examples, as shown by the large series from Raleigh, covering the period from Nov. 5 to April 7. Half-grown young differ markedly from the adults in being nearly uniform dark plumbeous.

Messrs. H. H. and C. S. Brimley, in answer to my inquiries as to the distribution of this species, have kindly written me as follows: "The only places in North Carolina from which we have seen specimens are Raleigh and Wolke, in Bertie County, on Albemarle Sound." They further state that Mr. C. S. Brimley collected in 1890 at Greensboro, Alabama, and at Bay St. Louis, Hancock Co., Miss., without meeting with this species. "At Raleigh," they add, "it inhabits the upland fields, and also the edges of marshes, but is never found in woods nor in wet meadows, where *Arvicola riparius* abounds. The few nests that have been found were in damp places in tussocks of grass or rushes. At Raleigh it is one of our commonest mice."

While in general the description of *Mus humulis* Aud. & Bach. applies satisfactorily to the species of *Reithrodontomys* occurring near the coast in South Carolina and Georgia, it is singular and

noteworthy that these authors failed to mention the grooved incisors in any of the three descriptions given by them of this species; especially when they so particularly refer to the character of the molars, which they compare with those of *Mus* and *Arvicola*, remarking (Quad. N. Am., II, p. 106) "that there are angular ridges on the enamel by which it [this species] approaches the genus *Arvicola*; it is in fact an intermediate species, but in the aggregate of its characteristics perhaps approaches nearest to *Mus*, where for the present we have concluded to leave it." They also state that they believe "this animal can be traced as far to the northeast as the State of New York, several having been procured in traps on the farms in the vicinity of the city." These statements, taken with the fact that *Mus humulis*, in their 'Descriptions of New Species of Quadrupeds inhabiting North America' (Journ. Acad. Nat. Sci. Phila., VIII, pp. 280-323), is separated from their *Mus carolinensis* and *Mus lecontii* by the intervention of *Mus aureolus* and *Mus michiganensis*, and the further fact that grooved incisors are particularly mentioned in the case of *M. carolinensis* and *M. lecontii*, seem to throw doubt upon the tenability of the name *humulis* for any species of *Reithrodontomys*.

It is further to be noted that Le Conte, in his remarks upon North American Muridæ (Proc. Acad. Nat. Sci. Phila., 1853, p. 410), says that "the Mus Lecontei of Bachman....is a Reithrodon, and neither a Mus nor a Hesperomys." In the same paper (p. 413) he refers both *Mus humulis* and *Mus carolinensis*, with which he says he has long been "well acquainted," to *Hesperomys*, and gives under *Reithrodon* only *R. lecontii*.

It is suggestive also that Baird in 1859 (Mex. Bound. Surv., l. c.) compared his *R. megalotis* with *R. lecontii*, and made no mention of *R. humulis*, the inference from which is obvious, as he had previously considered *lecontii* to be a pure synonym of *humulis*.

The only objection to referring *Mus carolinensis* Aud. & Bach. to "*Hesperomys*," as was done by Le Conte, is the statement that "the upper incisors are slightly grooved;" in *M. lecontii* they are said by the same authors to be "deeply grooved." The distinction here made is noteworthy, especially as the proportions and color of *Mus carolinensis* accord well with those of a young

Peromyscus (=*Sitomys*), and do not coincide with any known form of *Reithrodontomys* from "the maritime districts of South Carolina."

Of the pertinancy here of *Mus lecontii* there is no question.

Reithrodontomys merriami,[1] sp. nov.

MERRIAM'S HARVEST MOUSE.

Similar in general features to *R. lecontii*, but distinctly smaller, with slightly shorter tail, and much darker coloration.

Adult.—Above yellowish gray brown, darker along the middle of the dorsal area, forming a broad blackish band from the shoulders posteriorly; sides more yellowish gray, with a faint pale buffy lateral line. Below whitish gray, with often a faint buffy wash, most pronounced on the breast. Ears small, uniform blackish; feet dingy gray; tail very indistinctly bicolor, blackish above, dusky gray below, thinly haired, the annulations often distinctly visible.

Measurements.—Type No. $\frac{32\,8\,8\,22}{44\,8\,5\,8}$, Nat. Mus, ♂ ad., Austin Bayou, near Alvin, Texas, March 15, 1892; Wm. Lloyd. Length, 112; tail vertebræ, 55; hind foot, 16.5; ear, 9.

Nine specimens (U. S. Dept. Agr.) from Austin Bayou, near Alvin, Brazoria Co., Texas, measure as follows: Length, 112 (106–128); tail vertebræ, 52 (45–60); hind foot, 16.2 (15.5–17); ear, 8.5 (8–9); ratio of tail vertebræ to total length, 46.4 (44–49).

Geog. Dist.—Coast district of southwestern Louisiana to Brazoria Co., Texas.

Material Examined.—Austin Bayou, near Alvin, Texas, March 13–17, Wm. Lloyd (U. S. Dept. Agr.), 9 specimens; Lafayette, La., May 22, R. J. Thompson (U. S. Dept. Agr.), 1 specimen. Total, 10 specimens.

I also refer to this species a specimen (alcoholic) recorded by Coues (Mon. N. Am. Roden., p. 126, Table xxxiii, third line from bottom), under *Ochetodon humilis*, from Calcasieu Pass, La., of which he gives the following measurements (here reduced to mm.): Length, 112; tail vertebræ, 56; hind foot, 15.2; ear, 9.4. This (if properly referred) forms the first reference to the occurrence of this species in Louisiana.

Fortunately the Riceboro specimens of *R. lecontii* are strictly comparable, as regards season of capture, with the series from Austin Bayou. The differences in coloration are striking; there

[1] Named for Dr. C. Hart Merriam, Chief of the Division of Ornithology and Mammalogy, U. S. Department of Agriculture.

is also a quite noteworthy difference in size, and in the ratio of tail vertebræ to total length. The pelage is softer and fuller, and the tail more scantily haired.

It needs comparison with no other species thus far known.

Reithrodontomys dychei,[1] sp. nov.

DYCHE'S HARVEST MOUSE.

Ochetodon humilis COUES, Proc. Acad. Nat. Sci. Phila. 1874, p. 185; Mon. N. Am. Roden. 1877, p. 123 (Kansas, Missouri, Iowa and Nebraska specimens only).

Somewhat resembling *R. megalotis*, but darker, slightly smaller, and with smaller and more distinctly spotted ears.

Adult.—Above mouse gray, rather conspicuously lined with black, lighter and more fulvous on the sides, with an indistinct pale fulvous lateral line extending from the cheeks to the base of the tail; sides of the nose, lower edge of the cheeks, throat and whole lower parts whitish, the hairs being plumbeous at base and broadly tipped with white, without any tinge of fulvous on the breast or elsewhere on the ventral area. Ears of medium size for the genus, well rounded apically, moderately well clothed with short grayish-brown hairs on both surfaces. A more or less distinct dusky spot on the outer edge of the ear near the base, and another at the base of the ear internally, both often obsolete in old specimens. Usually a quite noticeable tuft of yellowish-brown hairs in front of the anterior base of ears. Tail well haired, distinctly bicolor, the upper third dusky and the rest whitish or grayish white. Upper surface of all the feet whitish.

Young.—Darker and more mixed with blackish above, with the fulvous lateral line (in middle-aged specimens) more uniformly present and stronger than in adults. The dusky ear spots are more distinct, usually forming rather conspicuous markings.

Measurements.—Type, No. $\frac{10187}{8481}$, Am. Mus., ♀ ad., Lawrence, Kans., Jan. 12, 1894; Prof. L. L. Dyche. Length, 133; tail vertebræ, 52; hind foot, 15.5; ear, 10.

Twenty-four adults from Lawrence, Kans., measure: Length, 130 (119–149); tail vertebræ, 60 (51–70); hind foot, 16.8 (15.2–18.8); ear (from skins), 10 (9.5–10.5); ratio of tail vertebræ to total length, 46 (44–49).

Five specimens from Neosho Falls, Kans., measure:[2] Length, 118 (102–123); tail vertebræ, 53 (43–58.4); hind foot, 16 (14.5–16.3).

The Onaga and Trego series are unfortunately not accompanied by measurements.

[1] Named for Prof. L. L. Dyche, University of Kansas, Lawrence, Kansas.
[2] Measurements from Coues (Mon. N. Am. Roden., p. 126), reduced to mm.

Geog. Dist.—Eastern Kansas, from about the middle of the State eastward to St. Louis, Mo., and from Neosho County north to eastern Nebraska and southwestern Iowa.

SPECIMENS EXAMINED.

No. of specimens.	Locality.	Date.	Collector.	Whence received.
37	Lawrence, Kan...	Dec. 28–Jan. 18, Mar. 22, Apr. 11–13.....	Prof. L. L. Dyche ..	Prof. L. L. Dyche.
2	Neosho Falls, Kan.	....	Col. N. S. Goss....	U. S. Nat. Mus.
9	Onaga, Pottawatomie Co , Kan ...	Oct. 6, Nov. 17–25, Dec. 2, Feb. 11, Apr. 14..	F. F. Crevacœur...	U. S. Dept. Agr.
1	St. Louis, Mo....	....	Dr. Geo. Engelmann	U. S. Nat. Mus.
2	London, Lancaster Co., Nebr.....	April 29.....	Geo. A. Coleman...	U. S. Dept. Agr.
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This species is much larger than either *R. merriami* or *R. lecontii*. The pelage is very long, soft and full. In coloration *L. dychei* differs from *R. merriami* in being much paler, with much less black over the dorsal area, more yellowish gray sides, and clear white underparts, with a much more sharply bicolored tail, and spotted ears; from *R. lecontii* in much lighter and wholly different coloration, in much fuller, softer pelage, in its heavily-clothed tail and distinctly spotted ears.

Reithrodontomys dychei is based primarily on the large series from Lawrence, Kansas, received from Prof. L. L. Dyche. I refer also to this species the two specimens (one of them is before me) from St. Louis, Missouri, doubtfully assigned by both Baird and Coues to *R. humilis* (=*lecontii*); also the five specimens (two are before me) recorded by Coues under the same name from Neosho Falls, Kans.; and the single specimens from Burlington Kans., and Buchanan Co., Iowa, similarly recorded by the same author.

The Onaga specimens are very dark and very small; some of them are obviously quite young, and all are apparently more or less immature, which probably explains their small size and dark coloration.

Reithrodontomys dychei nebrascensis, subsp. nov.

NEBRASKA HARVEST MOUSE.

Differs from *R. dychei* in slightly larger size, relatively larger ears, and more strongly fulvous coloration.

Adult.—Above yellowish brown finely lined with blackish tipped hairs, particularly over the median area; the fulvous brown tint is strongest on the sides and posterior half of the dorsum; beneath white. Ears indistinctly spotted.

Young.—Above pale buffy gray, faintly lined with dusky hairs; below white. Ears distinctly spotted. Much lighter colored above than the young of *R. dychei* at corresponding ages.

Measurements.—Type, No. $\frac{18684}{25426}$, Nat. Mus., ♂ ad., Kennedy, Nebr., April 19, 1890; Vernon Bailey. Length, 130; tail vertebræ, 61; hind foot, 18; ear (from skin), 11.

Thirteen specimens from Kennedy, Nebr., measure: Length, 135 (126–139); tail vertebræ, 63.6 (59-68); hind foot, 17.6 (17-18); ear (from skins), 11; ratio of tail vertebræ to total length, 45.6 (42–47).

Four adult specimens from Cañon City, Col., measure: Length, 141 (128–153); tail vertebræ, 64 (58–68); hind foot, 16.3 (16–17); ratio of tail vertebræ to total length, 45.4.

Geog. Dist.—Western border of the Plains, from Fremont Co., Col., north to Custer, Mont., and east to central and northeastern Nebraska.

SPECIMENS EXAMINED.

No. of specimens.	Locality.	Date.	Collector.
14	Kennedy, Cherry Co., Nebr..	Apr. 19-25.... ...	Vernon Bailey.[1]
1	Cherry Co., Nebr.....	June 20.....	A. B. Baker.[1]
2	Alliance, Boxbutte Co., Nebr.	July 13.....	Dr. A. K. Fisher.[1]
1	Ewing, Holt Co., Nebr.....	May 8.....	V. Bailey.[1]
3	Callaway, Custer Co., Nebr..	Sept. 13, 14.....	Geo. A. Coleman.[1]
3	Columbus, Platte Co., Nebr..	Aug. 27–29	" "
1	Kearney, Buffalo Co., Nebr..	Sept. 8.....	" "
2	Pendennis, Lane Co., Kans..	May 8.....	W. W. Granger.[2]
1	Trego Co., Kans	Dec. 24[2].....	
5	" "	Dec. 9–29[3]	
3	" "	Jan. 24	A. B. Baker.[1]
5	Cañon City, Col.....	Oct. 2–6.....	J. A. Loring.[1]
1	Loveland, Larimer Co., Col..	Oct. 22.....	C. P. Streator.[1]
8	" " " ..	Apr. 2–14, Sept. 11.	W. G. Smith.[3]
1	Belle Fourche River, S. Dak..	June 2.....	Vernon Bailey.[1]
1	Vermillion, S. Dak	Dec. 3....	G. S. Agersborg.[4]
1	Custer, Mont.....	June 14.....	J. A. Loring.[1]
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[1] Received from U. S. Dept. Agr.
[2] Collection Am. Mus. Nat. Hist.
[3] Received from Gerrit S. Miller, Jr.
[4] " " Dr. C. Hart Merriam.

This subspecies differs from *R. dychei* in its slightly larger size, slightly larger ears, and very much stronger suffusion of fulvous. In coloration it is parallel to the phase of *Peromyscus* found over the same region, and known as *P. americanus nebrascensis*, as compared with other conspecific forms of the latter group. *R. dychei* and *R. dychei nebrascensis* undoubtedly intergrade, from the nature of their distribution, over the central portions of Kansas and eastern central Nebraska.

This form is based primarily on the series from Kennedy, Nebraska—the only series of which measurements taken from the fresh specimens are available. The Loveland series, however, is quite similar in coloration and apparently in size. One specimen of the latter (No. 495, Coll. G. S. Miller, Jr., April 8) is remarkable for its pallor, having an exceedingly bleached appearance, and especially for the absence of the usual dusky stripe along the upper surface of the tail. Another (No. 65,667, Dept. Agr.) from Belle Fourche River, S. Dak., June 2, is remarkable also for its pale *gray* tint, through, apparently, the fading out of the fulvous tinge so prominent in early spring specimens from other localities. August and September specimens are darker and less fulvous than spring examples.

In coloration, hairiness of the tail, and in general features, this subspecies bears a close resemblance to the *R. megalotis* group, Kennedy specimens finding their exact counterpart in coloration in specimens from Inyo Co., California, and southern Nevada, while specimens of the grayer style are almost indistinguishable in coloration from the phase of the *R. megalotis* group represented in the San Juan region of New Mexico and Utah.

Reithrodontomys montanus (*Baird*).

MOUNTAIN HARVEST MOUSE.

Reithrodon montanus BAIRD, Proc. Acad. Nat. Sci. Phila. 1855, p. 335. "Collected in the vicinity of the Rocky Mountains, lat. 38°;" BAIRD, Mam. N Am. 1857, p. 449. "Rocky Mountains, 39°."

? Ochetodon montanus (sp. proband.) COUES, Mon. N. Am. Roden. 1877, p. 130. (From Baird.)

Reithrodontomys montanus ALLEN, Bull. Am. Mus. Nat. Hist. V, 1893, p. 80. (Based on an examination of the type of the species.)

"Tail very little less than head and body, which barely exceeds two inches. Hind foot, .50. Ears small, the membrane thickened, and with long coarse

hairs. Above, brown and pale yellowish gray, much lighter than mouse-color. Outside of ears and flanks, pale yellowish brown, without any rufous. Beneath, dull whitish."—*Baird*, N. Am. Mam., p. 449.

Measurements.—" Nose to occiput, 10 lines; nose to root of tail, 2 in. 2 lines [=51 mm.]; tail, from root to end of hairs, 2 in. [=50.8 mm.]; ears, height posteriorly, 3½ lines [=7.4 mm.]; ears, height internally, above notch, 4 lines [=10.2 mm.]; ....hind foot, from heel to end of claws, 6 lines [=12.7 mm.]; skull, length, 9⅓ lines [=44.5 mm.]; ...."—*Baird*, l. c., p. 450.

Geog. Dist.—Known only from the type, taken in lat. 38° to 39°, in the Rocky Mountains, probably near the upper end of the San Luis Valley in Colorado.

Although the original type of the species is before me, I have preferred, owing to its present deteriorated condition, to copy Baird's excellent description rather than to give a new one. There is nothing, in fact, to be said in amplification of what Baird wrote, the type still remaining unique. There are no specimens in the material before me from any point nearer the type locality than Cañon City, some fifty miles to the eastward, and in a quite different region. The type specimen, as said by Baird, "appears quite adult"; in fact, the teeth are considerably worn, and there are other indications of full maturity. Yet the specimen is not larger than quite immature (one-half to two-thirds grown) examples of *R. megalotis* or *R. dychei*. The very small ears, with the membrane thickened and covered with rather coarse yellowish hairs, the small size of the auditory bullæ and their rather oblique position, and the rather peculiar enamel pattern of the molariform teeth, are features not seen in any other example of the genus I have examined.

In external characters—as the relative length and hairiness of the tail, and in coloration—there is little besides the small thickened ears to distinguish it from immature examples from northern New Mexico, Colorado or Kansas.

The type of *Reithrodon montanus* is No. 13 of the specimens taken by Mr. Kreutzfeldt on Capt. E. G. Beckwith's Expedition from Wesport, Mo., to the Pacific Coast in 1853–4. Only a few specimens of mammals and birds appear to have been collected on this particular expedition, as on careful collation of Baird's famous Vols. VIII and IX of the Pacific R.R. Explorations and Surveys,

I find only about a dozen localities mentioned from which specimens are credited to Beckwith's Expedition. The locality of the type in question appears not to have been accurately known even to Professor Baird, who records it as "vicinity of the Rocky Mountains, lat. 38°," in his first description of the species, and later as "Rocky Mountains, 39°." Specimens Nos. 15–18 of Beckwith's Collection are given as from Sewatch Pass, and Nos. 14 and 20–22 as from Coochetopa Pass. The series begins with No. 1, taken at Bent's Fort, on the Arkansas River; No. 3 was from the Greenhorn Mountains; No. 5 from Sangre de Christo Pass, and Nos. 7 and 11 from near Fort Massachusetts. From the itinerary of the expedition (P. R. R. Expl. and Surv., II, pp. 1–128, and particularly pp. 116 and 120–122) it is evident that No. 13, the type of *Reithrodon montanus*, was taken about August 29 or 30 in the upper part of the San Luis Valley. Until this region has been thoroughly explored for 'topotypes' of *R. montanus*, it would be obviously improper to reject this species as unidentifiable or to give the name precedence over *R. megalotis* for the form here recognized under that name.

Reithrodontomys megalotis (*Baird*).

BIG-EARED HARVEST MOUSE.

Reithrodon megalotis BAIRD, Mam. N. Am. 1857, p. 451; Rep. U. S. and Mex. Bound. Surv. II, Mamm. 1859, p. 43. Between Janos, Sonora and San Luis Springs, New Mexico.

Reithrodontomys megalotis ALLEN, Bull. Am. Mus. Nat. Hist. V, 1893, p. 79 (San Juan region of New Mexico and Utah); ALLEN, ibid. VI, 1894, p. 320 (Fairbank, Arizona).

Reithrodontomys aztecus ALLEN, ibid. V, p. 79. La Plata, New Mexico.

Ochetodon humilis COUES, Proc. Acad. Nat. Sci. Phila. 1874, p. 185; Mon. N. Am. Roden. 1877, p. 123. (Only the references to *R. megalotis* Baird.)—ALSTON, Biol. Centr.-Am. Mamm. 1880, p. 151. (The Sonoran references only.)

"Largest of North American species. Head and body from 2.50 to 3.00 inches [=63.5 to 76 mm.]; tail about two-tenths shorter. Hind foot near .70 [=17.8]. Ears large, moderately clothed with hair. Above mouse-gray, lined with darker, and tinged with rusty; on the rump and sides a fulvous wash. Beneath soiled yellowish white."—*Baird*, Mam. N. Am., p. 451.

The above is an excellent description of average adults. Immature specimens are grayer with less of the fulvous wash, and with indistinct blackish ear spots, as in *R. dychei*. Occasionally the fulvous on the back in adults shades

on to a reddish tinge. The upper surface of the tail is distinctly darker than the sides and lower surface, well clothed with short hairs, wholly concealing the annuli, except in worn specimens. Feet soiled whitish.

Measurements.—(See Table II, p. 141.) In compiling the table obviously immature specimens were excluded, although a number of 'young adults' are embraced in several of the series, as in those from Aztec and Provo, thus tending to lower the general average.

Geog. Dist.—Northeastern Sonora northward through western New Mexico and eastern Arizona to Northern Utah. The localities given in the following table indicate more in detail the known distribution of the species.

SPECIMENS EXAMINED.

No. of specimens.	Locality.	Date.	Collector.
1	Near San Luis Springs, Sonora.	....	Dr. C.B. Kennerly.[1]
1	Fort Huachuca, Ariz	....	Dr. T. E. Wilcox.[1]
5	Fairbank, Ariz.....	March 2–14....	Price and Condit.[2]
1	St. Thomas, Ariz.....	Jan. 29.....	Vernon Bailey.[3]
1	Silver City, N. Mex	Dec. 5.....	C. P. Streator.[4]
1	Las Vegas, N. Mex..... ..	April 6.....	.....[2]
2	Aztec, N. Mex.....	March 19, 20...	C. P. Rowley.[2]
33	" "	Dec. 5–9.....	J. A. Loring.[4]
7	La Plata, N. Mex.....	Mch. 30–Apr. 11.	C. P. Rowley.[2]
34	" "	Dec. 10–12.....	J. A. Loring.[4]
1	Riverview, Utah.....	April 25.....	C. P. Rowley.[2]
1	Bluff City, Utah.....	May 18.....	" "
4	" "	Nov. 8, 9.....	J. A. Loring.[4]
4	Noland's Ranch, S. W. Utah..	Nov. 23.....	" "
3	Fairfield, Utah.....	June 24, 25....	Vernon Bailey.[4]
1	Manti, Utah.....	Dec. 11..... ...	.....[2]
1	Camp Floyd, Utah....	.....	C. S. McCarthy.[1]
5	St. George, Utah	Jan. 5	Vernon Bailey.[3]
15	Provo, Utah....	Nov. 11–Dec. 15.	" "
2	Kelton, Utah....	Oct. 25.....	" "
3	Ogden, Utah	Oct. 1–3.....	" "
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[1] Received from U. S. Nat. Mus.
[2] Collection Am. Mus. Nat. Hist.
[3] Received from Dr. C. Hart Merriam.
[4] " " " U. S. Dept. Agr.

R. megalotis was described from two specimens (Nos. 1039, skin, and 1040, alcoholic, U. S. Nat. Mus.) taken by Dr. C. B. R. Kennerly, between Janos and San Luis Spring, Sonora, near the boundary line of southwestern New Mexico, the former of which is properly to be considered as the type. Of these specimens only the skull of No. 1039 appears to be extant. This specimen,

through the kindness of Mr. True, Curator of Mammals in the U. S. National Museum, I have the opportunity to reëxamine[1] in the present connection. This skull, taken in connection with Baird's excellent description of the external characters, appears to leave no question of the propriety of applying the name to the species now so well represented by specimens from New Mexico, Arizona and Utah, among which is a small series from Fairbank, Arizona, a point about one hundred miles northwest from the type locality of the species. The Fairbank specimens are not appreciably different from large series from the San Juan Valley in northwestern New Mexico and southeastern Utah. Specimens from central and northern Utah are so closely similar that I am unable to specify any differences. In a series of 13 specimens from Winslow, Arizona, the tail averages slightly longer than in any of the series from New Mexico and Utah, and on this account has been referred to the next form rather than here.

Reithrodontomys megalotis deserti, subsp. nov.

DESERT HARVEST MOUSE.

Similar in coloration to *R. megalotis*, but with a considerably longer tail. Tail 50 to 52 per cent. of the total length, instead of 46 to 48 per cent., as in *R. megalotis* proper.

Type, $\frac{27720}{39819}$, U. S. Nat. Mus. (Dept. of Agr. Coll.), ♀ ad., Oasis Valley, Nye Co., Nevada, March 16, 1891 ; F. Stephens.

Measurements.—(See Table III, p. 142.)

Geog. Dist.—Southern Nevada and Inyo Co., California.

Specimens Examined.—(See next page.)

In coloration, general size, size of the ears, hairiness of the tail, and in other external features, there is very little difference between examples from the Death Valley region of California and adjoining portions of Nevada and specimens from northern Utah and thence southward to western New Mexico and eastern Arizona. The fulvous suffusion of the dorsal surface is possibly a little stronger and more of a brownish cast than in the Death Valley specimens, but the average difference in this respect is so slight as to be thoroughly masked by the wide range of individual and seasonal variation shown by any of the larger series, and

[1] See this Bulletin, V, 1893, p. 79.

SPECIMENS EXAMINED.[1]

No. of specimens.	Locality.	Date.	Collector.
13	Winslow, Ariz.	May 1–5.	C. P. Streator.
2	Grapevine Mts., Esmeralda Co., Nev.	Mch. 22 & June 9	F. Stephens & E. W. Nelson.
26	Ash Meadows, Nye Co., Nev.	March 4–12.	Fisher, Stephens, Nelson & Palmer
16	Oasis Valley, Nye Co., Nev.	March 15–18.	F. Stephens.
1	Panaca, Lincoln Co., Nev.	May 20.	Vernon Bailey.
12	Pahrump Valley, Lincoln Co., Nev.	Feb. 17–Mch. 16,	E. W. Nelson.
4	Pahranagat Valley, Lincoln Co., Nev.	May 24–26.	Vernon Bailey.
5	Vegas Valley, Lincoln Co., Nev.	March 11–16.	"
30	Lone Pine, Inyo Co., Cal.	Dec. 5-17 and June 7-9.	Bailey, Nelson and Fisher.
5	Keeler, Inyo Co., Cal.	Dec. 8–10.	E. W. Nelson.
6	Owens Valley, Inyo Co., Cal.	June 26–July 10,	F. Stephens.
1	Emigrant Springs, Inyo Co., Cal.	April 15.	"
1	Twelve Mile Spring, Inyo Co., Cal.	Feb. 11.	E. W. Nelson.
5	Grapevine Ranch, Inyo Co., Cal.	April 2–4.	F. Stephens.
20	Olancha, Owens Lake, Inyo Co., Cal.	May 16–22.	"
2	Ash Creek, Owens Lake, Inyo Co., Cal.	May 30.	"
10	Cartago, Owens Lake, Inyo Co., Cal.	June 4–11	"
9	Panamint Valley, Inyo Co., Cal.	Jan. 8–10.	Bailey and Fisher.
6	Panamint Mts., Inyo Co., Cal.	April 5–May 27.	E. W. Nelson.
1	Shepherd Cañon, Inyo Co., Cal.	Jan. 3.	"
3	Resting Springs, Inyo Co., Cal.	Feb. 9–18	Fisher and Nelson.
3	Saratoga Springs, Inyo Co., Cal.	Feb. 1, 2.	Vernon Bailey.
5	Death Valley, Inyo Co., Cal.	Feb. 3 & June 20,	Fisher and Bailey.
1	Argus Mts., Inyo Co., Cal.	April 25.	F. Stephens.
1	Furnace Creek, Inyo Co., Cal.	April 9.	"
1	Bishop Creek, Inyo Co., Cal.	August 9.	"
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[1] All received from U. S. Dept. Agr.

therefore is scarcely serviceable as a diagnostic feature. On the other hand, the difference in the relative length of the tail seems too important to be ignored, amounting to at least 4 per cent. Thus in *R. megalotis* the tail is decidedly less than half the total length, while in *R. megalotis deserti* it equals or exceeds one-half the total length. In a series of about 100 examples of *R. megalotis* proper it is exceedingly rare to find one in which the tail vertebræ equal one-half the total length, while in a still larger

series of *deserti* specimens rarely occur in which the tail length does not equal or slightly exceed half the total length. In the average there is a difference of 4 per cent. in the relative length of the tail in the two forms, with only an exceptional overlapping by individual extremes. These differences are well shown in the tables of averages and extremes of the two forms (see pp. 141, 142).

A small series of five specimens from the Panamint Mountains, Inyo Co., California, seems to offer an exception to the general rule obtaining in the series from neighboring localities, in this series the tail dropping down to the length proper to *R. megalotis*. Whether a larger series might not alter this ratio, or whether the series indicates a local short tailed form within the range of the long tailed style cannot at present be determined.

The series from Winslow, central Arizona, agrees so well in tail-length with the *deserti* group that it is provisionally referred here, although on geographical grounds it would seem more naturally referable to true *megalotis*. The coloration is also slightly different from that shown in series from other points, so that possibly the Winslow series may indicate the presence of a slightly differentiated local phase in central Arizona.

There is quite a wide range of variation in the coloration of the upper parts in specimens from the same locality, strictly comparable as to sex, age and season, specimens varying from pale grayish brown, washed with fulvous to much darker grayish brown washed with dark cinnamon.

Reithrodontomys longicauda (*Baird*).

SONOMA HARVEST MOUSE.

Reithrodon longicauda BAIRD, Mam. N. Am. 1857, p. 451. Petaluma, Sonoma Co., California.
Ochetodon longicauda COUES, Proc. Acad. Nat. Sci. Phila. 1874, p. 186; Mon. N. Am. Roden. 1877, p. 126.

Adult.—Above yellowish brown, heavily lined with black, the profusion of the intermixed black hairs usually forming a distinctly blackish area along the median line of the back; sides paler, less blackish and more yellowish, with a rather broad fulvous lateral line, extending from the cheeks to the rump, varying in intensity and distinctness in different individuals. Below dingy grayish white, often with a tinge of yellow, and sometimes with a more or less distinct fulvous patch on the breast. Ears dusky, thinly clothed with yellowish brown

hairs, with, as in nearly all the forms of the genus, a tuft of rusty brown hairs at the anterior base. Feet soiled white; tail rather sharply bicolor, dusky above, grayish white below, covered with short hairs, only partly concealing the annuli.

Young.—Above nearly uniform mouse color; below plumbeous, washed with gray. Ear with an elongated dusky spot near the base of the outer edge, which is usually obsolete in adults.

Young adults are duller and more uniformly colored above than adults, and generally lack the blackish median area along the back.

Summer and early autumn specimens are usually paler, with less black, than winter and early spring specimens.

Measurements.—Average and extremes of 6 specimens from Glen Ellen, Sonoma Co., Cal.: Length, 136.5 (129–144); tail vertebræ, 72 (68–79); hind foot, 17 (16–18); ear (from skins), 11.2 (10.5–12); ratio of tail vertebræ to total length, 52.2 (50–54.8). This is about an average series, from near the type locality. Measurements of other series are given in Table IV (p. 142). The tail varies from 50 to 56 per cent. of the total length, averaging about 53 per cent.

Specimens Examined.

No. of specimens.	Locality.	Date.	Collector.
4	Tehama, Tehama Co., Cal.	Dec. 30, 31	C. P. Streator.[1]
6	Leesville, Colusa Co., Cal	June 6-8	F. Stephens.[1]
3	Lower Lake, Lake Co., Cal.	April 23–25	"
10	Glen Ellen, Sonoma Co., Cal.	Jan. 10–21	C. P. Streator.[1]
3	Fairfield, Solano Co., Cal.	Feb. 4–6	" "
2	Novato, Marin Co., Cal.	Jan. 28	" "
5	Nicasio, Marin Co., Cal	March 6-9	C. A. Allen.[2]
5	" " "	Feb. 17–23	C. P. Streator.[1]
1	Jackson, Amador Co., Cal.	March 24	" "
1	Martinez, Contra Costa Co., Cal.	April 13	F. Stephens.[1]
20	Walnut Creek, ContraCostaCo., "	Feb. 14–20	C. P. Streator.[1]
10	Tracy, San Joaquin Co., Cal.	Jan. 9, 10	J. E. McLellan.[1]
3	Berkeley, Alameda Co., Cal.	Feb. 27–29	C. P. Streator,[1]
14	San Mateo, San Mateo Co., Cal.	Feb. 5–9	J. E. McLellan.[1]
11	Portola, Santa Cruz Co., Cal.	March 20–28	R. L. Wilbur.[3]
45	La Honda, " "	Dec. 24–Jan. 1	Price & Wilbur.[3]
16	Monterey, Monterey Co., Cal	Sept. 30–Oct. 2	Vernon Bailey.[1]
1	San Jacinto, Monterey Co., Cal.	Oct. 2	F. Stephens.[1]
2	Pacific Grove, " "	Oct. 6	J. H. Oliver.[1]
1	Posts, " "	March 11	J. E. McLellan.[1]
7	Sur, " "	March 4–13	" "
5	Jamesburg, " "	March 18–21	" "
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[1] Received from U. S. Dept. Agr. [2] Collection Am. Mus. Nat. Hist.
[3] Received from W. W. Price.

Geog. Dist.—California, west of the Sierra Nevada, from the coast region of Monterey County north to Mendocino County, and in the interior from San Joaquin County north to Tehama County. Probably further south, irregularly, in the Coast and San Bernardino ranges of mountains.

Specimens Examined, 175, as shown by the foregoing table.

Fourteen of the 15 specimens on which Baird based his *R. longicauda* were from Petaluma, and the other from San Francisco, California. As shown above, the region of the type locality is well represented in the present material. Baird's measurements, based on alcoholics, fall much under the average, taken from fresh specimens, due probably to the presence of a rather large proportion of more or less immature examples.

The table of measurements (see p. 142) apparently indicates more or less variation in size with locality, but this is more apparent than real, since in the series giving large measurements all of the specimens are practically adult, while those giving smaller averages contain examples that are not fully grown, although as a rule, obviously immature specimens were thrown out in making up the table.

Reithrodontomys longicauda pallidus (*Rhoads*).

SAN DIEGO HARVEST MOUSE.

Reithrodontomys pallidus RHOADS, Am. Nat. XXVII, Sept. 1893, p. 835. Santa Ysabel, San Jacinto Mts., San Diego Co. Cal. (Type in Am. Mus. Nat. Hist.)

Paler and slightly larger than *R. longicauda*.

Adult.—Above grayer, less fulvous, and less varied with blackish than *R. longicauda*. Averages about 8 to 10 mm. longer, with slightly larger ears, as shown by the measurements (Table V), in comparison with the table for *R. longicauda* (Table IV).

Measurements.—(See Table V, p. 143.)

Geog. Dist.—Southern California and northern Lower California, from Monterey County on the Coast and Merced County in the interior southward. Appears to develop slightly differentiated local phases in some of the southern mountain ranges.

Specimens Examined.—(See next page.)

Respecting Mr. Rhoads's *R. pallidus*, I find myself greatly embarrassed as to which of three courses to pursue in the matter,

Specimens Examined.

No. of specimens	Locality.	Date.	Collector.
2	Boulder Creek, Monterey Co., Cal.	Oct. 15	Vernon Bailey.[1]
1	Bear Valley, San Benito Co, Cal.	June 22	J. E. McLellan.[1]
1	Los Baños, Merced Co., Cal	Jan. 5	"
3	Fresno, Fresno Co., Cal	March 3–6	C. P. Streator.[1]
1	Three Rivers, Tulare Co., Cal.	July 21	T. S. Palmer.[1]
1	Lemoore, Kings Co., Cal.	Feb. 27	J. E. McLellan.[1]
1	Kern River, Kern Co., Cal.	July 1	Vernon Bailey.[1]
7	San Emigdio Cañon, Kern Co., Cal.	Oct. 18, 19	E. W. Nelson.[1]
1	Tehachapi, Kern Co., Cal.	June 9	J. E McLellan.[1]
1	Adobe Station, "	Oct. 13	E. W. Nelson.[1]
1	Old Fort Tejon, "	July 8	T. S. Palmer.[1]
5	San Simeon, San Luis Obispo Co., Cal.	Nov. 22	E. W. Nelson.[1]
5	San Luis Obispo, San Luis Obispo Co., Cal.	Nov. 26, 27	"
3	Pozo, San Luis Obispo Co., Cal.	Oct. 29	"
2	Morro, " "	Nov. 10	"
2	Paso Robles, " "	March 12, 13	F. Stephens.[1]
4	Jolon, " "	March 31–April 2,	J. E. McLellan.[1]
3	Santa Maria, " "	Dec. 2	E. W. Nelson.[1]
5	Gaviote Pass, Santa Barbara Co., Cal.	Dec. 9–12	"
4	Santa Inyez Mission, Santa Barbara Co., Cal	Dec. 4	"
2	Santa Barbara, Santa Barbara Co., Cal.	Dec. 12	F. Stephens.[1]
2	Carpentaria, Santa Barbara Co., Cal.	Dec. 19	E. W. Nelson.[1]
2	Los Olivos, Santa Barbara Co., Cal.	March 6	F. Stephens.[1]
4	Hueneme, Ventura Co., Cal.	Feb. 25	"
3	Ventura River, "	Dec. 21–23	E. W. Nelson.[1]
3	Montalva, "	Feb. 28	F. Stephens.[1]
17	Sta. Paula, "	Dec. 29–Jan. 4	E. W. Nelson.[1]
4	Burbank, Los Angeles Co., Cal.	March 10–12	C. P. Streator.[1]
7	San Fernando, "	March 18–22	"
4	Santa Monica, "	Feb. 16–18	F. Stephens.[1]
1	Calabasas, "	Feb. 2	"
2	Las Virginus Creek, "	Feb. 22	"
3	Rêche Cañon, San Bernardino Co., Cal	Sept. 22–24	"
2	San Bernardino Peak, San Bernardino Co., Cal.	Oct. 2	J. E. McLellan [1]
2	Elsinore, Riverside Co., Cal.	Nov. 2	F. Stephens.[1]
1	Temascal, "	Nov. 1	"
2	Radec, "	Feb. 3–5	"
1	Riverside, "	Sept. 20	"
1	San Marcos, San Diego Co., Cal.	Nov. 11	F. W. Koch.[1]
1	Dulzura, "	Oct. 18	C. H. Marsh.[1]
1	Twin Oaks, "	June 4	F. W. Koch.[1]
3	San Jacinto Mts., "	June 15–27	"
1	San Jacinto, "	Oct. 2	F. Stephens.[1]

[1] Received from U. S. Dept. Agr.

SPECIMENS EXAMINED.—*Continued.*

No. of specimens.	Locality.	Date.	Collector.
18	Santa Ysabel, San Diego Co., Cal.	Dec.–March.	F. Stephens.[2]
2	Jacumba, "	May 2.....	F. X. Holzner.[2]
1	Cameron's Ranch, "	June 6.....	"
3	Jumal Creek, "	July 6–8.....	"
3	Coast Mts., "	July 14.....	"
1	Seven Wells, Lower Cal.....	April 16	"
2	Gardiner's Lagoon, Lower Cal...	April 17–26.....	"
1	Nashaguerro Valley, " ...	June 8	"
4	San Cedros, " ...	June 29–July 3...	"
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[2] Collection Am. Mus. Nat. Hist.

namely: (1) To refer *R. pallidus* to *R. longicauda* as a pure synonym of the latter; (2) to treat *R. pallidus* as one of several local phases of *R. longicauda;* (3) to let the name stand in a subspecific sense for a generally dispersed paler southern form of *R. longicauda*, as opposed to true *longicauda* of the region from about Monterey and Merced Counties northward. Through lack of material for properly working out the problem I have provisionally adopted the latter course.

There is rather less difference between the representatives of the *longicauda* group from the plains and open valleys of southern California, and those from Sonoma and adjoining counties, than would be anticipated, considering the very diverse physical conditions of the two regions. Yet that the former are reasonably separable from the latter as a subspecies is fairly evident; but when we take into account those inhabiting the more or less isolated wooded mountainous districts of the southern counties, as the San Jacinto, Santa Ynez, and other ranges, the matter is much complicated. With no questions of synonomy in the way, I should not hesitate to name the form inhabiting the arid plains and valley districts of the southern half of the State, for which the name *pallidus* of Rhoads is unfortunately not strictly pertinent, being based on a dark, rather small mountain phase from the San Jacinto Mountains. His description was based apparently on three specimens, one of which (evidently immature) was from "San Bernardino," while the other two (borrowed from this Museum) were from Santa Ysabel. One of the latter (No.

$\frac{3289}{2568}$, ♀ ad.) he selected for his type, "owing," he says, "to the more typical character" of the specimen; adding: "Duplicates of *pallidus* from the San Bernardino Valley southward, will probably confirm its good specific characters." In reality the San Bernardino animal is very different from the form he has designated as his type. Indeed, this type specimen proves to be the darkest example in a series of eighteen (recently received by this Museum) from the original type locality, and which as a series seem to be very doubtfully separable from true *longicauda*, from which they are much less different than from the form so well represented in the material before me from the southern border of San Diego County, and various other points further northward.

Should the form from Santa Ysabel (San Jacinto Mountains) prove entitled to recognition, it should of course bear the (unfortunately rather inappropriate) name *pallidus*, thus leaving the real pallid form of southern California eligible for a new subspecific designation.

Reithrodontomys arizonensis, sp. nov.

CHIRICAHUA HARVEST MOUSE.

Reithrodontomys longicauda ALLEN, Bull. Am. Mus. Nat. Hist. VI, 1894, p. 320 (in text).

Adult.—Above brown, lined with black, and washed with reddish fulvous, including the whole top of the head; middle of back slightly darker than rest of the dorsal surface; fulvous of sides strongly golden, forming a prominent broad lateral line, extending from the cheeks to the tail. Below grayish white, the fur plumbeous at base, with a rust-colored patch on the breast. Ears blackish, particularly along the outer border above; feet soiled white; tail nearly naked, indistinctly bicolor, dusky on the dorsal surface, gray below.

Young.—Grayish brown above, ashy plumbeous below. Tail sparsely haired, the hairs only partly concealing the annulations.

Measurements.—Type: Length, 152; tail vertebræ, 78; hind foot, 18; ear, 13; ratio of tail vertebræ to total length, 51.3. Four adults measure: Length, 149 (145–152); tail vertebræ, 78 (74–80); hind foot, 17 (16–18); ear, 13 (12.5–14).

Type, No. $\frac{8848}{7148}$, Am. Mus., ♀ ad., Chiricahua Mountains, Arizona, July 8, 1894; B. C. Condit (Price Collection).

Specimens Examined.—Five examples, four adult and one immature, collected on Rock Creek in the Chiricahua Mountains, Cochise Co., Arizona (altitude about 8000 feet), July 7–9, 1894, by B. C. Condit.

This species finds its nearest relative in *R. longicauda* of California, from which it differs in more reddish coloration, particularly on the head. In size it is also considerably above the average of *R. longicauda*. Geographically the two forms are widely separated, so far as known *R. longicauda* not being found east of the San Jacinto Mountains in southern California.

Reithrodontomys mexicanus (*De Saussure*).

? *Mus tazamaca* Gray, P. Z. S. 1843, p. 79 (*apud* Alston). Coban, Guatemala. Nomen nudum.

Reithrodon mexicanus De Saussure, Rev. et Mag. de Zool. 1860, p. 109, pl. ix, fig. 1 (*Hesperomys mexicanus* on plate). "Habite les montagnes de la province de Véra-Cruz."—? Alston, P. Z. S. 1876, p. 756=*Mus tazamaca* Gray.

Reithrodon sumichrasti De Saussure, ibid. 1861, p. 3. "Mexican tellus."

Ochetodon mexicanus Coues, Proc. Acad. Nat. Sci. Phila. 1874, p. 186; Mon. N. Am. Roden. 1877, p. 128 (exclusive of Louisiana specimens).—Alston, Biol. Cent. Am. Mamm. 1880, p. 151.

Description.—"La couleur du pelage est un brun-fauve, qui devient tout à fait fauve sur les côtés, ou même fauve-orangé. Plus bas le fauve devient pâle, là où il est en contact avec le blanc du ventre. Les lèvres, le bas des joues, le menton, la gorge et toutes les parties inférieures sont d'un blanc assez pur, un peu lavé de fauve par places, surtout à la poitrine et à la gorge....Les poils sont d'un gris ardoise, avec le bout seulement roux ou blanc. Les oreilles sont brunes;....Les pieds antérieurs sont blancs, sauf en dessus, jusqú'a l'origine des doigts, où ils sont gris. Les pieds postérieurs sont obscurs, avec les orteils blancs. La queue est noirâtre, écailleuse, unicolore et garnie de poils gris assez obscurs; elle est surtout poilue vers le bout; á sa base, les poils sont rares et très-courts; mais ils devienment plus longs vers son extrémeté."—*De Saussure*, l. c.

Measurements.—"Longueur du corps et de la tête, 0^m, 068; de la queue, 0^m. 092; du pied postérieur, 0^m, 019.—Hauteur des oreilles à la face externe, 0^m, 011;—largeur des oreilles, 0^m, 010."—*De Saussure*, l. c.

Coues (l. c., p. 130) gives the measurements of 9 specimens from the State of Vera Cruz (3 skins from Tehuacan, and 6 alcoholics from Orizaba, Cordoba, and Mirador), which, reduced to millimetres, are, for the 6 alcoholics, as follows: Length, 150 (141–157); tail vertebræ, 87 (82.5–91); hind foot, 19.5 (18.3–20.5); ear, 12.7 (11.5–14.5); ratio of tail vertebræ to total length, 58 (57–60). One of the skins (No. 7007*a*, U. S. Nat. Mus.) is slightly larger, giving the following: Length, 171.5; tail vertebræ, 95; hind foot, 20.3; ear, 12.7; ratio of tail to total length, 55.5—but this skin is probably overstuffed.

The only specimen of this species before me is No. 7007*a*, U. S. Nat. Mus., which was compared with De Saussure's type (borowed by Dr. Merriam some years ago from the Geneva Museum) by Dr. Merriam, Mr. True and myself, Nov. 24, 1890, with which it was found to agree. It was collected by Mr. F. Sumichrast at Tehuacan, State of Vera Cruz, Mexico, a locality which comes within the habitat of the species as given by De Saussure—"Habite les montagnes de la province de Véra-Cruz." The measurements quoted above from Coues agree very closely with those given by De Saussure, the average length of six specimens exactly agreeing with that given by De Saussure.

Reithrodontomys mexicanus intermedius, subsp. nov.

RIO GRANDE HARVEST MOUSE.

Similar in size and proportions to *R. mexicanus*, but very much paler.

Adult.—Above grayish brown, washed with pale yellowish, varied slightly with darker hairs over the median area of the back, lighter on the sides, and becoming more yellow along the lateral line. Below white, the hairs plumbeous at base and broadly tipped with white. Ears brown, darker towards the margin on the outer surface, thinly haired, the very short hairs on the apical third of the inner surface rufous. Feet soiled white. Tail dusky, nearly unicolor (the lower surface a little lighter than the upper), nearly naked, the annuli nearly always conspicuously visible.

Young.—Paler and more nearly uniform above, with less of the pale fulvous wash; beneath with less white to the tips of the hairs; the dusky ear mark more conspicuous.

Measurements.—Type, ♀ ad.: Length, 194; tail vertebræ, 108; hind foot, 21; ear (from skin), 13; ratio of tail vertebræ to total length, 54.6.

Fifteen specimens from Brownsville, Texas, measure: Length, 178 (160–198); tail vertebræ, 98.7 (90–110); hind foot, 20 (19–21); ear (from skin), 12 (11–13); ratio of tail vertebræ to total length, 55.5 (53–58.5).

Type, No. $\frac{42667}{82837}$, Am. Mus. Nat. Hist., ♀ ad., Brownsville, Texas, Sept. 3, 1891; F. B. Armstrong.

Geog. Dist.—Southern Texas and northeastern Mexico, from Corpus Christi southward; in the Rio Grande Valley to about the mouth of the Pecos, and thence east to Kerr, Bexar and Bee Counties, Texas.

Specimens Examined.—(See next page).

SPECIMENS EXAMINED.

No. of specimens.	Locality.	Date.	Collector.
2	Santa Teresa, Tamaulipas, Mex.	March 23.....	J. Priour.[1]
2	Del Rio, Val Verde Co., Texas,	Feb. 4–7	Vernon Bailey.[2]
2	Santa Tomas, Webb Co., Texas.	Dec. 3, 4	Wm. Lloyd.[2]
1	Rio Grande City, Texas	June 2.....	" "
1	Turtle Creek, Kerr Co., Texas.	Feb. 21.....	H. P. Attwater.[1]
1	San Antonio, Bexar Co., Texas.	May 15.....	" "
12	Brownsville, Texas.....	Sept. 3–Oct. 6...	F. B. Armstrong.[1]
13	" "	Aug. 2, Sept. 10, Feb. 5-16, Apr. 14, June 8, July 24..	J. A. Loring and F. B. Armstrong.[2]
1	Padre Island, Texas.....	Nov. 1.....	Wm. Lloyd.[2]
1	Corpus Christi, Texas.....	April 8	Frank M Chapman.[1]
1	Bee County, Texas.....	January.....	John Priour.[1]
37			

[1] Collection Am. Mus. Nat. Hist. [2] Received from U. S. Dept. Agr.

This subspecies differs strikingly in its paler coloration from either *R. mexicanus* or *R. mexicanus aurantius*, as would be naturally expected from the very different character of its habitat. The name *intermedius* is given with relation to its intermediate position geographically between these two forms.

Reithrodontomys mexicanus aurantius, subsp. nov.

LOUISIANA HARVEST MOUSE.

Ochetodon mexicanus COUES, Mon. N. Am. Roden. 1877, 128 (Louisiana specimens only).

Resembling *R. mexicanus*, but more golden in coloration; much more strongly colored than *R. m. intermedius*.

Adult.—Above strongly yellowish brown, with a distinctly blackish median area; sides rich orange rufous; below white, commonly with a faint wash of yellowish, and rarely with an indistinct fulvous breast patch.

Measurements.—Type, ♂ ad.: Length, 174; tail vertebræ, 95; hind foot, 20; ear (from skin), 12; ratio of tail vertebræ to total length, 55. (For measurements of additional specimens see Table VI, p. 143.)

Type, No. $\frac{88888}{45998}$, U. S. Nat. Mus. (Dept. Agr. Coll.), ♂ ad., Lafayette, La., May 24; 1892; R. J. Thompson.

Geog. Dist.—Coast region of Texas from Matagorda County northward and thence eastward to Houma, La. (probably to the Mississippi River), and north to Beebe, Arkansas.

SPECIMENS EXAMINED.[1]

No. of specimens.	Locality.	Date.	Collector.
5	Matagorda, Texas	Feb. 3–8	Wm. Lloyd.
2	East Caranchua Creek, Matagorda Co., Texas	Jan. 6	"
1	Selkirk Island, Matagorda Co., Texas	Jan. 29	"
1	Elliott, Matagorda Co., Texas	Jan. 14	"
6	Barnard Creek, west of Columbia, Brazoria Co., Texas	Feb. 24–Mch. 2,	"
9	Velasco, Brazoria Co., Texas	March 10–13	"
2	Lafayette, La	May 24, 25	R. J. Thompson.
5	Avery, Iberia Parish, La.	Feb. 24–28	E. A. McIlhenny.
1	Houma, Terre Bonne Par., La.	May 13	Vernon Bailey.
2	Beebe, White Co., Ark.	April 19	B. H. Dutcher.
34			

[1] Received from U. S. Dept. Agr.

This form differs from *R. m. intermedius* in its very much stronger coloration, the general color above being much darker, with the middle of the dorsal area forming a decidedly blackish band, and the fulvous much brighter, approaching an orange shade. March specimens from Velasco are the brightest of the series, but Louisiana specimens, particularly the Lafayette examples, closely approach them, although taken in May. Immature specimens are paler than adults, and approach in coloration *adults* of *intermedius*, as shown in two examples from East Caranchua Creek (western border of Matagorda County, Texas), and by some of the younger Louisiana specimens.

In 1877 Coues recorded (l. c., p. 130, first two lines of Table XXXV) two alcoholic specimens from Grand Coteau, La.—the first record of any form of the *R. mexicanus* group from the United States.

Reithrodontomys fulvescens *Allen.*

SONORAN HARVEST MOUSE.

Reithrodontomys mexicanus fulvescens ALLEN, Bull. Am. Mus. Nat. Hist. VI, 1894, p. 319 (Nov. 7, 1894). Oposura, Sonora, Mexico.

Adult.—Above pale yellowish brown, conspicuously lined with black, darkest along the median line; sides paler, with a pale fulvous lateral line. Below white, the hairs plumbeous at base. Ears dusky externally, rusty within,

clothed with fine short hairs. Tail indistinctly bicolor, dusky above, lighter below, clothed with short hairs, concealing the annulations. Feet soiled white.

Measurements.—Total length (type), 183 ; tail vertebræ, 102 ; hind foot, 19 ; ear (from skin), 11.5.

Three adults measure : Total length, 176 (169–183); tail vertebræ, 110 (99–102); hind foot, 19 ; ratio of tail to total length, 57.

Geog. Dist.—Known only from Oposura, Sonora, Mexico.

Specimens Examined.—Oposura, Sonora, June 1, B. C. Condit (Am. Mus. Nat. Hist.), 3.

Since publishing the original description (l. c.) of this species I have been able to compare the Oposura specimens with large series of the *R. mexicanus* group from various points along the Gulf coast from central Louisiana to the mouth of the Rio Grande. As shown above, these are not only separable from true *R. mexicanus* from Vera Cruz, Mexico, but are themselves separable into two well-marked subspecies, both of which are very unlike the Oposura specimens. Considering the wide geographical area and physical barriers separating the Oposura animal from the forms inhabiting the coast region of Louisiana, Texas and eastern Mexico, and its strongly marked color differences, I am led to give the Sonora form full specific rank, although it evidently belongs to what may be termed the *R. mexicanus* group.

I have before me a single specimen, in rather poor condition, from Mazatlan (No. 9065, U. S. Nat. Mus., Mazatlan, Dec., 1868, F. Bischoff). It is much brighter in color than *R. fulvescens*, and probably represents still another form of the *R. mexicanus* group, peculiar to the west coast of Mexico.

Reithrodontomys costaricensis, sp. nov.

COSTARICAN HARVEST MOUSE.

Adult.—Above ferrugineous brown, finely lined with blackish hairs, passing into brighter, more orange rufous on the sides; below white, usually with a slight wash of yellow, and sometimes with a distinct patch of fulvous on the lower throat and breast. Ears brown, covered with short hairs. Feet whitish, the hind feet with a dusky median stripe above. Tail very long, dusky brown, almost unicolor, nearly naked, the few very short, bristly hairs not concealing the annulations.

Young.—Above brown faintly washed with rusty, the sides brighter, with a distinct brownish fulvous lateral line.

Measurements.—Length (type), 197; tail vertebræ, 111; hind foot, 20.5; ear (from skin), 12: ratio of tail vertebræ to total length, 56.4.

Four adults measure: Length, 196 (194–198); tail vertebræ, 114 (106–123); hind foot, 20.5 (19.8–21.3); ratio of tail to total length, 58.

Type, No. $\frac{9566}{7899}$, Am. Mus. Nat. Hist., ♂ ad., La Carpintera (alt. 6000 ft.), Costa Rica, July 15, 1891; George K. Cherrie.

Specimens Examined.—La Carpintera, Costa Rica, July, November and December, George K. Cherrie, 17 (2 are alcoholics).

Geog. Dist.—All the specimens thus far examined are from La Carpintera, Costa Rica, from an altitude of about 6000 feet.

The large size and strongly reddish coloration of this species render comparison with any other described species of the genus unnecessary. In size, proportion and coloration it closely resembles my *Hesperomys* (*Vesperimus*) (=*Peromyscus*) *cherrii*. In coloration it also closely resembles *Peromyscus aureolus* of the United States.

I.—Measurements (Average and Extremes) of 37 Specimens of *R. lecontii*.

Locality.	No. of specimens.	Total length.	Tail vertebræ.	Ratio of tail to total length.	Hind foot.	Ear.
Riceboro, Ga.	6	117 (112–124)	57 (53–60)	48.6 (46.5–49.2)	15.8 (15–17)	9.5 (9–10)
Society Hill, S. C.[1]	4	107 (101.6–118.6)	51.5 (48–57)	48.1 (47.2–51)	14.5 (12.7–15.2)	
Raleigh, N. C.[2]	15	123 (113–134)	58 (53–56)	47.3 (46–50)	16 (14.5–17.5)	
" "	12	119 (108–141[3])	50 (44–63.5[3])	42 (40.5–44.4)		

[1] Alcoholics; measurements from Baird (Mam. N. Am., p. 449) reduced to millimetres.

[2] The two series from Raleigh were collected and measured by Messrs. H. H. and C. S. Brimley, at intervals of several years, and doubtless represent two slightly different methods of measuring.

[3] This specimen (No. 3222, Coll. C. Hart Merriam) is exceptional for its large size, namely: Length, 141; tail vertebræ, 63.5. The next largest specimen of this series of 9 examples measures: Length, 127; tail vertebræ, 54.

II.—Measurements (Averages and Extremes) of 58 Specimens of *R. megalotis*.

Locality.	No. of specimens.	Total length.	Tail vertebræ.	Ratio of tail to total length.	Hind foot.	Ear.
Near San Luis Springs, Sonora[1]	1	133	57	42	17.3	11
Fairbank, Arizona	3	143 (141–146)	66 (62–72)	46 (43.9–49.3)	18.5 (18 –19)	12.5 (12 –13)
San Juan Valley, N. Mex.	8	134 (124–148)	63 (57–70)	47 (45 –50)	18.5 (15.7–19)	12.5 (12 –13)
La Plata, N. Mex	18	136 (122–155)	63 (55–73)	47.8 (45.4–49.3)	17 4 (15 –19)	12.5 (12 –13)
Aztec, N. Mex.	14	132 (123–149)	61 (54–67)	46.2 (43.6–48)	17.2 (17 –18)	12.2 (11 –13)
Provo, Utah.	9	131 (126–139)	62 (58–68)	47.3 (46 –50)	17 (16 –18)	12.5 (12 –13)
St. George, Utah.	5	132 (126–146)	64 (58–72)	48.3 (46.2–50)	17 (16 –18)	12.6 (11.5–13)

[1] Type of the species; measurements from Baird (Mam. N. Am., p. 451). Ear measured from crown, instead of from notch.

III.—Measurements (Averages and Extremes) of 128 Specimens of *R. megalotis deserti.*

Locality.	No. of specimens.	Total length.	Tail vertebræ.	Ratio of tail to total length.	Hind foot.	Ear.
Pahrump Valley, Nye Co., Nev.	11	138 (131–148)	69 (62–76)	50 (47.3–52.2)	17.5 (16.5–18.5)	12.6 (12 –14)
Oasis Valley, Nye Co., Nev.	16	137 (124–149)	71 (66–76)	51.1 (49 –52.6)	18.6 (17 –19)	12.6 (12 –14)
Ash Meadows, Nye Co., Nev.	27	134 (123–146)	68.7 (61–77)	50 (47 –53.6)	17.5 (16 –18)	12.5 (11.5–13.5)
Panamint Mts., Inyo Co., Cal	5	140 (137–143)	67 (65–69)	48 (47.4–48.1)	17 (16 –18)	12.5 (12 –13)
Lone Pine, Inyo Co , Cal..	24	135.3 (123–152)	71 (60–80)	52.4 (46 –57.2)	17.3 (16 –18)	12 (11 –13)
Owens Lake, Inyo Co., Cal	32	138 (124–156)	71 (63–83)	51.4 (43.6–54.2)	17 (16 –18)	12.5 (12 –13)
Winslow, Ariz	13	131 (122-147)	65.5 (59–78)	50 (48.5–53)	17.5 (17 –18)	12.5 (12 –13)

IV.—Measurements (Averages and Extremes) of 76 Specimens of *R. longicauda.*

Locality.	No. of specimens.	Total length.	Tail vertebræ.	Ratio of tail to total length.	Hind foot.	Ear.
Leesville, Colusa Co., Cal..	6	142 (133–151)	74 (66–79)	52 (49 –54)	17 (16 –18)	11.5 (11 –13)
Lower Lake, Lake Co., Cal.	3	139 (130–146)	73 (63–80)	52 (51 –54)	17 (16 –18)	11.5 (11 –12)
GlenEllen, Sonoma Co., Cal.	6	136.5 (129–144)	72 (68–79)	52.7 (49 –54.3)	17 (16 –18)	11.2 (10.5–12)
Petaluma, Sonoma Co., Cal.[1]	14	120 (115–134)	65 (57–80)	54.5 (51.9–59.6)	16.5 (15.2–17.8)	
Walnut Creek, Contra Costa Co., Cal	15	133 (125–143)	69.5 (64–74)	52.2 (50 –54.8)	16.5 (16 –17)	11 (10 –12)
San Mateo, San Mateo Co., Cal	7	137 (130–150)	71 (58–81)	52 (50 –54)	17.5 (17 –18)	10.9 (10 –12)
Monterey, Monterey Co., Cal.	18	140.2 (128–158)	76 (69–89)	54.3 (51 –56)	17 (16 - 18)	11.3 (10.5–12)
Tracy, San Joaquin Co., Cal.	7	132 (120–144)	68.4 (58–77)	51.8 (48.3–54)	16.7 (16.5–17)	11.2 (10 –12)

[1] Measurements from Baird (Mam. N. Am., p. 452), and mostly from alcoholics. Doubtless the discrepancies in ratio of tail to total length in this series as compared with the other series is due to different methods of measuring; and for this reason the comparison is of interest. Probably also the small size is largely due to the presence of immature specimens. The series is not now available for re-examination.

V.—Measurements (Averages and Extremes) of 65 Specimens of *R. longicauda pallidus*.

Locality.	No. of specimens.	Total length.	Tail vertebræ.	Ratio of tail to total length.	Hind foot.	Ear.
Santa Paula, Ventura Co., Cal.	17	144 (132–153)	76 (69–83)	54 (50–55)	17 (16–18)	11 (10 –12)
San Fernando, " "	9	141 (133–151)	75 (70–84)	53 (51–55.6)	16.5 (16–17)	11.8 (10 –12.5)
Santa Monica, " "	8	140 (134–150)	74 (72–85)	52.5 (50–58)	17 (16–18)	11.4 (11 –12)
Santa Barbara Co., "	8	143 (135–150)	76 (72–79)	53 (52–54)	16.5 (16–18)	11.7 (11 –12.5)
Santa Ysabel, San Diego Co., Cal.	15	139 (132–159)	76 (72–84)	54.5 (53–58)	17 (16–18)	11.5 (10.5–12.5)
Jacumba, etc., San Diego Co., Cal.	8	145 (135–160)	76 (70–83)	52.5 (50–54)	17 (16–19)	11.6 (11 –12)

VI.—Measurements (Averages and Extremes) of 27 Specimens of *R. mexicanus aurantius*.

Locality.	No. of specimens.	Total length.	Tail vertebræ.	Ratio of tail to total length.	Hind foot.	Ear.
Velasco, Matagorda Co., Texas.	7	168 (158–182)	94 (85–109)	56 (53 –61)	21 (20 –22)	11.2 (10.5–12)
Barnard Creek, near Columbia, Brazoria Co., Texas.	6	165 (152–180)	94 (84–105)	57 (52.4–61)	21 (20.5–22)	11.2 (10 –12)
Matagorda, Texas	5[1]	152 (144–176)	87.4 (81– 92)	57.5 (52.3–61)	20.8 (20 –22)	11 (10 –12)
Avery, Iberia Parish, La	5[1]	157 (152–159)	88 (86– 92)	56 (55.9–56.3)	19.2 (19 –20.5)	11.5 (11 –12)
Lafayette, Lafayette Par., La.	2	172.5 (171–174)	89 (83– 95)	52 (50 –54)	18.5 (17 –20)	11.5 (11 –12)
Beebe, White Co., Ark.	2	166.5 (163–170)	90.5 (89– 92)	54.5 (54 –54.6)	20 (20 –20)	11 (11 –11)

[1] Mostly young adults.