

**The Status of the Cooper Hawk.**—On November 10, 1855 (not "October, 1856," as given in various citations), Dr. James G. Cooper shot a hawk near Mountain View, Santa Clara County, California, that he thought was the same as the Ferruginous Rough-legs which he evidently saw quite commonly at that time in the same neighborhood (see Cooper, Pac. R. R. Repts., 12, book 2, part 3, no. 3, 1860, p. 148). The specimen in question shortly was sent East where it reached the hands of John Cassin who, in the Proceedings of the Academy of Natural Sciences of Philadelphia for October, 1856 (p. 253), made it the basis of his description of the new species *Buteo cooperi*. This bird was described repeatedly in subsequent literature, and commented upon variously. It was figured on plate XVI, accompanying volume 12 of the Pacific Railroad Reports, though not, as it proves, with any high degree of accuracy.

No other specimen entirely like the type of *Buteo cooperi* ever came to light, from California or anywhere else. One from Colorado, in the C. E. Aiken collection, Ridgway (Auk, 1, 1884, p. 253) for a time thought might belong to the same species.

Latterly, suspicion began to arise that *Buteo cooperi* was not a distinct species but a variant in the Red-tail aggregation of Buteos (see Ridgway, Auk, 2, 1885, p. 165). In the first edition of the American Ornithologists' Union Check-list of North American Birds (1886) the species was placed in the "Hypothetical" list (page 353) with the remark "Probably the light phase of *B. harlani* Aud.;" the same held, with slight modifications of statement, in the second and third editions (1895, p. 329, and 1910, p. 372). The latest author to offer critical comment is Swann (Monograph Birds of Prey, 1926, p. 392, footnote) who concludes from his examination of the type that "it is an aberrant example" of *Buteo borealis calurus*.

In the course of my efforts to run down various uncertain records of California birds I have just made a study of the present case. Through the kindness of Dr. Herbert L. Friedmann, Curator of Birds, United States National Museum, I have had here at the Museum of Vertebrate Zoology for several days the type specimen of *Buteo cooperi*. It is a skin in good condition, taken down from a mount. The earliest label, in Cooper's handwriting, indicates that it was a male. Cooper's and Cassin's supposition, however, that it was "young" or "immature" does not appear to be the case, for the bird, in my estimation, is in fully adult stage of plumage. It is a big-footed *Buteo*, unquestionably falling within the species *borealis*; there is no structural suggestion of any possible hybrid influence from *Archibuteo* (see Baird, Brewer and Ridgway, History N. Amer. Birds, 3, 1874, p. 296). The main characters which still prevented Ridgway (Auk, 2, 1885, p. 166) from relinquishing the "claims of *Buteo cooperi* as a distinct species" are the shortness or retraction of the tibiotarsal feathering and the "glaucous" color of the outer surfaces of the primaries.

The length of the tarsus itself shows no difference as compared with the average run of Red-tails; but it is the "bare part of tarsus in front" that shows extraordinary length as compared with most individuals of the Red-tail group, about as indicated by the figures in Ridgway's table.

In this regard, it looks to me as though in the type of *cooperi* the feathering of the flanks and tarsi had not as yet at the time of capture undergone replacement by molt, although the feathering in other tracts had; in other words, the results of wear are evident in extreme degree. Nevertheless, there is shown a greater exposure of the scaled portion of the limb segment in the type than in most Red-tails; thirteen complete transverse scutes can be made out on the right leg, eleven on the left, whereas eight to eleven is the number in the specimens of *harlani* now before me, as well as in the majority of *calurus*. This is obviously a variable feature; for now and then an example of *calurus* has twelve or even thirteen scutes showing. In no. 10643, Mus. Vert. Zool., from Mayfield, Santa Clara County, California, there are fourteen complete scutes on the right leg and twelve on the left. Therefore, in my opinion, the type of *cooperi* merely happens to show an extreme of development of scalation versus feathering on the lower leg.

The subspecies *Buteo borealis harlani* was never properly understood until Swarth's thoroughgoing study of it in 1926 (Univ. Calif. Publ. Zool., 30, pp. 105ff), wherein the characters of that race were correctly set forth and its summer and winter ranges for the first time properly outlined. Shortly afterward, Taverner (Victoria Memorial Museum, Bulletin no. 48, Biological Series no. 13, 1927, 20 pages, 3

colored plates, 1 map) presented a large amount of additional and valuable information concerning variations within the *borealis* group. His conclusions as to the pattern of subspeciation within the group were not, however, in accord with Swarth's conclusions. After reviewing both papers and especially Swarth's latest contribution (Condor, 30, 1928, p. 197), I am compelled to say that my own understanding of the facts and implications coincides exactly with that of Swarth. In other words, *Buteo borealis harlani* is a separately recognizable subspecies, with a definite summer range, a definite migration route, and a definite winter range; true, it shows wide variations in its several characters, overlapping other subspecies, but this is quite consistent with its status as a subspecies.

As to the color characters of the type of *Buteo cooperi*, its tail is just about an average for adult *harlani* (see Swarth's descriptions and comments, and Taverner's plate 1, especially figures 18 and 21). The tail is chiefly white at the base, becoming largely reddish toward the end, but with much confused longitudinal dashing with dusky and with a subterminal black bar and a white ending. The head and shoulders are exactly as for *harlani* in its so-called "light" phase (see Taverner's plates 2 and 3, especially figure 6 on the latter); there is conspicuous lack of any chestnut edgings to the feathers, as compared with *calurus*, and much white shows through. There is also much concealed white in the mantle. The underparts are very light, with no streaking or barring whatsoever on the chest, tibiae and crissum (about like Taverner's plate 3, figure 6). The primaries lack any distinct barring, as emphasized in the descriptions of *cooperi*; but I do find suggestive traces of it here and there. The barring of the primaries varies markedly in the large series of Western Red-tails at hand. The type of *cooperi* shows an extreme but not unique meagerness of it.

There remains just one of the characters ascribed to *cooperi* which, admittedly, is puzzling. This is the "glaucous" tone on the outer surfaces of the closed wings, especially of the outer webs of the outermost primaries. Doubtless this was much more conspicuous in the specimen seventy-five years ago than it is today; for it consists of a sort of "bloom", such as is easily lost by wear. The specimen now shows little of it on the most exposed parts of the flight feathers; chiefly does it appear where the feathers have been shielded from handling. This bloom is quite like that shown normally in *Archibuteo*, in which, in just one year's cycle of wear, it may be nearly or quite obliterated on exposed portions of the feathers. I have been able to find but few specimens in our entire series of *Buteo borealis* and subspecies (113 skins) which show any trace of this bloom. It consists, apparently, of a state of pigmentlessness, hence of white color, of the attenuated tips of the barbs which project upward from the surfaces constituted by the connected barbs. I am at a loss to explain the presence of this "hoary plumbeous cast", as Ridgway (1885) calls it, except on the ground that it is a sport variation involving lack of pigmentation, of a type that happens to be of uncommon occurrence in the Red-tail section of the buteonine group of hawks.

To sum up, my examination of the type of *Buteo cooperi* Cassin in comparison with the other materials at hand, together with all the published knowledge of individual and geographic variations in the group to which it belongs, leads to my determination of it positively as an example of *Buteo borealis harlani* Audubon, as this race has been defined by Swarth. It can be called aberrant in only the one respect, the presence of the "bloom" above referred to. There is no question as to the source of this specimen—that it was actually taken in Santa Clara County, California, as stated by James G. Cooper in various places in the literature where he mentions the matter. This constitutes the only record of the race *harlani*, so far, from California. Yet it is not an astonishing occurrence; strays—vagrants—of other species of birds summering in the same range in which *harlani* regularly breeds (northern interior British Columbia, etc.) frequently get switched off, as it were, from their southeastward migration route and reach California. Only a few miles intervene in northern British Columbia between the narrow Pacific Coast strip and the interior, faunally so different; and occasional crossing by individuals likely occurs, with resulting divergence in southward route to wintering grounds so far apart as the states of Louisiana and California.—J. GRINNELL, *Museum of Vertebrate Zoology, University of California, Berkeley, May 27, 1930.*