

ARTICLE IX.—*List of Mammals collected by Mr. Clark P. Streater in British Columbia, with Descriptions of two New Subspecies of Sciurus.* By J. A. ALLEN.

Following is a list of the mammals collected for the American Museum of Natural History during the summer of 1889, by Mr. Streater in British Columbia. The localities at which the specimens were obtained have been already described in Mr. Chapman's report on the birds (see *antea*, p. 123) and need not here be repeated. The collection numbers about 140 specimens, representing 20 species. Mr. Streater's field notes are given in quotation marks in their proper connection.

The series of Squirrels, of the genera *Sciurus* and *Tamias*, proved most interesting and instructive, throwing much light on the distribution of the several forms in British Columbia. The Cascade Range appears to sharply limit the two coast forms, *Sciurus hudsonius douglassi* and *Tamias townsendii*, at the eastward, they being replaced in the interior respectively by *Sciurus hudsonius richardsoni* and *Tamias quadrivittatus affinis*. The form of *Sciurus* found on Vancouver Island proves unexpectedly to be not referable to *S. hudsonius douglassi* but to be a well-marked insular form, in some respects resembling *S. hudsonius richardsoni*.

1. Putorius vison (*Schreber*). MINK.—“Common throughout the Province.”

One specimen, Ducks, August 4.

2. Mephitis mephitis (*Shaw*). SKUNK.—“Common in the interior. Skins that I saw from the coast region appeared to represent a much smaller species.”

A half-grown specimen, without data, the label having become detached and lost.

3. Ursus americanus *Pallas*. BLACK BEAR.—Represented by a single skull of a half-grown specimen. Locality not stated.

4. Vesperugo fuscus (*Bauvais*). BROWN BAT.—One specimen, Mt. Lehman, June 15; the only specimen seen by the collector.

5. Vespertilio nitidus *H. Allen*. CALIFORNIAN BAT.—“Common in the coast region.”

Three specimens, Westminster, April 24, and one without label (probably from Mt. Lehman), are provisionally referred to this species. The first three are very dark, the other somewhat lighter in color.

6. *Sorex suckleyi* Baird. SUCKLEY'S SHREW.—“Common in the coast region, but no indications of them were noticed in the interior.”

Five specimens (Westminster, April 30–May 10, four specimens, two adult and two half grown; Mt. Lehman, June 6, adult female) are provisionally referred to this species.

7. *Sciurus hudsonius richardsoni* (Bachman). RICHARDSON'S CHICKAREE.—“Common throughout the interior of British Columbia.”

Ten specimens, five from Ashcroft, July 8–21, and five from Ducks, August 1–16. Three of the specimens are about two-thirds grown; the others are all adult. They are all clear white below, with a well-defined black lateral line on each side of the body, much broader and blacker in some than in others, at the junction of the dorsal and ventral areas. They vary somewhat in color above, the two extremes being represented by No. 2049, ♀ ad., Ashcroft, July 9, and No. 2054, ♂ ad., Ducks, August 3. The former is nearly pure olivaceous gray above with no mixture of rufous except on the fore and hind limbs and upper surface of the tail. The other is heavily suffused above with brownish rufous, most strongly on the limbs and upper surface of the tail. The rest are variously intermediate, with a tendency,—in some well marked,—to a broad median dorsal dark reddish brown band. A parallel variation is seen in two young specimens from Ducks, showing that there is a wide range of individual variation in color, irrespective of season. The gray specimens bear a strong resemblance, in the general color of the dorsal surface (excluding the tail), to average Colorado specimens of *Sciurus hudsonius fremonti*.

8. *Sciurus hudsonius douglassi* (Gray). DOUGLASS'S CHICKAREE.—“Distributed abundantly throughout the coast region of British Columbia and Washington.”

Twenty-eight specimens, as follows: Westminster, B. C., April 21 to May 20, fifteen specimens; Mt. Lehman, B. C., June 2–8, three specimens; Kalama, Washington, October 14–18, five speci-

mens ; Cape Disappointment, Washington, November 1-3, five specimens. This large series thus covers the period from April 21 to November 3, and admirably shows the wide range of seasonal variation to which this subspecies is subject.

A male and female, collected at Westminster, April 23, are in breeding pelage, showing only here and there small patches of the post-breeding dress. In these there is barely a faint indication of the black lateral line ; the sides of the body above the lateral line are dark gray, with a faint wash of dark brown, which increases in amount toward the dorsal line, and forms the prevailing color for a considerable area along the middle of the dorsal region, from the head to the end of the apical half or third of the tail. Tail above mixed brown and black with a subapical border and a broad subapical tip of black and an outer broad conspicuous fringe of white. Lower surface of the body buff, the hairs broadly dusky at base and narrowly ringed with black near the tips, giving the effect of a plumbeous ground color heavily washed with pale buff. Limbs and upper surface of the feet like the sides. The beginning of the change to the post-breeding pelage is shown by patches of short, pale yellow fur on the chin and sides of the muzzle, and by little tufts of yellowish hair here and there on the ventral surface of the body. In most of the other April specimens the whole ventral surface is more or less mixed with irregularly dispersed patches of the post-breeding pelage. The April specimens still retain the blackish ear-tufts characteristic of the winter dress.

In May specimens the change has considerably advanced. Thus, in No. 2075, ♂ ad., Westminster, May 12, the whole chin, throat, and fore neck, and a quite broad but somewhat irregular median line are bright buffy yellow ; the fore limbs, as far as the elbows, and the toes and edges of the hind feet are deep orange yellow. A still more advanced stage is seen in No. 2065, ♂ ad., Mt. Lehman, June 2, in which the new coat has encroached still more upon the ventral surface, has crept farther up on the fore limbs, and covers most of the hind feet, extending to the base of the toes and along the inside of the foot to the lower part of the leg, while the whole top and outer side remains as in early spring. The inner border of the foot is thus bright orange, while the top and outer border are dull brownish gray. The dark line on the

sides of the body is still indistinct, and, with the exception of the parts named, the pelage is nearly as in April examples.

In a July specimen, collected in Pacific County, Washington, by Mr. A. H. Helme, July 17, 1885, the whole lower surface and both fore and hind feet are deep ochraceous orange; the black lateral line is broad and intense black, and the broad dorsal band of dark rufous has disappeared, leaving the whole dorsal area dull dark brown, washed with pale yellowish or olivaceous gray. The tail is fringed broadly with yellowish white instead of pure white. Mr. Streater's October and November specimens are similar, and in striking contrast with his April and May specimens.

The change is thus parallel in character to the seasonal changes occurring in the Eastern Chickaree (see this Bulletin, Vol. III, pp. 41-44), but much more strongly marked.

Besides the seasonal variation in color in this subspecies, there is also a wide range of individual variation, especially in the color of the ventral surface. In specimens taken in March and April the ventral surface in about one specimen in ten is pale buff, varying from this to very strong buff or faint ochraceous. In post-breeding pelage the ventral surface varies from pale ochraceous yellow to deep ochraceous orange. The dorsal surface varies in spring specimens from a dark fuscous gray with only the faintest or even no tinge of rusty to a strong shade of dark rusty brown over the middle third of the dorsal region, with a faint tinge of the same color on the sides of the body. In fall specimens the middle of the back is more or less tinged with dark rusty. The edging of the tail varies from clear white to yellowish or rusty white, in spring as well as in fall specimens.

The principal differences observable between *S. h. richardsoni* and *S. h. douglassi* are the much smaller and more heavily-clothed ears, longer tail, softer and fuller pelage, and the absence of ochraceous on the ventral surface in the former as compared with the latter. When series of the two forms are placed side by side with the backs uppermost, *douglassi* averages darker and browner in coloration, with much less rufous in the tail, but the range of individual variation in color quite overlaps the average difference. When the same series are placed side by side with the ventral surface uppermost there is a strong contrast between even the palest specimen of *douglassi* and the *richardsoni* series.

9. *Sciurus hudsonius vancouverensis*, subsp. nov. VANCOUVER CHICKAREE.

“Common on Vancouver Island.”

Six specimens from Duncan's, Vancouver Island, October 1-9, are strikingly different from either *S. h. douglassi* or *S. h. richardsoni*, being in some respects intermediate between them. They wholly lack the ochraceous color below of *douglassi*, in this resembling *richardsoni*. The color above is rather darker and browner than in either, but most resembles that of *douglassi*. It has also the small low ears of that form, as compared with the much larger ears of *richardsoni*. While of about the same general size, the tail (judging from the skins) is one-fifth shorter than in either, but broader, more bushy, and very differently colored. This form may be characterized as follows :

Post-breeding Pelage.—Similar to *S. h. douglassi* in general size, in the size and form of the ears, and in the general coloration of the dorsal surface ; below white, as in *S. h. richardsoni* ; tail short (6 inches or less to end of hairs instead of 7 inches or more, as in *richardsoni*), broad and very full ; tail above dark reddish brown varied with black, without a conspicuous lighter fringe, the apical fourth to third deep black. The coloration of the tail is much as in some specimens of *richardsoni*, but the black of the apical portion is broader and less mixed with red, while the usual light fringe formed by the tips of the hairs of the sides and end of the tail, found in the allied forms, is almost wholly absent, the tips of the lateral hairs being scarcely lighter in color than those covering the upper surface.

Length of head and body (measurements from skins), 6.50 to 7.50 in. (165-190 mm.) ; tail to end of vertebræ, 4.60 to 5.00 (117-127) ; tail to end of hairs, 5.80 to 6.40 (147-163) ; hind foot, 1.70 to 1.80 (43.2-45.7) ; height of ear from crown, .50 (12.7).

Type, No. 2059, ♀ ad., Duncan's, Vancouver Island, Oct. 2, 1889 ; C. P. Streater.

A second undescribed form of this group, represented by eight specimens from the Sierra Nevada, Placer County, California, may be thus indicated :

***Sciurus hudsonius californicus*, subsp. nov. CALIFORNIA CHICKAREE.**

?? *Sciurus mollipilosus* AUDUBON & BACHMAN, Proc. Acad. Nat. Sci. Phila., I, 1842, p. 102 ; Journ. Acad. Nat. Sci. Phila., VIII, 1842, p. 316.

Size of *S. h. douglassi*, but with much larger ears and very different coloration. *Post-breeding Pelage* (Oct. 7-14).—Above dark olivaceous gray, varied with yellowish rufous ; fore limbs as far as the elbows yellowish rufous ; hind feet rusty yellow ; a distinct broad black lateral line ; below white, varying in different specimens to pale creamy white ; outer edge of thighs yellowish ; tail above dark reddish brown mixed with black centrally on the basal half, bordered broadly with black and very heavily fringed with pure white ; tail below black varied with white and broadly edged with pure white. In some specimens the tail above is gray centrally with barely a trace of rufous, with very broad white

margins, the hairs being more or less rusty towards the base, then broadly ringed with black and tipped with white. Ears blackish on the anterior and apical edges, and distinctly tufted with blackish. In some specimens a band down the middle of the dorsal region is distinctly rusty, as in the other forms of the group.

Length of head and body (collector's measurements from the fresh specimens), 8 in. (203 mm.); tail to end of hairs, 6.50 (165); hind foot, 2.00 (51); height of ear from crown, .60 (15.3.).

Type, No. 2551, ♀ ad., Blue Cañon, Placer Co., Cal., Oct. 13, 1886; C. A. Allen.

These specimens, as regards season, are strictly comparable with Mr. Streater's series from Kalama and Cape Disappointment (mouth of the Columbia River), and also with the Vancouver Island series. The latter represent an insular white-bellied form (*vancouverensis*); the Columbia River specimens represent the form with the deep orange or ochraceous ventral surface (true *douglassi*); while the Blue Cañon series represent a form with pale creamy white (varying to pure white) underparts (*californicus*). The latter differs from both the others in the lighter, more yellowish-olivaceous gray of the dorsal surface, in strong contrast with the reddish-fuscous gray of the two northern forms.

Californicus differs also from the others in the broad snowy white border to the tail, in contrast to the narrower, more or less yellowish white of *douglassi*, and the almost entire absence of a distinctly lighter border in *vancouverensis*. In respect to the coloration of the tail, and of the dorsal surface generally, *californicus* and *vancouverensis* represent the extreme phases of what may be called the *douglassi* group.

In the coloration of the dorsal surface *californicus* much resembles *S. h. fremonti*, but the latter is pure clear white below and has the very large ears characteristic of the interior forms (*richardsoni*, *fremonti*, and *mogollonensis*).

Doubtless *californicus* has a considerable geographical distribution in California, but over just what area cannot now be determined. Fort Crook specimens, at least the light-bellied ones, as I now recall them (see Mon. N. Amer. Roden., pp. 679-681, and *passim*), being doubtless referable to what is here named *californicus*.

Sciurus mollipilosus Bachman, from "the northern parts of California," may refer to the present form, but it is too inadequately described for recognition. "The inner surface of the fore legs, the throat and abdomen cinereous, lightly tinged with

rufous," and "a few of the hairs [of the tail] are tipped with grey," does not apply to the form here described.

10. *Tamias townsendii* Bachman. TOWNSEND'S CHIPMUNK.—"Abundant throughout the coast region of British Columbia and Washington."

Nineteen specimens, as follows: Westminster, May 15, one; Mt. Lehman, June 5-15, nine; Kalama, Oct. 15-20, four; Cape Disappointment, Nov. 1-11, five. None were obtained on Vancouver Island, where, Mr. Streater was informed by the residents, it does not occur.

11. *Tamias quadrivittatus affinis* Allen. COLUMBIAN CHIPMUNK.—"Abundant throughout the interior of British Columbia."

Ten specimens, all from Ashcroft, collected June 18 and 19, and July 3-8. As already noted (see *antea*, pp. 103-106), the small Chipmunks of the *T. quadrivittatus* group from British Columbia are strikingly similar in general features to the true *T. quadrivittatus* from Central Colorado, though separated from it by a thousand miles of territory and several quite different intervening conspecific forms.

12. *Hesperomys leucopus austerus* (Baird). BAIRD'S WHITE-FOOTED MOUSE.—"Very common in all parts of British Columbia visited."

Nine adult specimens from Westminster, taken April 3 to May 15; one adult female from Mt. Lehman, June 3; three nearly full-grown young from Ducks, Aug. 4-10, and a similar example from Ashcroft, June 18, are typically referable to Baird's *Hesperomys austerus*. This form is very near *H. leucopus arcticus* Mearns (Bull. Am. Mus. Nat. Hist., Vol. II, No. 4, p. 285), from which it differs in much darker colors and larger ears. Specimens from Point Reyes, Cal., are also quite similar.

13. *Neotoma cinerea* (Ord). BUSHY-TAILED WOOD RAT.—"Very common throughout the interior of British Columbia."

Six specimens, Ducks, August 1 to Sept. 1. They show much variation in color; the single September specimen is browner than the others, being pale cinnamon rufous above varied with black.

14. *Arvicola (Myonomes) riparius* (Ord). MEADOW MOUSE.—Two fully adult specimens from Ducks, taken August 4, and two immature examples from Westminster, taken May 2, I am unable to distinguish from ordinary *A. riparius* of the East. In two of the three skulls preserved the middle upper molar has the usual postero-internal loop; in the other skull it is absent.

15. *Arvicola (Chilotus) oregoni* (Bachm.). OREGON MEADOW MOUSE.—Male and female adult, Ducks, August 4.

16. *Zapus hudsonius* (Zimm.). JUMPING MOUSE.—“Frequents the meadows of both the interior and the coast region.”

One adult specimen from Mt. Lehman, June, and two not fully grown from Ducks, August. The adult specimen is much larger than the average of eastern examples. The same is true of a specimen from Pacific County, Washington, collected by Mr. A. H. Helme, April 20, 1885.

17. *Fiber zibethicus* (Linn.). MUSKRAT.—Three specimens, Ducks, August 2-5.

18. *Thomomys talpoides douglassi* (Rich.). OREGON GOPHER.—“Common throughout all parts of the interior of British Columbia I visited.”

Five specimens, Ducks, August 8-21. They are all immature, which may account for their small size, as compared with California examples (*T. t. bulbivorus*). They are also very differently colored, being much lighter about the mouth, more rufescent above, and much less tawny below.

19. *Erethizon epizanthus* Brandt. WESTERN PORCUPINE.—“Not uncommon in the interior; less so on the coast.”

Represented by a single specimen, unfortunately without a label.

20. *Lepus americanus washingtoni* (Baird). WESTERN VARYING HARE.—“Not common; found only in the coast region.”

Represented by a very young specimen and another nearly full grown, from Mt. Lehman, June 14 and Sept. 23.