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A Synopsis of the North American Lagomorpha

BY

E. RAYMOND HALL

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7. A new subspecies of *Microtus montanus* from Montana and comments on *Microtus canicaudus* Miller. By E. Raymond Hall and Keith R. Kelson. Pp. 73-79. October 1, 1951.
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10. A synopsis of the North American Lagomorpha. By E. Raymond Hall. Pp. 110-202, 68 figures in text. December 15, 1951.

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A Synopsis of the North American Lagomorpha

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E. RAYMOND HALL

The most popular small game mammal in nearly every part of North America is one or another of the species of rabbits or hares. The rabbit is one of the few species of wild game that still is hunted commercially and sold for food on the open market. The close association and repeated contact of man with these animals has resulted in his contracting such of their diseases as are transmissible to him. Consequently the rabbits and hares have figured in many investigations concerned with public health and medicine. Because the number of such investigations is increasing, there has been an increasing number of specimens of these animals submitted to mammalogists for identification; also, inquiries are received as to the degree of relationship between two or more of the named kinds of rabbits in which identical, or closely related, disease organisms have been found; other inquiries have to do with the degree of relationship of named kinds of rabbits and hares in widely separated parts of the continent.

The monographs to which the investigator could turn to obtain answers to some of these questions are Arthur H. Howell's "Revision of the American Pikas" (1924), and Edward H. Nelson's "The Rabbits of North America" (1909) published 27 and 42 years ago, respectively. These monographs are still excellent sources of detailed information, as, of course, also is Marcus Ward Lyon's "Classification of the Hares and their Allies" (1904). The acquisition of additional study specimens in recent years, however, has provided new data on the geographic occurrence of several species, and study of these specimens has given basis for a different arrangement of several named kinds of the lagomorphs. Two principal aims of the present synopsis, therefore, are to combine in one publication the current taxonomic arrangement and as much as is known of the geographic distribution of the several species and subspecies.

The maps herewith and listings of marginal localities are the means chosen to present the information on geographic distribution. The artificial key is supplemented by line drawings of skulls of certain species and by a minimum of text to aid the user of the key.[Pg 122] The skulls are necessary for the identification of some species of the genus *Sylvilagus*. The skins, on the contrary, are essential for the identification of the species of the genus *Lepus* in central Mexico and in the Great Basin of the western United States. Consequently, it has been impossible to construct a key based on external characters only or on cranial features only. Furthermore, the only apparent differences between a given pair of species in one region may not be apparent in another region where the same two species occur together. A case in point is provided by *Sylvilagus floridanus* and *Sylvilagus nuttallii* where the Great Plains meet the eastern flank of the Rocky Mountains and where the Sonoran desert meets the southwestern flank of these mountains. The details are described by Hall and Kelson (1951:52, 53) and are indicated in the part of the accompanying artificial key that takes out the species *Sylvilagus nuttallii*. Because of this geographic change in specific characters and because of the slight amount of difference between certain species of leporids, I have frequently resorted to geography, instead of to morphology alone, in constructing the artificial key. Despite this fault of the key to the lagomorphs, it, and the accompanying account, I hope, will aid workers who need to identify kinds of lagomorphs and to know about their geographic distribution.

Another reason for presenting a synopsis of the lagomorphs at this time is that the presentation may bring suggestions for improvement in the arrangement of the kind of information presented here; an account along similar lines for all of the kinds of mammals native to North America is in prospect. Corrections of, and additions to, the material presented here will be welcomed and I shall be especially grateful for suggestions as to a more useful arrangement of the data.

In arranging the families, genera and species the aim has been, in each category, to list the most primitive members first and to list last the one which presents the highest total of specialization. The term *total of specialization* is used here, as Miller (1924:2) used it, to denote the sum of the physical modifications which any mammal, or taxonomic category of mammals, is supposed by the author to have undergone during the course of its development away from its original or generalized mammalian stock.

Subspecies of any one species are arranged alphabetically. On the maps, of course, the subspecies are shown in their correct geographic positions.

For each subspecies, or species if it has not been divided into subspecies, there is given (1) the accepted scientific name (selected[Pg 123] in accordance with the rules of the International Commission of Zoological Nomenclature); (2) a citation to the account in which the terminal part of the name was first proposed (the original description of zoological parlance) followed by a statement of the type locality; (3) a citation to the

account in which the combination of names (generic, specific and subspecific) used in the present account first was employed unless the name combination used here is the same as that in the original description; (4) synonyms arranged in chronological order, and (5) marginal record stations of occurrence.

These marginal records are arranged in clockwise order beginning with the northernmost locality. If more than one of the marginal localities lies on the line of latitude that is northernmost for a given kind of mammal, the westernmost of these is recorded first. The marginal localities that are represented by symbols on the corresponding distribution map are in Roman type. Italic type is used for those marginal localities that could not be represented by symbols on the map because undue crowding, or overlapping, of the symbols would have occurred. An understanding of how these localities are arranged and knowledge as to which of these localities are shown on the map will permit a person to associate any symbol on a map with its corresponding place name.

Measurements are in millimeters unless otherwise indicated. Capitalized color terms are after Ridgway (Color Standards and Color Nomenclature, Washington, D. C., 1912), and uncapitalized terms refer to no particular color standard. Several of the drawings of skulls were reproduced originally in the "Mammals of Nevada" (Hall, 1946) and I am grateful to the University of California Press for permission to use them here. Those drawings were made by Miss Viola Memmler. The other drawings are the work of Mrs. Frieda Abernathy, Mrs. Diane (Danley) Sandidge, and Mrs. Virginia (Cassel) Unruh. Initials on the drawings identify the individual's work. The study here reported upon was aided by a contract between the Office of Naval Research, Department of the Navy, and the University of Kansas (NR 161-791). Also, assistance with some of the field work was given by the Kansas University Endowment Association and by Dr. Curt von Wedel. For the corrected dates on several publications I am indebted to Dr. A. Remington Kellogg. For assistance with the organization of the data for the present account I am grateful to several persons, especially to my wife, Mary F. Hall, and to Dr. Keith R. Kelson.[Pg 124]

Order LAGOMORPHA—Hares, Rabbits and Pikas

Families and genera revised by Lyon, Smithsonian Misc. Coll., 45:321-447, June 15, 1904. For taxonomic status of group see Gidley, Science, n. s., 36:285-286, August 30, 1912.

The order Lagomorpha is old in the geological sense; fossilized bones and teeth of both pikas and rabbits are known from deposits of Oligocene age and even at that early time the structural features distinguishing these animals from other orders were well developed.

A noteworthy character of the order is the presence of four upper incisor teeth (instead of only two as in the Rodentia); also, the fibula is ankylosed to the tibia and articulates with the calcaneum. Each of the first upper incisors has a longitudinal groove on its anterior face.

All lagomorphs are herbivorous. They eat principally leaves and non-woody stems although the bark of sprouts and bushes is taken as second choice by rabbits and hares.

Correlation of structure and function is well illustrated among the lagomorphs by the means which the different species employ to detect and escape from their enemies. A gradient series is evident in which the pikas and jack rabbits are the extremes. The black-tailed jack rabbit, for example, in relation to size of the entire animal, has the longest ears and longest hind legs. This kind of lagomorph takes alarm when an enemy, for example, a coyote, is yet a long way off. The jack rabbit seeks safety in running; even when being overtaken by a pursuer that is close behind, the jack rabbit still relies on its running ability instead of entering thick brush or a hole in the ground where its larger-sized pursuer would be unable to follow. A cottontail has shorter ears and shorter hind legs. It allows the enemy to approach more closely than the jack rabbit does before running, and then, although relying in some measure on its running ability for escape, flees to a burrow or thicket for safety from its pursuer. The brush rabbit with ears and hind legs shorter than those of the cottontail seldom if ever ventures farther than 45 feet away from the edge of dense cover. After an enemy is near, the brush rabbit has merely to scamper back into the brush. Still shorter of ear and hind leg is the pigmy rabbit which ventures outside its burrow to feed only among the tall and closely-spaced bushes of sagebrush among which its burrow is dug. Detection of the slightest movement of an enemy on the opposite side of the bush sends the pigmy rabbit, in one or a few jumps, into[Pg 125] the mouth of its burrow and, if need be, below ground. The pika, with the shortest ears and legs of all, lives in the rock slides and has to do little more than drop off the top of a rock into a space between the broken rocks when an enemy is detected near enough to the pika to have a chance of seizing it.

The number of molts in a year, depending on the kind of lagomorph, varies in adults from one (according to Nelson, 1909:31) in the cottontails (genus *Sylvilagus*) to as many as three (according to Lyman, 1943, and Severaid, 1945) in the varying hare (*Lepus americanus*). Difficulties that I have experienced in attempting to account for the variations in color and wear of the pelage of the pika, *Ochotona princeps*, on the basis of two molts per year, make me wonder if it, too, has three molts. *Lepus townsendii* certainly has at least two molts per year.

KEY TO FAMILIES AND GENERA OF LAGOMORPHA

- 1. Hind legs scarcely larger than forelegs; hind foot less than 40; nasals widest anteriorly; no supraorbital process on frontal; five cheek teeth on each side above
 - Family Ochotonidae, Genus *Ochotona*, p. [125](#)
- 1'. Hind legs notably larger than forelegs; hind foot more than 40; nasals widest posteriorly; supraorbital process on frontal; six cheek teeth on each side above
 - Family Leporidae, p. [134](#)
- 2. Interparietal fused with parietals (see fig. 49); hind foot usually more than 105
 - Genus *Lepus*, p. [170](#)
- 2'. Interparietal not fused with parietals (see fig. 10); hind foot usually less than 105
 - Genera *Romerolagus* and *Sylvilagus*, pp. [137](#), [138](#)

Family OCHOTONIDAE—Pikas

Certain characters in which this family differs from the Leporidae (hares and rabbits) are: hind legs scarcely longer than forelegs; ears short, approximately as wide as high; no postorbital process on frontal; rostrum slender; nasals widest anteriorly; maxilla not conspicuously fenestrated; jugal long and projecting far posteriorly to zygomatic arm of squamosal; no pubic symphysis; one less cheek-tooth above, the dental formula being i. 2/1, c. 0/0, p. 3/2, m. 2/3; second upper maxillary tooth unlike third in form; last lower molar simple (not double) or absent (in the extinct genus *Oreolagus*); cutting edge of first upper incisor V-shaped; mental foramen situated under last lower molar.

Genus *OCHOTONA* Link—Pikas

Revised by A. H. Howell, N. Amer. Fauna, 47:1-57, August 21, 1924.

1795. *Ochotona* Link, Beyträge zur Naturgesch, I (pt. 2):74. Type, *Lepus ogotona* Pallas.

Characters.—Five teeth (excluding incisor) in lower jaw; first cheek-tooth (p3) with more than one re-entrant angle; columns of lower molars angular[Pg 126] internally; transverse width of any one column of a lower molariform tooth more than double the width of the neck connecting it to the other column.

Subgenus PIKA Lacépède

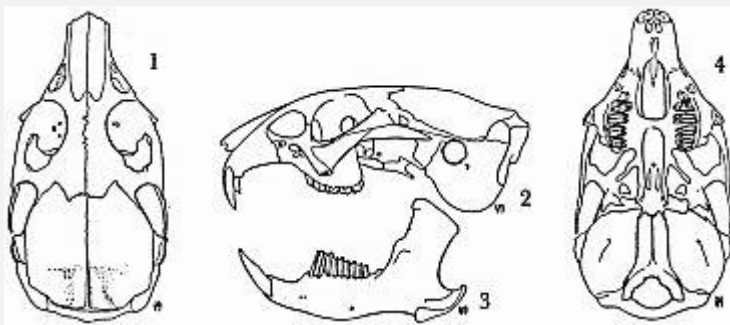
1799. *Pika* Lacépède, Tableau des Divisions &c., Mamm., p. 9. Type, *Lepus alpinus* Pallas.

1904. *Pika*, Lyon, Smiths. Misc. Coll., 45:438, June 15.

Characters.—Skull flattened; interorbital region wide; maxillary orifice roundly triangular; palatal foramina separate from anterior palatine foramina.

All of the living members of the family Ochotonidae belong to this genus. American pikas all belong to the subgenus *Pika*, which occurs also in Eurasia.

The distribution is boreal and the animals live in talus. This broken rock at the foot of a cliff provides interstices in which the animals live and store grass and herbs. These plant materials are cut for food and stacked in piles to dry in the sun, often beneath slabs of rock which protect the hay-piles from rain. Pikas are diurnal, active throughout the year, and have a characteristic call, "chickck-chickck." Young number two to five per litter.



Figs. 1-4. *Ochotona princeps*

***tutelata*, Greenmonster Canyon, 8150 feet, No. 38519 MVZ, ♂, × 1.**

KEY TO NOMINAL SPECIES OF OCHOTONA

- 1. North of 58° N latitude; underparts creamy white, without buffy wash; an indistinct grayish "collar" on shoulders
 - *collaris*, p. [126](#)
- 1'. South of 58° N latitude; underparts washed with buff; no grayish "collar" on shoulders
 - *princeps*, p. [127](#)

Ochotona collaris (Nelson)

Collared Pika

1893. *Lagomys collaris* Nelson, Proc. Biol. Soc. Washington, 8:117, December 21, type from near head of Tanana River, Alaska.

1897. [*Ochotona*] *collaris*, Trouessart, Catalogus Mammalium ..., p. 648

Marginal records.—Alaska: Mt. McKinley (A. H. Howell, 1924:36). Yukon: head of Coal Creek, Ogilvie Mountains (*ibid.*). Mackenzie: mile 63E[Pg 127] on Little Keel River, Canol Road (Anderson, 1947:94). Yukon: *Macmillan Pass, mile 282, Canol Road* (*ibid.*); Ross River, mile 96, Canol Road (*ibid.*); vic. Teslin Lake (A. H. Howell, 1924:36). British Columbia: Tagish Lake (*ibid.*); Stonehouse Creek, 5-1/2 mi. W jct.

Stonehouse Creek and Kelsall River (29088 KU). Alaska: Tanana River (A. H. Howell, 1924:36).

Upper parts Drab to Light Drab; underparts creamy white; grayish patch on nape and shoulders; skull broad; tympanic bullae large; total length 189; hind foot, 30.

Ochotona princeps

Pika

Total length, 162-216; hind foot, 25-35; weight of *O. p. tulelata*, 6 ♂ 121 (108-128), 2 ♀ 121 and 129 grams. Upper parts varying from grayish to Cinnamon-Buff depending on the subspecies; underparts with wash of buff. Eight Nevadan females had an average of 3.1 (2-4) embryos. The mode was 3.

OCHOTONA PRINCEPS ALBATA Grinnell.

1912. *Ochotona albatrus* Grinnell, Univ. California Publ. Zool., 10:125, January 31, type from 11,000 ft., near Cottonwood Lakes, Sierra Nevada, Inyo County, California.

Marginal records (A. H. Howell, 1924:45).—California: Bullfrog Lake; 10,000 ft., Independence Creek; type locality; Mineral King, E. Fork Kaweah River.

OCHOTONA PRINCEPS BROOKSI A. H. Howell.

1924. *Ochotona princeps brooksi* A. H. Howell, N. Amer. Fauna, 47:30, August 21, type from Sicamous, British Columbia.

Marginal records.—British Columbia: Mountains E Shuswap Lake (Anderson, 1947:95); type locality; McGillivray Creek, Lillooet Dist. (A. H. Howell, 1924:31).

OCHOTONA PRINCEPS BRUNNESCENS A. H. Howell.

1919. *Ochotona fenissex brunnescens* A. H. Howell, Proc. Biol. Soc. Washington, 32:108, May 20, type from Keechelus, Kittitas County, Washington.

1924. *Ochotona princeps brunnescens* A. H. Howell, N. Amer. Fauna, 47:31, September 23.

Marginal records.—British Columbia: Alta Lake (Anderson, 1947:95); Hope, Lake House (A. H. Howell, 1924:33). Washington: *Whatcom Pass* (Dalquest, 1948:380); Stevens Pass (A. H. Howell, 1924:33); *Cowlitz Pass* (Dalquest, 1948:380). Oregon: Mt. Hood (A. H. Howell, 1924:33); Crater Lake (*ibid.*); Mt. McLoughlin (V. Bailey, 1936:116); Diamond Lake (A. H. Howell, 1924:33). Washington: Tumtum Mtn. (Dalquest, 1948:380); Mt. Index (A. H. Howell, 1924:33). British Columbia: Chilliwack (*ibid.*); Vancouver (*ibid.*).

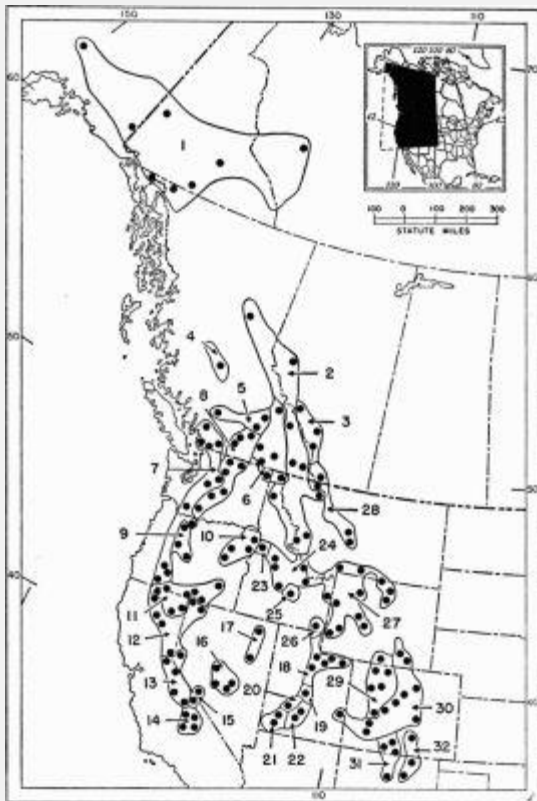


Fig. 5. Distribution of *Ochotona collaris* and *Ochotona princeps*.

1. *O. collaris*
2. *O. p. princeps*
3. *O. p. lutescens*
4. *O. p. septentrionalis*
5. *O. p. brooksi*
6. *O. p. cuppes*
7. *O. p. brunnescens*
8. *O. p. fenisex*
9. *O. p. fumosa*
10. *O. p. jewetti*
11. *O. p. taylori*
12. *O. p. schisticeps*
13. *O. p. muii*
14. *O. p. albatu*
15. *O. p. sheltoni*
16. *O. p. tutelata*
17. *O. p. nevadensis*

- 18. *O. p. uinta*
- 19. *O. p. moorei*
- 20. *O. p. cinnamomea*
- 21. *O. p. fuscipes*
- 22. *O. p. utahensis*
- 23. *O. p. howelli*
- 24. *O. p. lemhi*
- 25. *O. p. goldmani*
- 26. *O. p. clamosa*
- 27. *O. p. ventorum*
- 28. *O. p. levis*
- 29. *O. p. figginsi*
- 30. *O. p. saxatilis*
- 31. *O. p. nigrescens*
- 32. *O. p. incana*

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OCHOTONA PRINCEPS CINNAMOMEA J. A. Allen.

- 1905. *Ochotona cinnamomea* J. A. Allen, Mus. Brooklyn Inst. Arts and Sci., Sci. Bull., 1:121, March 31, type from 11,000 ft., Briggs [=Britts] Meadows, Beaver Range, Beaver County, Utah (5 mi. by road W Puffer Lake, according to Hardy, Jour. Mamm., 26:432, February 12, 1946). Known from type locality only.
- 1934. *Ochotona princeps cinnamomea*, Hall, Proc. Biol. Soc. Washington, 47:103, June 13.

OCHOTONA PRINCEPS CLAMOSA Hall and Bowlus.

- 1938. *Ochotona princeps clamosa* Hall and Bowlus, Univ. California Publ. Zool., 42:335, October 12, type from 8400 ft., north rim Copenhagen Basin, Bear Lake County, Idaho.
- Marginal records*.—Idaho: type locality; *Deep Lake, Bear River Mts.* (Hall and Bowlus, 1938:336) 2 mi. E Strawberry Creek Ranger Station, Wasatch Mts. (Davis, 1939:352).

OCHOTONA PRINCEPS CUPPES Bangs.

- 1899. *Ochotona cuppes* Bangs, Proc. New England Zool. Club, 1:40, June 5, type from 4000 ft., Monashee Divide, Gold Range, British Columbia.
- 1924. *Ochotona princeps cuppes*, A. H. Howell, N. Amer. Fauna, 47:27, September 23.

Marginal records.—British Columbia: Glacier (A. H. Howell, 1924:28); Nelson (Anderson, 1947:95). Idaho: Cabinet Mts. (Davis, 1939:348). Washington: Sullivan Lake (A. H. Howell, 1924:28). British Columbia: Rossland (*ibid.*); type locality.

OCHOTONA PRINCEPS FENISEX Osgood.

1913. *Ochotona fenisex* Osgood, Proc. Biol. Soc. Washington, 26:80, March 22 (substitute for *minimus* Lord, type from 7000 ft., Ptarmigan Hill, near head of Ashnola River, Cascade Range, British Columbia).

1924. *Ochotona princeps fenisex*, A. H. Howell, N. Amer. Fauna, 47:28, September 23.

1863. *Lagomys minimus* Lord, Proc. Zool. Soc. London, p. 98. (Not of Schinz, 1821.)

1899. *Ochotona minimus*, Bangs, Proc. New England Zool. Club, 1:39, June 5.

Marginal records.—British Columbia: Okanagan (A. H. Howell, 1924:30). Washington: Horseshoe Basin, "near" Mt. Chopaka (*ibid.*); mts. near Wenatchee (*ibid.*); Steamboat Mtn. (Dalquest, 1948:380); Easton (*ibid.*); Lyman Lake (*ibid.*); Barron (A. H. Howell, 1924:30). British Columbia: Tulameen (*ibid.*); 2500 ft., mts. W Okanagan Lake (*ibid.*).

Ochotona princeps figginsi J. A. Allen.

1912. *Ochotona figginsi* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 31:103, May 28, type from Pagoda Peak, Rio Blanco County, Colorado.

1924. *Ochotona princeps figginsi*, A. H. Howell, N. Amer. Fauna, 47:21, September 23.

Marginal records (A. H. Howell, 1924:22).—Wyoming: Bridger Peak, Sierra Madre. Colorado: Mt. Zirkel; Trappers Lake; *Crested Butte*; Irwin; type locality; Sand Mtn., 9 mi. SW Hahns Peak P. O.

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OCHOTONA PRINCEPS FUMOSA A. H. Howell.

1919. *Ochotona fenisex fumosa* A. H. Howell, Proc. Biol. Soc. Washington, 32:109, May 20, type from Permilia Lake, W base Mt. Jefferson, Linn County, Oregon.

1924. *Ochotona princeps fumosa* A. H. Howell, N. Amer. Fauna, 47:33, September 23.

Marginal records (A. H. Howell, 1924:34).—Oregon: About 900 ft., 15 mi. above Estacada; Paulina Lake; *Three Sisters*; Lost Creek Ranger Station, 10 mi. SE McKenzie Bridge.

OCHOTONA PRINCEPS FUSCIPES A. H. Howell.

1919. *Ochotona schisticeps fuscipes* A. H. Howell, Proc. Biol. Soc. Washington, 32:110, May 20, type from Brian Head, Parowan Mts., Iron County, Utah.

1941. *O[chotona]. p[rinceps]. fuscipes*, Hall and Hayward, The Great Basin Naturalist, 2:108, July 20.

Marginal records.—Utah: type locality; 9000 ft., Duck Creek (Durrant, MS).

OCHOTONA PRINCEPS GOLDMANI A. H. Howell.

1924. *Ochotona schisticeps goldmani* A. H. Howell, N. Amer. Fauna, 47:40, September 23, type from Echo Crater, Snake River Desert, 20 mi. SW Arco, Idaho.

1938. *Ochotona princeps goldmani*, Hall and Bowlus, Univ. California Publ. Zool., 42:337, October 12.

Marginal records.—Idaho: *S base Grassy Cone* (Davis, 1939:350); type locality; *Fissure Crater* (A. H. Howell, 1924:41); *Great Owl Cavern* (Davis, 1939:350).

OCHOTONA PRINCEPS HOWELLI Borell.

1931. *Ochotona princeps howelli* Borell, Jour. Mamm., 12:306, August 24, type from 7500 ft., near head of Bear Creek, summit of Smith Mtn., S end Seven Devils Mts., Adams County, Idaho.

Marginal records.—Idaho: *1/2 mi. E Black Lake* (Davis, 1939:350); type locality.

OCHOTONA PRINCEPS INCANA A. H. Howell.

1919. *Ochotona saxatilis incana* A. H. Howell, Proc. Biol. Soc. Washington, 32:107, May 20, type from 12,000 ft., Pecos Baldy, Santa Fe County, New Mexico.

1924. *Ochotona princeps incana* A. H. Howell, N. Amer. Fauna, 47:25, September 23.

Marginal records.—Colorado: Medano Creek (A. H. Howell, 1924:25). New Mexico: Wheeler Peak (V. Bailey, 1932:64); type locality.

OCHOTONA PRINCEPS JEWETTI A. H. Howell.

1919. *Ochotona schisticeps jewetti* A. H. Howell, Proc. Biol. Soc. Washington, 32:109, May 20, type from head of Pine Creek, near Cornucopia, S slope Wallowa Mts., Baker County, Oregon.

Marginal records (A. H. Howell, 1924:42).—Oregon: Wallowa Lake; Cornucopia, near head East Pine Creek; *Anthony*; Strawberry Butte; Austin.

OCHOTONA PRINCEPS LEMHI A. H. Howell.

1919. *Ochotona uinta lemhi* A. H. Howell, Proc. Biol. Soc. Washington, 32:106, May 20, type from Lemhi Mountains, 10 mi. W Junction, Lemhi County, Idaho.

1924. *Ochotona princeps lemhi* A. H. Howell, N. Amer. Fauna, 47:16, September 23.

Marginal records.—Idaho: Elk Summit, about 15 mi. SE Warren (A. H. Howell, 1924:18); mts. E of Leadore (*ibid.*); mts. E of Birch Creek (*ibid.*); Ketchum (*ibid.*); Stanley Lake (*ibid.*); 5 mi. W Cape Horn (Davis, 1939:348).

OCHOTONA PRINCEPS LEVIS Hollister.

1912. *Ochotona levis* Hollister, Proc. Biol. Soc. Washington, 25:57, April 13, type from Chief Mountain [= Waterton] Lake, Alberta.

1924. *Ochotona princeps levis*, A. H. Howell, N. Amer. Fauna, 47:16, September 23.

Marginal records (A. H. Howell, 1924:16).—Alberta: type locality. Montana: Little Belt Mts.; Belt Mts.; Chief Mountain Lake.

OCHOTONA PRINCEPS LUTESCENS A. H. Howell.

1919. *Ochotona princeps lutescens* A. H. Howell, Proc. Biol. Soc. Washington, 32:105, May 20, type from approximately 8000 ft., Mount Inglismaldie, near Banff, Alberta.

Marginal records.—Alberta: Mistaya Creek, Banff-Jasper Highway (Anderson, 1947:96); Canmore (A. H. Howell, 1924:15); Mt. Forget-me-not, 50 to 75 mi. SW Calgary (*ibid.*).

OCHOTONA PRINCEPS MOOREI Gardner.

1950. *Ochotona princeps moorei* Gardner, Jour. Washington Acad. Sci., 40:344, October 23, 1950, type from 10,000 ft., 1 mi. NE Baldy Ranger Station, Manti Nat'l Forest, Sanpete County, Utah. Known from type locality only.

OCHOTONA PRINCEPS MUIRI Grinnell and Storer.

1916. *Ochotona schisticeps muiri* Grinnell and Storer, Univ. California Publ. Zool., 17:6, August 23, type from 9300 ft., Ten Lakes, Yosemite Nat'l Park, California.

1934. *Ochotona princeps muiri*, Hall, Proc. Biol. Soc. Washington, 47:103, June 13.

Marginal records.—Nevada (Hall, 1946:593): 8500 ft., 3 mi. S Mt. Rose, California (A. H. Howell, 1924:44): Markleeville; mts. W Bishop Creek; Washburn Lake; Latitude 39°, summit of Sierra.

OCHOTONA PRINCEPS NEVADENSIS A. H. Howell.

1919. *Ochotona uinta nevadensis* A. H. Howell, Proc. Biol. Soc. Washington, 32:107, May 20, type from 10,500 ft., Ruby Mts., SW Ruby Valley P. O., Elko County, Nevada.

1924. *Ochotona princeps nevadensis* A. H. Howell, N. Amer. Fauna, 47:21, September 23.

Marginal records.—Nevada: 7830 ft., Long Creek (Hall, 1946:590); type locality.

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OCHOTONA PRINCEPS NIGRESCENS V. Bailey.

1913. *Ochotona nigrescens* V. Bailey, Proc. Biol. Soc. Washington, 26:133, May 21, type from 10,000 ft., Jemez Mountains, Bernalillo County, New Mexico.

1924. *Ochotona princeps nigrescens*, A. H. Howell, N. Amer. Fauna, 47:26, September 23.

Marginal records (A. H. Howell, 1924:26).—Colorado: Upper Navajo River; Osier. New Mexico: type locality. Colorado: Navajo Peaks.

OCHOTONA PRINCEPS PRINCEPS (Richardson).

1828. *Lepus (Lagomys) princeps* Richardson, Zool. Jour., 3:520, type from headwaters of Athabaska River, near Athabaska Pass, Alberta.

1897. [*Ochotona*] *princeps*, Trouessart, Catalogus Mammalium, p. 648.

Marginal records.—British Columbia: headwaters South Pine River (Anderson, 1947:95). Alberta: Muskeg Creek "about" 60 mi. N Jasper House (*ibid.*). British Columbia: Morrissey (*ibid.*). Montana: mts. near St. Marys Lake (A. H. Howell, 1924:14); mts. 15 mi. E Corvallis (*ibid.*); Lake Como, Bitterroot Mts. (*ibid.*). Idaho: Coeur d' Alene Nat'l Forest (Rust, 1946:322). British Columbia: Mt. Evans, "near" Cranbrook (A. H. Howell, 1924:14); Spillamacheen River (*ibid.*)

OCHOTONA PRINCEPS SAXATILIS Bangs.

1899. *Ochotona saxatilis* Bangs, Proc. New England Zool. Club, 1:41, June 5, type from Montgomery, "near" Mt. Lincoln, Park County, Colorado.

1924. *Ochotona princeps saxatilis*, A. H. Howell, N. Amer. Fauna, 47:23, September 23.

Marginal records (A. H. Howell, 1924:24, except as otherwise noted).—Wyoming: Medicine Bow Mts.; just above Centennial in mts. (Martin, 1943:394). Colorado: Estes Park; Pikes Peak; Silverton. Utah: La Sal Mts. Colorado: Crystal Lake, 5 mi. W Lake City; Middle Brush Creek; Ten Mile Creek; Berthoud Pass; *Irwin Lakes* (A. H. Howell, *loc. cit.*) not found.

OCHOTONA PRINCEPS SCHISTICEPS (Merriam).

1889. *Lagomys schisticeps* Merriam, N. Amer. Fauna, 2:11, October 30, type from Donner, Placer County, California.

1936. *Ochotona princeps schisticeps*, A. H. Miller, Jour. Mamm., 17:174, May 18.

1897. *Ochotona schisticeps* Merriam, Mazama, 1:223, October.

Marginal records.—Nevada (Hall, 1946:590): 12 mi. E and 3 mi. N Ft. Bidwell, 5700 ft.; 8400-8600 ft., Duffer Peak, Pine Forest Mts. California (A. H. Howell, 1924:39): Tahoe; *Donner Pass*; 12 mi. NE Prattville; Lassen Peak; Mt. Shasta.

OCHOTONA PRINCEPS SEPTENTRIONALIS Cowan and Racey.

1947. *Ochotona princeps septentrionalis* Cowan and Racey, Canadian Field-Nat., 60:102, March 17, type from 6500 ft., Itcha Mountains, 52° 45' N lat., 125° W long., British Columbia. Known from type locality only.

OCHOTONA PRINCEPS SHELTONI Grinnell.

1918. *Ochotona schisticeps sheltoni* Grinnell, Univ. California Publ. Zool., 17:429, April 25, type from 11,000 ft., "near" Big Prospector Meadow, White Mountains, Mono County, California.[Pg 133]

1946. *Ochotona princeps sheltoni*, Hall, Mammals of Nevada, p. 593, July 1.

Marginal records.—Nevada: 8700 ft., Pinchot Creek (Hall, 1946:593). California: type locality.

OCHOTONA PRINCEPS TAYLORI Grinnell.

1912. *Ochotona taylori* Grinnell, Proc. Biol. Soc. Washington, 25:129, July 31, type from 9000 ft., Warren Peak, Warner Mts., Modoc Co., Calif.

Marginal records (V. Bailey, 1936:113, unless otherwise noted).—Oregon: N end of Steens Mts.; Guano Valley; Jack Lake, 20 mi. NE Adel; Adel. California (A. H. Howell, 1924:40): type locality; 5400 ft., "near" Termo, Madeline Plains; nr. head Little Shasta Riv. Oregon: Lower Klamath Lake.

OCHOTONA PRINCEPS TUTELATA Hall.

1934. *Ochotona princeps tutelata* Hall, Proc. Biol. Soc. Washington, 47:103, June 13, type from 8150 ft., Greenmonster Canyon, Monitor Mts., Nye County, Nevada.

Marginal records (Hall, 1946:591).—Nevada: 7500 ft., Smiths Creek, Desatoya Mts.; 8600 ft., type locality; 8700-11,000 ft., SW and W slopes Mt. Jefferson, Toquima Range; South Twin River; *Arc Dome*.

OCHOTONA PRINCEPS UINTA Hollister.

1912. *Ochotona uinta* Hollister, Proc. Biol. Soc. Washington, 25:58, April 13, type from "near" head E. Fork Bear River, Uinta Mts., Utah.

1924. *Ochotona princeps uinta*, A. H. Howell, N. Amer. Fauna, 47:19, September 23.

Marginal records.—Utah: type locality; Elk Park (Hall and Bowlus, 1938:337); 11,000 to 11,500 ft., *The Nipple* (*ibid.*); 10,500 ft., SW slope Bald Mtn. (*op. cit.*:336); Mt. Timpanogos (*op. cit.*:337); 8500 ft., Morehouse Canyon, 5 mi. above Weber River (*op. cit.*:337); *Spirit Lake* (*op. cit.*:336) not found.

OCHOTONA PRINCEPS UTAHENSIS Hall and Hayward.

1941. *Ochotona princeps utahensis* Hall and Hayward, Great Basin Nat., 2:107, July 20, type from 2 mi. W Deer Lake, Garfield County, Utah.

Marginal records.—Utah: 9000 ft., Donkey Lake, Boulder Mtn. (Durrant, MS); type locality.

OCHOTONA PRINCEPS VENTORUM A. H. Howell.

1919. *Ochotona uinta ventorum* A. H. Howell, Proc. Biol. Soc. Washington, 32:106, May 20, type from Fremont Peak, Wind River Mts., Fremont County, Wyoming.

1924. *Ochotona princeps ventorum* A. H. Howell, N. Amer. Fauna, 47:18, September 23.

Marginal records.—Montana: Emigrant Peak (A. H. Howell, 1924:19); Beartooth Mts. (*ibid.*). Wyoming: 9600 ft., 19-1/2 mi. E and 4-1/2 mi. S Shell (20882 KU); head of Trappers Creek (A. H. Howell, 1924:19); Medicine Wheel Ranch, 28 mi. E Lovell (32919 KU); Needle Mtn. (A. H. Howell, 1924:19); Lake Fork (*ibid.*); 8450 ft., 17-1/2 mi. S and 6-1/2 mi. W Lander (37994 KU); Middle Piney Lake, "near" Stanley (A. H. Howell, 1924:19); Salt River, 16 mi. S Afton (Hall and Bowlus, 1938:337); Teton Pass (A. H. Howell, 1924:19). Idaho: Teton Canyon (Davis, 1939:349).

[Pg 134]

Family LEPORIDAE—Rabbits and Hares

Hind legs longer than forelegs; ears longer than wide; frontal bone carrying supraorbital process consisting always of posterior arm and sometimes of anterior arm; rostrum wide; nasals not wider anteriorly than posteriorly; maxillae conspicuously fenestrated; jugal projecting less than half way from zygomatic root of squamosal to external auditory meatus (except in *Romerolagus*); pubic symphysis well marked; dental formula, i. 2/1, c. 0/0, p. 3/2, m. 3/3 (but m. 2/3 in *Pentalagus* of Liu Kiu Islands south of Japan); second upper maxillary tooth like third in form; last lower molar double; cutting edge of first upper incisor straight; mental foramen of mandible situated under

first lower cheek-tooth. Females average larger than males in all members of this family. (See Orr, 1940:20.) The reverse is true in most other families of mammals.

Hare is a name applied to any lagomorph whose young are born fully haired, with the eyes open, and able to run about a few minutes after birth. The young are born in the open, not in a nest. All of the species of the genus *Lepus* are hares. The species of leporids of all genera other than *Lepus*, in North America at least, are rabbits. Their young are born naked, blind, and helpless, in a nest especially built for them and lined with fur. Considering the degree of development of the young at birth, the gestation periods are about what a person would expect: 26 to 30 days in *Sylvilagus* and 36 to 47 days in *Lepus* (see Severaid, 1950:356-357). Vernacular names are misleading because the names jack rabbit and snowshoe rabbit are applied to hares; also, Belgian hare is a name applied to a rabbit (genus *Oryctolagus*) that is commonly bred in captivity. There are many domestic strains and varieties of *Oryctolagus* and the animals are second only to poultry in some areas as a protein food for man. Also, the pelts are sold as a source of felt and many of the skins are dyed and processed for making fur coats and other fur-pieces that appear on the market under names not readily associated with rabbit.

Rabbits and hares are crepuscular and possibly more nocturnal than diurnal. So far as I know they do not store food as do their diurnal relatives, the pikas. Some leporids, however, have an unusual, and possibly unique, method of processing food: Two types of vegetable pellets are expelled from the anal opening of the digestive tract; the dark brownish pellets, from which the nutriment[Pg 135] have been extracted, are feces, but the greenish pellets seem to be only slightly predigested foods which are re-eaten. Southern (1942:553), among others, has written about this. This system functionally resembles that in the ruminants where a cud of vegetation is returned to the mouth, from one part of the stomach, to be re-chewed and finally swallowed.

Because the causative organism of a disease that decimates dense populations of small mammals, and some other kinds of vertebrates, was isolated first in leporids, this disease, tularemia, is more associated in the popular mind with rabbits than with other kinds of mammals. Actually, many kinds of mammals are quite as likely to have tularemia as are rabbits. Now that streptomycin is available, cases of tularemia in persons are easily cured.

KEY TO SPECIES OF THE GENERA SYLVILAGUS AND ROMEROLAGUS

- 1. Antorbital extension of supraorbital process more than 1/2 length of posterior extension; first upper cheek-tooth with only one re-entrant angle on anterior face; re-entrant angle of second upper cheek-tooth not crenate

- *Sylvilagus idahoensis*, p. [139](#)

- 1'. Antorbital extension of supraorbital process less than 1/2 of posterior extension or entirely absent; first upper cheek-tooth with more than one (usually 3) re-entrant angles on anterior face; re-entrant angle of second upper cheek-tooth crenate.
- 2. Anterior extension of supraorbital process absent (or if a point is barely indicated, then 5/6 or all of posterior process fused to braincase).
 - 3. Tympanic bulla smaller than foramen magnum; hind foot more than 74; geographic range wholly in United States.
 - 4. Ear more than 58 from notch in dried skin; basilar length of skull more than 63
 - *Sylvilagus aquaticus*, p. [166](#)
 - 4'. Ear less than 58 from notch in dried skin; basilar length of skull less than 63.
 - 5. Underside of tail white; posterior extension of supraorbital process tapering to a slender point, this point free of braincase or barely touching it and leaving a slit or long foramen
 - *Sylvilagus transitionalis*, p. [160](#)
 - 5'. Underside of tail brown or gray; posterior extension of supraorbital process always fused to skull, usually for entire length but in occasional specimens there is small foramen at middle of posterior extension of supraorbital process
 - *Sylvilagus palustris*, p. [147](#)
 - 3'. Tympanic bulla as large as foramen magnum; hind foot less than 74; geographic range limited to southern edge of Mexican tableland at high elevations
 - *Romerolagus diazi*, p. [138](#)
- 2'. Anterior extension of supraorbital process present, and posterior extension free of braincase or leaving a slit between the process and braincase.
 - 6. Tympanic bullae large (see [fig. 26](#)).
 - *Sylvilagus audubonii*, p. [162](#)
 - 6'. Tympanic bullae small (see [figs. 23, 25 and 27](#)).
 - 7. Restricted to Pacific coastal strip from Columbia River south to tip of Baja California, west of Sierra Nevada-Cascade Mountain Chain; hind foot less than 81.

- *Sylvilagus bachmani* and *S. mansuetus*, pp. [143](#), [147](#)
- 7'. East of the Pacific coastal strip mentioned in 7; hind foot usually more than 81.
- 8. If north of United States-Mexican boundary:
 - 9. In Arizona, New Mexico and southern Colorado posterior extension of supraorbital process free of braincase, and supraoccipital shield posteriorly pointed; from central Colorado north into Canada diameter of external auditory meatus more than crown length of last three cheek-teeth
 - *Sylvilagus nuttallii*, p. [161](#)
 - 9'. In Arizona, New Mexico and southeastern Colorado posterior extension of supraorbital process of frontal with its tip against, or fused to, braincase, and supraoccipital shield posteriorly truncate or notched; from central Colorado north into Canada, diameter of external auditory meatus less than crown length of last three cheek-teeth
 - *Sylvilagus floridanus*, p. [154](#)
- 8'. If south of United States-Mexican boundary:
 - 10. Geographic range restricted to Tres Marias Islands
 - *Sylvilagus graysoni*, p. [169](#)
 - 10'. Geographic range not including Tres Marias Islands.
 - 11. Underside of tail dingy gray or buffy (not white).
 - 12. Tail short (less than 30) and brown like rump; ear from notch (dry) less than 53; interorbital breadth less than 16.
 - *Sylvilagus brasiliensis*, p. [141](#)
 - 12'. Tail of moderate length (more than 30) and dingy gray; ear from notch (dry) more than

53; interorbital breadth more than 16

- *Sylvilagus insonus*, p. [168](#)
- 11'. Underside of tail distinctly white.
 - 13. Total length more than 476; ear from notch (dry) more than 64; interorbital breadth usually more than 19.3; geographic range, southwestern Mexico north of the Isthmus of Tehuantepec.
 - *Sylvilagus cunicularius*, p. [169](#)
 - 13'. Total length less than 476; ear from notch (dry) less than 64; interorbital breadth usually less than 19.3; geographic range, Canada to Panamá
 - *Sylvilagus floridanus*, p. [154](#)

[Pg 137]

Genus ROMEROLAGUS Merriam—Volcano Rabbit

1896. *Romerolagus* Merriam, Proc. Biol. Soc. Washington, 10:173, December 29. Type, *Romerolagus nelsoni* Merriam = *Lepus diazi* Diaz.

Total length 300 to 311; tail rudimentary; hind foot, 52; ear from notch (dry), 36; upper parts grizzled buffy brown or dull cinnamon brown; underparts dingy gray; anterior projection of supraorbital process absent; jugal projecting posteriorly past squamosal root of zygomatic arch more than half way to external auditory meatus. The two cranial characters mentioned are resemblances to pikas although the skull otherwise resembles that of the true rabbits. The genus contains only the one living species.

Living in well defined runways in the dense sacoton grass, these small rabbits are mainly nocturnal and crepuscular, but sometimes are active by day, especially in cloudy weather in the period of mating.

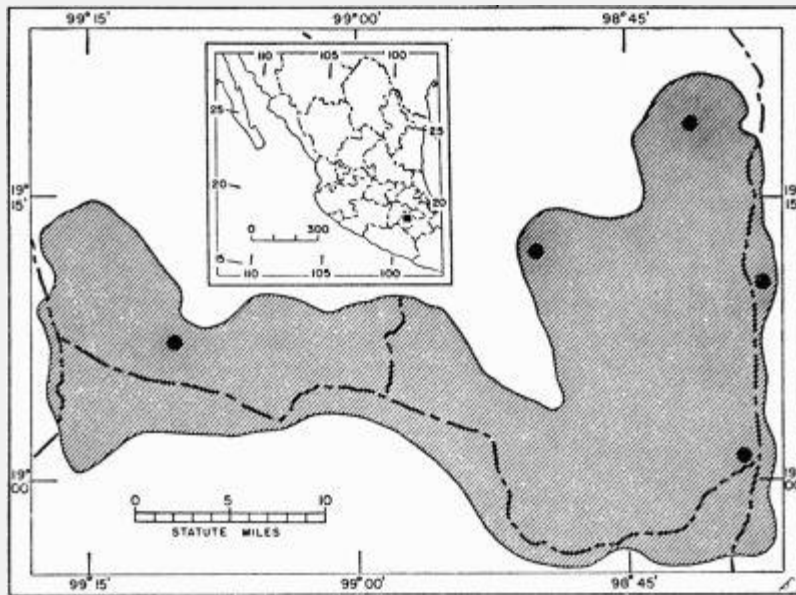


Fig. 6. Distribution of

Romerolagus diazi.

[Pg 138]

Romerolagus diazi (Diaz) Volcano Rabbit

1893. *Lepus diazi* Diaz, Catal. Com. Geográf.-Expl. Repub. Mex. Expos. Internac. Columb. Chicago, pl. 42, March, 1893, type from eastern slope of Mount Ixtaccihuatl, Puebla.

1911. *Romerolagus diazi* Miller, Proc. Biol. Soc. Washington, 24:228, October 31, 1911.

1896. *Romerolagus nelsoni* Merriam, Proc. Biol. Soc. Washington, 10:173, December 29, 1896, type from west slope Mount Popocatepetl, 11,000 feet, México.

Range.—Canadian Life-zone of the mountains bounding the eastern, southern and western sides of the Valley of Mexico. *Marginal records*.—México: Monte Río Frío, 45 km. ESE Mexico City (Davis, 1944:401). Puebla: type locality. México: Mt. Popocatepetl (Nelson, 1909:280). Distrito Federal: 31 km. S Mexico City (30815 KU). México: Llano Grande, 3 km. W Tlalmanalco (28278 KU).

Genus SYLVILAGUS Gray—Cottontails and Allies

Revised by Nelson, N. Amer. Fauna, 29:58-158, August 31, 1909.

1867. *Sylvilagus* Gray, Ann. and Mag. Nat. Hist., 20 (ser. 3):221. Type, *Lepus sylvaticus* Bachman, *Lepus nuttalli mallurus* Thomas.

Total length, 291-538; tail, 18-73; hind foot, 71-110; ear from notch (dry) 41-74. Grayish to dark brownish above and lighter below; sutures of interparietal bone distinct

throughout life; second to fourth cervical vertebrae broader than long with dorsal surface flattened and without carination.

The delectable flesh of members of this genus, the large numbers that occur on a small area, even in thickly settled rural areas, and the wariness that rabbits soon develop when much hunted, give them top ranking among small game mammals. Tens of thousands of cottontails in Kansas and Missouri (*Sylvilagus floridanus* and some *S. audubonii*) are captured alive, transported to the eastern United States and released there to bolster the local supply of game. Considering that certain ectoparasites are limited to certain hosts and that some ectoparasites transmit such diseases as Rocky Mountain Spotted Fever whereas other ectoparasites do not, this transplantation of rabbits is dangerous. Also, expenditure of \$100.00 on improving the habitat for *Sylvilagus* in a given area in the eastern United States would produce more cottontails than the expenditure of the same sum for live animals, from the Middlewest, that are to be released (see Langenbach and Beule, 1942:14, 15 and 30).

Different species venture different distances from cover to feed. The Audubon cottontail of west-central California ventures a hundred feet and more from cover but the brush rabbit was never seen[Pg 139] (Orr, 1940:182) farther than 42 feet from cover. In the thirties, when a gladiolus farmer from the chaparral belt of Santa Clara County, California, visited the University of California seeking advice on how to prevent damage by "cottontails" to his gladioli plantings, we asked the farmer if brush rabbits or cottontails were responsible and suggested to the farmer, who was unable to distinguish between the two, that an animal be killed and submitted for identification. When this was done, the brush rabbit (*Sylvilagus bachmani*) was found to be responsible for the damage. Robert T. Orr's recommendation that the chaparral (brush) be cut back 45 feet from the gladioli plantings was reluctantly followed and proved to be effective. A letter from a Santa Clara County agricultural official a couple of years later expressed thanks for the recommendation made by Orr, and estimated that adoption of his recommendations saved farmers of that one county \$40,000 annually. This incident illustrates how detailed knowledge of the life history of a given kind of animal and control of its environment, rather than direct "control" of the animal, is sometimes of value to man.

The genus *Sylvilagus* is restricted to the New World; the two species *Sylvilagus brasiliensis* and *S. floridanus* are the only two which occur in South America and they occur also in North America.

Subgenus BRACHYLAGUS Miller—Pigmy Rabbit

1900. *Brachylagus* Miller, Proc. Biol. Soc. Washington, 13:157, June 13. Type, *Lepus idahoensis* Merriam. For characters see subgenus *Sylvilagus*.

Sylvilagus idahoensis (Merriam)

Pigmy Rabbit

1891. *Lepus idahoensis* Merriam, N. Amer. Fauna, 5:76, July 30, type from head of Pahsimeroi Valley, near Goldburg, Custer County, Idaho (Davis, Recent Mammals of Idaho, p. 363, April 9, 1939).
1930. *Sylvilagus idahoensis*, Grinnell, Dixon and Linsdale, Univ. California Publ. Zool., 35:553, October 10.

Marginal records.—In southeastern Washington: Ritzville (Taylor and Shaw, 1929:29); Lind (243344 USBS); Warden (Taylor and Shaw, 1929:29). In remainder of range: Montana: Bannack (Davis, 1937:27). Idaho: Trail Creek near Pocatello (Davis, 1939:366). Utah: 3 mi. NE Clarkson (Durrant, MS); W side Utah Lake (*ibid.*); 20 mi. W Parowan (*ibid.*); 10 mi. SW Cedar City (*ibid.*). Nevada: 8-1/2 mi. NE Sharp (Hall, 1946:618); Fallon (Schantz, 1947:187). California: Bodie (Severaid, 1950:2); 5000 ft., 3 mi. S Ravendale (Orr, 1940:194). Oregon: Silver Lake (Bailey, 1936:110, fig. 17, 206518 USBS); Fremont (*ibid.*, 205005 USBS); Redmond (*ibid.*, 242302 USBS); 10 mi. N Baker (Dice, 1926:27). Idaho: type locality; Junction (Davis, 1939:366).

[Pg 140]

Total length, 250-290; tail, 20-30; hind foot, 65-72; ear from notch (dry), 36-48; weight, 6 ♂ 409(375-435), 9 ♀ 398(246-458) grams. Upper parts pinkish to blackish or dark grayish depending on amount of wear. The pigmy rabbit lives in burrows, mostly dug by itself, preferably where tall sagebrush grows densely. This species feeds extensively on sagebrush, at least in winter. Six young seem to be the rule and they are born any time from late in May until early in August.

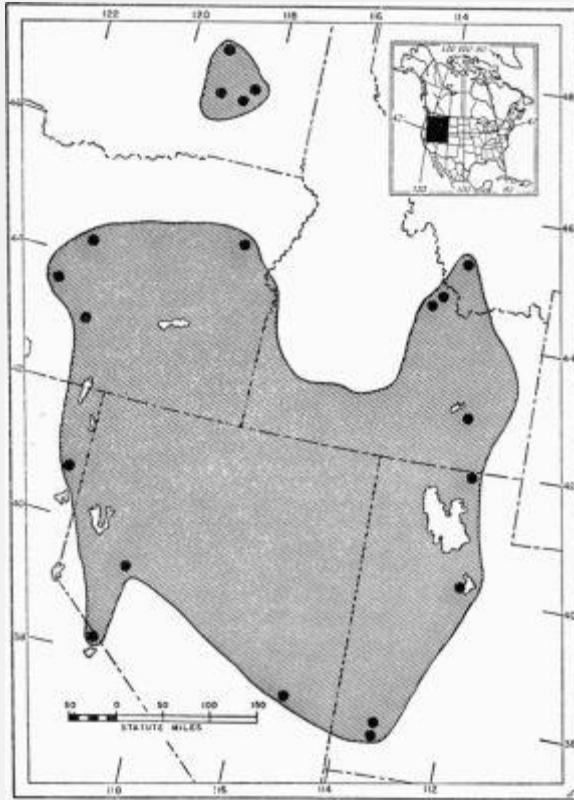


Fig. 7. Distribution of *Sylvilagus idahoensis*.

[Pg 141]

Subgenus SYLVILAGUS Gray—Cottontails and Allies

1867. *Sylvilagus* Gray, Ann. and Mag. Nat. Hist., 20 (ser. 3):221. Type, *Lepus sylvaticus* Bachman [= *Lepus nuttalli mallurus* Thomas].
1867. *Tapeti* Gray, Ann. and Mag. Nat. Hist., 20 (ser. 3):224, September. Type *Lepus brasiliensis* Linnaeus.
1897. *Microlagus* Trouessart, Catalogus Mammalium ..., p. 660. Type, *Lepus cinerascens* J. A. Allen.
1897. *Limnolagus* Mearns, Science, n. s., 5:393, March 5. Type *Lepus aquaticus* Bachman.
1950. *Paludilagus* Hershkovitz, Proc. U. S. Nat. Mus., 100:333, May 26. Type *Lepus palustris* Bachman.

Characters of subgeneric worth, in contrast to those of the subgenus *Brachylagus*, are: First premolar, in upper jaw and in lower jaw, with more than one fold in the enamel; infolded enamel, which divides each molar tooth into two parts, crenate.

The many nominal species of the subgenus *Sylvilagus* belong to no more than 12 and perhaps to only ten full species. The now more abundant specimens than were available

a half century ago reveal also that there are less trenchant differences between some of the species than were supposed to exist when the five names for genera or subgenera listed immediately above were proposed. Some species can be placed in each of two subgenera with almost equal propriety. If used, four of the five subgeneric names mentioned above would contain only one species each. It seems that no useful purpose is served by attempting to fit the several species of the genus *Sylvilagus* into more than the two subgenera *Brachylagus* and *Sylvilagus*; the other names, *Tapeti* Gray, *Microlagus* Trouessart, *Limnolagus* Mearns, and *Paludilagus* Hershkovitz, are here arranged as synonyms of the subgeneric name *Sylvilagus* Gray.

Sylvilagus brasiliensis

Forest Rabbit

Total length, 380-420; tail, 20-21; hind foot, 77-80; ear from notch (dry), 39-46. The principal characters of this species are small size, dark color, short tail, and dingy buffy (not white) undersurface of the tail. These rabbits rest in forests or other thick vegetative cover and do not venture far from such cover to feed.

SYLVILAGUS BRASILIENSIS CONSOBRINUS Anthony.

1917. *Sylvilagus gabbi consobrinus* Anthony, Bull. Amer. Mus. Nat. Hist., 37:335, May 28, type from Old Panamá, Panamá. Known from type locality only.

1950. *Sylvilagus brasiliensis consobrinus*, Hershkovitz, Proc. U. S. Nat. Mus., 100:353, May 26.

SYLVILAGUS BRASILIENSIS DICEI Harris.

1932. *Sylvilagus dicei* Harris, Occas. Papers Univ. Michigan, Mus. Zool., 248:1, August 4, type from 6000 ft., El Copey de Dota, in the Cordillera de Talamanca, Costa Rica.[Pg 142]

1950. *Sylvilagus brasiliensis dicei*, Hershkovitz, Proc. U. S. Nat. Mus., 100:352, May 26.

Marginal records.—Costa Rica (Goodwin, 1946:359); Rancho de Río Jimenez; Juan Viñas; type locality; *San José*.

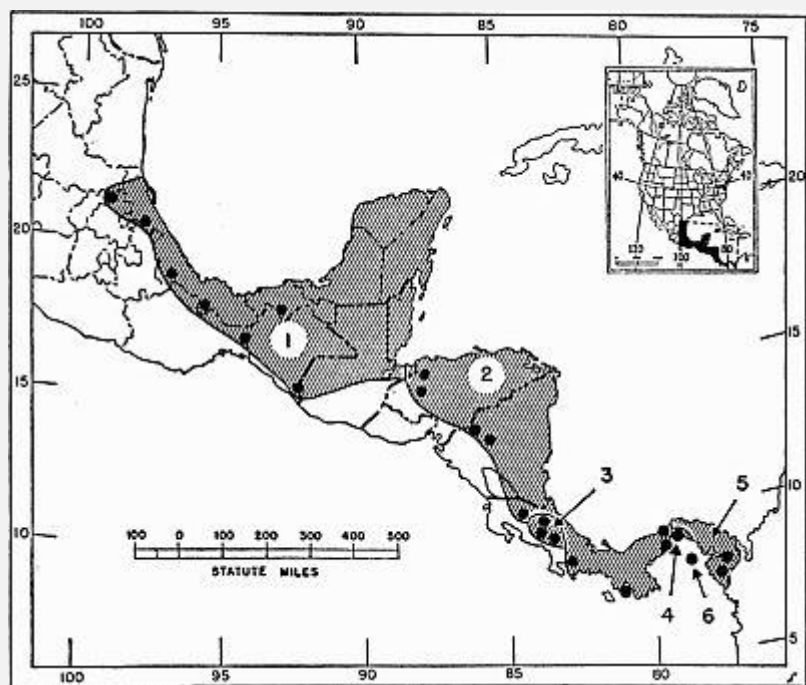


Fig. 8. Distribution of

***Sylvilagus brasiliensis*.**

1. *S. b. truei*
2. *S. b. gabbi*
3. *S. b. dicei*
4. *S. b. consobrinus*
5. *S. b. messorius*
6. *S. b. incitatus*

SYLVILAGUS BRASILIENSIS GABBI (J. A. Allen).

1877. *Lepus brasiliensis* var. *gabbi* J. A. Allen, Monogr. N. Amer. Rodentia, p. 349, August, type locality Costa Rica and Chiriquí; restricted by Nelson (N. Amer. Fauna, 29:259, August 31, 1909), by designation of type specimen, to Talamanca [= Sipurio, Río Sixaola, near Caribbean Coast], Costa Rica.

1950. *Sylvilagus brasiliensis gabbi*, Hershkovitz, Proc. U. S. Nat. Mus., 100:351, May 26.

1908. *Lepus gabbi tumacus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 24:649, October 13, type from Tuma, Nicaragua.

Marginal records.—Honduras: San Pedro Sula (Nelson, 1909:261); to Gulf Coast and southward along coast to Panamá Canal, Panamá: Gatun (Goldman, 1920:146); Corozal (*ibid.*); Gobernador Island (*ibid.*); Divala (*ibid.*); Chiriquí (Goodwin, 1946:358). Northward east of the range of *S. b. dicei*, thence westward in Costa Rica: Vijaqual, San

Carlos (Goodwin, 1946:358). Nicaragua: Matagalpa (Allen, 1910:96); Ocotal (*ibid.*). Honduras: San José, Santa Barbara (Goodwin, 1942:151).

[Pg 143]

SYLVILAGUS BRASILIENSIS INCITATUS (Bangs).

1901. *Lepus (Tapeti) incitatus* Bangs, Amer. Nat., 35:633, August, type from San Miguel Island, Bay of Panamá. Known from type locality only.

1950. *Sylvilagus brasiliensis incitatus*, Hershkovitz, Proc. U. S. Nat. Mus., 100:352, May 26.

SYLVILAGUS BRASILIENSIS MESSORIUS Goldman.

1912. *Sylvilagus gabbi messorius* Goldman, Smiths. Misc. Coll. 60 (no. 2):13, September 20, type from Cana, 1800 ft., mts. of eastern Panamá.

1950. *Sylvilagus brasiliensis messorius*, Hershkovitz, Proc. U. S. Nat. Mus., 100:352, May 26.

Marginal records.—Panamá (Goldman, 1920:147): Boca de Cupe; Tacarcuna; Tapalisa; type locality.

SYLVILAGUS BRASILIENSIS TRUEI (J. A. Allen).

1890. *Lepus truei* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:192, December 10, type from Mirador, Veracruz.

1950. *Sylvilagus brasiliensis truei*, Hershkovitz, Proc. U. S. Nat. Mus., 100:351, May 26.

Marginal records (Nelson, 1909:264, unless otherwise noted).—San Luis Potosí: Rancho Apetsco, Xilitla (Dalquest, 1950:4), thence down coast to Tabasco: Teapa. Chiapas: Huehuetan. Oaxaca: Santo Domingo. Veracruz: Buena Vista; Motzorongo. Puebla: Metlaltoyuca.

Sylvilagus bachmani
Brush Rabbit

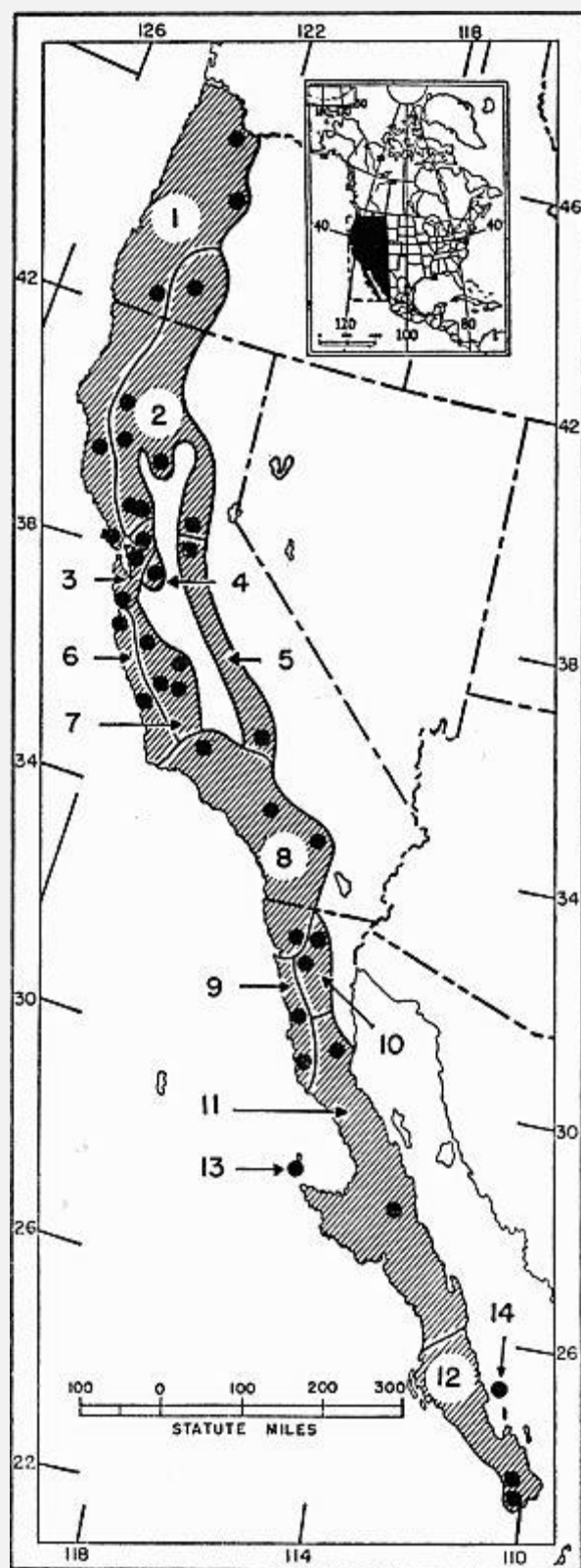


Fig. 9. Distribution of *Sylvilagus bachmani* and *Sylvilagus mansuetus*.

1. *S. b. ubericolor*

2. *S. b. tehamae*
3. *S. b. macrorhinus*
4. *S. b. riparius*
5. *S. b. mariposae*
6. *S. b. bachmani*
7. *S. b. virgulti*
8. *S. b. cinerascens*
9. *S. b. rosaphagus*
10. *S. b. howelli*
11. *S. b. exiguus*
12. *S. b. peninsularis*
13. *S. b. cerrosensis*
14. *S. mansuetus*

Size small. Total length, 300-375; tail, 20-43; hind foot, 64-81; ear from notch (dry), 50-64; weight (topotypes of *S. b. macrorhinus*) 16 ♂ 679 (561-832), 22 ♀ 707 (517-843) grams. Body uniformly dark brown or brownish gray, but tail whitish beneath; hair on midventral part of body gray at base; only a slight crenulation of ridge of enamel which separates an individual molariform tooth into anterior and posterior sections. From *Sylvilagus audubonii*, the only other species of *Sylvilagus* in the same geographic area, *S. bachmani* differs in smaller size, less white on underparts (the hairs on the midventral part of the body being gray instead of white at base), shorter ears and legs, and a less crenulated ridge of enamel separating the anterior and posterior parts of a molariform tooth.

The brush rabbit is a Pacific Coastal species; as may be seen from figure 9 on the next page, this species occurs from the Columbia River on the north to the tip of Baja California on the south. Nowhere, so far as I can learn, does it occur as far east as the crest of the Cascade-Sierra Nevada Mountain Chain. Throughout its range the brush rabbit is closely associated with—in fact, lives in—the chaparral that is dense enough to afford protection from raptorial birds and the larger carnivorous mammals. The rabbit's [Pg 144] reliance on protective cover is so great that, as pointed out on an earlier page, a person can turn this trait to advantage in protecting cultivated crops from inroads that the rabbits might make on them. The protection is afforded by clearing the brush from a strip forty-five feet wide so that the cleared strip intervenes between the cultivated crops and the brushy shelter. The rabbits will not risk crossing the open strip and hence do not reach the growing crops.

Brush rabbits use simple "forms" in the brush for resting. Only one observer (Orr, 1940: 173) has reported an individual entering a hole. In patches of chaparral in which the

rabbits live they make runways that are especially well defined at the edges of the brush. The outer entrance to a runway is tunnellike and one to two feet from the outer entrance there is a special form that serves as a lookout post. A brush rabbit that is about to venture into the open ordinarily pauses in such a form for several minutes, presumably to satisfy itself that no enemy is in the open area whither the rabbit is bound.

The breeding season is from January to June, at least in California. There are 2 to 5 young, averaging 3.5 per litter. They are born in a nest.[Pg 145]

SYLVILAGUS BACHMANI BACHMANI (Waterhouse).

1839. *Lepus bachmani* Waterhouse, Proc. Zool. Soc. London, Pt. 6 (for 1838):103, February 7, type from California, probably between Monterey and Santa Barbara.

1904. *Sylvilagus (microlagus) bachmani*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

1855. *Lepus trowbridgei* Baird, Proc. Acad. Nat. Sci. Philadelphia, p. 333, type from Monterey County, California.

Marginal records.—California (Orr, 1940:150): 2 mi. S mouth Salinas River; near Morro.

SYLVILAGUS BACHMANI CERROSENSIS (J. A. Allen).

1898. *Lepus cerrosensis* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 10:145, April 12, type from Cerros [=Cedros] Island, Baja California. Known from type locality only.

1909. *Sylvilagus bachmani cerrosensis*, Nelson, N. Amer. Fauna, 29:255, August 31.

SYLVILAGUS BACHMANI CINERASCENS (J. A. Allen).

1890. *Lepus cinerascens* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:159, October 8, type from San Fernando, Los Angeles County, California.

1907. *Sylvilagus bachmani cinerascens*, Nelson, Proc. Biol. Soc. Washington, 20:84, July 22.

Marginal records.—California (Orr, 1940:168): 5700 ft., San Emigdio Canyon; 3 mi. E San Fernando; Reche Canyon (Orr, 1940:169); 3500 ft., Dos Palmas Springs, Santa Rosa Mts. Baja California (Nelson, 1909:253): La Huerta, thence northward up-coast to point of beginning.

SYLVILAGUS BACHMANI EXIGUUS Nelson.

1907. *Sylvilagus bachmani exiguus* Nelson, Proc. Biol. Soc. Washington, 20:84, July 22, type from Yubay, central Baja California.

Marginal records.—Baja California (Nelson, 1909:254): Agua Dulce; Santana.

SYLVILAGUS BACHMANI HOWELLI Huey.

1927. *Sylvilagus bachmani howelli* Huey, Trans. San Diego Soc. Nat. Hist., 5:67, July 6, type from 10 mi. SE Alamo, Baja California, lat. 31° 35' N, long. 116° 03' W.

Marginal records.—Baja California (Huey, 1927:68): Laguna Hanson, Sierra Juarez; type locality.

SYLVILAGUS BACHMANI MACRORHINUS Orr.

1935. *Sylvilagus bachmani macrorhinus* Orr, Proc. Biol. Soc. Washington, 48:28, February 6, type from Alpine Creek Ranch, 3-1/2 mi. S and 2-1/3 mi. E Portola, 1700 ft., San Mateo County, California.

Marginal records.—California (Orr, 1940:163): 10 mi. SW Suisun; W side Mt. Diablo; Summit Station, Santa Cruz Mts., thence north along coast to Golden Gate.

SYLVILAGUS BACHMANI MARIPOSAE Grinnell and Storer.

1916. *Sylvilagus bachmani mariposae* Grinnell and Storer, Univ. California Publ. Zool., 17:7, August 23, type from McCauley Trail, 4000 ft., near El Portal, Mariposa County, California.

[Pg 146]

Marginal records.—California (Orr, 1940): Carbondale (p. 158); French Gulch, 6700 ft., Piute Mtn. (p. 159).

SYLVILAGUS BACHMANI PENINSULARIS (J. A. Allen).

1898. *Lepus peninsularis* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 10:144, April 12, type from Santa Anita, Baja California.

1909. *Sylvilagus bachmani peninsularis*, Nelson, N. Amer. Fauna, 29:255, August 31.

Marginal records.—Baja California (Nelson, 1909:255): type locality; Cape San Lucas.

SYLVILAGUS BACHMANI RIPARIUS Orr.

1935. *Sylvilagus bachmani riparius* Orr, Proc. Biol. Soc. Washington, 48:29, February 6, type from west side San Joaquin River, 2 mi. NE Vernalis, in Stanislaus County, California. Known from type locality only.

SYLVILAGUS BACHMANI ROSAPHAGUS Huey.

1940. *Sylvilagus bachmani rosaphagus* Huey, Trans. San Diego Soc. Nat. Hist., 9:221, July 31, type from 2 mi. W Santo Domingo Mission, Baja California, México, lat. 30° 45'

N, long. 115° 58' W, or precisely, near the huge red cliff that marks the entrance of the Santo Domingo River Cañon from the coastal plain.

Marginal records.—Baja California (Huey, 1940): San Quintín (p. 223); El Rosario (p. 222).

SYLVILAGUS BACHMANI TEHAMAE Orr.

1935. *Sylvilagus bachmani tehamae* Orr, Proc. Biol. Soc. Washington, 48:27, February 6, type from Dale's, on Paine's Creek, 600 ft., Tehama County, California.

Marginal records.—Oregon (Orr, 1935:28): Prospect. California (Orr, 1940:156): Auburn; 7 mi. W and 14 mi. S Chico; Rumsey; Castle Springs; 3 mi. S Covelo; Mad River Bridge, S. Fork Mtn.

SYLVILAGUS BACHMANI UBERICOLOR (Miller).

1899. *Lepus bachmani ubericolor* Miller, Proc. Acad. Nat. Sci. Philadelphia, p. 383, September 29, type from Beaverton, Washington County, Oregon.

1904. *Sylvilagus (Microlagus) bachmani ubericolor*, Lyon, Smiths. Misc. Coll., 45:337, June 15.

Range.—Columbia River, Oregon, south to San Francisco Bay, California, and from the Pacific Coast eastward to a line connecting the following marginal records.—Oregon (V. Bailey, 1936:109, unless otherwise noted): Portland (Nelson, 1909:251); Mackenzie Bridge; above Grants Pass. California (Orr, 1940:153): Laytonville; Maillard [=4 mi. E Lagunitas].

SYLVILAGUS BACHMANI VIRGULTI Dice.

1926. *Sylvilagus bachmani virgulti* Dice, Occas. papers Mus. Zool. Univ. Michigan, 166:24, February 11, Soledad, Monterey County, California.

Marginal records.—California (Orr, 1940:166): The Pinnacles; Waltham Cr., 4-1/2 mi. SE Priest Valley; 2 mi. S San Miguel; Bryson.

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Sylvilagus mansuetus

Brush Rabbit

1907. *Sylvilagus mansuetus* Nelson, Proc. Biol. Soc. Washington, 20:83, July 22, type from San José Island, Gulf of California, Baja California. Known from San José Island only.

This insular species is closely related to *Sylvilagus bachmani* and is distinguished by paleness, proportionately longer and narrower skull, fusion to skull of anterior arm of supraorbital process, and larger jugal.

Sylvilagus palustris

Marsh Rabbit

(See [figure 42](#))

Total length, 425-440; tail, 33-39; hind foot, 88-91; ear from notch (dry), 45-52. Upper parts blackish brown or reddish brown; underside of tail brownish or dingy gray (not white); ears, tail and hind feet short; posterior and anterior extensions of supraorbital processes joined to skull along most (or all) of their extent. The lack of white on the underside of the tail is a ready means of distinguishing this species from the other species of the genus which occur within its geographic range. The species occurs in the lowlands, possibly not above 500 feet altitude, of the Lower Austral and Tropical life-zones. In Florida, Blair (1936) found that the marsh rabbit ate 29 per cent of its bodily weight in green food each day and that the number of embryos in 3 females was 4, 4 and 3.

SYLVILAGUS PALUSTRIS PALUDICOLA (Miller and Bangs).

1894. *Lepus paludicola* Miller and Bangs, Proc. Biol. Soc. Washington, 9:105, June 9, type from Ft. Island, near Crystal Riv., Citrus Co., Fla.

1909. *Sylvilagus palustris paludicola*, Nelson, N. Amer. Fauna, 29:269, August 31.

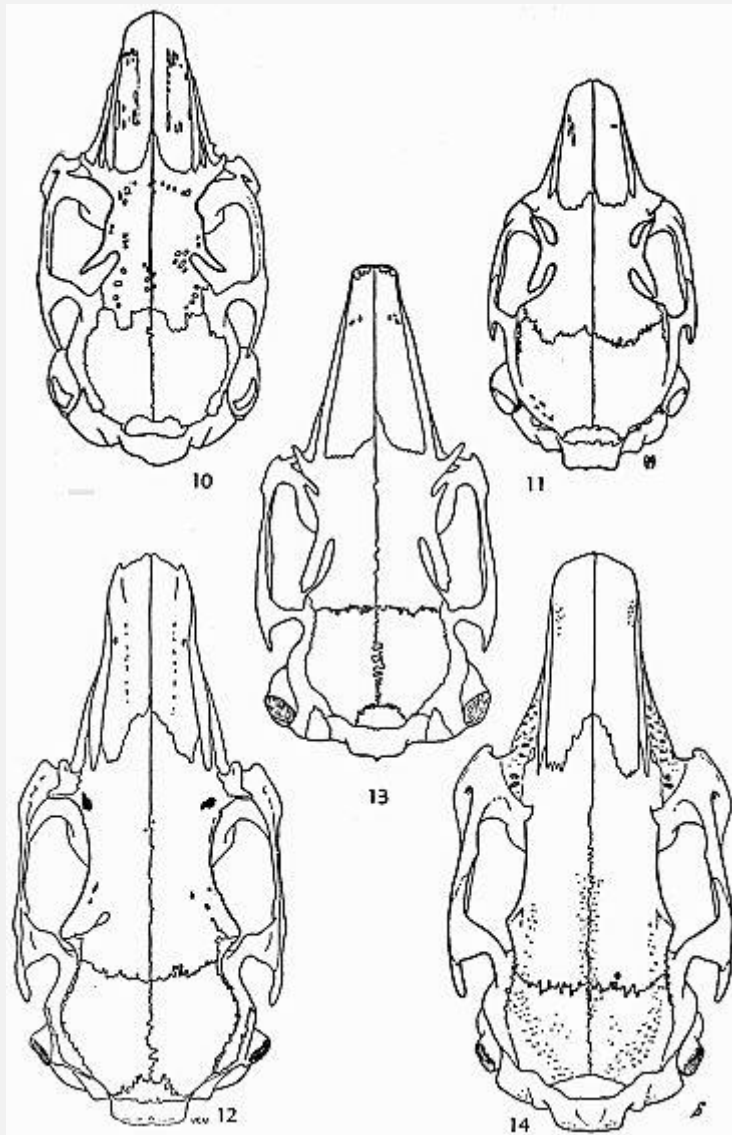
Marginal records.—Florida (Nelson, 1909:270): Hibernia [= Green Cove Springs]; San Mateo; along Atlantic Coast at least to Micco; Kissimmee River; Cape Sable; northward along Gulf Coast and on coastal islands at least to Suwanee River.

SYLVILAGUS PALUSTRIS PALUSTRIS (Bachman).

1837. *Lepus palustris* Bachman, Jour. Acad. Nat. Sci. Philadelphia, 7:194, type locality eastern South Carolina.

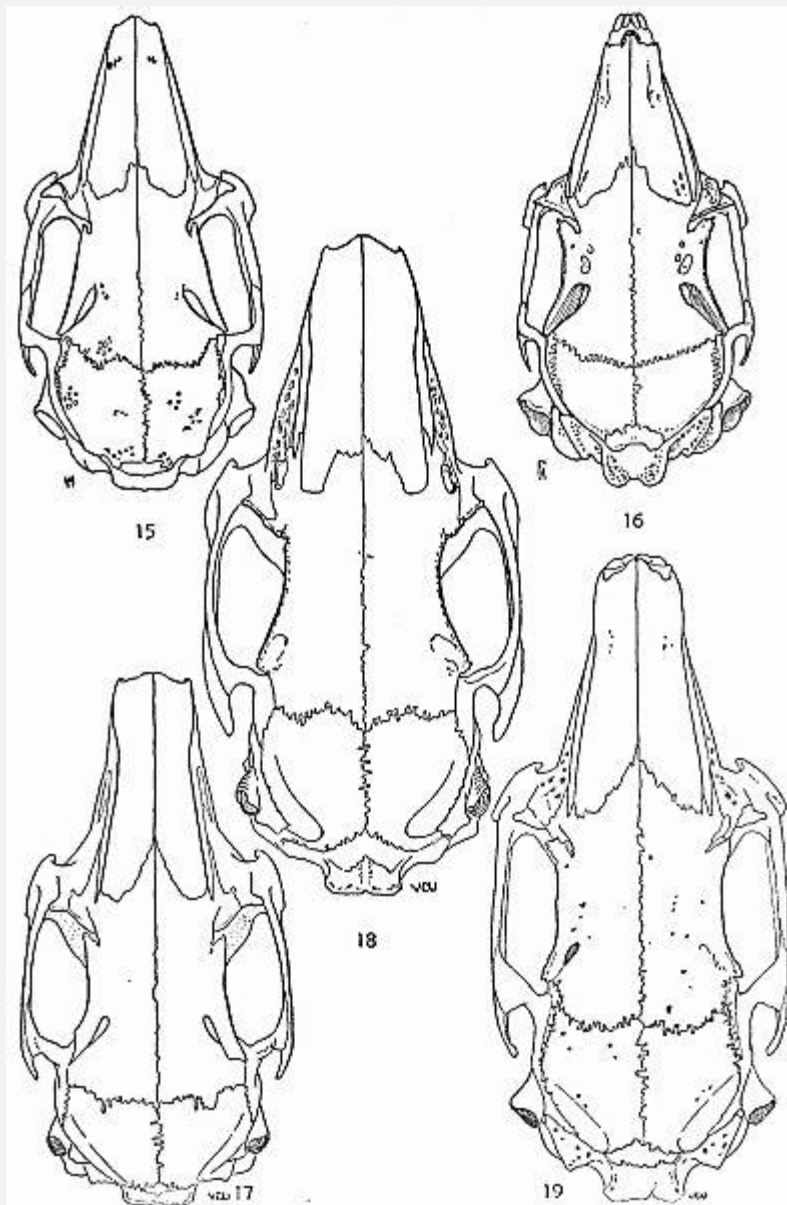
1909. *Sylvilagus palustris*, Nelson, N. Amer. Fauna, 29:266, August 31.

Marginal records.—Nansemond County (Handley and Patton, 1947:190), southward along Atlantic Coast to northern Florida: Anastasia Island (Nelson, 1909:269). West to Gulf Coast and along Coast to Alabama: Bon Secour (Nelson, 1909:269); Flomaton (Howell, 1921:74); Dothan (*ibid.*). Georgia: Americus (Nelson, 1909:269). South Carolina: Society Hill (*ibid.*).



Figs. 10-14. Dorsal views of skulls of rabbits. All $\times 1$.

- FIG. 10. *Romerolagus diazi*, 31 km. S Mexico City, D. F. No. 30815 KU, ♀.
- FIG. 11. *Sylvilagus idahoensis*, Millett P. O., Nevada. No. 37275 MVZ, ♂.
- FIG. 12. *Sylvilagus brasiliensis truei*, 30 km. SSE Jesus Carranza, Veracruz. No. 32128 KU, ♂.
- FIG. 13. *Sylvilagus bachmani macrorhinus*, 1700 feet, Alpine Creek Ranch, San Mateo County, California. No. 53382 MVZ, ♀.
- FIG. 14. *Sylvilagus palustris palustris*, Riceboro, Georgia. No. 45502 USNM, ♀. (After Nelson, 1909: pl. 12, fig. 3.)



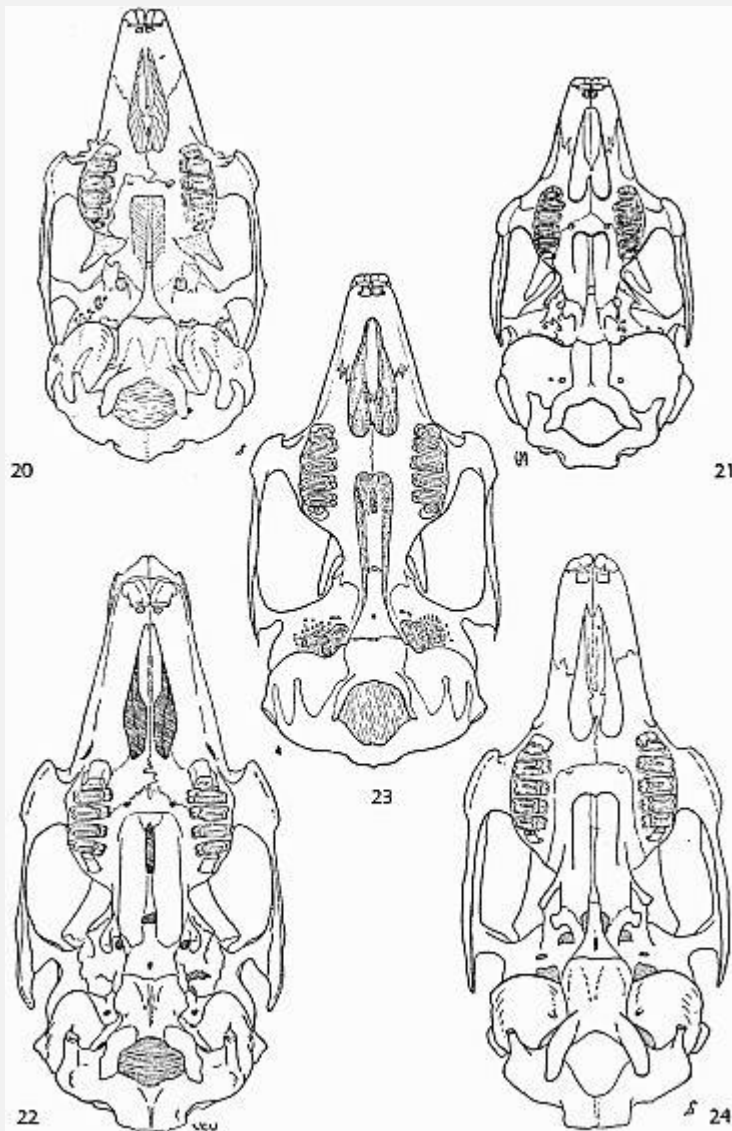
Figs. 15-19. Dorsal views of

skulls of rabbits. All $\times 1$.

- FIG. 15. *Sylvilagus nuttallii grangeri*, 1/2 mi. E. Jefferson, Nev. No. 58527, ♀.
- FIG. 16. *Sylvilagus audubonii minor*, 3290 ft., Neville Spring, Grapevine Mts., Big Bend, Brewster Co., Texas. No. 80519 MVZ, ♂.
- FIG. 17. *Sylvilagus floridanus mearnsi*, 4 mi. NE Lawrence, Douglas Co., Kansas. No. 3774 KU, ♂.
- FIG. 18. *Sylvilagus a. aquaticus*, Crawford Co., Kansas. No. 8544 KU. ♂.

- FIG. 19. *Sylvilagus cunicularius cunicularius*, 3 km. W Acultzingo, Veracruz. No. 30749 KU, ♂.

[Pg 150]

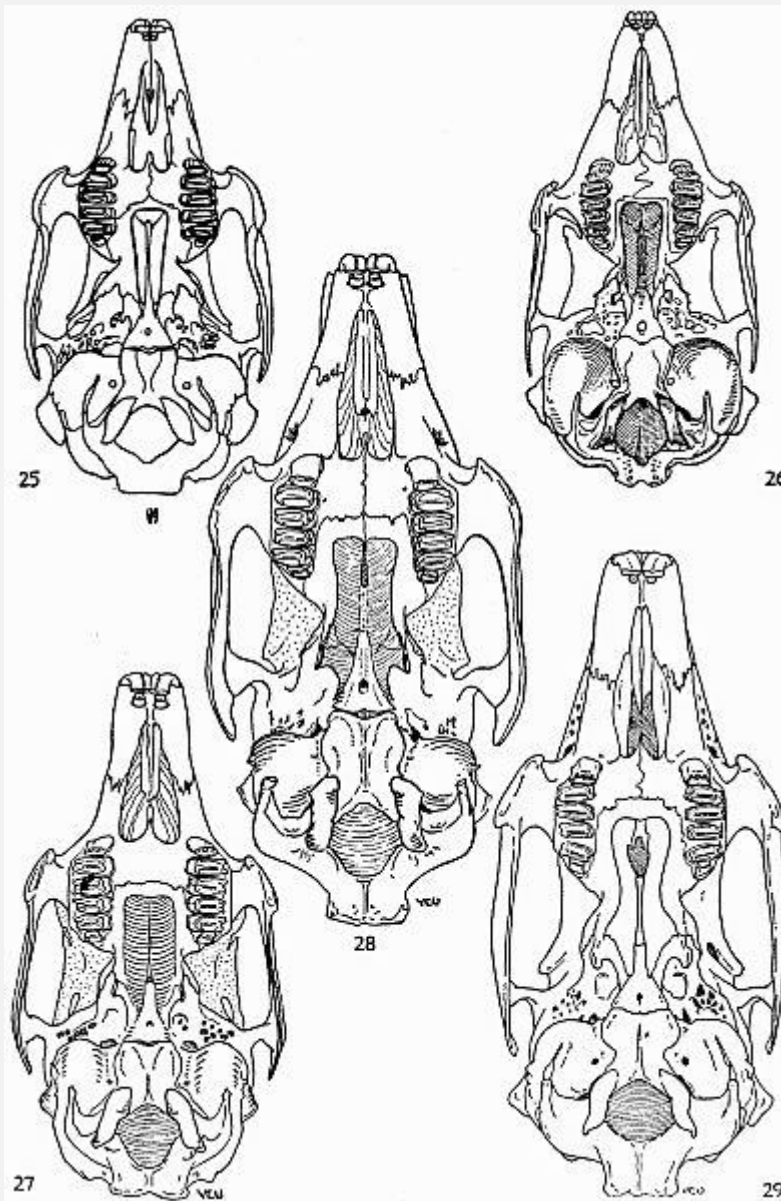


Figs. 20-24. Ventral views of skulls of rabbits. All $\times 1$. Different views of the first four of these skulls are shown in figs. 10-13.

- FIG. 20. *Romerolagus diazi*.
- FIG. 21. *Sylvilagus idahoensis*.

- FIG. 22. *Sylvilagus brasiliensis truei*.
- FIG. 23. *Sylvilagus bachmani macrorhinus*.
- FIG. 24. *Sylvilagus palustris palustris*, Society Hill, South Carolina. No. 2089 USNM (after Lyon, 1904: pl. 76, fig. 6).

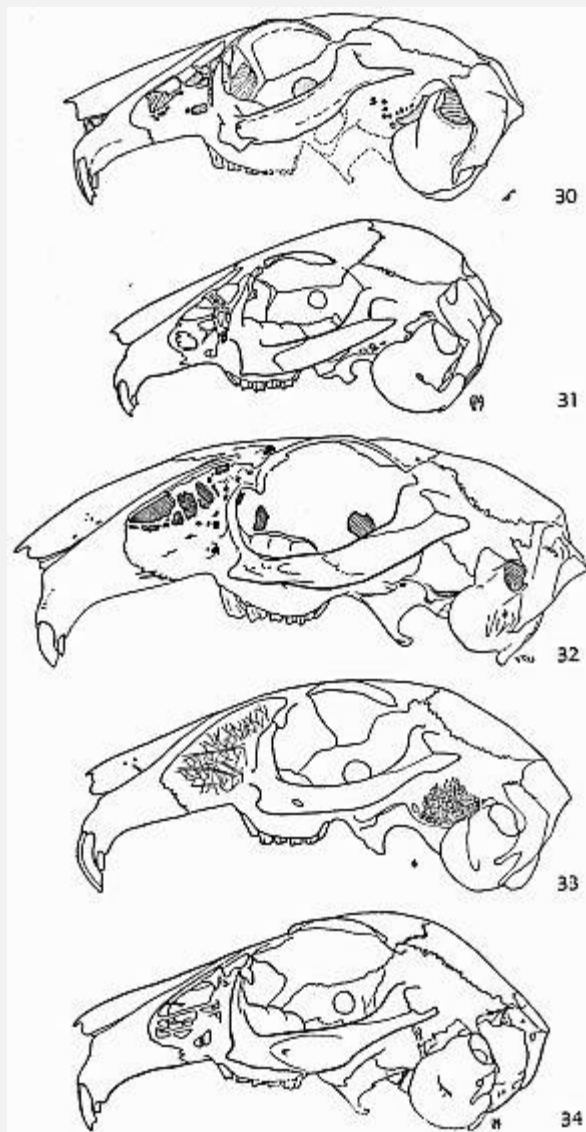
[Pg 151]



Figs. 25-29. Ventral views of skulls of rabbits. All $\times 1$. Different views of these skulls are shown in [figs. 15-19](#).

- FIG. 25. *Sylvilagus nuttallii grangeri*.
- FIG. 26. *Sylvilagus audubonii minor*.
- FIG. 27. *Sylvilagus floridanus mearnsi*.
- FIG. 28. *Sylvilagus aquaticus aquaticus*.
- FIG. 29. *Sylvilagus cunicularius cunicularius*.

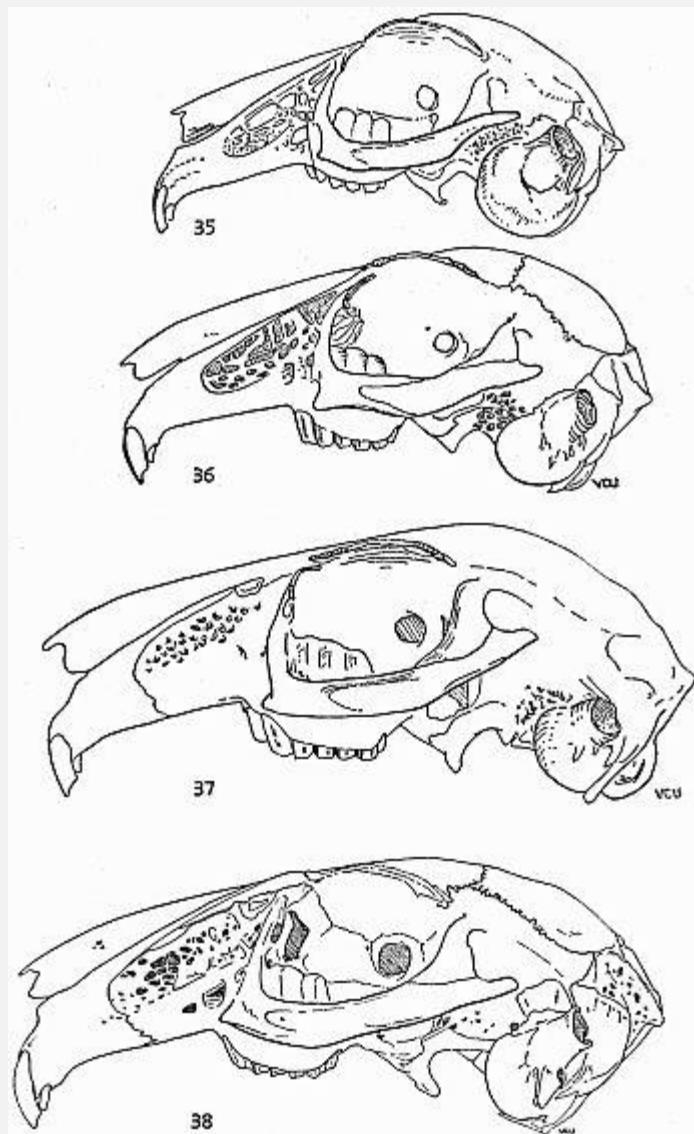
[Pg 152]



Figs. 30-34. Lateral views of skulls of rabbits. All $\times 1$. Different views of these skulls are shown in [figs. 10-15](#).

- FIG. 30. *Romerolagus diazi*.
- FIG. 31. *Sylvilagus idahoensis*.
- FIG. 32. *Sylvilagus brasiliensis truei*.
- FIG. 33. *Sylvilagus bachmani macrorhinus*.
- FIG. 34. *Sylvilagus nuttallii grangeri*.

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Figs. 35-38. Lateral views of skulls of rabbits. All $\times 1$. Different views of these skulls are shown in [figs. 16-19](#).

- FIG. 35. *Sylvilagus audubonii minor*.
- FIG. 36. *Sylvilagus floridanus mearnsi*.
- FIG. 37. *Sylvilagus aquaticus aquaticus*.
- FIG. 38. *Sylvilagus cunicularius cunicularius*.

[Pg 154]

Sylvilagus floridanus
Florida Cottontail

Total length, 375-463; tail, 39-65; hind foot, 87-104; ear from notch (dry), 49-68; upper parts brownish or grayish; underside of tail white; skull with transversely thick posterior extension of supraorbital process of frontal. The geographic range is the largest of all of the North American species of the genus *Sylvilagus*; from Canada the species occurs south at least to Costa Rica and it may occur in Panamá for the species is recorded also from South America.

In the western part of the Great Plains this species is confined to the riparian growth along streams and *Sylvilagus audubonii* occupies the remainder of the terrain. In New Mexico and southwestern Texas *S. floridanus* is confined to the boreal life-zones where timber provides denser cover than is found in the lower life-zones. The zonal range is from the Canadian Life-zone into the Tropical Life-zone. It is not surprising, therefore, that there is much geographic variation in the shape and size of the skull. There is so much geographic variation in the skull that it is impossible, at this writing at least, to frame a description that will enable the reader to distinguish the skull from those of all other species of the genus. In any given area, however, it is possible, easily and certainly, to distinguish the skulls of *S. floridanus* from those of the other species which occur in that area.

SYLVILAGUS FLORIDANUS ALACER (Bangs).

1896. *Lepus sylvaticus alacer* Bangs, Proc. Biol. Soc. Washington, 10:136, December 28, type from Stilwell, Boston Mountains, Adair County, Oklahoma.

Marginal records.—Missouri (Nelson, 1909:176): Columbia; St. Louis. Illinois: Ozark (Necker and Hatfield, 1941:56). Tennessee (Nelson, 1909:176): Samburg; Raleigh. Mississippi (Nelson, 1909:176): Michigan City; Bay St. Louis. Texas (Nelson, 1909:176): Port Lavaca; Brazos; Henrietta. Oklahoma: Norman (Blair, 1939:128). Kansas: 8 mi. NE Harper (12917 KU); Rago (12508 KU); Halstead (3110 KU); 4 mi. S and 14 mi. W Hamilton (13673 KU); 3 mi. N Chanute (22026 KU).

SYLVILAGUS FLORIDANUS AMMOPHILUS A. H. Howell.

1939. *Sylvilagus floridanus ammophilus* A. H. Howell, Jour. Mamm., 20:365, August 14, type from "Oak Lodge", on peninsula opposite Micco, Florida. Known from type locality only.

[Pg 155]

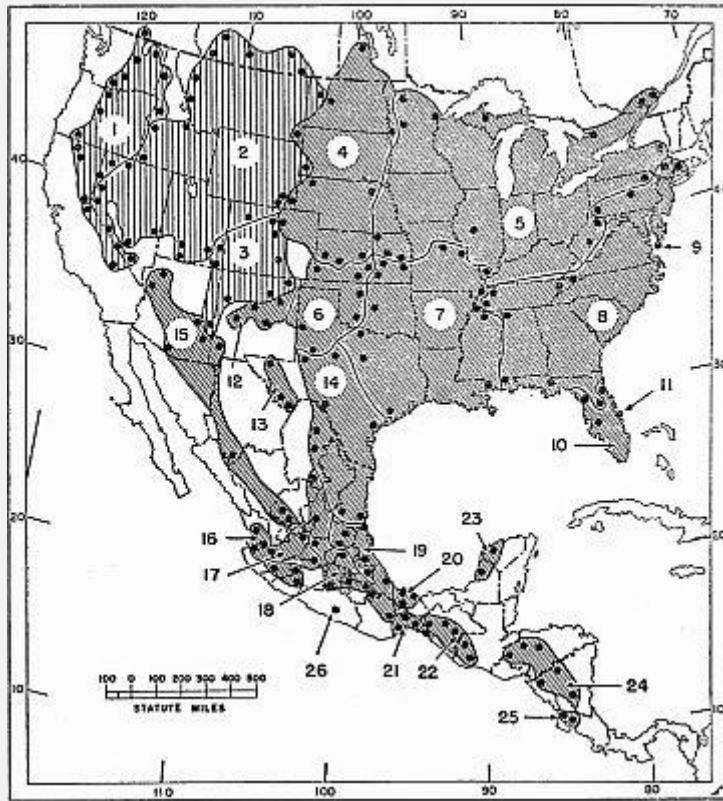


Fig. 39. Distribution of *Sylvilagus nuttallii*, *S. floridanus* and *S. insonus*.

Guide to kinds:

1. *S. n. nuttallii*
2. *S. n. grangeri*
3. *S. n. pinetis*
4. *S. f. similis*
5. *S. f. mearnsi*
6. *S. f. llanensis*
7. *S. f. alacer*
8. *S. f. mallurus*
9. *S. f. hitchensi*
10. *S. f. floridanus*

- 11. *S. f. ammophilus*
- 12. *S. f. cognatus*
- 13. *S. f. robustus*
- 14. *S. f. chapmani*
- 15. *S. f. holzneri*
- 16. *S. f. restrictus*
- 17. *S. f. subcinctus*
- 18. *S. f. orizabae*
- 19. *S. f. connectens*
- 20. *S. f. russatus*
- 21. *S. f. aztecus*
- 22. *S. f. chiapensis*
- 23. *S. f. yucatanicus*
- 24. *S. f. hondurensis*
- 25. *S. f. costaricensis*
- 26. *S. insonus*

SYLVILAGUS FLORIDANUS AZTECUS (J. A. Allen).

1890. *Lepus sylvaticus aztecus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:188, December 10, type from Tehuantepec City, Oaxaca.

1904. *Sylvilagus (Sylvilagus) floridanus aztecus*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

[Pg 156]

Marginal records (Nelson, 1909:188, unless otherwise noted).—Oaxaca: Santa Maria Petapa; Santa Efigenia. Chiapas: Tonala, 50 M (Hooper, 1947:56). Oaxaca: Salina Cruz; *type locality*.

SYLVILAGUS FLORIDANUS CHAPMANI (J. A. Allen).

1899. *Lepus floridanus chapmani* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 12:12, March 4, type from Corpus Christi, Nueces County, Texas.

1904. *Sylvilagus (Sylvilagus) floridanus chapmani*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

1899. *Lepus floridanus caniclunis* Miller, Proc. Acad. Nat. Sci. Philadelphia, p. 388, October 5, type from Fort Clark, Kinney County, Texas.

1902. *Lepus simplicicanus* Miller, Proc. Biol. Soc. Washington, 15:81, April 25, type from Brownsville, Cameron County, Texas.

Marginal records (Nelson, 1909:178).—Texas: Clyde; Victoria County; *Rockport*. Tamaulipas: Soto la Marina; Juamave. Coahuila: Monclova; Sabinas. Texas: Comstock; Stanton.

SYLVILAGUS FLORIDANUS CHIAPENSIS (Nelson).

1904. *Lepus floridanus chiapensis* Nelson, Proc. Biol. Soc. Washington, 17:106, May 18, type from San Cristobal, Chiapas.

1909. *Sylvilagus floridanus chiapensis*, Lyon and Osgood, Bull. U. S. Nat. Mus., 62:32, January 28.

Marginal records (Nelson, 1909:190, unless otherwise noted).—Chiapas: type locality; Comitán. Guatemala: Hacienda Chancol; Panajachel (Goodwin, 1934:56). Chiapas: Tuxtla.

SYLVILAGUS FLORIDANUS COGNATUS Nelson.

1907. *Sylvilagus cognatus* Nelson, Proc. Biol. Soc. Washington, 20:82, July 22, type from near summit of the Manzano Mountains, Valencia County, New Mexico.

1951. *Sylvilagus floridanus cognatus*, Hall and Kelson, Univ. Kansas Publ., Mus. Nat. Hist., 5:55, October 1, 1951.

Marginal records (Nelson, 1909:193).—New Mexico: Santa Rosa, 35 mi. N on Conchas River; Capitan Mts.; Datil Mts.; type locality.

SYLVILAGUS FLORIDANUS CONNECTENS (Nelson).

1904. *Lepus floridanus connectens* Nelson, Proc. Biol. Soc. Washington, 17:105, May 18, type from Chichicaxtle, central Veracruz.

1909. *Sylvilagus floridanus connectens*, Lyon and Osgood, Bull. U. S. Nat. Mus., 62:32, January 28.

Marginal records (Nelson, 1909:186).—Tamaulipas: Altamira. Veracruz: type locality. Oaxaca: Mt. Zempoaltepec. Veracruz: Orizaba (City of); Jico. Puebla: Metlaltoyuca. Queretaro: Pinal de Amoles. San Luis Potosí: Valles.

SYLVILAGUS FLORIDANUS COSTARICENSIS Harris.

1933. *Sylvilagus floridanus costaricensis* Harris, Occas. Papers Mus. Zool., Univ. Michigan, 266:3, June 28, type from Hacienda Santa Maria, Province of Guanacaste, 3200 ft, Costa Rica.

Marginal records (Goodwin, 1946:358).—Costa Rica: El Pelón; type locality; Tenorio.

SYLVILAGUS FLORIDANUS FLORIDANUS (J. A. Allen).

1890. *Lepus sylvaticus floridanus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:160, October 8, type from Sebastian River, Brevard County, Florida.

1904. *Sylvilagus floridanus*, Lyon, Smiths. Misc. Coll., 45:322, June 15.

Marginal records.—Florida: San Mateo (Sherman, 1936:122); *Enterprise* (*ibid.*); Miakka Lake (230812 USBS); Blitches Ferry (Sherman, 1936:122).

SYLVILAGUS FLORIDANUS HITCHENSI Mearns.

1911. *Sylvilagus floridanus hitchensi* Mearns, Proc. U. S. Nat. Mus., 39:227, January 9, type from Smiths Island, Northampton County, Virginia.

Marginal records.—Virginia: type locality; Fishermans Island (Handley and Patton, 1947:187).

SYLVILAGUS FLORIDANUS HOLZNERI (Mearns).

1896. *Lepus sylvaticus holzneri* Mearns, Proc. U. S. Nat. Mus., 18:554, June 24, type from Douglas spruce zone, near summit of Huachuca Mountains, Cochise County, Arizona.

1904. *Sylvilagus* (*Sylvilagus*) *floridanus holzneri*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

1896. [*Lepus sylvaticus*] subspecies *rigidus* Mearns, Proc. U. S. Nat. Mus., 18:555, June 24, type from Carrizalillo Mts., near monument No. 31, Mexican boundary line, Grant County, New Mexico.

1903. *Lepus* (*Sylvilagus*) *durangae* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 19:609, November 12, type from Rancho Bailon, northwestern Durango.

Marginal records.—Arizona: Pine Springs, 15 mi. S of Canyon of Colorado (Hall and Kelson, 1951:54); Reynolds Creek R. S., Sierra Ancha Mts. (*ibid.*); W base Mt. Turnbull, 4500 ft. (*ibid.*). New Mexico: Silver City (Nelson, 1909:180); *Animas Mts.* (*ibid.*). Zacatecas: Valparaiso (*ibid.*); Plateado (*ibid.*). Chihuahua: Guadalupe y Calvo (*ibid.*). Arizona: Thomas Cañon, 2 mi. E Baboquivari Mts. (Hall and Kelson, 1951:54), Hualapi Mts. (*ibid.*).

SYLVILAGUS FLORIDANUS HONDURENSIS Goldman.

1932. *Sylvilagus floridanus hondurensis* Goldman, Proc. Biol. Soc. Washington, 45:122, July 30, type from Monte Redondo, approximately 30 mi. NW Tegucigalpa, 5100 ft., Honduras.

Marginal records.—Honduras: Santa Barbara (Goodwin, 1942:150); Cedros (*ibid.*). Nicaragua: Jinotega (Nelson, 1909:190); Chontales ["District" of] (*ibid.*); Leon. Honduras: Ocotepeque (Goodwin, 1942:150).

SYLVILAGUS FLORIDANUS LLANENSIS Blair.

1938. *Sylvilagus floridanus llanensis* Blair, Occas. Papers. Mus. Zool., Univ. Michigan, 380:1, June 21, type from Old "F" Ranch headquarters, Quitaque, Briscoe County, Texas.

Marginal records.—Kansas: 15 mi. N and 3 mi. E Stafford (5547 KU); 1 mi. NE Aetna (12144 KU). Oklahoma: 3 mi SE Southard (10063 KU); *Fort Cobb* (Blair, 1939:129); Mt. Scott (*ibid.*). Texas: 6 mi. E Coahoma (Blair, 1938:3); 6 mi. southwest of Muleshoe (*ibid.*). Kansas: Coolidge (18462 KU).

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SYLVILAGUS FLORIDANUS MALLURUS (Thomas).

1898. *L[epus]. n[uttalli]. mallurus* Thomas, Ann. and Mag. Nat. Hist., 2(ser. 7):320, October, type from Raleigh, Wake County, North Carolina.

1904. *Sylvilagus floridanus mallurus*, Lyon, Smiths. Misc. Coll., 45:323, June 15.

1837. *Lepus sylvaticus* Bachman, Jour. Acad. Nat. Sci. Philadelphia, 7:403, no type or type locality. Name given to the "common gray rabbit" of the eastern United States and probably with particular reference to the animal in South Carolina. Name preoccupied by *Lepus borealis sylvaticus* Nilson, 1832, from Sweden.

Marginal records.—Connecticut: Bear Mountain (Goodwin, 1935:163), south along coast to Florida: Lake Julian (Nelson, 1909:168); Rock Bluff (Sherman, 1936:122). Alabama: Bayou Labatre (A. H. Howell, 1921:71); Leighton (*ibid.*). Tennessee (Kellogg, 1939:291): Arlington; Hornbeak; Highcliff; Watauga Valley. West Virginia: *Ernshaw* (Kellogg, 1937:472). Pennsylvania (Nelson, 1909:169): Waynesburg; Potts Grove. New York: Palenville (*ibid.*).

SYLVILAGUS FLORIDANUS MEARNsii (J. A. Allen).

1894. *Lepus sylvaticus mearnsii* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 6:171, May 31, type from Fort Snelling, Hennepin County, Minnesota.

1904. *Sylvilagus (Sylvilagus) floridanus mearnsi*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

Marginal records.—Minnesota: Fertile (Swanson, Surber and Roberts, 1945:97); Duluth (*ibid.*). Michigan: Marquette County (Burt, 1946:249). Ontario: Lake Simcoe (Miller, 1924:464). Quebec (Anderson, 1947): Montreal (p. 103); Quebec-side Ottawa

River in Laurentian Hills (p. 104). New York: "eastern New York" (Hamilton, 1943:383). Pennsylvania: Lopez (Nelson, 1909:172). West Virginia: 7 mi. E Phillipi (Kellogg, 1937:473); Gilboa (*ibid.*). Illinois: Sangamon (Nelson, 1909:172). Kansas: Neosho Falls (5104 KU); 1 mi. N and 1/2 mi. E Lincolnville (12964 KU); 6 mi. SW Clay Center (12398 KU); Strawberry (4510 KU). Minnesota: Otter Tail County (Surber, 1932:74).

SYLVILAGUS FLORIDANUS ORIZABAE (Merriam).

1893. *Lepus orizabae* Merriam, Proc. Biol. Soc. Washington, 8:143, December 29, type from Mt. Orizaba, 9500 ft., Puebla.

1909. *Sylvilagus floridanus orizabae*, Nelson, N. Amer. Fauna, 29:183, August 31.

1903. *Lepus floridanus persultator* Elliott, Field Columb. Mus., publ. 71, zool. ser., 3:147, March 20, type from Puebla, Puebla.

Marginal records (Nelson, 1909:185).—Coahuila: Sierra Encarnación. Hidalgo: Encarnación. Veracruz: Las Vigas; Mt. Orizaba. Puebla: Chalchicomula. México: Mt. Popocatepetl; Volcano of Toluca. Guanajuato: Santa Rosa. San Luis Potosí: San Luis Potosí.

SYLVILAGUS FLORIDANUS RESTRICTUS Nelson.

1907. *Sylvilagus floridanus restrictus* Nelson, Proc. Biol. Soc. Washington, 20:82, July 22, type from Zapotlan, Jalisco.

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Marginal records (Nelson, 1909:183).—Nayarit: Tepic; Ojo de Agua. Jalisco: La Cienega; Atenguillo. Michoacán: Mt. Tancítaro; Pátzcuaro. Jalisco: type locality; Las Canoas; La Laguna.

SYLVILAGUS FLORIDANUS ROBUSTUS (V. Bailey).

1905. *Lepus pinetus robustus* V. Bailey, N. Amer. Fauna, 25:159, October 24, type from 6000 ft., Davis Mts., Jeff Davis County, Texas.

1951. *Sylvilagus floridanus robustus*, Hall and Kelson, Univ. Kansas Publ., Mus. Nat. Hist., 5:56, October 1, 1951.

Marginal records.—Texas: The Bowl, Guadalupe Mts. (Hall and Kelson, 1951:56); Chisos Mts. (Nelson, 1909:195); 35 mi. S Marfa (*ibid.*).

SYLVILAGUS FLORIDANUS RUSSATUS (J. A. Allen).

1904. *Lepus (Sylvilagus) russatus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 20:31, February 29, type from Pasa Nueva, southern Veracruz.

1909. *Sylvilagus floridanus russatus*, Nelson, N. Amer. Fauna, 29:186, August 31.

Marginal records (Nelson, 1909:187).—Veracruz: Catemaco; Coatzacoalcos; Minatitlán; type locality; Jimba (KU 19895).

SYLVILAGUS FLORIDANUS SIMILIS Nelson.

1907. *Sylvilagus floridanus similis* Nelson, Proc. Biol. Soc. Washington, 20:82, July 22, type from Valentine, Cherry County, Nebraska.

Marginal records.—Manitoba: Dauphin (Anderson and Rand, 1943:24). Minnesota: Ten Mile Lake (Surber, 1932:74). Nebraska: Neligh (Nelson, 1909:174). Kansas: Long Island (*ibid.*); 3 mi. N and 2 mi. W Hoisington (16509 KU); Lane County (5520 KU); Elkader (5595 KU). Colorado: Arvada (Cary, 1911:158). Wyoming: 6400 ft., 3 mi. E Horse Creek, P. O. (15936 KU). Nebraska: 8 mi. E Chadron (39380 KU). Montana: Little Missouri River, 7 mi. NE Albion (Hall and Kelson, 1951:52); Box Elder Creek, 25 mi. SW Sykes (*ibid.*). North Dakota: Oakdale (Bailey, 1927:134).

SYLVILAGUS FLORIDANUS SUBCINCTUS (Miller).

1899. *Lepus floridanus subcinctus* Miller, Proc. Acad. Nat. Sci. Philadelphia, p. 386, October 5, type from Hacienda El Molino, near Negrete, Michoacán.

1904. *Sylvilagus floridanus subcinctus*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

Marginal records (Nelson, 1909:181).—Jalisco: Lagos. Guanajuato: Acámbaro. Michoacán: Querendaro. Jalisco: Ameca; Etzatlán.

SYLVILAGUS FLORIDANUS YUCATANICUS (Miller).

1899. *Lepus floridanus yucatanicus* Miller, Proc. Acad. Nat. Sci. Philadelphia, p. 384, September 29, type from Mérida, Yucatán.

1904. *Sylvilagus floridanus yucatanicus*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

Marginal records (Nelson, 1909:191).—Yucatán: Progreso; type locality. Campeche: Campeche.

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Sylvilagus transitionalis (Bangs)

New England Cottontail

1895. *Lepus sylvaticus transitionalis* Bangs, Proc. Boston Soc. Nat. Hist., 26:405, January 31, type from Liberty Hill, New London County, Connecticut.

1909. *Sylvilagus transitionalis*, Nelson, N. Amer. Fauna, 29:195, August 31.

Marginal records.—Vermont: west side at Canadian boundary (Osgood, F. L., Jr., 1938:440); Montpelier (*ibid.*). Maine: Sagadahoc County (Palmer, 1944:194); *Androscoggin County* (*ibid.*). New York: Miller Place (Nelson, 1909:199). Virginia: Roanoke County (Llewellyn and Handley, 1946:385). North Carolina: Roan Mtn. (Nelson, 1909:199). Georgia: Brasstown Bald Mtn. (A. H. Howell, 1921:71). Alabama: Erin (*ibid.*); Ardell (*ibid.*). Tennessee: Walden Ridge, "near" Soddy (Kellogg, 1939:291). West Virginia: Ronceverte (Kellogg, 1937:473). Pennsylvania: Renovo (Nelson, 1909:199). New York: Lake George (*ibid.*).

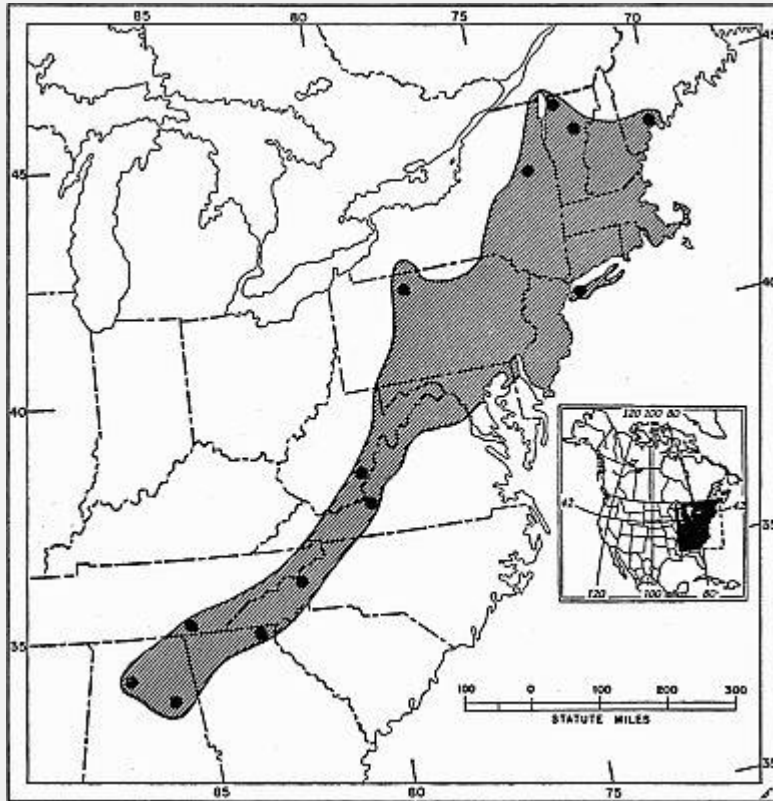


Fig. 40. Distribution of

***Sylvilagus transitionalis*.**

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Total length, 388; tail, 39; hind foot, 95; ear from notch (dry), 52. Upper parts almost pinkish buff, varying to almost ochraceous buff; back overlaid by a distinct black wash giving a penciled effect; anterior extension of supraorbital process obsolete or short and closely appressed to orbital rim; tympanic bullae small, smaller than in any subspecies of *S. floridanus* in the United States. *S. transitionalis* is a forest-inhabiting species—more so than is *S. floridanus*.

Sylvilagus nuttallii
Nuttall Cottontail
(See [figure 39](#))

Total length, 350-390; tail, 44-50; hind foot, 88-100; ear from notch (dry), 55-56; weight in Nevada, ♂ 678, 3 ♀ 928 (868-1032) grams. Hind feet densely covered with long hair; ear short; tympanic bulla of moderate size. In the northern part of its range *S. nuttallii* occurs principally in the sagebrush areas but it occurs also in the timbered areas of the Transition Life-zone and almost exclusively in timbered areas in the southern part of its range. From *S. floridanus*, *S. nuttallii* along the eastern margin of its range differs in more slender rostrum, and larger external auditory meatus. In New Mexico and Arizona, *S. nuttallii* differs from *S. floridanus* in the posteriorly pointed and un-notched supraoccipital shield and in the posterior extension of the supraorbital process, the tip of which projects free from the braincase or merely lies against the braincase instead of being firmly welded to the side of the skull. From *S. audubonii*, *S. nuttallii* differs in shorter ears, smaller tympanic bullae and smaller hind legs; *S. nuttallii* usually occurs at higher elevations, or where the two occur at approximately the same elevation *S. nuttallii* occurs in wooded or brushy areas and *S. audubonii* lives on the plains or in relatively open country. Eight females contained an average of 6.1 (4-8) embryos.

SYLVILAGUS NUTTALLII GRANGERI (J. A. Allen).

1895. *Lepus sylvaticus grangeri* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 7:264, August 21, type from Hill City, Black Hills, Pennington County, South Dakota.

1909. *Sylvilagus nuttalli grangeri*, Nelson, N. Amer. Fauna, 29:204, August 31.

1904. *Lepus [laticinctus]. perplicatus* Elliott, Field Columb. Mus., publ. 87, zool. ser., 3:255, January 7, type from Hannopee [= Hannaupah] Canyon, Panamint Mts., Inyo County, California.

Marginal records.—Alberta: Steeveville (Anderson, 1943:25). Saskatchewan (*ibid.*): Cypress Hills; Johnston Lake; Big Muddy Lake. North Dakota:[Pg 162] Goodall (V. Bailey, 1927:137). South Dakota: Custer (Nelson, 1909:207). Wyoming: 2 mi. W Horse Creek P. O. (15935 KU); Sherman (Nelson, 1909:207). Colorado: Meeker (Warren, 1942:272). Utah (Nelson, 1909:207): Mt. Ellen; "Upper Kanab"; Panguitch. Nevada (Hall, 1946:612): 1/4 mi. W Utah-Nev. boundary, 38° 17' N, 7300 ft.; S end Belted Range, 5 mi. NW Whiterock Spring, 7200 ft.; Chiatovich Creek, 7000 ft.; 2-1/2 mi. E and 1 mi. S Grapevine Peak, 6700 ft.; Charleston Park, Kyle Cañon, 8000 ft. California (Orr, 1940:103): Johnson Canyon, 6500 ft.; nr. Woodfords, 5500 ft. Nevada (Hall, 1946:612): Calvada; Hardscrabble Canyon; Paradise Valley. Idaho (Davis, 1939:363): S. Fork Owyhee River, 12 mi. N Nevada line; Crane Creek, 15 mi. E Midvale; Lemhi.

Montana: 4 mi. W Hamilton (Jellison, MS); 2 mi. N Moise Lake (*ibid.*). Alberta: Cardston (Anderson, 1947:105).

SYLVILAGUS NUTTALLII NUTTALLII (Bachman).

1837. *Lepus nuttallii* Bachman, Jour. Acad. Nat. Sci. Philadelphia, 7:345, type locality probably eastern Oregon near mouth of Malheur River.

1904. *Sylvilagus nuttallii*, Lyon, Smiths. Misc. Coll., 45:323, June 15.

Marginal records.—British Columbia: Anarchist Mtn., Osoyoos (Cowan, 1940:9). Washington: Kettle Falls (Dalquest, 1941:408). Idaho: Couer d' Alene (Rust, 1946:322); Lewiston (Davis, 1939:361); Fiddle Creek (*ibid.*). Nevada (Hall, 1946:612): 5800 ft., Quinn River Crossing; 1/2 mi. S Granite Cr., Granite Mts.; Smoke Creek, 9 mi. E California line; 4-1/2 mi. S Flanigan. California: Truckee (Orr, 1940:101); Beckwith (*ibid.*); Weed (Orr, 1940:100); Yreka (*ibid.*). Oregon (V. Bailey, 1936:107): near Ashland; Bend; The Dalles. Washington: Grand Dalles (Taylor and Shaw, 1929:29); Yakima Valley (*ibid.*); Douglas (Nelson, 1909:203).

SYLVILAGUS NUTTALLII PINETIS (J. A. Allen).

1894. *Lepus sylvaticus pinetis* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 6:348, December 7, type from White Mts., south of Mt. Ord, Apache County, Arizona, according to Warren (Mammals of Colorado, 1942:270).

1909. *Sylvilagus nuttalli pinetis*, Nelson, N. Amer. Fauna, 29:207, August 31.

Marginal records.—Colorado (Nelson, 1909:210): Arkins; Golden; Greenhorn Mts. New Mexico: Sierra Grande (Nelson, 1909:211); Willis (*ibid.*); Zuni Mts. (V. Bailey, 1932:60). Arizona: type locality. Utah (Durrant, MS): 4-1/2 mi. NW Bluff; Block Canyon, 19 mi. SE Moab, 5400 ft.; 5 mi. NE La Sal P. O., 8000 ft.

Sylvilagus audubonii

Audubon Cottontail

Total length, 350-420; tail, 45-75; hind foot, 75-100; ear from notch (dry), 55-70; weight of *S. a. vallicola*, 7 ♂ 912 (835-988), 2 ♀ 1096, 1191 grams. Long hind legs, long ears, sparseness of hair on the ears, shortness of hair on the feet, prominent (upturned) supraorbital process of the skull and much inflated tympanic bullae are characters of this wide-spread species. Embryos in 19 Californian females averaged 3.6 (2-6) per female.[Pg 163]

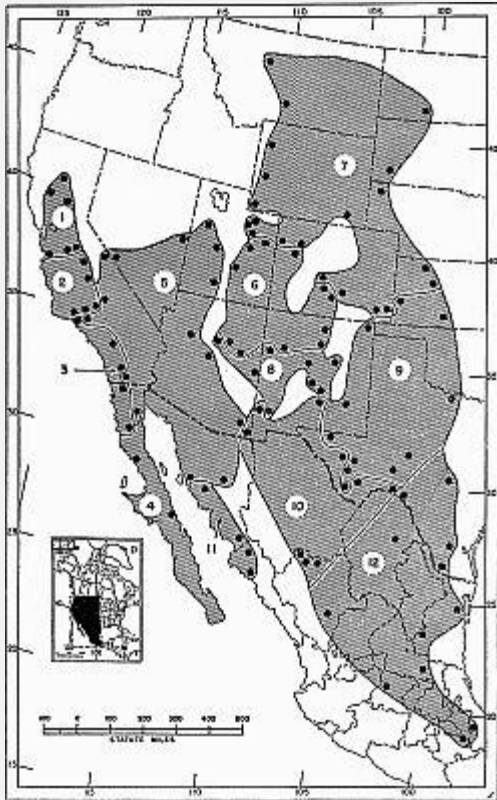


Fig. 41. Distribution of *Sylvilagus audubonii*.

1. *S. a. audubonii*
2. *S. a. vallicola*
3. *S. a. sanctidiegi*
4. *S. a. confinis*
5. *S. a. arizonae*
6. *S. a. warreni*
7. *S. a. baileyi*
8. *S. a. cedrophilus*
9. *S. a. neomexicanus*
10. *S. a. minor*
11. *S. a. goldmani*
12. *S. a. parvulus*

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SYLVILAGUS AUDUBONII ARIZONAE (J. A. Allen).

1877. [*Lepus sylvaticus*] var. *arizonae* J. A. Allen, Monogr. North Amer. Rodentia, p. 332, August, type from Beals Spring, Yavapai Co., Arizona.

1909. *Sylvilagus auduboni arizonae*, Nelson, N. Amer. Fauna, 29:222, August 31.

1896. *Lepus arizonae major* Mearns, Proc. U. S. Nat. Mus., 18:557, June 24, type from Calabasas, Pima County, Arizona.

1904. *Lepus laticinctus* Elliot, Field Columb. Mus., publ. 87, zool. ser., 3:254, January 7, type from Oro Grande, Mohave Desert, San Bernardino County, California.

1904. *Lepus l[aticinctus]. rufipes* Elliot, Field Columb. Mus., publ. 87, zool. ser., 3:254, January 7, type from Furnace Cr., Inyo Co., California.

Marginal records.—Utah (Durrant, MS): 2 mi. SW Fish Springs; Holden; 7 mi. SW Tropic. Arizona (Nelson, 1909:225): Seligman; Ft. Verde; Dos Cabezas. Sonora (Burt, 1938:69): Tecoripa; La Libertad Ranch. Baja California: San Matias Pass (Nelson, 1909:225). California: Vallecito (Orr, 1940:126); Fairmont, Antelope Valley (*ibid.*); Little Lake, 3300 ft. (Orr, 1940:125); 5300-5639 ft., near Benton (*ibid.*). Nevada (Hall, 1946:614): Arlemont; 4 mi. E Smith Creek Cave.

SYLVILAGUS AUDUBONII AUDUBONII (Baird).

1858. *Lepus audubonii* Baird, Mamm. N. Amer., p. 608, July 14, type from San Francisco, San Francisco County, California.

1909. *Sylvilagus auduboni*, Nelson, N. Amer. Fauna, 29:214, August 31.

Marginal records (Orr, 1940:115).—California: 600 ft., Paines Creek; Rackerby; Pleasant Valley; Snelling; 2 mi. S mouth Salinas River, northward not reaching coast again except at San Francisco, thence around shores of San Francisco Bay to mouth of Carquinez Straits and northward along western side of Sacramento Valley to Winslow, 5 mi. W Fruto.

SYLVILAGUS AUDUBONII BAILEYI (Merriam).

1897. *Lepus baileyi* Merriam, Proc. Biol. Soc. Washington, 11:148, June 9, type from Spring Creek, east side of Bighorn Basin, Bighorn County, Wyoming.

1908. *Sylvilagus auduboni baileyi*, Lantz, Trans. Kansas Acad. Sci., 22:336.

Marginal records.—Montana: Great Falls of the Missouri (Nelson, 1909:234). North Dakota: Wade on the Cannonball River (V. Bailey, 1927:138). South Dakota: Corral Draw (Nelson, 1909:234). Nebraska: Glen (*ibid.*). Kansas: 2-1/2 mi. S and 4 mi. W Oberlin (19035 KU); Wakeeney (1203 KU). Colorado (Nelson, 1909:234): Monon; The Cedars; Quenda [=Querida]; Salida. Wyoming: 1/2 mi. W Horse Creek P. O. (15948 KU). Colorado (Nelson, 1909:234): White Rock [2 mi. above Meeker, 6400 ft.]; 20 mi. SW Rangely. Utah (Durrant, MS): 8 mi. S Myton; 6 mi. NW Duchesne; 10 mi. E Mountain Home. Wyoming (Nelson, 1909:234): Ft. Bridger; Big Piney; Circle. Montana: Stillwater (*ibid.*). Phillips Creek, Montana (Nelson 1909:234) not found.

SYLVILAGUS AUDUBONII CEDROPHILUS Nelson.

1907. *Sylvilagus auduboni cedrophilus* Nelson, Proc. Biol. Soc. Washington, 20:83, July 22, type from Cactus Flat, 20 mi. N Cliff, Grant County, New Mexico.

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Marginal records (Nelson, 1909:230).—Arizona: San Francisco Mts. New Mexico: Gallup; Santa Rosa; Capitan; Ancho; Isleta; Burro Mts. Arizona: Springerville.

SYLVILAGUS AUDUBONII CONFINIS (J. A. Allen).

1898. *Lepus arizonae confinis* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 10: 146, April 12, type from Playa Maria, Baja California.

1909. *Sylvilagus auduboni confinis*, Nelson, N. Amer. Fauna, 29:220, August 31.

Marginal records (Nelson, 1909:221).—Baja California: type locality; San Bruno, thence southerly over peninsula to tip.

SYLVILAGUS AUDUBONII GOLDMANI (Nelson).

1904. *Lepus arizonae goldmani* Nelson, Proc. Biol. Soc. Washington, 17:107, May 18, type from Culiacán, Sinaloa.

1909. *Sylvilagus auduboni goldmani* Nelson, N. Amer. Fauna, 29:225, August 31.

Marginal records (Nelson, 1909:226).—Sonora: Ortiz; Camoa. Sinaloa: Bacubirito; type locality.

SYLVILAGUS AUDUBONII MINOR (Mearns).

1896. *Lepus arizonae minor* Mearns, Proc. U. S. Nat. Mus., 18:557, June 24, type from El Paso, El Paso County, Texas.

1907. *S[ylvilagus]. a[uduboni]. minor*, Nelson, Proc. Biol. Soc. Washington, 20:83, July 22.

Marginal records (Nelson, 1909:228, unless otherwise noted).—New Mexico: [12 mi. N] Tularosa. Texas: Kent; Haymond; Langtry. Durango (Nelson, 1909:229): Inde; Rancho Bailon; Río Campo. Arizona: San Bernardino Ranch. New Mexico: Red Rock; Lordsburg.

SYLVILAGUS AUDUBONII NEOMEXICANUS Nelson.

1907. *Sylvilagus auduboni neomexicanus* Nelson, Proc. Biol. Soc. Washington, 20:83, July 22, type from Fort Sumner, Guadalupe County, New Mexico.

Marginal records.—Kansas: 1 mi. E Coolidge (12976 KU); Rezeau Ranch, 5 mi. N Belvidere (13208 KU). Texas: Wichita Falls (Nelson, 1909:236); San Angelo (*ibid.*);

Adam [=15 mi. E Adams] (Nelson, 1909:236); 28 mi. S Alpine (Borell and Bryant, 1942:39); 15 mi. S Alpine, (Hall and Kelson, 1951:57); 7 mi. NE Marfa (Blair, 1940:34); Toyahvale [= 10 mi. S of] (Nelson, 1909:236); McKittrick Canyon (Davis and Robertson, 1944:271). New Mexico: Roswell (V. Bailey, 1932:54); Emory Peak (*ibid.*).

SYLVILAGUS AUDUBONII PARVULUS (J. A. Allen).

1904. *Lepus (Sylvilagus) parvulus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 20:34, February 29, type from Apam, Hidalgo.

1909. *Sylvilagus auduboni parvulus*, Nelson, N. Amer. Fauna, 29:236, August 31.

Marginal records (Nelson, 1909:237, unless otherwise noted).—Texas: Llano; San Diego; Rio Grande City. Tamaulipas: El Mulato (Dice, 1937:256); Miquihuana. San Luis Potosí: Rio Verde. Veracruz: Perote. Puebla: Chalchicomula. Guanajuato: Silao. Durango: Durango City. Coahuila: Monclova. Texas: Comstock.

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SYLVILAGUS AUDUBONII SANCTIDIEGI (Miller).

1899. *Lepus floridanus sanctidiegi* Miller, Proc. Acad. Nat. Sci. Philadelphia, 51:389, October 5, type from Mexican Boundary Monument No. 258, shore of Pacific Ocean, San Diego County, California.

1909. *Sylvilagus auduboni sanctidiegi*, Nelson, N. Amer. Fauna, 29:218, August 31.

Marginal records.—California (Orr, 1940:122): Sespe; Reche Canyon near Colton; San Felipe Canyon. Baja California (Nelson, 1909:220): Nachogüero Valley; Santo Tomas, thence northerly along coast.

SYLVILAGUS AUDUBONII VALLICOLA Nelson.

1907. *Sylvilagus auduboni vallicola* Nelson, Proc. Biol. Soc. Washington, 20:82, July 22, type from San Emigdio Ranch, Kern County, California.

Marginal records (Orr, 1940:118, unless otherwise noted).—California: Fresno Flat (Nelson, 1909:218); Badger (*ibid.*); 2750 ft., Onyx; Tehachapi (Nelson, 1909:218); Mt. Pinos (Orr, 1940:119), northwesterly, seldom actually reaching coast, to central Monterey County thence easterly to point of beginning.

SYLVILAGUS AUDUBONII WARRENI Nelson.

1907. *Sylvilagus auduboni warreni* Nelson, Proc. Biol. Soc. Washington, 20:83, July 22, type from Coventry, Montrose County, Colorado.

Marginal records.—Utah: 5250 ft., Willow Creek (Durrant, MS). Colorado (Nelson, 1909:232): Rifle; Villa Grove; Medano Ranch. New Mexico: Hondo Canyon (Nelson, 1909:232); Cieneguilla (*ibid.*); Juan Tafoya (Bailey, 1932:59). Arizona (Nelson, 1909:232): Holbrook; Winslow. Utah: Canesville (*sic*) (Nelson, 1909:232); Wellington (Durrant, MS).

Sylvilagus aquaticus
Swamp Rabbit

Total length, 530-540; tail, 67-71; hind foot, 105-110; length of ear from notch (dry), 63-67. Upper parts blackish brown or reddish brown; underparts with some white; under side of tail white; skull robust; posterior extensions of supraorbital processes joined for their entire length with side of braincase or, in some specimens, with a small foramen between the braincase and the base of the posterior extension of the supraorbital process. This big rabbit is a stronger runner than the smaller marsh rabbit and is easily distinguished from the smaller species by larger size and white, instead of brownish or grayish, underside of the tail.

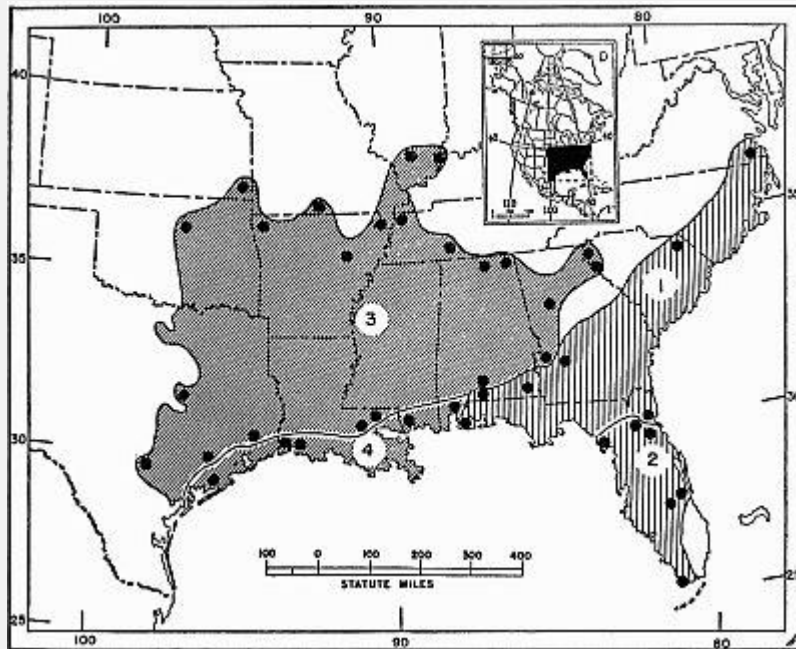
SYLVILAGUS AQUATICUS AQUATICUS (Bachman).

1837. *Lepus aquaticus* Bachman, Jour. Acad. Nat. Sci. Philadelphia, 7:319, type locality western Alabama.
1909. *Sylvilagus aquaticus*, Nelson, N. Amer. Fauna, 29:270, August 31.
1895. *Lepus aquaticus attwateri* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 7:327, November 8, type from Medina River, 18 mi. S San Antonio, Bexar County, Texas.
1899. *Lepus telmalemonus* Elliot, Field Columb. Mus., publ. 38, zool. ser., 1:285, May 25, type from Washita River, near Dougherty, Murray County, Oklahoma.

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Marginal records.—Illinois: 6 mi. N Sesser (Cockrum, 1949:427). Indiana: Point Township (Harrison and Hickie, 1931:319). Tennessee: 5 mi. W Hornbeak (Kellogg, 1939:292); Henryville (A. H. Howell, 1909:63). Alabama: Huntsville (Nelson, 1909:273); Big Crow Creek near Stevenson (A. H. Howell, 1921:71). South Carolina: "about" 3 mi. SE Westminster (F. Sherman, 1939:259); "about" 5 mi. W Iva (*ibid.*). Georgia: Fulton County (*ibid.*); Lumpkin (Nelson, 1909:273). Alabama: Castleberry (*ibid.*). Louisiana: Covington (Lowery, 1936:32); Kleinpeter (*ibid.*). Texas (Nelson, 1909:273): Sourlake; Richmond; Medina River, 18 mi. SW San Antonio; Gurley. Oklahoma: 7 mi. NW Stillwater (Blair, 1939:129). Kansas: Crawford County (8826 KU). Arkansas: along White River near Springdale (Black, 1936:34). Missouri: 3 mi. SW Udall (Leopold and Hall, 1945:145). Arkansas: White River near Augusta

(Dellinger and Black, 1940:190). Missouri: St. Francis River, W of Senath (Nelson, 1909:273).



**Fig. 42. Distribution of
Sylvilagus palustris and *Sylvilagus aquaticus*.**

1. *S. p. palustris*
2. *S. p. paludicola*
3. *S. a. aquaticus*
4. *S. a. littoralis*

SYLVILAGUS AQUATICUS LITTORALIS Nelson.

1909. *Sylvilagus aquaticus littoralis* Nelson, N. Amer. Fauna, 29:273, August 31, type from Houma, Terrebonne Parish, Louisiana.

Range.—Swamps and marshes along Gulf Coast, wholly within Lower Austral Life-zone, below 50 ft., from Mobile Bay west to Matagorda Bay. *Inland Marginal records*.—Alabama: Blakely Island opposite Mobile (A. H.[Pg 168] Howell, 1921:73). Mississippi: Bay St. Louis (Nelson, 1909:275). Louisiana: Rayne (Lowery, 1936:32); Hackberry (Nelson, 1909:275). Texas: Matagorda (Nelson, 1909:275).

Sylvilagus insonus (Nelson)
Omiteme Cottontail
(See [figure 39](#))

1904. *Lepus insonus* Nelson, Proc. Biol. Soc. Washington, 17:103, May 18, type from Omiteme, Guerrero. Known from type locality only.

1909. *Sylvilagus insonus*, Lyon and Osgood, Bull. U. S. Nat. Mus., 62:34, January 28 (see Hershkovitz, Proc. U. S. Nat. Mus., 100:335, May 26, 1950, for allocation of *S. insonus* to subgenus *Sylvilagus* instead of to subgenus *Tapeti*).

Total length, 435; tail, 42.5; hind foot, 95; ear from notch (dry), 61. Color grayish brown above and dingy (not white) below; tail dingy buffy below and dull rusty brown above. The collectors thought that the species was restricted to the forested parts of the Sierra Madre del Sur between 7000 and 10,000 feet altitude in the Mexican state of Guerrero.

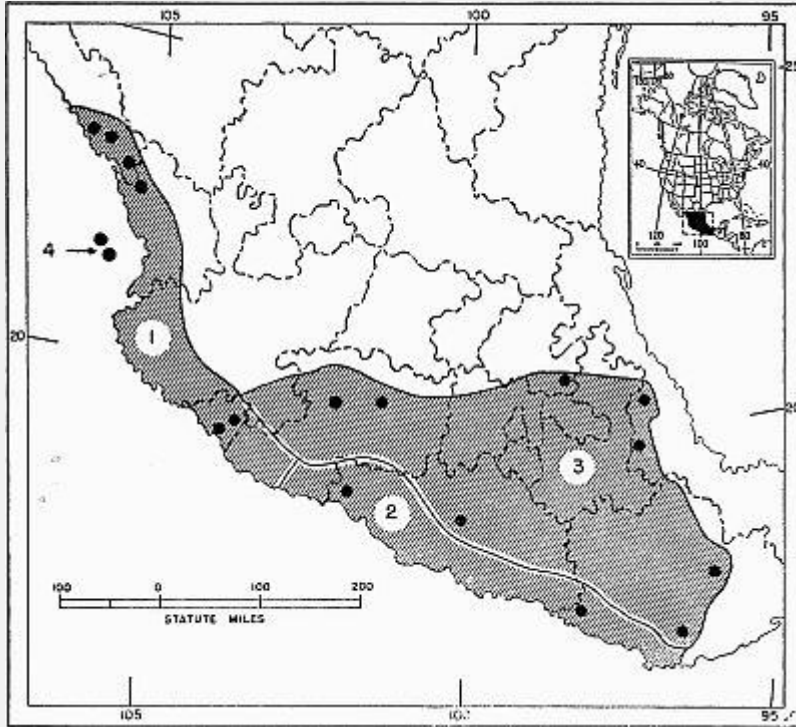


Fig. 43. Distribution of

***Sylvilagus cunicularius* and *Sylvilagus graysoni*.**

1. *Sylvilagus cunicularius insolitas*
2. *Sylvilagus cunicularius pacificus*
3. *Sylvilagus cunicularius cunicularius*
4. *Sylvilagus graysoni*

[Pg 169]

Sylvilagus cunicularius Mexican Cottontail

Total length, 485-515; tail, 54-68; hind foot, 108-111; ear from notch (dry), 60-63. Pelage coarse; upper parts brownish gray; skull massive; posterior extensions of supraorbital processes varying from those that project free to those that have the tips, or tips and a considerable part of the processes, attached to the braincase.

SYLVILAGUS CUNICULARIUS CUNICULARIUS (Waterhouse).

1848. *Lepus cunicularius* Waterhouse, Nat. Hist. Mammalia, 2:132, type from Zacualpan (probably in state of México).

1909. *Sylvilagus cunicularius*, Nelson, N. Amer. Fauna, 29:239, August 31.

1890. *Lepus verae-crucis* Thomas, Proc. Zool. Soc. London, p. 74, June, type from Las Vigas, Veracruz.

Marginal records (Nelson, 1909:241).—Hidalgo: Tulancingo. Veracruz: Las Vigas; Orizaba. Oaxaca: Mt. Zempoaltepec; Suchixtepec. Guerrero: Chilpancingo. Michoacán (Hall and Villa, 1949:469). Pátzcuaro; Tancítaro.

SYLVILAGUS CUNICULARIUS INSOLITUS (J. A. Allen).

1890. *Lepus insolitus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:189, December 10, type from plains of Colima, Jalisco.

1909. *Sylvilagus cunicularius insolitus*, Nelson, N. Amer. Fauna, 29:243, August 31.

Marginal records (Nelson, 1909:244).—Sinaloa: Mazatlan; Rosario; Esquinapa. Nayarit: Acaponeta. Colima: Colima; Armeria, thence northward along Pacific Coast.

SYLVILAGUS CUNICULARIUS PACIFICUS (Nelson).

1904. *Lepus veraecrucis pacificus* Nelson, Proc. Biol. Soc. Washington, 17:104, May 18, type from Acapulco, Guerrero.

1909. *Sylvilagus cunicularius pacificus*, Lyon and Osgood, Catal. Bull. U. S. Nat. Mus., 62:35, January 28.

Marginal records (Nelson, 1909:242).—Guerrero: El Limón. Oaxaca: Llano Grande, thence westward along Pacific Coast.

Sylvilagus graysoni (J. A. Allen)

Tres Marias Cottontail

1877. *Lepus graysoni* J. A. Allen, Monogr. N. Amer. Rodentia, p. 347, August, type from Tres Marias Islands, Jalisco; probably María Madre Island. (See Nelson, N. Amer. Fauna, 14:16, April 29, 1899.)

1904. *Sylvilagus (Sylvilagus) graysoni*, Lyon, Smiths. Misc. Coll., 45:336, June 15.

Marginal records (Nelson, 1909:245): María Madre Island; María Magdalena Island.

Total length, 480; tail, 51; hind foot, 99; ear from notch (dry), 57. This insular species is closely related to *Sylvilagus cunicularius* of the adjacent mainland but has notably

shorter ears and more reddish on the upper parts, sides and legs; the skull is slenderer, especially in the rostral region. The posterior extensions of the supraorbital process are united to the braincase throughout most of their length as in *Sylvilagus palustris*. The species seems to have a narrow vertical range, occurring from sea level up to only 200 feet.

Genus LEPUS Linnaeus—Hares and Jack Rabbits

Revised by Nelson, N. Amer. Fauna, 29:59-158, August 31, 1909. Concerning Shamel's (Proc. Biol. Soc. Washington, 55:25, May 12, 1942) proposed changes of names for several species, see Hall, Univ. Kansas Publ., Mus. Nat. Hist., 5:45, October 1, 1951.

1758. *Lepus* Linnaeus, Systema Naturae, ed. 10, 1:57. Type *Lepus timidus* Linnaeus.
1895. *Macrotolagus* Mearns, Science, n. s., 1:698, June 21. Type, *Lepus alleni* Mearns. (See Mearns, Proc. U. S. Nat. Mus., 18:552, June 24, 1896.)
1904. *Poecilolagus* Lyon, Smiths. Misc. Coll., 45:395, June 15. Type, *Lepus americanus* Erxleben.
1904. *Lagos* Palmer. N. Amer. Fauna, 23:361, January 23. Type, *Lepus arcticus* Ross. *Lagos* J. Brooks, a catalogue of the anatomical and zoological museum, pt. 1, p. 54, July, 1828, appears to be a *nomen nudum*.
1911. *Boreolepus* Barrett-Hamilton, History of the British Mammalia, pt. 9, p. 160, November 17. Type, *Lepus groenlandicus* Rhoads. (For status see Sutton and Hamilton, Mem. Carnegie Mus., 12 (pt. 2, sec. 1):78, August 4, 1932; also A. H. Howell, Jour. Mamm., 17:331, November 16.)

Total length, 363-664; tail, 25-112; hind foot, 112-189; ear from notch (dry), 62-144. Upper parts grayish, brownish or black; interparietal bone fused to surrounding bones; cervical vertebrae long, 2nd and 3rd being longer than wide; transverse processes of lumbar vertebrae long, the longest one equal to the length of the centrum to which it is attached plus half of the length of the preceding centrum; free extremity of transverse process of lumbar vertebra considerably expanded; distance from anterior edge of acetabulum to extreme anterior point of ilium less than distance from former point to most distant point of ischium; ulna reduced in size along middle part of shaft, and, excepting the lower extremity, placed almost entirely behind radius.

All members of the genus *Lepus* are technically hares, as these are defined in the account of the family Leporidae. The largest members of the order Lagomorpha are members of the genus *Lepus*. No domestic strains have been developed but effort in this direction might be profitable, in as much as the so-called Belgian hares of the related genus, *Oryctolagus*, have done well in captivity.

In the past it has been customary to recognize two or more subgenera of the genus *Lepus*. The species are a less diverse lot than [Pg 171] those in some other genera, however, and it seems that no useful purpose is served by recognizing subgenera. Accordingly, the several names proposed for this purpose are arranged here as synonyms of the generic name *Lepus* Linnaeus.

The introduction of the European Hare (*Lepus europaeus*) into the eastern part of the North American Continent has been successful in the sense that the animal is multiplying. If it continues to increase, the increase almost certainly will be at the expense of some native species of rabbit. This circumstance and the unfortunate consequences of the introduction of the European rabbit (*Oryctolagus cuniculus*) in New Zealand (see Wodzicki, 1950:107-141) and Australia (see Stead, 1925:355-358) give basis for effort to exterminate the alien species before it spreads more widely.

KEY TO THE SPECIES OF THE GENUS LEPUS

- 1. North of 34° N latitude.
 - 2. All white pelage (tips of ears sometimes black).
 - 3. North of line from Port Simpson, British Columbia, to Halifax, Nova Scotia.
 - 4. Basilar length of skull more than 67; ear from notch usually more than 73 dry (77 fresh); first upper incisors inscribing an arch of a circle the radius of which is more than 9.6 mm.
 - 5. Geographic range east of Mackenzie River.
 - *Lepus arcticus*, p. [178](#)
 - 5'. Geographic range west of Mackenzie River.
 - *Lepus othus*, p. [177](#)
 - 4'. Basilar length of skull less than 67; ear from notch usually less than 73 dry (77 fresh); first upper incisors inscribing an arch of a circle the radius of which is less than 9.6 mm.
 - *Lepus americanus*, p. [173](#)
 - 3'. South of a line from Port Simpson, British Columbia to Halifax, Nova Scotia.
 - 5. Ear from notch more than 82 dry (87 fresh); least interorbital breadth more than 26
 - *Lepus townsendii*, p. [180](#)
 - 5'. Ear from notch less than 82 dry (87 fresh); least interorbital breadth less than 26
 - *Lepus americanus*, p. [173](#)

- 2'. Brownish or grayish pelage.
 - 6. Tail blackish or brownish all around (in specimens not having completed molt on tail, white winter pelage may be present); basilar length less than 67 mm.
 - *Lepus americanus*, p. [173](#)
 - 6'. Tail partly or wholly white.
 - 7. Tail black on upper surface.
 - 8. Upper sides of hind feet without a trace of white; upper parts tawny.
 - *Lepus europaeus*, p. [189](#)
 - 8'. Upper sides of hind feet with more or less white or whitish; upper parts grayish or brownish
 - [Pg 172]*Lepus californicus*, p. [181](#)
 - 7'. Tail all white or (in some *Lepus townsendii*) with faint buffy or dusky median line on top but this line not extending on to rump (as in *L. californicus*).
 - 9. Geographic range north of a line from Port Simpson, British Columbia, to Halifax, Nova Scotia.
 - 10. Geographic range east of Mackenzie River
 - *Lepus arcticus*, p. [178](#)
 - 10'. Geographic range west of Mackenzie River
 - *Lepus othus*, p. [177](#)
 - 9'. Geographic range south of a line from Port Simpson, British Columbia, to Halifax, Nova Scotia
 - *Lepus townsendii*, p. [180](#)
- 1'. South of 34° N latitude.
 - 11. In state of Tamaulipas, México.
 - *Lepus californicus*, p. [181](#)
 - 11'. Range outside Tamaulipas, México.
 - 12. Ears with terminal black patch (on outside).

- *Lepus californicus* and *Lepus insularis*, pp. [181](#), [186](#)
 - 12'. Ears without terminal black patch.
 - 13. Ear from notch, dry more than 130 (137 fresh),
 - *Lepus alleni*, p. [188](#)
 - 13'. Ear from notch, dry less than 130 (137 fresh).
 - 14. Nape more or less black.
 - 15. Ears yellow; range Pacific Coastal region of Isthmus of Tehuantepec in southern Oaxaca and Chiapas.
 - *Lepus flavigularis*, p. [188](#)
 - 15'. Ears dark buff, grayish, white and black; range north of Isthmus of Tehuantepec.
 - *Lepus callotis*, p. [186](#)
 - 14'. Nape gray or grayish buff.
 - *Lepus gaillardi*, p. [188](#)
-

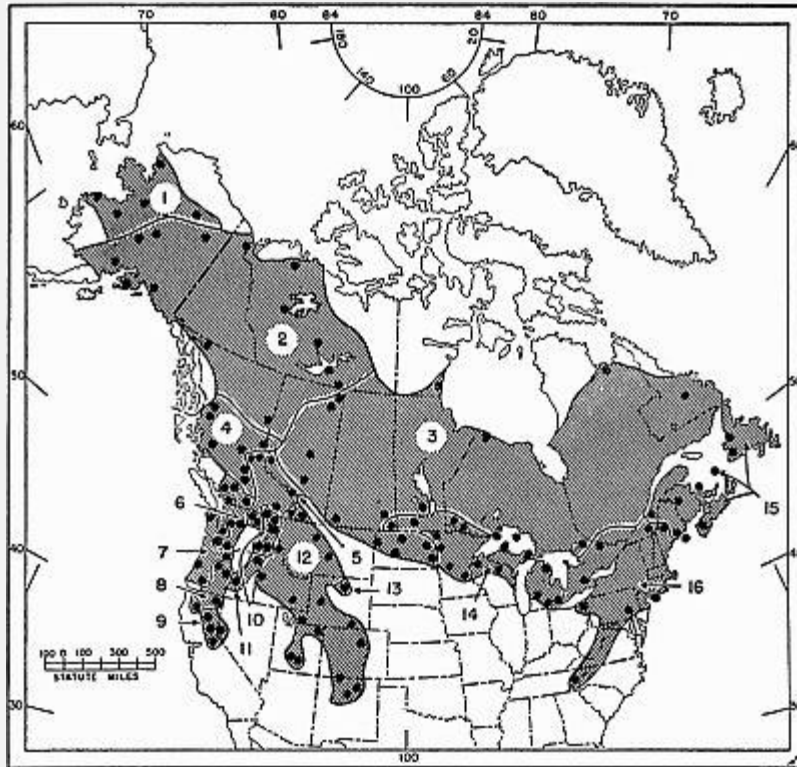


Fig. 44. Distribution of *Lepus americanus*.

Guide to subspecies:

1. *L. a. dalli*
2. *L. a. macfarlani*
3. *L. a. americanus*
4. *L. a. pallidus*
5. *L. a. columbiensis*
6. *L. a. cascadensis*
7. *L. a. washingtoni*
8. *L. a. klamathensis*
9. *L. a. tahoensis*
10. *L. a. pineus*
11. *L. a. oregonus*
12. *L. a. bairdii*
13. *L. a. seclusus*
14. *L. a. phaenotus*
15. *L. a. struthopus*
16. *L. a. virginianus*

Lepus americanus
American Varying Hare

Total length, 363-520; tail, 25-55; hind foot, 112-150; ear from notch (dry), 62-70. Upper parts brownish or dusky grayish; hind feet brownish or white depending on subspecies; winter pelage white except in certain populations along Pacific Coast; basilar length less than 67; first upper incisors inscribing an arc of a circle[Pg 174] the radius of which is less than 9.6 mm. There are two to six young in a litter according to Orr (1940:59).

LEPUS AMERICANUS AMERICANUS Erxleben.

1777. [*Lepus*] *americanus* Erxleben, Systema Regni Animalis ..., 1:330, type locality Hudson Bay, Canada.

1778. *Lepus hudsonius* Pallas, Glires, p. 30, type locality not stated.

1790. *Lepus nanus* Schreber, Säugethiere, 4:880-885, pl. 234B, a composite of *Lepus americanus* and *Sylvilagus floridanus*. No type or type locality designated. Range given as from Hudson Bay to Florida.

1899. *Lepus bishopi* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 12:11, March 4, type from Mill Lake, Turtle Mts., North Dakota (inseparable from *L. a. americanus* according to V. Bailey, N. Amer. Fauna, 49:138, January 8, 1927 [not December, 1926]).

Marginal records (Nelson, 1909:89, unless otherwise noted).—Keewatin: Hudson Bay (Anderson, 1947:100). Ontario: Fort Severn (Nelson, 1909:88); around shore of Hudson Bay to approximately 56° N thence to Ungava: Fort Chimo. Labrador: Hamilton Inlet. Ontario: North Bay of Lake Nipissing; Michipicoten Island; Isle Royal (Anderson, 1947:100). Manitoba: Dog Lake. Saskatchewan: Indian Head. North Dakota (V. Bailey, 1927:139): Mill Lake, Turtle Mts.; Grafton; "near" Fargo; Elbowoods; Buford. Saskatchewan: Battle Creek (Soper, 1946:149). Alberta: Red Deer; 50 mi. N Edmonton; Fort Chipewyan; Govt. Hay Camp, Slave River (Soper, 1942:140).

LEPUS AMERICANUS BAIRDII Hayden.

1869. *Lepus bairdii* Hayden, Amer. Nat., 3:115, May, type locality Columbia Valley, Wind River Mts., Fremont County, Wyoming.

1875. [*Lepus americanus*] var. *bairdii*, J. A. Allen, Proc. Boston Soc. Nat. Hist., 17:431, February 17.

Marginal records.—British Columbia: Elko (Anderson, 1947:100); Waterton Lakes Nat'l Park (*ibid.*). Montana (Nelson, 1909:112): Fort Benton; Big Snowy Mts. Wyoming: 5 mi. E and 9 mi. N Pinedale (15924 KU); 3 mi. ESE Browns Peak (17603 KU). Colorado: Boulder Co. (Nelson, 1909:112). New Mexico: 10,500 ft., Agua Fria

Mtn. (Hill, 1942:82); Pecos Baldy (V. Bailey, 1932:45); Chama (*ibid.*). Utah (Durrant, MS unless otherwise noted): 18 mi. SE Manila; 30 mi. N Fort Duchesne; 23 mi. N Fruitland; 21 mi. N Escalante; 10 mi. E Marysville; City Creek Canyon, Salt Lake City (Barnes, 1927:145). Idaho (Dalquest, 1942:181): Pocatello; Payette; Cuddy Mtn.; Weippe; Bitterroot Valley. *British Columbia: Newgate* (Anderson, 1947:100).

LEPUS AMERICANUS CASCADENSIS Nelson.

1907. *Lepus bairdi cascadenis* Nelson, Proc. Biol. Soc. Washington, 20:87, December 11, type from Roab's ranch, near Hope, British Columbia.

1935. *Lepus americanus cascadenis*, Racey and Cowan, Rep't Prov. Mus. British Columbia, 1935:H28.

Marginal records (Dalquest, 1942:177, unless otherwise noted).—British Columbia: type locality; Fairview-Keremeos Summit (Anderson, 1947:101). Washington: Lake Chelan; Trout Lake; Vance; Mt. Rainier; Entiat River, 20 mi. from mouth. British Columbia: Alta Lake.

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LEPUS AMERICANUS COLUMBIENSIS Rhoads.

1895. *Lepus americanus columbiensis* Rhoads, Proc. Acad. Nat. Sci. Philadelphia, p. 242, July 2, type from Vernon, British Columbia.

Marginal records.—Alberta: Banff Nat'l Park (Anderson, 1947:101); Jasper Nat'l Park (*ibid.*). British Columbia: Creston (Dalquest, 1942:182). Washington: Republic (Dalquest, 1948:385); Moulson (Dalquest, 1942:182). British Columbia: Cottonwood Post Office (Dalquest, 1942:182); Indianpoint Lake (*ibid.*).

LEPUS AMERICANUS DALLI Merriam.

1900. *Lepus americanus dalli* Merriam, Proc. Washington Acad. Sci., 2:29, March 14, type from Nulato, Alaska.

Marginal records.—Noatak River (Bailey and Hendee, 1926:21); Upper St. John River (Rausch, 1950:466); Koyukuk (Nelson, 1909:102); Anvik (*ibid.*); Yukon Delta (*ibid.*); thence northerly, in suitable habitat, along coast to Noatak River.

LEPUS AMERICANUS KLAMATHENSIS Merriam.

1899. *Lepus klamathensis* Merriam, N. Amer. Fauna, 16:100, October 28, type from head of Wood River, near Fort Klamath, Klamath County, Oregon.

1936. *Lepus americanus klamathensis*, V. Bailey, N. Amer. Fauna, 55:95, August 29.

Marginal records.—Oregon (Dalquest, 1942:176): Mt. Hood; mouth Davis Creek. California (Orr, 1940:53): vicinity Fort Bidwell; 3000 ft., Rush Creek, 12 mi. from [N of] Weaverville. *Oregon: Estacada* (Dalquest, 1942:176).

LEPUS AMERICANUS MACFARLANI Merriam.

1900. *Lepus americanus macfarlani* Merriam, Proc. Washington Acad. Sci., 2:30, March 14, type from Fort Anderson, near mouth of Anderson River, Mackenzie.

1900. *Lepus saliens* Osgood, N. Amer. Fauna, 19:39, October 6, type from Caribou Crossing, between Lake Bennett and Lake Tagish, Yukon.

1907. ? *Lepus niediecki* Matschie, Niedieck's Kreuzfahrten im Beringmeer, p. 240, type locality Kasilof Lake, Kenai Peninsula, Alaska.

Marginal records (Nelson, 1909:100, unless otherwise noted).—Mackenzie: type locality; Fort Franklin; Fort Rae; Fort Resolution; Fort Smith. British Columbia: Peace River and Alaska Highway (Anderson, 1947:101); Bennett. Alaska: Cordova (Philip, 1939:84); Mills Creek (*ibid.*); Lake Clark; E. Fork Kuskokwim River (Dice, 1921:27); head N. Fork Kuskokwim (*ibid.*); Fort Yukon. Yukon: Russell Mts.

LEPUS AMERICANUS OREGONUS Orr.

1934. *Lepus bairdii oregonus* Orr, Jour. Mamm., 15:152, May 15, type from 12 mi. S Canyon City, 5500 ft., Grant County, Oregon.

1942. *Lepus americanus oregonus*, Dalquest, Jour. Mamm., 23:179, June 3.

Marginal records.—Oregon (Dalquest, 1942:180): 22 mi. N Enterprise; *Wallowa Lake*; *summit of Blue Mts.*; Ochoco Nat'l Forest, Harney County.

1938. *Lepus americanus pallidus* Cowan, Jour. Mamm., 19:242, May 12, type from Chezacut Lake, Chiloctin River, British Columbia.

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LEPUS AMERICANUS PALLIDUS Cowan.

Marginal records.—British Columbia: 23 mi. N Hazelton (Dalquest, 1942:183); Berg Lake (*ibid.*); Quesnel (Cowan, 1938:243); Lac La Hache (*ibid.*); Bonaparte River, 5 days N Ashcroft (Dalquest, 1942:183); Kimsquit, Dean Channel (Anderson, 1947:102); Hazelton (Dalquest, 1942:183).

LEPUS AMERICANUS PHAEONOTUS J. A. Allen.

1899. *Lepus americanus phaeonotus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 12:11, March 4, type from Hallock, Kittson County, Minnesota.

Marginal records (Nelson, 1909:96, unless otherwise noted).—Manitoba: Selkirk Settlement. Ontario: Lake of the Woods (Anderson, 1947:102); Rainy Lake. Michigan: Houghton; Chippewa County (Burt, 1946:244); Presque Isle County (*ibid.*); Wayne County (*ibid.*); Jackson County (*ibid.*); Allegan County (*ibid.*). Wisconsin: Rhinelander; St. Croix River, Douglas Co. Minnesota: Elk River; Moores Lake; Warren; St. Vincent. Saskatchewan: Glen Ewen (Soper, 1946:149). Manitoba: Carberry (Anderson, 1947:102).

LEPUS AMERICANUS PINEUS Dalquest.

1942. *Lepus americanus pineus* Dalquest, Jour. Mamm., 23:178, June 3, type from Cedar Mtn., Latah County, Idaho.

Marginal records.—British Columbia (Anderson, 1947:102): Trail; Nelson Range south of Creston. Idaho (Dalquest, 1942:179): 5 mi. W Cocolalla; Troy. Washington (Dalquest, 1942:179): Blue Mts., Columbia County; *Marcus. British Columbia: Rossland* (Anderson, 1947:102).

LEPUS AMERICANUS SECLUSUS Baker and Hankins.

1950. *Lepus americanus seclusus* Baker and Hankins, Proc. Biol. Soc. Washington, 63:63, May 25, type from 12 mi. E and 2 mi. N Shell, 7900 ft., Bighorn Mts., Big Horn County, Wyoming. Type locality is only precise locality.

LEPUS AMERICANUS STRUTHOPUS Bangs.

1898. *Lepus americanus struthopus* Bangs, Proc. Biol. Soc. Washington, 12:81, March 24, type from Digby, Nova Scotia.

Marginal records (Nelson, 1909:92, unless otherwise noted).—Newfoundland (introduced in 1864): Bay of Islands; Bay of St. George. Nova Scotia: type locality. Maine: Bucksport. Quebec: south of St. Lawrence River (Anderson, 1947:102). New Brunswick: Andover. Prince Edward Island: Alberton. Quebec: Grosse Isle, Magdalen Islands.

LEPUS AMERICANUS TAHOENSIS Orr.

1933. *Lepus washingtonii tahoensis* Orr, Jour. Mamm., 14:54, February 14, type from 1/2 mi. S Tahoe Tavern, Placer County, California.

1942. [*Lepus americanus*] *tahoensis*, Dalquest, Jour. Mamm., 23:176, June 3.

Marginal records.—California: vic. Mineral (Orr, 1940:56). Nevada: 350 yards NE junction of Nevada state line and N shore Lake Tahoe (Hall, 1946:601). California: Niagara Creek (Orr, 1940:55); Cisco (Orr, 1940:56).

LEPUS AMERICANUS VIRGINIANUS Harlan.

1825. *Lepus virginianus* Harlan, Fauna Americana, p. 196, type locality Blue Mountains, northeast of Harrisburg, Pennsylvania.
1875. *Lepus americanus* var. *virginianus*, J. A. Allen, Proc. Boston Soc. Nat. Hist., 17:431, February 17.
1825. *Lepus wardii* Schinz, Das Thierreich ..., 4:428, based on the varying hare of the southern part of the United States (Warden, D. B., in A statistical, political, and historical account of the United States of North America ..., 1:233, 1819).
1845. *Lepus borealis* Schinz, Synopsis Mammalium, 2:286-287. No type or type locality mentioned. From Virginia and the Alleghenies.

Marginal records (Nelson, 1909:94, unless otherwise noted).—Quebec (Anderson, 1947:103): Ottawa River; Megantic County. Maine: *Greenville* (Nelson, 1909:95); Sebec Lake (*ibid.*); Mt. Desert Island (Manville, 1942:397). *Massachusetts: Concord; Middleboro. Rhode Island: Washington County.* New York: Locust Grove. Pennsylvania: type locality. Tennessee: White Rock (Kellogg, 1939:289). Ohio: Ashtabula Co. (Bole and Moulthrop, 1942:174). Ontario: Holland Riv. (Snyder and Logier, 1930:180).

LEPUS AMERICANUS WASHINGTONII Baird.

1855. *Lepus washingtonii* Baird, Proc. Acad. Nat. Sci. Philadelphia, 7:333, type from Steilacoom, Washington.
1875. *Lepus americanus* var. *washingtoni*, J. A. Allen, Proc. Boston Soc. Nat. Hist., 18:431, February 17.

Marginal records (Dalquest, 1942:175, unless otherwise noted).—British Columbia (Nelson, 1909:107): Sumas; Chilliwack. Washington: *Mt. Vernon*; Lake Kapowsin; White Salmon. Oregon: Drew; Florence; *Tillamook*. Washington: Sekiu River.

Lepus othus

Alaskan Hare

Total length, 565-690; tail, 53-104; hind foot, 147-189; ear from notch (dry), 75-78. Color brownish in summer; white in winter; but tips of ears always black. General comparisons indicate that this is the species which, in Eurasia, bears the name *Lepus timidus*.

LEPUS OTHUS OTHUS Merriam.

1900. *Lepus othus* Merriam, Proc. Washington Acad. Sci., 2:28, March 14, type from St. Michael, Norton Sound, Alaska.

Marginal records.—Alaska (A. H. Howell, 1936:334): Kotzebue Sound; mts. NW Nulato River; Akiak; 75 mi. below Bethel; thence N along coast.

LEPUS OTHUS POADROMUS Merriam.

1900. *Lepus poadromus* Merriam, Proc. Washington Acad. Sci., 2:29, March 14, type from Stepovak Bay, Alaska Peninsula, Alaska.

1936. *Lepus othus poadromus*, A. H. Howell, Jour. Mamm., 17:334, November 16.

Marginal records.—Alaska (A. H. Howell, 1936:335): Nushagak; Kawatna Bay, Shelikof Strait; *Cold Bay*; *Chignik*; *type locality*; *Sand Point*; 15 mi. W Pavlof Mtn.

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Lepus arcticus

Arctic Hare

Revised by A. H. Howell, Jour. Mamm., 17:315-332, November 16, 1936. For the taxonomic status of the technical names *arcticus* and *glacialis* see Rhoads, Amer. Nat., 30:234-235, March, 1896; Merriam, Science, n. s., 3:564-565, April 10, 1896; Rhoads, Science, n. s., 3:843-845, June 5, 1896; Merriam, Science, n. s., 3:845, June 5, 1896.

Total length, 480-678; tail, 34-80; hind foot, 132-174; ear from notch (dry), 70-84. Upper parts gray in summer in southern subspecies; in others white; in winter white in all subspecies, except black tips of ears. Weights of lean individuals reach 12 pounds. Hopping on the hind feet without touching the forefeet to the ground has repeatedly been recorded for this species. There are four to eight young in a litter.

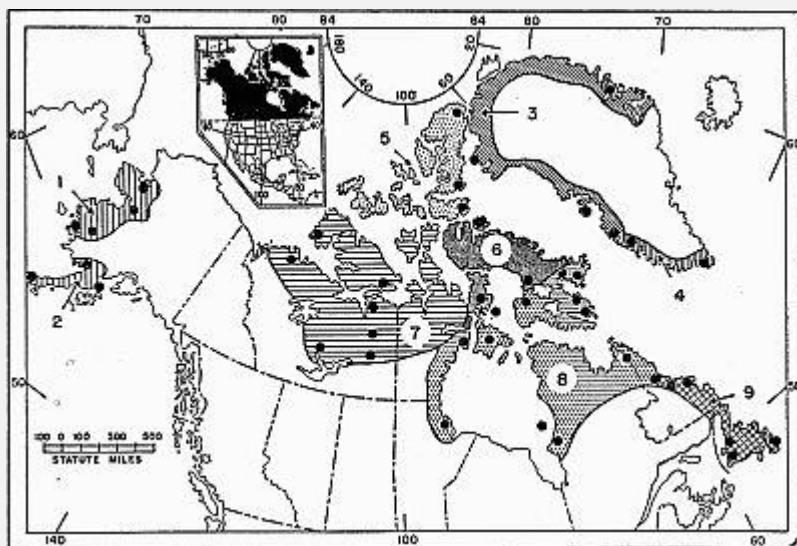


Fig. 45. Distribution of *Lepus othus* and *Lepus arcticus*.

1. *L. o. othus*
2. *L. o. poadromus*
3. *L. a. groenlandicus*
4. *L. a. porsildi*
5. *L. a. monstrabilis*
6. *L. a. arcticus*
7. *L. a. andersoni*
8. *L. a. labradorius*
9. *L. a. bangsi*

LEPUS ARCTICUS ARCTICUS Ross.

1819. *Lepus arcticus* Ross, Voyage of Discovery, ed. 2, vol. 2, appendix 4, p. 151, type locality Possession Bay, Bylot Island, lat. 73° 37' N.

1819. *Lepus glacialis* Leach, in Ross, Voyage of Discovery, ed. 2, vol. 2, p. 170, type locality same as for *Lepus arcticus* Ross.

Marginal records.—Franklin: type locality; Egukjuak, 8 mi. E Pond Inlet, Baffin Island (A. H. Howell, 1936:322); W coast Baffin Island, 67° 30' (Anderson, 1947:96); Winter Island, Melville Peninsula (A. H. Howell, 1936:321); Repulse Bay, Melville Peninsula (*ibid.*)

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LEPUS ARCTICUS ANDERSONI Nelson.

1934. *Lepus arcticus andersoni* Nelson, Proc. Biol. Soc. Washington, 47:85, March 8, type from Cape Barrow, Coronation Gulf, Northwest Territory.

Marginal records (A. H. Howell, 1936:328).—Franklin: Cape Kellett, Banks Island; Cambridge Bay, Victoria Island. Mackenzie: Bathurst Inlet; Backs River near Lake Beechey; Lake Hanbury; Fort Rae; Fort Anderson.

LEPUS ARCTICUS BANGSII Rhoads.

1896. *Lepus arcticus bangsii* Rhoads, Amer. Nat., 30:253[=236 of March issue], author's separates (preprints) published February 20, 1896, type from Codroy, Newfoundland.

Marginal records (A. H. Howell, 1936:327).—Labrador: Hopedale; Makkovik. Newfoundland: Saint Johns; type locality; Mt. St. Gregory.

LEPUS ARCTICUS GROENLANDICUS Rhoads.

1896. *Lepus groenlandicus* Rhoads, Amer. Nat., 30:254(=237 of March issue), author's separates (preprints) issued February 20, type from Robertson Bay, NW Greenland.

1934. [*Lepus arcticus*] *groenlandicus*, Nelson, Proc. Biol. Soc. Washington, 47:83, March 8.

1912. *Boreolepus groenlandicus*, Barrett-Hamilton, Hist. British Mammals, pt. 12, p. 298, October.

1930. *Lepus variabilis hyperboreus* Pedersen, Medd. om Grönland, 77:363, no type or type locality designated but name applied to hares of east Greenland in the general vicinity of Scoresby Sound (preoccupied by *Lepus hyperboreas* Pallas, Zoogeographica Rosso Asiatica, 1:152, 1831, a species of *Ochotona*).

1934. *Lepus arcticus persimilis* Nelson, Proc. Biol. Soc. Washington, 47:84, March 8, type from S side Clavering Island, east Greenland.

Marginal records.—Greenland (A. H. Howell, 1936:331): Cape Alexander; on east coast to Francis Joseph Fiord; on west coast to *Nugsuak Peninsula*; Disko Island; Holsteinsborg.

LEPUS ARCTICUS LABRADORIUS Miller.

1899. *Lepus labradorius* Miller, Proc. Biol. Soc. Washington, 13:39, May 29, type from Fort Chimo, Ungava, Canada.

1924. *Lepus arcticus labradorius*, G. M. Allen and Copeland, Jour. Mamm., 5:12, February 9.

1902. *Lepus arcticus canus* Preble, N. Amer. Fauna, 22:59, October 31, type from Hubbard Point, W coast Hudson Bay, Keewatin.

Marginal records (A. H. Howell, 1936:323).—Franklin: Pangnirtung Fiord; Nunata, Kingua Fiord; Cumberland Sound, Blacklead Island; Weddell Harbor, Frobisher Bay. Labrador: Ramah; Solomons Island, near Davis Inlet. Quebec: *type locality*; Great Whale River, Hudson Bay; Belcher Islands. Manitoba: Fort Churchill; *Hubbart Point*. Keewatin: Cape Fullerton; Southampton Island. Franklin: *Cape Dorset*; Camp Kungovik, W coast Baffin Island, 65° 35' N lat.; *Nettilling Fiord*.

LEPUS ARCTICUS MONSTRABILIS Nelson.

1934. *Lepus arcticus monstrabilis* Nelson, Proc. Biol. Soc. Washington, 47:85, March 8, type from Buchanan Bay, Ellesmere Island.

Marginal records.—Franklin (A. H. Howell, 1936:329): Cape Sheridan; Craig Harbor; Dundas Harbor, Devon Island.

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LEPUS ARCTICUS PORSILDI Nelson.

1934. *Lepus arcticus porsildi* Nelson, Proc. Biol. Soc. Washington, 47:83, March 8, type from near Julianehaab, 61° 20' N lat., Greenland.

Marginal records.—Greenland (A. H. Howell, 1936:332): Sukkertoppen; *Neria*, 61° 36' N lat.; 60° 42' N lat.

Lepus townsendii
White-tailed Jack Rabbit

Total length, 565-655; tail, 66-112; hind foot, 145-172; ear from notch (dry), 96-113. Upper parts grayish brown; tail all white or with dusky or buffy mid-dorsal stripe which does not extend onto back; white in winter in northern parts of its range. Two adult males weighed 2945 and 2494 grams (Orr, 1940:43) and there are 3 to 6 young in a litter.

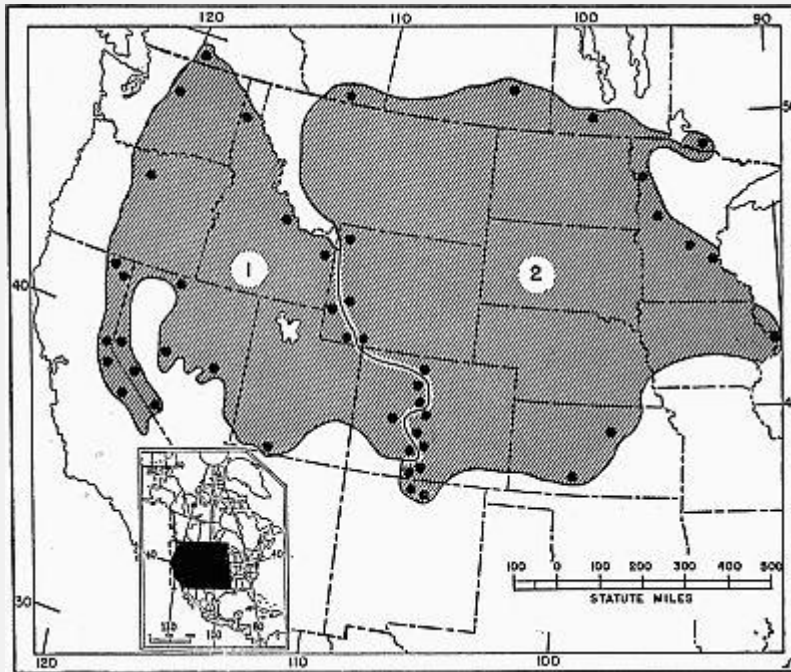


Fig. 46. Distribution of *Lepus townsendii*.

1. *Lepus townsendii townsendii*
2. *Lepus townsendii campanius*

LEPUS TOWNSENDII CAMPANIUS Hollister.

1837. *Lepus campestris* Bachman, Jour. Acad. Nat. Sci. Philadelphia, 7:349, not of Meyer, 1790; type locality plains of the Saskatchewan, probably near Carlton House.

1915. *Lepus townsendii campanius* Hollister, Proc. Biol. Soc. Washington, 28:70, March 12.

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Marginal records (Nelson, 1909:78, unless otherwise noted).—Saskatchewan: Indian Head (Nelson, 1909:77). Manitoba: Carberry (*ibid.*). Ontario: Rainy River (Anderson, 1947:100). Minnesota (Swanson, Surber and Roberts, 1945:97): Polk County; Otter Tail County; Sherburne County; Washington County. Illinois: Blanding, 6 mi. WNW Hanover (Hoffmeister, 1948:1). Kansas: Red Fork, 60 mi. W Fort Riley; Greensburg (Brown, 1940:387). New Mexico: "near" Taos (V. Bailey, 1932:47); Hopewell. Colorado: Antonito; Fort Garland; Villa Grove; Salida; Como; *Denver*; Mt. Whitely, 25 mi. N Kremmling. Wyoming: Spring Creek; Big Piney; head Glenn Creek, Yellowstone Nat'l Park. Alberta: Great Plains region (Anderson, 1947:99).

LEPUS TOWNSENDII TOWNSENDII Bachman.

1839. *Lepus townsendii* Bachman, Jour. Acad. Nat. Sci. Philadelphia, 8(pt. 1):90, pl. 2, type from Fort Walla Walla, near present town of Wallula, Walla Walla County, Washington.
1904. *Lepus campestris sierrae* Merriam, Proc. Biol. Soc. Washington, 17:132, July 14, type from 7800 ft., Hope Valley, Alpine County, California. Regarded as inseparable from *L. t. townsendii* by Orr, Occas. Papers, California Acad. Sci., 19:42, May 25, 1940.

Marginal records (Nelson, 1909:82, unless otherwise noted).—British Columbia: Fairview, Okanagan Valley. Idaho: Rathdrum Prairie (Rust, 1946:322); Lemhi River; Teton Basin. Wyoming: Hamsfork; Henrys Fork. Colorado: Hot Sulphur Springs; Mt. Baldy; Crested Butte; Mill City. Utah: Kanab. Nevada (Hall, 1946:600): Hamilton; Desatoya Mts.; Santa Rosa Mts. California: Parker Creek, 6300 ft., Warner Mts. Nevada (Hall, 1946:600): 8600 ft., 3 mi. S Mt. Rose; 8900 ft., Lapon Canyon, Mt. Grant; Mt. Magruder. California (Orr, 1940:43): Tuolumne Meadows; Woodfords; Tahoe City; 4700 ft., Steele Meadows. Oregon: Antelope. Washington: Manson (Dalquest, 1948:382).

Lepus californicus
Black-tailed Jack Rabbit

Total length, 465-630; tail, 50-112; hind foot, 112-145; ear from notch (dry), 99-131. Upper parts gray to blackish; tail with black mid-dorsal stripe extending onto back; never all white in winter. On the tableland of Mexico and in the southwestern United States where this species occurs together with the white-sided jack rabbits, *L. californicus* can be recognized by the terminal black patch on the outside of each ear and by the less extensive area of white on the flank. To the eastward, in Tamaulipas, where only the black-tailed jack rabbit occurs, it too, has extensively white flanks and some individuals lack the terminal black patch on the ear.

A certain means for distinguishing the skulls of the black-tailed jack rabbit from those of all of the white-sided jack rabbits has not yet been found. The same is true of the skulls of the white-tailed jack rabbit and the black-tailed jack rabbit in the Great Basin region of Nevada. The skulls, at least of adults, of these two species, in the [Pg 182] region east of the Rocky Mountains can be readily distinguished by the pattern of infolding of the enamel on the front of the first upper incisor teeth; *L. townsendii* has a simple groove on the anterior face of the tooth and *L. californicus*, east of the Rocky Mountains, has a bifurcation, or even trifurcation, of the infold that can readily be seen by examining the occlusal surface of the incisor.

In Arizona, Vorhies and Taylor (1933:478) found the weight of 23 adult males to average 5.1 (4.4-6.1) lbs. In that state, 70 pregnant females averaged 2.24 (1-6) young

per litter and the authors (*op. cit.*) thought that a female had three or four litters each year.

LEPUS CALIFORNICUS ALTAMIRAE Nelson.

1904. *Lepus merriami altamirae* Nelson, Proc. Biol. Soc. Washington, 17:109, May 18, type from Alta Mira, Tamaulipas. Known from type locality only.

1951. *Lepus californicus altamirae*, Hall, Univ. Kansas Publ., Mus. Nat. Hist., 5:45, October 1, 1951.

LEPUS CALIFORNICUS ASELLUS Miller.

1899. *Lepus asellus* Miller, Proc. Acad. Nat. Sci., Philadelphia, p. 380, September 29, type from San Luis Potosí, San Luis Potosí.

1909. *Lepus californicus asellus*, Nelson, N. Amer. Fauna, 29:150, August 31.

Marginal records (Nelson, 1909:151).—Coahuila: Jaral. Nuevo Leon: Miquihuana. San Luis Potosí: Río Verde. Aguascalientes: Chicalote. Zacatecas: Valparaiso.

LEPUS CALIFORNICUS BENNETTII Gray.

1844. *Lepus bennettii* Gray, Zoology Voy. *Sulphur*, p. 35, pl. 14, type from San Diego, San Diego County, California.

1909. *Lepus californicus bennetti*, Nelson, N. Amer. Fauna, 29:136, August 31.

Marginal records.—California: Mt. Piños (Orr, 1940:73); Arroyo Seco, Pasadena (Orr, 1940:74); San Felipe Valley (*ibid.*); Jacumba (Nelson, 1909:137), Baja California: San Quintín (Nelson, 1909:137). Northward along coast at least to California: Montalvo (Orr, 1940:73).

LEPUS CALIFORNICUS CALIFORNICUS Gray.

1837. *Lepus californica* Gray, Charlesworth's Mag. Nat. Hist., 1:586, type from "St. Antoine," California (probably on coastal slope of mts. near the Mission of San Antonio, Jolon, Monterey County).

1926. *Lepus californicus vigilax* Dice, Occas. Papers Mus. Zool., Univ. Michigan, 166:11, February 11, type from Balls Ferry, Shasta County, California.

Marginal records.—Oregon (Nelson, 1909:132): Drain; Grants Pass. California (Orr, 1940:68-69): Callahan, Scott River; 3300 ft, Lyman, NW of Lyonsville; Dry Creek, Oroville-Chico Road; Snelling; Hernandez; Morro; Carmel Point; Bolinas Bay; Freestone; Sherwood; Ferndale; 3 mi. W Arcata. Oregon: Rogue River Valley (Nelson, 1909:132).

Lepus californicus curti Hall.

1951. *Lepus californicus curti* Hall, Univ. Kansas Publ., Mus. Nat. Hist., 5:42, October 1, 1951, type from 88 mi. S and 10 mi. W Matamoros, Tamaulipas. Known from type locality only.

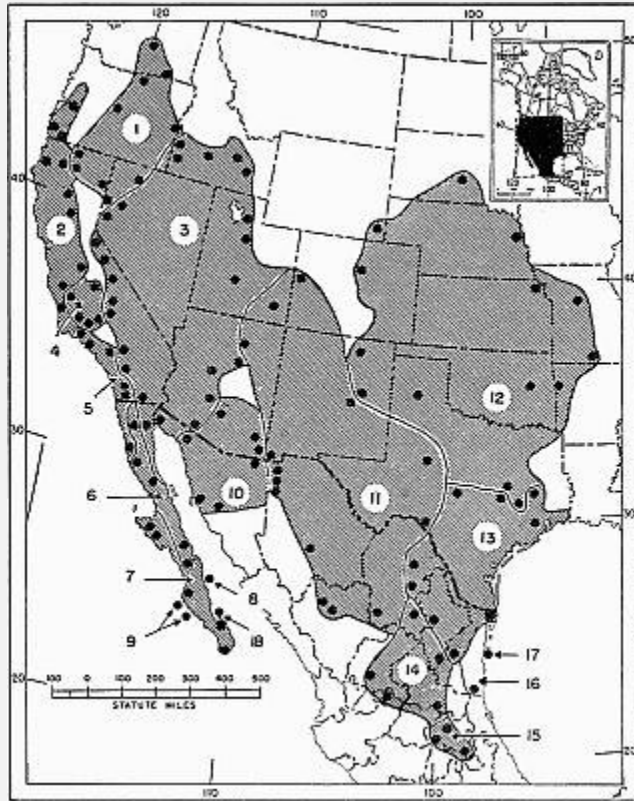


Fig. 47. Distribution of *Lepus californicus* and *Lepus insularis*.

1. *L. c. wallawalla*
2. *L. c. californicus*
3. *L. c. deserticola*
4. *L. c. richardsonii*
5. *L. c. bennettii*
6. *L. c. martirensis*
7. *L. c. xanti*
8. *L. c. sheldoni*
9. *L. c. magdalenae*
10. *L. c. eremicus*
11. *L. c. texianus*

- 12. *L. c. melanotis*
- 13. *L. c. merriami*
- 14. *L. c. asellus*
- 15. *L. c. festinus*
- 16. *L. c. altamirae*
- 17. *L. c. curti*
- 18. *L. insularis*

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LEPUS CALIFORNICUS DESERTICOLA Mearns.

- 1896. *Lepus texianus deserticola* Mearns, Proc. U. S. Nat. Mus., 18:564, June 24, type from western edge Colorado Desert, at base of Coast Range Mts., Imperial County, California.
- 1909. *Lepus californicus deserticola*, Nelson, N. Amer. Fauna, 29:137, August 31.
- 1932. *Lepus californicus depressus* Hall and Whitlow, Proc. Biol. Soc. Washington, 45:71, April 2, type from 1/2 mi. S. Pocatello, Bannock County, Idaho. (Regarded as inseparable from *L. c. deserticola* by Davis, The Recent Mammals of Idaho, p. 359, April 5, 1939.)

Marginal records (Nelson, 1909:140, unless otherwise noted).—Idaho (Davis, 1939:360): Boise River; Sawtooth Nat'l Forest; Arco; Blackfoot. Utah: Ogden; Provo; Loa. Arizona: San Francisco Mtn.; Fort Whipple; Phoenix; Rancho Bonito, Abra Valley (Huey, 1942:362). Sonora: El Doctor. Baja California: Calamahue; Esperanza Canyon. California (Orr, 1940-76): Coyote Wells; Kenworthy; Victorville; Farrington Ranch; 5 mi. SW Lone Pine; 10,000 ft., head Silver Canyon; Mono Mills; 5600 ft., near Woodfords. Nevada (Hall, 1946:606): Sutcliffe; 3/4 mi. S Sulphur. Idaho: 6 mi. S Murphy (Davis, 1939:360).

LEPUS CALIFORNICUS EREMICUS J. A. Allen.

- 1894. *Lepus texianus eremicus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 6:347, December 7, type from Fairbank, Cochise County, Arizona.
- 1909. *Lepus californicus eremicus*, Nelson, N. Amer. Fauna, 29:140, August 31.

Marginal records (Nelson, 1909:141, unless otherwise noted).—Arizona: Casa Grande; Fort Bowie; 2 mi. E Portal (Cahalane, 1939:435). Chihuahua: San Bernardino Ranch (possibly Nelson should have placed this in Sonora); Colonia Garcia. Sonora: Hermosillo; La Libertad (Burt, 1938:68); Agua Dulce (of Sonora, not of Arizona).

LEPUS CALIFORNICUS FESTINUS Nelson.

1904. *Lepus festinus* Nelson, Proc. Biol. Soc. Washington, 17:108, May 18, type from Irolo, Hidalgo.

1909. *Lepus californicus festinus* Nelson, N. Amer. Fauna, 29:151, August 31.

Marginal records (Nelson, 1909:152).—Hidalgo: Zimapan; *Tulancingo*; type locality; Queretaro: Tequisquiapam.

LEPUS CALIFORNICUS MAGDALENAE Nelson.

1907. *Lepus californicus magdalenae* Nelson, Proc. Biol. Soc. Washington, 20:81, July 22, type from Magdalena Island, Baja California.

Marginal records.—Baja California (Nelson, 1909:155): type locality; Margarita Island.

LEPUS CALIFORNICUS MARTIRENSIS Stowell.

1895. *Lepus martirensis* Stowell, Proc. California Acad. Sci., 5(ser. 2):51, May 28, type specimen from the San Pedro Mártir Mountains of Baja California.

Marginal records.—Baja California (Nelson, 1909:154): La Huerta; Calamahue; San Bruno; Rancho San José; San Simon.

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LEPUS CALIFORNICUS MELANOTIS Mearns.

1890. *Lepus melanotis* Mearns, Bull. Amer. Mus. Nat. Hist., 2:297, February 21, type from Independence, Montgomery County, Kansas.

1909. *Lepus californicus melanotis*, Nelson, N. Amer. Fauna, 29:146, August 31.

Marginal records.—South Dakota: Lyman Co. (Over and Churchill, 1945:48). Nebraska: Oakland (12399 KU). Kansas: near Doniphan Lake (Linsdale, 1928:146). Missouri: Saline Co. (Enders, 1932:120); 5 mi. E Rockbridge (Leopold and Hall, 1945:145). Arkansas: "about" 2 mi. S Evansville (Dellinger and Black, 1940:190). Oklahoma: 3 mi. E Wainwright (Blair, 1939:128). Texas: Brazos County (Petersen, 1946:166); Golinda (Nelson, 1909:148); Washburn (*ibid.*). New Mexico: Santa Rosa (*ibid.*); vicinity of Cimarron (Hill, 1942:82). Colorado: Semper (Nelson, 1909:148). Wyoming: 3 mi. W Meriden along Horse Cr. (15926 KU).

LEPUS CALIFORNICUS MERRIAMII Mearns.

1896. *Lepus merriami* Mearns, Preliminary diagnoses of new mammals from the Mexican border of the United States, p. 2, March 25, (Reprint: Proc. U. S. Nat. Mus., 18:444, May 23, 1896) type from Fort Clark, Kinney County, Texas.

Marginal records (Nelson, 1909:150, unless otherwise noted).—Texas: Mason; Lott; Antioch; Houston. Tamaulipas: Matamoros; Tamaulipeca, San Carlos Mts. (Dice, 1937:255). Nuevo Leon: Santa Catarina. Coahuila: Monclova; Sabinas.

LEPUS CALIFORNICUS RICHARDSONII Bachman.

1839. *Lepus richardsonii* Bachman, Jour. Acad. Nat. Sci. Philadelphia, 8(pt. 1):88, type from California (exact locality unknown, but probably on interior slope of mts. near Jolon, Monterey County).

1909. *Lepus californicus richardsoni*, Nelson, N. Amer. Fauna, 29:133, August 31.

1904. *Lepus tularensis* Merriam, Proc. Biol. Soc. Washington, 17:136, July 14, type from Alila, Tulare County, California.

Marginal records.—California (Orr, 1940:71): Minkler; Thompson Valley, Walker Basin; Kern Lake Basin; Carrizo Plains, 7 mi. SE Simmler; 2 mi. E Bryson; Jolon.

LEPUS CALIFORNICUS SHELDONI Burt.

1933. *Lepus californicus sheldoni* Burt, Proc. Biol. Soc. Washington, 46:37, February 20, type from Carmen Island [(lat. 26° N, long. 111° 12' W) Gulf of Calif.], Baja California. Known from type locality only.

LEPUS CALIFORNICUS TEXIANUS Waterhouse.

1848. *Lepus texianus* Waterhouse, Nat. Hist. Mamm., 2:136, type locality unknown, but probably in western Texas.

1909. *Lepus californicus texianus*, Nelson, N. Amer. Fauna, 29:142, August 31.

1896. *Lepus texianus griseus* Mearns, Proc. U. S. Nat. Mus., 18:562, June 24, type from Fort Hancock, El Paso County, Texas.

1903. *Lepus (Macrotolagus) texianus micropus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 19:605, November 12, type from Río del Bocas, NW Durango.

Marginal records (Nelson, 1909:146, unless otherwise noted).—Colorado: between Grand Junction and the Utah boundary (Cary, 1911:158). New[Pg 186] Mexico: Roswell (Nelson, 1909:145). Texas (Nelson, 1909:145). Colorado: Comstock. Coahuila: 8 mi. SE San Pedro de los Colonias, 3700 ft. (40206 KU). Durango: Río Sestín; Río del Bocas. Chihuahua: Santa Rosalia; Pacheco; San Luis Mts. New Mexico (Nelson, 1909:145): Guadalupe Ranch. Arizona: Painted Desert. Utah: Abajo (Blue Mts.) (Barnes, 1927:149).

LEPUS CALIFORNICUS WALLAWALLA Merriam.

1904. *Lepus texianus wallawalla* Merriam, Proc. Biol. Soc. Washington, 17:137, July 14, type from Touchet, Plains of the Columbia, Walla Walla County, Washington.

1909. *Lepus californicus wallawalla*, Nelson, N. Amer. Fauna, 29:132, August 31.

Marginal records.—Washington: Moses Coulee (Dalquest, 1948:386); Touchet (Nelson, 1909:133). Oregon: Ontario (Nelson, 1909:133). Nevada (Hall, 1946:606): 4100 ft., Quinn River Crossing; 4200 ft., 4-1/2 mi. W Flanigan. California (Orr, 1940:79): 5000 ft., 7 mi. E Ravendale; 3600 ft., 1 mi. SE Weed; Hornbrook. Oregon (Nelson, 1909:133): Hay Creek; Willow Junction.

LEPUS CALIFORNICUS XANTI Thomas.

1898. *Lepus californicus xanti* Thomas, Ann. and Mag. Nat. Hist., 1(ser. 7):45, January, type from Santa Anita, Baja California.

Marginal records.—Baja California (Nelson, 1909:156): Southern part of the Peninsula. Santa Clara Mts., southward around range of *L. c. martirensis* to and down east coast; La Paz; Cape St. Lucas; San Jorgé; 20 mi. W San Ignacio.

Lepus insularis Bryant

Black Jack Rabbit

1891. *Lepus insularis* Bryant, Proc. California Acad. Sci., 3(ser. 2):92, April 23, type from Espiritu Santo Island, Gulf of California, Baja California. Known from Espiritu Santo Island only.

1895. *Lepus edwardsi* St. Loup, Bull. Mus. Hist. Nat., Paris, 1:5, type from Espiritu Santo Island, Gulf of California, Baja California.

Total length, 574; tail, 96; hind foot, 121; ear from notch (dry), 105. This insular species, clearly a close relative of *Lepus californicus* of the adjacent peninsula of Baja California, is mainly glossy black on the upper parts but grizzled and suffused on sides of back and body, and in some specimens on head, with dark buffy or reddish brown; underparts dark cinnamon buffy or dusky brown; ears and sides of head grayish dusky; jugals heavier than in *Lepus californicus* of the adjacent peninsula of Baja California.

Lepus callotis Wagler

White-sided Jack Rabbit

1830. *Lepus callotis* Wagler, Nat. Syst. der Amphibien, p. 23, type from southern end of Mexican Tableland.

1830. *Lepus mexicanus* Lichtenstein, Abhandl. k. Akad. Wiss., Berlin., p. 101, type from México (southern end of Mexican Tableland).[Pg 187]

1833. *Lepus nigracaudatus* Bennett, Proc. Zool. Soc. London, p. 41, type from "that part of California which adjoins to Mexico" (probably southwestern part of Mexican Tableland).

Marginal records (Nelson, 1909:124).—Durango: Durango (city of). San Luis Potosí: Arenal. Hidalgo: Tulancingo. Oaxaca: Oaxaca (city of); Tlapancingo. Jalisco: Atenquiqui; Reyes.

Total length, 560; tail, 71; length of hind foot, 133; ear from notch (dry), 117. Upper parts dark, slightly pinkish, buff heavily washed with black; backs of ears mainly white without terminal patch of black; flanks white; rump iron gray.

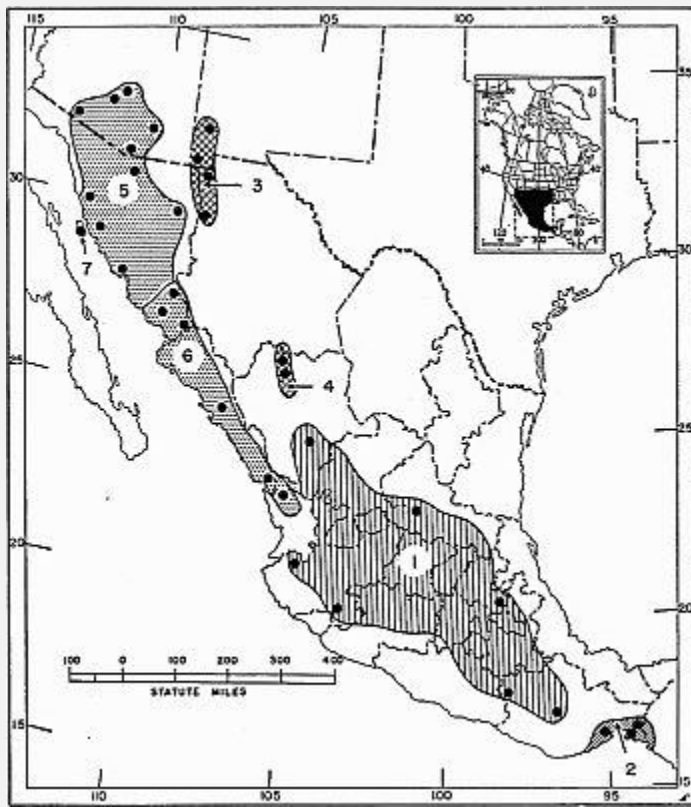


Fig. 48. Distribution of the White-sided Jack Rabbits.

Guide to kinds:

1. *Lepus callotis*
2. *Lepus flavigularis*
3. *Lepus gaillardi gaillardi*
4. *Lepus gaillardi battyi*
5. *Lepus alleni alleni*
6. *Lepus alleni palitans*

7. *Lepus alleni tiburonensis*

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Lepus flavigularis **Wagner**
Tehuantepec Jack Rabbit

1844. *Lepus callotis* var [gamma] *flavigularis* Wagner, Schreber's Säugthiere, Suppl., 4:106, type from México (probably near Tehuantepec City, Oaxaca).

1909. *Lepus flavigularis*, Nelson, N. Amer. Fauna, 29:125, August 31.

Marginal records.—Oaxaca (Nelson, 1909:126): Santa Efigenia; San Mateo del Mar; Huilotepec.

Total length, 595; tail, 77; hind foot, 133; ear from notch (dry), 112. Upper parts bright ochraceous buff strongly washed with black; ears entirely buff; nape with black stripe extending back from base of each ear and median stripe of buff; flanks and underparts of body white; rump iron gray; tympanic bullae smaller than in any other *Lepus* of México.

Lepus gaillardi
Gaillard Jack Rabbit

Total length, 450-536; tail, 59-80; hind foot, 124-133; ear from notch (dry), 110-112. Coloration essentially as in *Lepus callotis* except that nape is plain buff, without a trace of black, and upper parts paler, more vinaceous buff.

LEPUS GAILLARDI BATTYI J. A. Allen.

1903. *Lepus (Microtolagus [sic]) gaillardi battyi* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 19:607, November 12, type from Rancho Santuario, northwestern Durango.

Marginal records.—Durango (Nelson, 1909:122): Río Campo; type locality.

LEPUS GAILLARDI GAILLARDI Mearns.

1896. *Lepus gaillardi* Mearns, Proc. U. S. Nat. Mus., 18:560, June 24, type from West Fork of Playas Valley, near monument No. 63, Mexican boundary line, Grant County, New Mexico.

Marginal records.—New Mexico: Animas Valley (V. Bailey, 1932:53). Chihuahua (Nelson, 1909:121): Whitewater; Colonia Juarez. New Mexico; type locality.

Lepus alleni
Antelope Jack Rabbit

Total length, 553-670; tail, 48-76; hind foot, 127-150, ear from notch, in flesh, 138-173. Top and sides of head creamy buff, slightly washed on top with black; tail white except for mid-dorsal line of black extending onto rump; sides of shoulders, flanks, sides of abdomen, rump, and outside of hind legs uniform iron gray. The average weight of 61 adult males from Arizona was 8.2 lbs. In that state 124 pregnant females had an average of 1.93 young (1-5) and Vorhies and Taylor (1933:580) thought that a female had three or four litters per year.[Pg 189]

LEPUS ALLENI ALLENI Mearns.

1890. *Lepus alleni* Mearns, Bull. Amer. Mus. Nat. Hist., 2:294, February 21, type from Rillito, on the Southern Pacific Railroad, Pima County, Arizona.

Marginal records.—Arizona: Queen Creek (Vorhies and Taylor, 1933:480); Cascabel (*ibid.*); Calabasas (Nelson, 1909:118). Sonora (Burt, 1938): Cerro Blanco (p. 67); Oputo (p. 66); Batamotal (p. 66); La Libertad Ranch (p. 67); Picu Pass (p. 67). Arizona: 2 mi. W Quitovaquita (Huey, 1942:362); Casa Grande (Nelson, 1909:118).

LEPUS ALLENI PALITANS Bangs.

1900. *Lepus (Macrotolagus) alleni palitans* Bangs, Proc. New England Zool. Club, 1:85, February 23, type from Aguacaliente, about 40 mi. SE Mazatlan, Sinaloa.

Marginal records.—Sonora: near San Bernardo on Río Mayo on Sonora side of Sonora-Chihuahua boundary (Burt and Hooper, 1941:7); *Alamos* (Nelson, 1909:119); Guirocoba (Burt, 1938:68). Nayarit: Acaponeta (Nelson, 1909:119). Sinaloa (Nelson, 1909:119): Esquinapa; *Rosario*; Culiacán. Sonora: "near" Navajoa (Burt, 1938:68).

LEPUS ALLENI TIBURONENSIS Townsend.

1912. *Lepus alleni tiburonensis* Townsend, Bull. Amer. Mus. Nat. Hist., 31:120, June 14, type from Tiburon Island, Gulf of California, Sonora. Known from Tiburon Island only.

Lepus europaeus
European Hare

Total length, 640-700; tail, 70-100; hind foot, 130-150; ear from notch (dry), 79-100; weight, 3000 to 5000 grams. Upper parts tawny, mixed with blackish hairs on back; underparts white including underside of tail; upper side of tail and terminal patch at distal end of outside of ears black; upper side of feet tawny like sides (not white or whitish). This is an introduced species.

LEPUS EUROPAEUS EUROPAEUS Pallas.

1778. *Lepus europaeus* Pallas, Nov. Spec. Quadr. Glir. Ord., p. 30. Type locality, Burgundy, France. (Introduced and established in Ontario and parts of the northern United States; slowly spreading in southern Ontario north of Lake Erie (St. Thomas and Woodstock), west and north of Lake Ontario (Toronto) to Goodrich on east side of Lake Huron. See Anderson, Canadian Field-Naturalist, 37:75-76, April, 1923; Anderson, Nat. Mus. Canada Bull., 102:100, January 24, 1947; Burt, Mammals of Michigan, p. 247, 1946.)

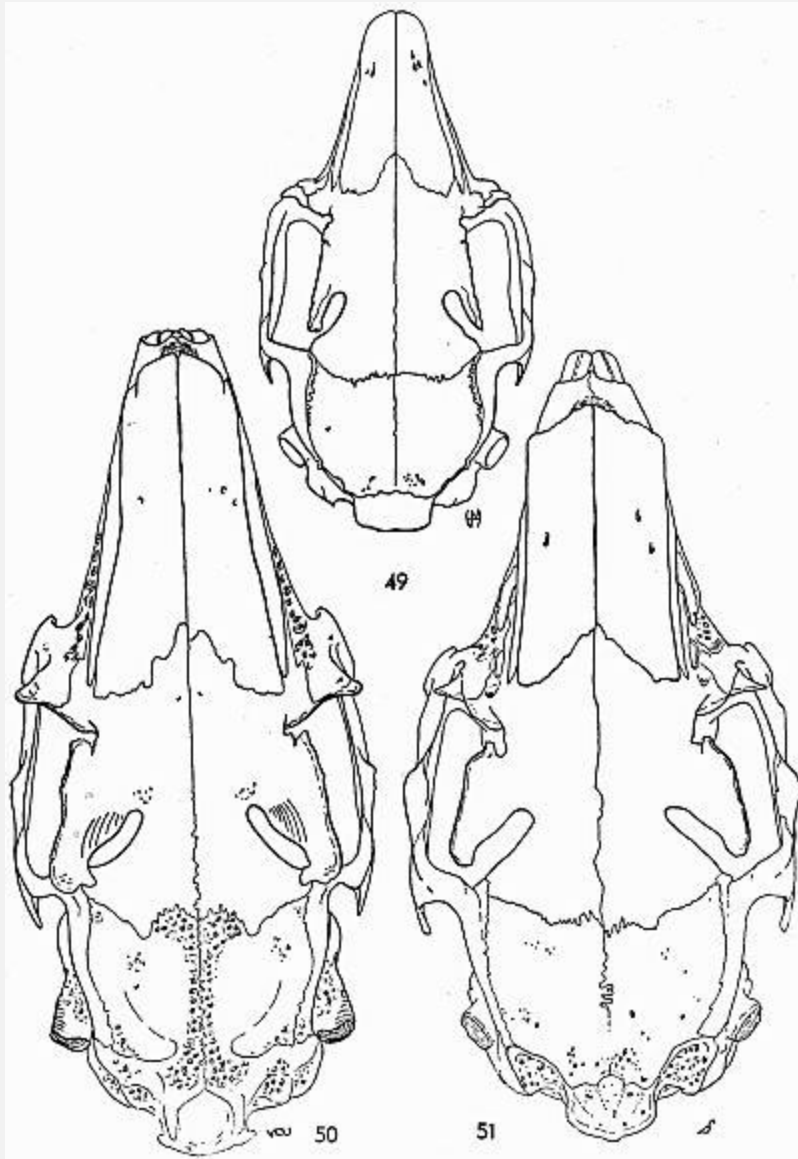
LEPUS EUROPAEUS HYBRIDUS Desmarest.

1822. *Lepus hybridus* Desmarest, Encyclopedie methodique (Zoologie) Mammalogie, pt. 1, p. 349 (Name based on "Russac" of Pallas, Nov. Spec. Quadr. Glir. Ord., p. 5, 1778), type locality central Russia.

1912. *Lepus europaeus hybridus*, Miller, Cat. Mamm., western Europe, Publ., British Mus. (Nat. Hist.), p. 508, November 23, 1912.

Range.—Introduced and established in New York and Connecticut (see Goodwin, Connecticut Geol. and Nat. Hist. Survey, Bull. 53:159-162, 1935).

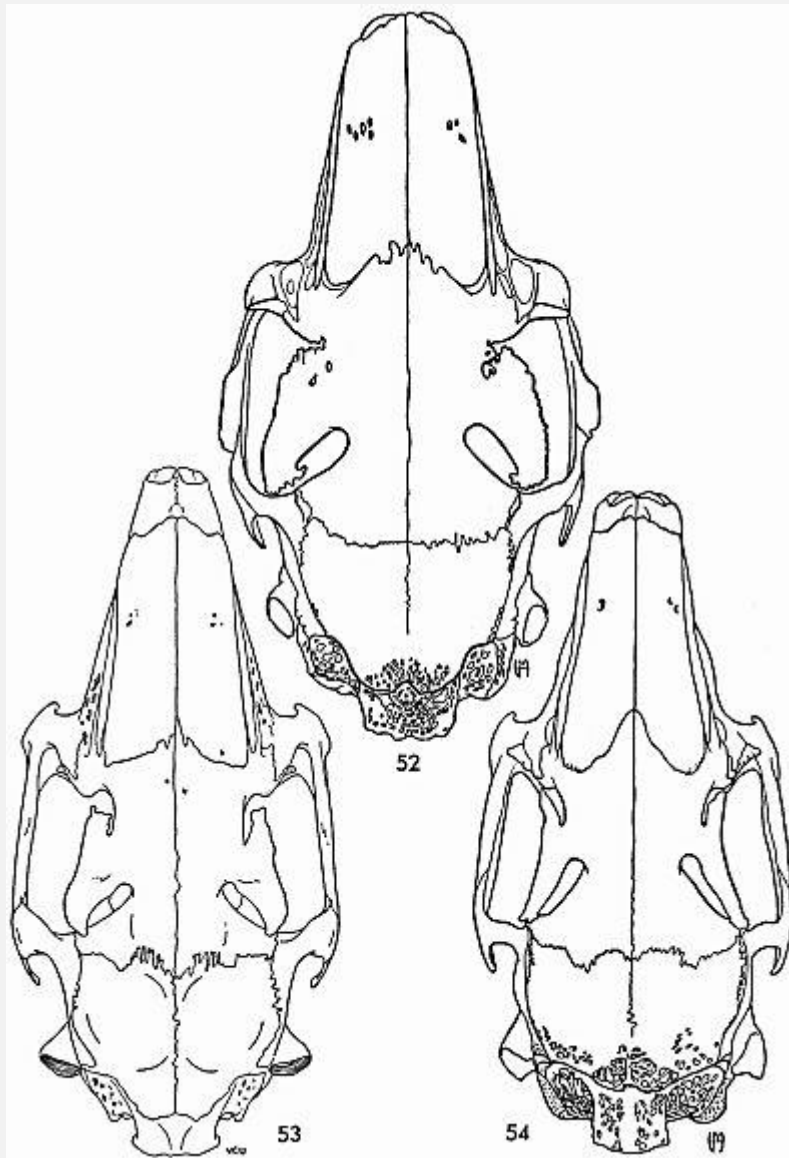
[Pg 190]



Figs. 49-51. Dorsal views of

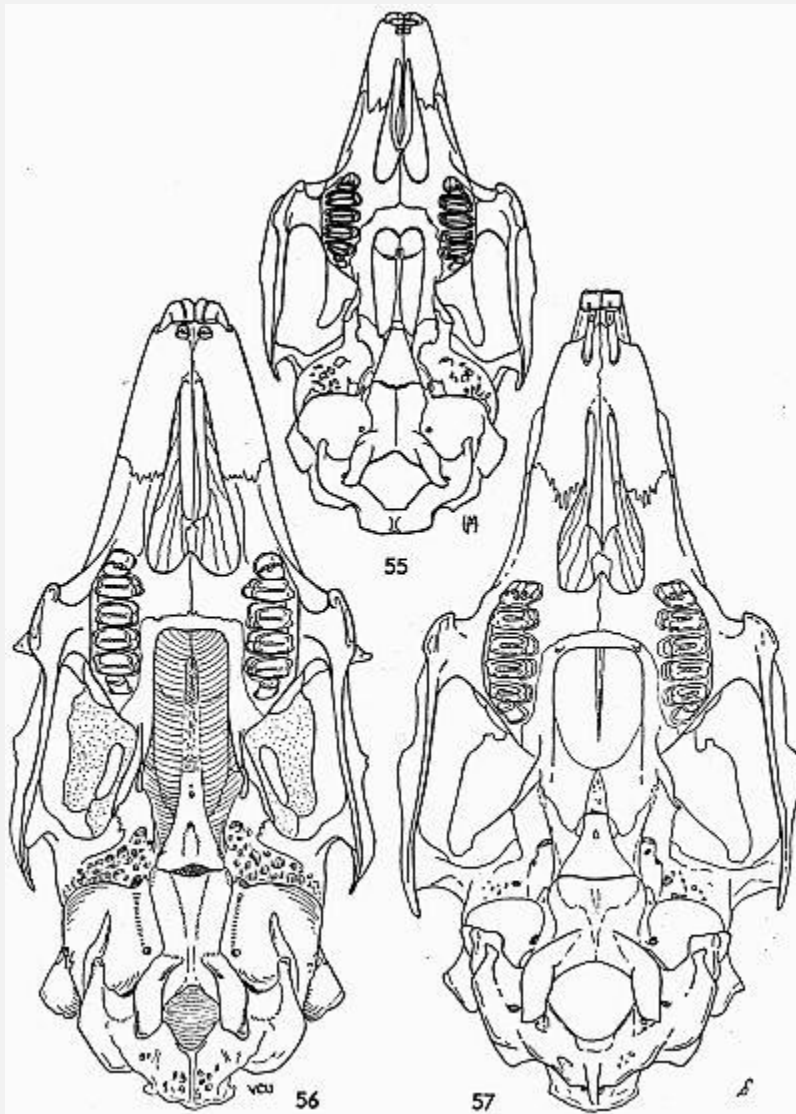
skulls of hares. All $\times 1$.

- FIG. 49. *Lepus americanus tahoensis*, 1/2 mi. S Tahoe Tavern, Lake Tahoe, Placer County, California. No. 37522 MVZ, ♂.
 - FIG. 50. *Lepus alleni alleni*, Santa Rita Mountains, 30 mi. S Tucson, Pima County, Arizona. No. 8621 KU, ♂.
 - FIG. 51. *Lepus arcticus groenlandicus*, Cape Alexander, Greenland. No. 114850 USNM, ♂.
-



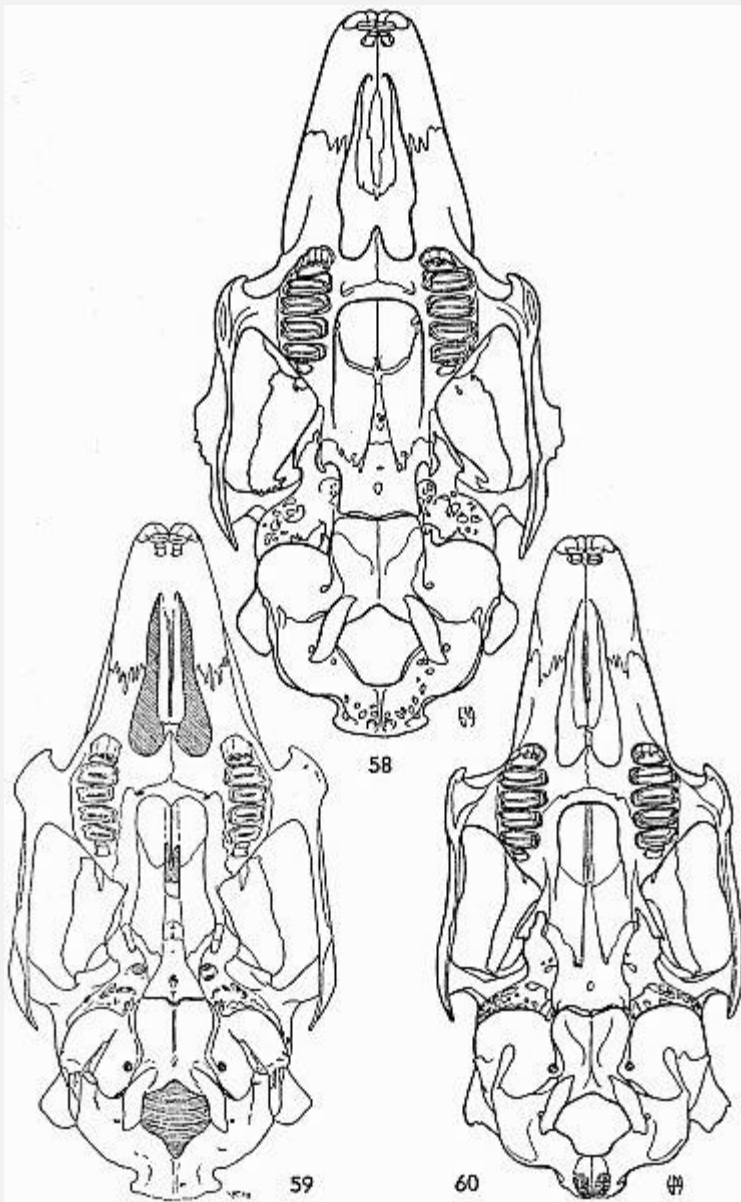
Figs. 52-54. Dorsal views of skulls of hares. All $\times 1$.

- FIG. 52. *Lepus townsendii townsendii*, north end Ruby Valley, east base Ruby Mountains, Elko County, Nevada. No. 4686, coll. of Ralph Ellis, ♀.
 - FIG. 53. *Lepus callotis*, 3-1/2 mi. S Tecolotlán, Jalisco. No. 31842 KU, ♀.
 - FIG. 54. *Lepus californicus deserticola*, 4 mi. W Fallon, Churchill County, Nevada. No. 900061 MVZ, ♂.
-



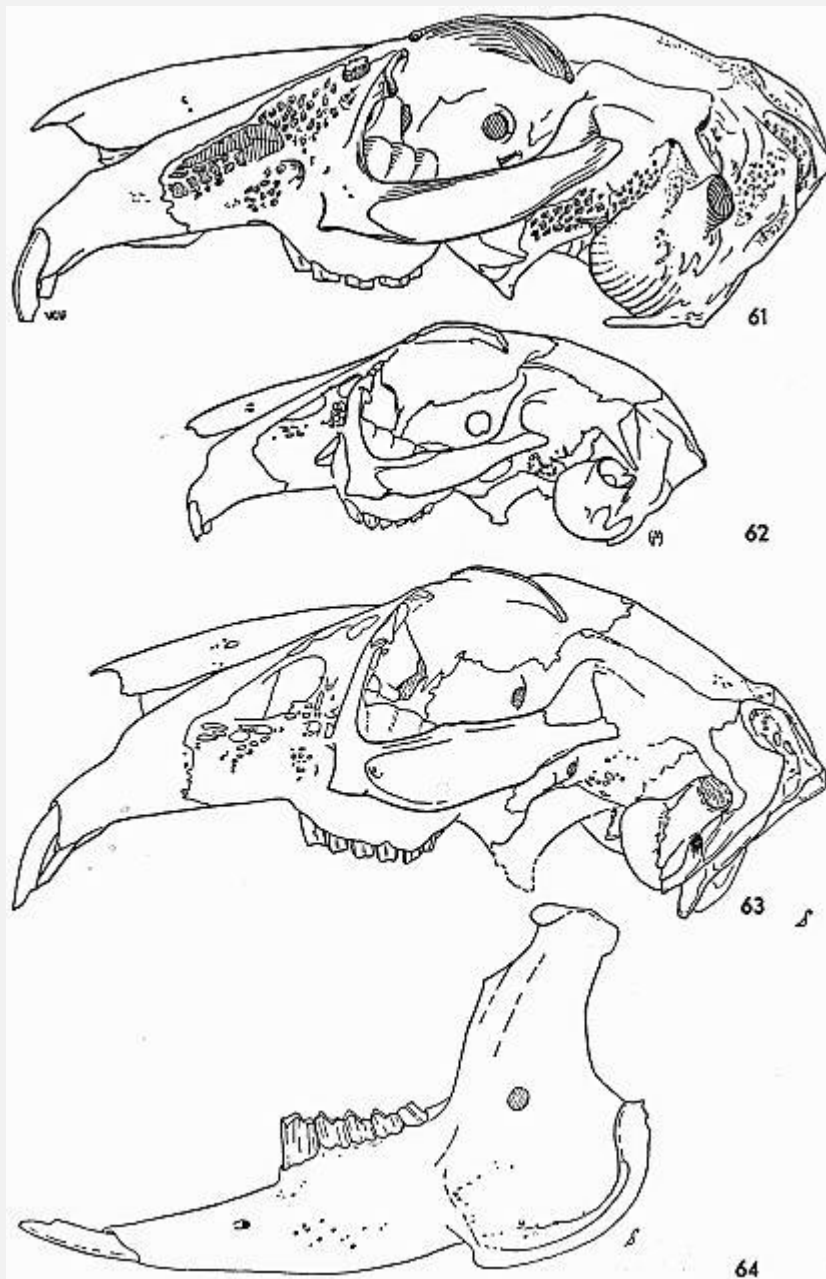
Figs. 55-57. Ventral views of skulls of hares. All $\times 1$. Different views of these skulls are shown in [figs. 49-51](#).

- FIG. 55. *Lepus americanus tahoensis*.
- FIG. 56. *Lepus alleni alleni*.
- FIG. 57. *Lepus arcticus groenlandicus*.



Figs. 58-60. Ventral views of skulls of hares. All $\times 1$. Different views of these skulls are shown in [figs. 49-51](#).

- FIG. 58. *Lepus townsendii townsendii*.
- FIG. 59. *Lepus callotis*.
- FIG. 60. *Lepus californicus deserticola*.

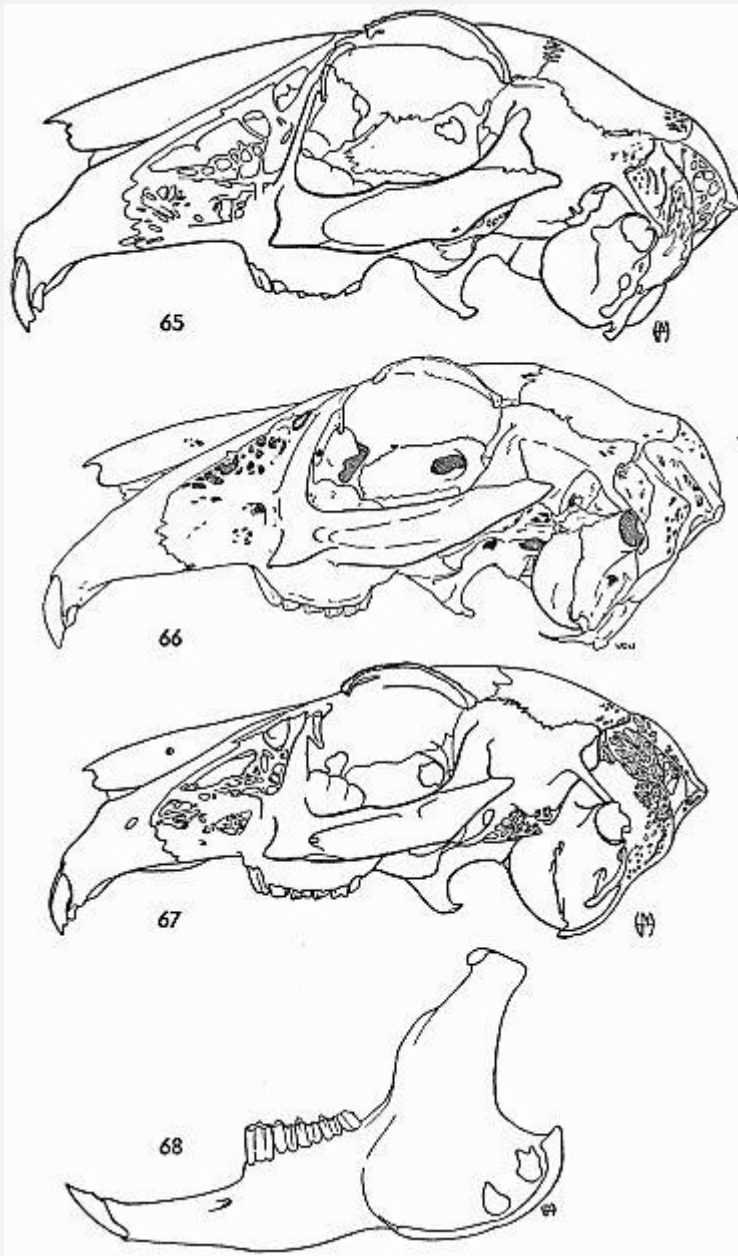


**Figs. 61-64. Lateral views
of skulls (one lower jaw) of hares.**

All $\times 1$.

Different views of these skulls are shown in [figs. 49-51](#).

- FIG. 61. *Lepus alleni alleni*.
 - FIG. 62. *Lepus americanus tahoensis*.
 - FIGS. 63-64. *Lepus arcticus groenlandicus*.
-



Figs. 65-68. Lateral views of skulls (one lower jaw) of hares. All $\times 1$. Different views of these skulls are shown in [figs. 52-54](#).

- FIG. 65. *Lepus townsendii townsendii*.
- FIG. 66. *Lepus callotis*.
- FIGS. 67-68. *Lepus californicus deserticola*.

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23-7988

Transcriber's Notes:

page [121](#) Changed "are are" to "as are" (such of their diseases as are transmissible to him)

page [131](#) Changed "Inglesmaldie" to "Inglismaldie" (Mount Inglismaldie, near Banff, Alberta).

page [142](#) Changed "Carribean" to "Caribbean" (Sipurio, Río Sixaola, near Caribbean Coast).

page [146](#) Changed "Quintin" to "Quintín" (Baja California (Huey, 1940): San Quintín)

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