

OCCASIONAL PAPERS OF THE MUSEUM OF
ZOOLOGY

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

UNIVERSITY OF MICHIGAN PRESS

A REVIEW OF THE RABBITS OF THE *ANDINUS*
GROUP AND THEIR DISTRIBUTION
IN ECUADOR

BY PHILIP HERSHKOVITZ

INCLUDED among the mammals which I collected in Ecuador between the years 1933 and 1937, and which are now deposited in the Museum of Zoology, University of Michigan, are twenty-five specimens of rabbits representing three races of the Andean *Sylvilagus andinus*. Since Cabrera in 1913 briefly reviewed the *andinus* group, there have been no further contributions to our knowledge of the group. With my material as a basis, representatives of the other known races of *andinus* occurring in Ecuador, except *nivicola* Cabrera, and some allied forms were examined with the object of presenting a discussion of the status of the species and of its distribution in Ecuador.

To the American Museum of Natural History and to the Academy of Natural Sciences of Philadelphia I am grateful for the loan of critical specimens used in this study. To Dr. Lee R. Dice I am especially indebted for valuable suggestions and criticisms.

In the lists of specimens examined the abbreviation A.M.N.H. refers to the American Museum of Natural History; and U.M. M.Z. to the University of Michigan Museum of Zoology. Capitalized color terms are from Ridgway (1912).

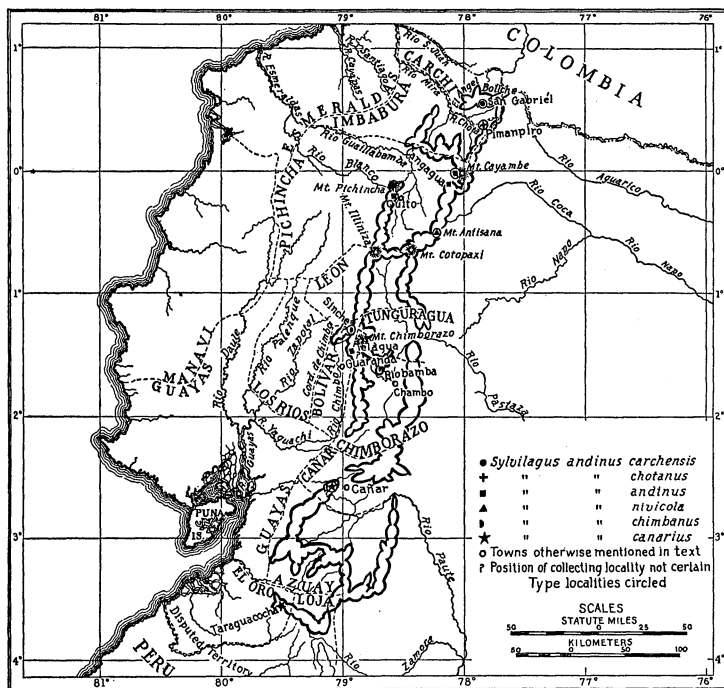
DISTRIBUTION

The rabbits of the *andinus* group, which are diurnal in their activities, inhabit most of the generally treeless portions of the Ecuadorian Andes, including practically all summits of both the eastern and western cordilleras, most of their inner facing slopes, and the whole surface of the high interandean plateau. The outer slopes of the two cordilleras are completely forested to an altitude of 3000 meters and, in some places, to 3500 meters above sea level. Rabbits of a distinctly different kind, which are exclusively nocturnal, inhabit these temperate rain forests. On the forested western slopes of the western cordillera are found rabbits of the *kelloggi* group; the *de-filippi* group inhabits the forests of the eastern slopes of the eastern cordillera. It seems, then, that the east to west movements of the *andinus* group are limited in Ecuador to a maximum of some fifty miles. The longitudinal range, according to Cabrera, extends from Venezuela (*S. meridensis* Thomas) southward along the Andes into Peru (*S. capsalis* Thomas).

In altitudinal distribution, the *andinus* group is necessarily restricted to below the snow line which, in Ecuador, is permanent at an average height of 4653 meters. The most elevated point at which I encountered these rabbits was on the paramo of the Guamaní Pass, 4173 meters high, on the road to Papalacta. The highest recorded altitude is given by Cabrera. He says, referring to the type locality of his *nivicola*: "Pico de Antisana, Andes del Ecuador, en el límite de las nieves perpétuas, a unos 4800 m. de elevación." However, Wolf (1892) records the line of perpetual snow for this peak as at 4700 meters, and with the glacier of its crater descending to 4216 meters. No doubt the collector of Cabrera's type specimen mistook the lower edge of the glacier for the limit of perpetual snow.

The rabbits of the *andinus* group are the most abundant forms of mammalian life on the cold, humid paramos characteristic of the summits and slopes of the Ecuadorean Andes between the altitudes approximately of 3000 and 4000 meters (Map 1). They thrive also, although not so abundantly, in the

dry, warm, interandean region where the average elevation is 2500 meters, and in its several deep, hot, arid valleys, which are in some instances 1000 meters lower than the surrounding country. The available records and my own observations indicate that the vertical range of each race of *andinus* in Ecuador is confined within a zone which varies approximately 500 to 1000 meters in extent.



MAP 1. Ecuador, with a diagrammatic representation of the zones of paramos (slightly exaggerated latitudinally) of the Andean mountain system. Based on Wolf and other sources, with some modifications. Drawn by Grace Eager.

The collecting localities of *Sylvilagus andinus* are indicated by the various symbols. It is evident from the map that the limits of distribution of the several races of the Andean rabbit in Ecuador are not completely known.

CHARACTERS AND RELATIONSHIPS

In comparing specimens of *Sylvilagus andinus* with those of *gabbi* from Central America and Colombia, and with those of

brasiliensis from Bolivia and Paraguay, in the collections of the University of Michigan Museum of Zoology, and with the only two known forms of the Ecuadorian *kelloggi* group (*S. kelloggi* Anthony, A.M.N.H. No. 60516 ♂, A.M.N.H. No. 60517 ♀, from Guachanamá, Loja; and *S. chillae* Anthony, A.M.N.H. No. 60514 ♂, from Portovelo, El Oro), the following characters were noted.

The ears of *Sylvilagus andinus* are not as short as those of *gabbi* or of *brasiliensis*; ear measurements for the *kelloggi* group are not available. The pale, tawny nape patch, which in *andinus* extends well beyond the tips of the ears when laid back, is of a brighter tone in *brasiliensis*, *gabbi*, and *kelloggi*, but is almost completely hidden by the ears. The pelage of the two lowland forms is coarser, thinner, and shorter on an average than that of *andinus*. The color of the underparts in *andinus* is gray, with the darker basal portions of the hairs showing through conspicuously; in the lowland forms the underparts are almost pure white. Here *kelloggi* shows an intermediate relationship. The colors of the upper surface of the body in these forest-dwelling rabbits, *brasiliensis*, *gabbi*, and *kelloggi*, are much brighter in tone and more clearly defined as compared with the dull and rather obscure coloration of *andinus*.

The outline of the skull on the median dorsal line in *andinus* is but slightly convex anteriorly, almost flat, attaining its maximum flatness in the race *chotanus*. This contrasts with the more convex skull in *brasiliensis*, *gabbi*, and *kelloggi*. The lateral outline of the skull in *andinus*, as viewed from the dorsal surface, is angular, tapering strongly to the tips of the nasals, which are narrow. In the other species, the lateral outline of the skull is slightly convex, and there is less tapering in the front, the region of the muzzle being much broader and the tips of the nasals wider than in *andinus*. The notch formed by the anterior angle of the postorbital process is always present and well defined in *andinus*. This is not always true in the other forms, where there is evident a tendency for the apex of the anterior angle of the process to coalesce with the frontal, thus

either forming a foramen instead of a notch or completely obliterating the notch. Correspondingly, the posterior angle of the postorbital process in *andinus* is delicate and less developed than in the other species mentioned. In *andinus* the frontal and palatal regions are narrower than in *brasiliensis* and *gabbi*, and the palatal bridge is longer than in *brasiliensis*, but slightly shorter than in *gabbi*. With respect to these skull characters, *kelloggi* more closely resembles *gabbi* than it does either *brasiliensis* or *andinus*. The extent and profusion of pit marks on the dorsal surface of the skull, present in all the forms here considered, vary considerably. Apparently these are correlated with age. Skulls of the older individuals show a more pitted condition than do those of the younger, irrespective of the group to which they may belong.

The evidence, although incomplete, seems sufficient to indicate that *gabbi* and *brasiliensis* are more nearly related to each other than to *andinus*, and that *kelloggi* is very nearly related to *gabbi* or to a closely related form such as *S. daulensis* Allen, as was pointed out by Anthony (1923: 9).

RACES

The Ecuadorian races of *andinus* are treated in geographical order. The race from the northernmost province, Carchi, may be known as

Sylvilagus andinus carchensis, n. subsp.

TYPES.—Holotype, adult female, skin and skull; U.M.M.Z. No. 77062; collected October 27, 1934, by Philip Hershkovitz; original No. M296. Paratypes, four males, five females, skins, skulls, and four complete skeletons; U.M.M.Z. Nos. 77063–71 inclusive.

TYPE LOCALITY.—The foot of the paramos of Boliche, about five miles southwest of San Gabriel, Montúfar, Carchi Province, Ecuador. Altitude, about 2900 meters.

DIAGNOSIS.—Superficially, *carchensis* resembles typical *andinus*, but differs in the slightly paler coloration, smaller size, and longer tail. The distance across the bullae averages greater

in *carchensis* than in typical *andinus*, and the nasals are relatively wider.

COLOR OF HOLOTYPE.—Nose at tip brown; small, but conspicuous patches of white at sides of nostrils. Forehead brown washed with black; basal half of hairs Dark Mouse Gray, subterminal band Cinnamon-Buff, tips black. Hairs on buffy crown narrowly tufted along median line. The gray, wide, distinct eye ring is lightly washed with buffy. Prominent sub-orbital patch blackish. Cheeks and sides of foreneck gray, washed with buff. Outside surface of ears brownish at base darkening terminally to Mummy Brown. The Ochraceous-Tawny nape patch extends beyond the tips of the ears when laid back for a distance about equal to their greatest length. Back Warm Buff streaked with black; hairs, for the basal one-half, Neutral Gray followed by a black band, then a subterminal band of Warm Buff, and tipped with black. Underfur Wood Brown terminally, Neutral Gray basally. Guard hairs entirely black except for Neutral Gray basal portion. Rump, outside surface of hind legs, and heels Ochraceous-Tawny lightly washed with black; outside of forelegs similarly colored, but with no black. Sides light buff grizzled with black; shoulders and outside of forelegs slightly darker. Chest and underside of neck like sides. Belly Pale Gull Gray, with the Light Neutral Gray of the base showing through. Undersurface of forelegs like belly, but with a light wash of Ochraceous-Buff. Chin and throat like belly, but base of hairs Drab-Gray. Upper surface of feet Ochraceous-Buff faintly washed with white; the pale, brown soles thickly furred, the hairs concealing the nails. Tail hidden in fur, colored like rump.

COLOR OF TYPE SERIES.—The color of the feet ranges from white, slightly washed with Ochraceous-Buff to the reversed condition of Ochraceous-Buff with a faint wash of white, as in the holotype. The greatest variance in color within the series is one associated with the molting of the adult pelage. In one individual in old pelage most of the hairs on the back are tipped with Russet, thus showing a Russet streaking instead of the normal black. In another specimen in new pelage the back is heavily washed with black.

MEASUREMENTS (in mm.).—The first given is that of the holotype, followed by those of the means and extremes of the type series of seven adults (two males, five females). External (taken from the freshly killed animal): head and body, 317, 311.8 (272–325); tail, to base on underside, 31, 30.6 (29–33); hind foot (*s.u.*), 73, 68.5 (61–73); ear from crown, 79, 78.6 (73–84); ear from notch, 54, 55.8 (52–61). Skull: Condylar-incisive length (condyle to gnathion), 61.6, 60.3 (58.7–62.7); greatest zygomatic breadth, 32.3, 32.1 (31.2–32.8); interorbital constriction, 13.3, 13.5 (12.5–14.1); postorbital constriction, 11.6, 11.3 (10.6–12.2); greatest length of nasals, 26, 26.8 (25.6–27.9); greatest width of nasals, 12.8, 13.1 (12.3–14.5); width of nasals to length of nasals, 49 per cent, 48.8 per cent (48–50 per cent); length of palatal bridge, 6.2, 6.3 (5.9–6.6); palatal length from hensenion, 25.1, 24.8 (23.9–25.7); greatest width of parietals, 22, 21.9 (21–23); palatine foramen, 16.5 by 6, 15.4 by 5.7 (14.6–16.3 by 5.1–6.2); diastema, 18, 17.9 (17–18.9); alveolar length of upper molar row, 14, 13.4 (13–14); greatest diameter of bulla, 10, 9.2 (8.6–10.2); greatest width across bullae, 25.2, 24.9 (24.2–26.3).

REMARKS.—Although the coloration of *carchensis* is but slightly paler than that of typical *andinus* and hardly of diagnostic value in a comparison, it is of significance in indicating the nearer relationship to the distinctly paler *chotanus*, next to be described, with which *carchensis* further agrees in the length of the tail, the width across the bullae, and the proportional width of the nasals to the length of the nasals.

DISTRIBUTION.—Rabbits of the race *carchensis* are in evidence throughout most of the province of Carchi. They range from the paramos of El Angel, the northern continuation of the western cordillera, eastward across the paramos of Boliche as far as, but not on, the eastern cordillera. In Carchi, the eastern cordillera is heavily forested on both slopes and, so far as known, not inhabited by rabbits of any kind. To the south and southwest the distribution of *carchensis* is halted by the deep, wide valley of the Chota River. This valley effectively disrupts the continuity of the western cordillera and the central plateau and

is inhabited by the clearly different race, *chotanus*, the description of which follows:

Sylvilagus andinus chotanus, n. subsp.

TYPES.—Holotype, adult female, skin and skull; U.M.M.Z. No. 77061; collected July 18, 1934, by Philip Hershkovitz; original No. M268. Paratypes, two females, one male, skins and one complete skeleton; U.M.M.Z. Nos. 77058–60 inclusive.

TYPE LOCALITY.—Taken on the slopes of the Chota Valley, Pimampiró, Imbabura Province, Ecuador. Altitude, about 1500 meters.

DIAGNOSIS.—*S. a. chotanus* is readily distinguished from all other known races of *andinus* by the thinner, shorter pelage; the decidedly paler, more gray coloration throughout, and by the extremely flattened skull.

COLOR OF HOLOTYPE.—Tip of nose and forehead to crown Light Buff grizzled with black. Nostril patches pure white. Crown grayish with the darker Deep Neutral Gray of base of hairs showing through; the tuft lightly washed with buffy. Eye ring as in *carchensis*, but paler. Black suborbital streak not well defined. Cheeks and sides of neck gray-streaked with black and with a light wash of buff. Ears Drab, at base Pale Drab-Gray; hair on inner surface whitish. The pale cinnamon nape patch less developed than in *carchensis* and its pelage decidedly thinner. Back Light Buff streaked with black; hairs Neutral Gray at base; banding as in *carchensis*, but with color of sub-terminal band Light Buff. Underfur Drab terminally. Guard hairs as in *carchensis*. Rump Warm Buff with a faint wash of black. Outside surface of legs Ochraceous-Buff, inside surface Cartridge Buff. Sides Light Buff with traces of the gray basal portions of the hairs showing through; shoulders grayer than sides, thighs more buffy. Chest band like sides, much narrower than in *carchensis*. Belly as in *carchensis*, but with more of the basal color of the hairs showing through. A narrow Warm Buff line marks off the belly from the sides. Chin, throat, and undersurface of forelegs like belly, but with the base of the hairs Drab-Gray. Upper surface of feet white,

washed with Ochraceous-Buff—the same colors as in *carchensis*—but in a reversed relation; soles as in *carchensis*, but paler. Tail concealed in rump.

MEASUREMENTS (in mm.).—External of holotype (taken from the freshly killed animal): head and body, 312; tail, 31; hind foot (*s.u.*), 72; ear from crown, 71; ear from notch, 54. Skull: Condylar-incisive length, 60; greatest zygomatic breadth, 31.9; interorbital constriction, 14.2; postorbital constriction, 12.4; greatest length of nasals, 26.7; greatest width of nasals, 13.9; length of palatal bridge, 7.2; palatal length from hensenion, 24.2; greatest width of parietals, 21.9; palatine foramen, 14.8 by 6.2; diastema, 17.2; alveolar length of upper molar row, 13; greatest diameter of bulla, 9.4; greatest width across bullae, 25.4.

REMARKS.—The individual selected for the holotype is the only specimen with an unbroken skull. Unfortunately, the holotype is not an average specimen with respect to its pelage, which is longer and thicker than in the other individuals of the series. One of the paratypes has very short, thin hair which is grayer in color than in the holotype. Another specimen is slightly darker than the holotype.

DISTRIBUTION.—The four specimens of *chotanus* were taken within the hot, arid Chota Valley at various altitudes, ranging from the bottom of the valley at about 1000 meters above sea level up the slopes to 2000 meters. Since no record was kept of the altitude at which each individual was taken, the average elevation of 1500 meters is given.

Sylvilagus andinus andinus (Thomas)

1897 *Lepus andinus* Thomas, *Ann. Mag. Nat. Hist.*, (6), 20: 551.

1910 *Sylvilagus (Tapeti) ecaudatus* Trouessart, *Mamm. de la mission de l'Equateur*, Paris, p. A23.

1914 *Sylvilagus andinus*, Stone, *Proc. Acad. Nat. Sci. Phila.*, p. 15.

TYPE LOCALITY.—Western slope of Mount Cayambe, eastern cordillera of the Andes, Pichincha Province. Altitude, 4000 meters.

The following description is based on nine adult specimens (five males, four females) taken on the paramos of the hacienda

“La Compañía,” near Cangagua, about ten miles southwest of Mount Cayambe. Altitude, 3400 meters. Specimens, U.M.M.Z., Nos. 77072, 77074–76, 77078–82; collected by Philip Hershkovitz.

COLORATION.—Area from tip of snout through forehead and crown averages Clay Color with a light suffusion of black. End of crown tufted. Small nostril patches white to grayish white. Cheeks varying from Pale Smoke Gray, then Smoke Gray, to light buff, grizzled with black. Well-marked eye ring Light Buff to Warm Buff. Black suborbital patch present in some specimens, obsolete in others. Ears Drab to Mummy Brown, edged with gray hairs. Nape patch approximates Cinnamon in some specimens, Ochraceous-Tawny in others, and extends beyond the tips of the ears, when laid back, for at least half their length. Back Warm Buff to Clay Color and irregularly streaked with black, presenting a grizzled appearance in some specimens, ranging to a conspicuously patched effect in others. Rump warmer in tone than back and lightly washed with black. Outside of legs averages Ochraceous-Tawny. Feet white, washed lightly with buffy in most specimens and more heavily with Ochraceous-Buff in others. Underparts gray, in some specimens lightly washed with buffy, with Light Neutral Gray of basal half of hairs showing through prominently. Sides range in color from Light Ochraceous-Buff to Ochraceous-Buff and more or less grizzled with black. Chest band like sides, but basal gray of hairs showing through. Soles of feet thickly furred, brown. Tail a mere stump, concealed in the rump.

MEASUREMENTS (in mm.).—External (taken from the freshly killed animal), nine adults (five males, four females): head and body, 333.7 (326–53); tail, to base on underside, 22.2 (20–23); hind foot (*s.u.*), 67.2 (64–78); ear from crown, 73.2 (66–80); ear from notch, 54.8 (52–60). Skull, seven adults (three males, four females): condylo-incisive length, 59.8 (57.5–62.7); greatest zygomatic breadth, 32.2 (31.4–33); interorbital constriction, 12.6 (11.8–13.8); postorbital constriction, 11.1 (9.9–11.8); greatest length of nasals, 26.9 (26.1–28); greatest width

of nasals, 12.4 (11.5–12.7); width of nasals to length of nasals, 45.7 per cent (43–47.5 per cent); palatal bridge, 6.5 (6–7); palatal length from henselion, 25.4 (24.3–26.4); greatest width of parietals, 21.5 (20.9–22.2); palatine foramen, 15.9 by 5.4 (15.1–16.9 by 5–6.4); diastema, 18.5 (17.8–19.2); alveolar length of upper molar row, 13.2 (12.9–13.5); greatest diameter of bulla, 8.8 (8.2–9.7, in five specimens); greatest width across bullae, 23.6 (22.3–24.9, in four specimens).

One specimen from "Pichincha" (A.M.N.H., No. 34670, male) agrees in every respect with the above description.

DISTRIBUTION.—Paramos of the eastern and western cordilleras, from Mount Cayambe south as far as Riobamba.

From the localities recorded for *andinus* it seems that this form is confined within altitudes ranging from 3000 to approximately 4000 meters above sea level. Typical *andinus* has never been recorded from any appreciably lower or higher altitude, and it appears that it does not descend into the dry interandean plateau in crossing from one cordillera to the other. Instead, *andinus* spreads along the paramos of the high ridges which bridge the eastern and western chains. Thus, for example, to the south of Mount Cayambe the paramos of Cotopaxi reach out as a spur from the eastern chain and connect with the paramos of Illiniza, a spur from the western chain, affording typical *andinus* free access to both cordilleras without the necessity of leaving its accustomed elevations.

S. a. andinus has been recorded from Mount Pichincha on the western chain by Lönnberg (1913: 33), Cabrera (1917: 56), and Allen (1916: 117), who also records another from Quito at the foot of Mount Pichincha. Other records for Quito are by Trouessart (1910: 23) and by Cabrera (1913: 6). Considerably to the south of the above localities specimens of typical *andinus* have been recorded by Thomas (1913: 212) from Telagua, Bolívar Province, the paramos east of Riobamba, and from Guallabamba near Riobamba. The specimens recorded by Stone are discussed under *chimbanus*.

Sylvilagus andinus nivicola Cabrera

1913 *Sylvilagus nivicola* Cabrera, *Trab. mus. nac. cien. nat. Madrid*, ser. Zool., No. 9: 4, pl., Fig. 2.

TYPE LOCALITY.—Mount Antisana of the eastern Andes, near the snow line, Pichincha Province.

REMARKS.—The description of *nivicola* was based on a single specimen collected in January, 1865. Cabrera states that the only other known specimen of *nivicola*, a paratype, was exhibited publicly in the Museum of Madrid until 1911 when it was found necessary to destroy it as it had been very badly moth-eaten. The measurements of the type as given by Cabrera agree with those of typical *andinus*. In coloration, *nivicola* is paler than *andinus* (Cabrera, 1913: pl., figs. 1-2), but there always remains the question of possible fading of the type, since a half century elapsed before it was described.

DISTRIBUTION.—The type locality, which is the only recorded locality, of *nivicola*, may well be within the range of typical *andinus*. On the other hand, it is quite probable that a distinct and restricted race is isolated in the vicinity of such a great volcanic cone as Mount Antisana. Although there may be no reason to question the correctness of the locality given for this particular specimen, Cabrera has pointed out the carelessness with which the matter of localities had been dealt in some of the specimens taken by Jiménez de la Espada of the Spanish "expedición científica del Pacífico." The latter collected *nivicola* during the expedition across Ecuador to the Atlantic by way of the Amazon River.

Sylvilagus andinus chimbanus Thomas

1913 *Sylvilagus andinus chimbanus* Thomas, *Ann. Mag. Nat. Hist.* (8), 11: 212.

TYPE LOCALITY.—Sinche, upper Río Chimbo, north of Guaranda, Bolívar Province. Altitude, 4000 meters.

REMARKS.—I have examined three specimens labeled *chimbanus*, collected by S. N. Rhoads, now in the collection of the Academy of Natural Sciences of Philadelphia. They were taken at elevations of 10,000 to 10,400 feet "above the Chimbo River . . . 500 to 1000 feet above the town of Chambo" (Stone, 1914: 15). I fail to locate on any map a town so named in the vicinity of the Chimbo River. However, there is a town, Chambo, east of Riobamba and near the railroad line along

which Rhoads did most of his collecting. Typical *andinus* has been recorded from east of Riobamba, and the Rhoads specimens cannot be set off as distinct from that race.

The principal difference noted by Thomas in setting off *chimbanius* from other races of *andinus* was in the nape patch, which he described as "much reduced in size, so that no part of it shows beyond the ears when laid back." Apart from this, Thomas notes "all essential characters as in true *andinus*." Comparing the measurements of the type and of the specimens collected by Rhoads with those of typical *andinus*, I find that they agree in every respect. As for the nape patch, in the two adult specimens collected by Rhoads, it hardly extends to the tips of the ears when laid back, but this is accounted for by a deep infolding of the skin behind the head, which the collector failed to draw out in putting up the specimens. In the third Rhoads specimen, a young male, the nape patch is as long as in all true *andinus*.

If the specimens collected by Rhoads are from the paramos above the Chimbo River in Bolívar Province, they must have come from near the type locality of *chimbanius*. In that event *chimbanius* might be synonymous with *andinus*. If, on the other hand, Rhoads's specimens are from near Chambo in Chimborazo Province no specimens of undoubted *chimbanius* are known to be in any North American museum. It seems that the validity of *chimbanius* hinges upon little more than the size of the nape patch.

DISTRIBUTION.—*S. a. chimbanius*, if separable from *andinus*, inhabits the paramos of the Cordillera de Chimbo, which comes off in a westerly direction from Mount Chimborazo of the western cordillera.

Sylvilagus andinus canarius Thomas

1913 *Sylvilagus andinus canarius* Thomas, *Ann. Mag. Nat. Hist.*, (8), 11: 213.

TYPE LOCALITY.—"Cañar, Andes of Ecuador. Alt. 2600 m."

REMARKS.—This rabbit is distinguished from the other races

of *andinus* by its warmer, browner coloration, which is nearly uniform over the entire dorsal surface. As a result, there is less difference in color between the rump and the back than in the other races. The principal distinction lies, however, in the small size of the bullae, which is not duplicated in any individual of the other Ecuadorean races.

A single specimen was examined. This rabbit, a male, A.M.N.H., No. 60510, was collected by Anthony at Taguara-cocha, Cordillera de Chilla, El Oro Province, at an altitude of 10,750 feet. Since the specimen is not quite adult, its measurements are omitted. However, the small bullae in this individual can be appreciated by comparing the skull with skulls of other *andinus* of comparable size and age, of which a number are available. The greatest diameter of the bulla in this specimen of *canarius* measures 7.5 mm.; the smallest bulla in typical *andinus*, found in a skull slightly larger and of the same sex (U.M.M.Z. No. 77075), is 8.2 mm. As compared with *carchensis*, the bulla of a slightly smaller and definitely immature male (U.M.M.Z. No. 77064) measures 8.6 mm.

DISTRIBUTION.—*S. a. canarius* represents the most southern race of *andinus* as yet known from the Ecuadorean Andes. It is impossible to determine from the type locality as given by Thomas whether reference is made to some unknown point within the limits of Cañar Province or to the town of Cañar in the western part of the same province. Since Anthony obtained a specimen of *canarius* from the paramos of the Cordillera de Chilla in El Oro Province, it seems that the range of the race extends from the paramos of western Cañar Province, southward over the continuous chain of paramos through Azuay Province into northern Loja and eastern El Oro.

LITERATURE CITED

ALLEN, J. A.

- 1916 List of Mammals Collected for the American Museum in Ecuador by William B. Richardson, 1912-13. Bull. Amer. Mus. Nat. Hist., 35: 113-25.

ANTHONY, H. E.

- 1923 Report on Ecuadorean Mammals, No. 3. Amer. Mus. Novit., 55: 1-14.

CABRERA, A.

1913 Dos mamíferos nuevos de la fauna neotropical. Trab. mus. cien. nat. Madrid, ser. Zool., 9: 1-16, pl., 2 figs., 2 maps.

1917 Mamíferos del viaje al Pacífico. *Ibid.*, 31: 1-62.

LÖNNBERG, E.

1913 Mammals from Ecuador and Related Forms. Arkiv für Zoologi, 8, No. 16: 1-36.

RIDGWAY, R.

1912 Color Standards and Color Nomenclature. Washington: Published by the author. iv + 44 pp., 53 pls.

STONE, W.

1914 Mammals from Ecuador. Proc. Acad. Nat. Sci. Phila., pp. 9-19.

THOMAS, O.

1897 Descriptions of New Bats and Rodents from America. Ann. Mag. Nat. Hist., ser. 6, 20: 544-53.

1913 Notes on S. American Leporidae. *Ibid.*, ser. 8, 11: 209-14.

TROUËSSART, E.-L.

1910 Mammifères de la mission de l'Equateur d'après les collections formées par le Dr. Rivet. Mission de l'Equateur. Paris. 9: A. 23-A. 25.

WOLF, TEODORO

1892 Geografía y geología del Ecuador. Leipzig. xii + 671 pp., illus., 3 maps.

