

ARTICLE XVII.—*Description of a New Species of Weasel, and a New Subspecies of the Gray Fox, from Arizona.* By EDGAR A. MEARNs, Assistant Surgeon, U. S. A.

***Putorius arizonensis*, sp. nov.**

(ARIZONA WEASEL.)

Habitat.—Mountains and high plateau region of Arizona, down to the lower limit of the forest zone of *Pinus ponderosa*.

General Characters.—This is one of the smaller Weasels, its skull being but little larger than that of *Putorius vulgaris* from England. The general effect of its coloration is similar to that of *P. longicauda*, though approaching the deeper tints of *P. brasiliensis xanthogenys*.

Summer Pelage (based on the type specimen, a nursing female, taken June 20, 1886*).—Above yellowish mahogany-brown, deepening to chocolate-brown on the front of the head; tail with terminal black pencil; below tawny-yellow, becoming paler on the inner surface of the limbs, and shading to white on the hind toes and on the whole of the manus; throat and border of upper lip white; tail of the same color as the upper surface, but paler towards the base below; whiskers mixed black and white, the longest measuring 33 mm. in length; no trace of a white spot between the eyes, nor of a dark spot near the angle of the mouth. There are a few white hairs in the nape.

Fall Pelage (No. 2489, Am. Mus. Coll., ♂ ad., Quaking Asp Settlement, Mogollon Mountain Divide, Yavapai Co., Arizona, Sept. 20, 1887, collected by Dr. Mearns).—Similar to the above, but with more tawny-yellow staining on the feet, and a more olivaceous shade above. The white spot between the eyes, seen in *xanthogenys*, is suggested by a minute white spot, and the dark blotch at each side of the head, behind the angle of the mouth, sometimes seen in *longicauda*, and conspicuous in *xanthogenys*, is likewise indicated.

Measurements of Type (taken in the flesh by the author).—Length, measured from nose to end of caudal vertebræ, 302 (to end of hairs of tail, 323); head and body, measured from nose to tuberosity of ischium, 198; tail, from root to end of vertebræ, 109; tail, from root to end of hairs, 130; height of ear above crown, 11; height of ear above notch, 19; width of ear, 17; from tip of nose to eye, 14; to ear, 30; to auditory meatus, 35, to tip of ear, 49; to occiput, 45; to end of outstretched hind limb, 275; distance between eyes, 13; girth of neck, 65; girth of chest, 78; girth of abdomen, 88; girth of loin, 70; fore limb, measured from coracoid process to end of longest claw, 63; from olecranon to end of claws, 44; length of manus, 22; longest claw of manus, 4.3; hind limb, measured from great trochanter to end of claws, 77; knee-joint to end of claws, 56; length of pes, 32; longest claw of pes, 4 mm.

* A memorandum of the colors was made before skinning, the specimen having been subsequently preserved in a solution of alum and salt, which extracted much of the coloring matter.

Cranial Characters.—The only skull before me is that of the type (No. 1886, Am. Mus. Coll.) which, fortunately, is perfect, and adult, the sutures being closed and obliterated; but, from the perfect condition of the teeth, and the absence of prominent bony ridges, it is probably but middle aged. The animal was nursing young at the time it was taken. It is most closely related to *Putorius brasiliensis xanthogenys*, *P. b. frenatus*, and *P. longicauda*, from which its small size at once distinguishes it, it being less than half the size of either of them, as regards bulk and weight, the skull measuring but 35.3 mm. in basilar length by 22 mm. in zygomatic breadth. With the single specimen in hand, and an insufficient series of skulls of the remaining species of the genus from which to prepare reliable *average* measurements and ratios for comparison, it is impossible, as yet, to give a sufficiently exact account of the cranial and dental characters of this species. It appears to present no very salient points of difference from the forms above named, though the palatal notch is a little shallower, and the audital bullæ slightly more developed. The height of the mandible, as compared with its length, is a little less than in those species, but greater than in *vulgaris*, *cicognani*,* and *erminea* from the Eastern United States. Its proportions are nearest to the two northern subspecies of *brasiliensis*, in which the brain-case is relatively broader, as compared with the basilar length of Hensel, than in *longicauda*, and considerably broader than in any other American species of the genus—taking the genus *Putorius* in a wide sense, to include *Cynomyonax* and *Lutreola-arizonensis* having the brain-case broader than *longicauda*, equaling *frenatus*, and appreciably narrower than *xanthogenys*. The zygomatic breadth is relatively less than in any of the remaining North American species except *cicognani* and *erminea*. The ratio of the two measurements, from the posterior border of the foramen magnum to the hinder margin of the palate, and from the last point to the front incisor teeth, is, in *arizonensis* 54:46, in *xanthogenys* 53:47, in *frenatus* 58:42, in *longicauda* 53:47, in *erminea* (from the Eastern United States) 55:45, in *cicognani* 58:42, in *vison* 48:52, in *nigripes* 51:49. No sagittal crest is developed in this specimen, and it is probable that it will prove to be inconspicuous in this species, the skull as a whole being lightly ossified.

Type, No. $\frac{2420}{1888}$, Am. Mus. Coll., ♀ ad., San Francisco Forest, Yavapai County, Arizona, June 20, 1886, Dr. Edgar A. Mearns.

* The species provisionally referred to this form is a very slender Weasel, from Fort Snelling, Minnesota, represented in my collection by five specimens, which are very distinct from *erminea* and *vulgaris*, both of which have representatives in this region. Its size and proportions are nearer to Bonaparte's diagnosis of this species, as elaborated by Professor Baird, than to the same author's "*M. richardsoni*," which has a longer tail. These specimens averaged 218 mm. in length of head and body, with the caudal vertebrae 80 mm., and the pes 40 mm. The furry coat is short and quite harsh, as compared with the small Weasels of the East, and differently colored, the color being chocolate-brown, becoming much darker on the fore part of the head, which has the upper lip indifferently white or dark, or a mixture of both. The feet are mostly colored like the upper surface, and the underparts nearly pure white, there being no staining of the upper or under surface with yellow. End of tail black.

***Urocyon virginianus scottii*, subsp. nov.**

(SCOTT'S FOX.)

Habitat.—Southern California, Arizona, and Western New Mexico.*General Characters.*—Similar in general size and pattern of coloration to *Urocyon virginianus*, but more slender, with very much longer ears and tail, with the muzzle more attenuated, and the colors paler, purer gray, and more yellowish fulvous.Type, No. $\frac{1448}{638}$, ♂ nearly adult, Pinal County, Arizona, October 28, 1884; collected by W. E. D. Scott.*Description of Type.*—About the size of *U. virginianus*, but more slender, with much longer tail, and much longer and more pointed ears; upper surface a fine, hoary gray, the underfur being gray, the long coat black with broad white or silver-gray subterminal annulations; towards the sides the black area on the long hairs gradually decreases, and, in consequence, the color becomes paler and grayer; whole of lower jaw black, curving around the commissure and extending forward as a narrow marginal band as far as the whiskers, where the whole sides of the muzzle become black (as are the whiskers), excepting a small white spot adjoining the nasal pad; lower half of face, inner surface of ears, throat, a large patch on the breast and another on the belly, pure white; convexity and base of ears, sides of neck (meeting to form a gorget), edge of belly, and hinder surface of limbs, yellowish fulvous, darkest on the base of the ears; fore limbs with a hoariness extending from the middle of the humerus to the feet; chest and inner sides of limbs stained with fulvous; tail gray, with a broad stripe of pale yellowish fulvous below, and a narrow stripe of black above, formed by the so-called 'mane' of stiff hairs in the median line.*Measurements.*—No. 472, Mearns Collection,* ♂ ad., near Fort Verde, Yavapai County, Arizona, November 22, 1886: Length, measured from nose to end of caudal vertebræ, 985; head and body, 585; tail from root to end of vertebræ, 405; to end of hairs, 475; greatest expanse of tail, 200; girth of chest, 290; height of ear from notch, 78, above crown, 83; width of ear, 75; distance between eyes, 31; diameter of eye, 15; length of longest whisker, 90; from tip of outstretched fore limbs to that of outstretched hind limbs, 925; from tip of nose to front incisor teeth, 16; to angle of mouth, 67; to eye, 59; to centre of pupil, 68; to ear, 118; to tip of ear, 212; to occiput, 146; to end of outstretched hinder extremity, 905; fore limb from coracoid process of scapula to end of claws, 267; from olecranon, 192; length of manus, 94; width, 32; hind limb from great trochanter to end of claws, 350; from knee-joint, 240; length of pes, 132, width, 32; weight, 8¼ pounds Avoir. Iris hazel.

No. 664, Mearns Collection, ♀ ad., Copper Cañon, Verde Mountains (near Forte Verde), Arizona, February 10, 1888: Length, measured from nose to

* Measured in the flesh by the author; still in a preservative fluid, and not yet catalogued in the American Museum Collection.

end of caudal vertebræ, 1,105; head and body, 630; tail, from root to end of vertebræ, 470; to end of hairs, 545; breadth of expanded tail, 190; girth of chest, 250; height of ear from notch, 84; above crown, 92; width of ear, 80; distance between eyes, 30; diameter of eye, 15; length of longest whisker, 97; from tip of nose to front teeth, 14; to angle of mouth, 68; to eye, 59; to centre of pupil, 69; to ear, 123; to tip of ear, 225; to occiput, 148; to end of outstretched hind limbs, 950; fore limb from coracoid to end of claws, 275; from olecranon, 203; length of manus, 95; width, 30; claws, 11.5, 15, 14, 14, 13.5; hind limb from great trochanter to end of claws, 355; from knee-joint, 220; length of pes, 135; width, 28; claws, 13, 13, 13, 13.

Average measurements of three adult males of *Urocyon virginianus*, from the Hudson Highlands, New York, taken by the author, and measured in the flesh: Head and body, 642; tail from root to end of vertebræ, 333; to end of hairs, 437; breadth of expanded tail, 229; height of ear above crown, 77; from tip of nose to eye, 54; to ear, 117; to occiput, 143; fore limb from olecranon to end of claws, 190. Iris grayish brown.

Cranial Characters.—The produced muzzle and slender frame of this Fox as compared with the shortened muzzle and stouter build of the eastern animal, should, it would seem, find expression in pronounced cranial characters; but I have examined the half-dozen skulls before me without being able to fix upon a single diagnostic character, skulls from New York differing more among themselves than they do from Arizona specimens; but there are *average* differences between specimens from the two regions; but, to define them with precision, larger series of specimens are required.

Remarks.—There is considerable variation in the intensity of the fulvous markings in the six skins examined, the brightest one having been taken in February. The contrast of these markings with the beautiful silver-gray of the upper surface is very pleasing, the pelts being handsomer by far than those of the Eastern Gray Fox, and highly prized by the Indians. All of these specimens differ from eastern ones in having all of the underfur gray, except upon the forehead where it has a faint fulvous tinge, whereas eastern specimens are quite strongly tinged with fulvous over the whole upper surface, though the hairs are plumbeous at the extreme base. The Arizona animal is paler, clearer gray above, with the fulvous markings yellowish instead of chestnut-fulvous. The tail is differently colored in the two animals, that organ being distinctly tricolored in *V. scottii*—gray, striped with black above and yellowish fulvous below; while in *V. virginianus* the gray color of the sides of the tail is largely mixed with rufous,

especially towards the extremity, where the hairs are only black for their terminal three-fifths.

Scott's Fox is distinguished by the great size of its ears, which measure 11 mm. more in height than those of *U. virginianus*; also by the greater length of its tail, the caudal vertebræ averaging 105 mm. more in length than in the eastern species, which is stouter, with relatively shorter limbs and heavier body. The differences noted between the Eastern Gray Fox and the present subspecies have a close parallel in the case of *Vulpes velox* and *V. macrotis*. In *V. velox*, the Eastern Kit Fox, the body is stout, with short ears and tail; while in *V. macrotis*, which inhabits Southern California and Arizona, the ears are much enlarged, the tail elongated, and the form slender. In external appearance Scott's Fox differs as much from the Eastern Gray Fox as *V. macrotis* does from the Eastern Kit Fox; but the well-marked cranial characters which serve so well to distinguish the latter species from each other are absent in the Gray Foxes; or, rather, the variations are so great in skulls from a single locality that the average differences between specimens from the two regions are overlapped by exceptional individuals in either.

Skulls of a Gray Fox from Nicasio, California, collected by Mr. C. A. Allen, agree essentially with those from Arizona; and Mr. D. G. Elliot procured a specimen of Scott's Fox in the San Francisco Mountains of New Mexico. Its range, therefore, extends from Southern California across Arizona into western New Mexico.