

ON THE NAME OF THE NORTHERN BALD EAGLE AND THE IDENTITY OF AUDUBON'S GIGANTIC "BIRD OF WASHINGTON"

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DURING his extraordinary career, John James Audubon was pardonably confused about the identities of some of the myriad, little-known birds in the wilderness around him. Some of his early misconceptions he cleared up himself; others continued to baffle ornithologists long after his death.

A case in point is furnished by his remarkable "Bird of Washington" (*Falco washingtonii* Audubon, *Ornithological Biography*, 1, 1831:58-65), long thought to have been an immature Bald Eagle (*Haliaeetus leucocephalus*). Although Audubon came to realize that the dark young and the white-headed, white-tailed adults of the Bald Eagle belonged to the same species, he continued steadfastly to believe in the existence of another sea eagle in eastern North America—a larger, fiercer, still more magnificent creature—the "Bird of Washington." Before discussing the complexities which resulted from this belief, let us consider briefly Audubon's feelings about the matter. He wrote (*op. cit.*, p. 61):

. . . as it is indisputably the noblest bird of its genus that has yet been discovered in the United States, I trust I shall be allowed to honour it with the name of one yet nobler, who was the saviour of his country, and whose name will ever be dear to it. To those who may be curious to know my reasons, I can only say, that, as the new world gave me birth and liberty, the great man who assured its independence is next to my heart. He had a nobility of mind, and a generosity of soul, such as are seldom possessed. He was brave, so is the eagle; like it, too, he was the terror of his foes; and his fame, extending from pole to pole, resembles the majestic soaring of the mightiest of the feathered tribe. If America has reason to be proud of her Washington, so has she to be proud of her Great Eagle.

It is easily seen that the great naturalist's intense emotions were aroused over and above his normal enthusiasm at what he believed to be a bird new to science. The Washington Eagle was formally presented to science with plate 11 of the *elephant folio* (1827), in which the bird looks much like an immature Bald Eagle. Its description was completed with the written account that followed (1831), which will be considered further below.

The Bird of Washington, virtually forgotten and long buried in the crypts of synonymy, reappeared on the nomenclatural scene in connection with the large Bald Eagles of the northern part of the North American continent, which had been separated by Townsend (1897) under the name *alascanus* (type locality: Unalaska, Aleutian Islands; type specimen: male, U. S. National Museum No. 151567). Townsend's name stood for the northern sub-

species until Peters (1931:258) replaced it with the older name *washingtoniensis* Audubon (elephant folio), explaining his action by the words (footnote): "Audubon's type of *washingtoniensis* had a wing measurement of 32 inches; 4 inches longer than any Alaskan specimen measured by me if measured the same way."

Bent (1937:333) and the American Ornithologists' Union Check-List (1944:445) shortly followed suit. Soon afterward it became necessary to change the name once again (A. O. U., 1948:439), this time to *washingtonii*, because a number of the elephant folio plates by one engraver (Lizars) bore the name *washingtoniensis*, while others in the same edition (engraved by Havell) were labelled *washingtonii*. Therefore, the use of the name *washingtoni* by Bangs (1898:174) for the Bald Eagles of the northeastern United States fixed the one to be used, according to the "principle of first reviser." The northern Bald Eagle thus became *Haliaeetus leucocephalus washingtonii* (Audubon), with Henderson, Kentucky, where Audubon secured his specimen, as type locality. Audubon's name belonged once more to a bird, if to a less spectacular one than he had originally envisioned.

The logic of Peters' reasoning is obvious, but vulnerable. If Audubon's bird from Henderson was too large for a southern Bald Eagle, too large, in fact, for any known northern bird, it must have been a northern bird. But the question here is, how much too large? The picture evoked by a careful consideration of the original written description is downright unnerving.

I am not the first to appreciate this. Many years ago J. A. Allen (1870) brilliantly reviewed what was then known and thought about Audubon's great eagle, remarking on its incredible size and concluding, doubtfully, that it may have been an extremely large, immature Bald Eagle. He stated in closing that "a 'few grains of allowance' may be safely made for slight inaccuracies on the part of its enthusiastic discoverer." Much later, Friedmann (1950:495) expressed similar doubts, stating that the wingspread (of 10 feet and 2 inches) was too great for any eagle. Carrying this line of thought somewhat further, I found that *all* of the measurements were, as Friedmann put it, "undoubtedly exaggerated," or that Audubon had before him a form of eagle which no longer exists, or that he was in possession of a freak individual. A statistical analysis, the details of which follow, shows that one or another of these conclusions is inevitable.

Table 1 shows the disparity of certain of Audubon's measurements (converted to millimeters) of his type with those of northern birds given by Friedmann (*op. cit.*, p. 489). Audubon said his specimen was a male, but even supposing he mis-sexed the bird, we see his huge eagle to have been much larger than recorded female northern Bald Eagles.

TABLE 1
COMPARISON OF MEASUREMENTS OF MALE AND FEMALE *Haliaeetus leucocephalus alascanus* TOWNSEND* WITH THOSE OF THE TYPE OF *Falco washingtonii* AUDUBON (MALE?)

| | <i>washingtonii</i> (1 specimen) | <i>alascanus</i> ♂ ♂ (29 specimens) | <i>alascanus</i> ♀ ♀ (42 specimens) |
|------------------|-------------------------------------|--|--|
| | | range mean | range mean |
| Wing | 812 mm. (32 in.) | 570-612 (588.6) | 605-685 (640.2) |
| Tail | 381 mm. (15 in.) | 290-322 (309.7) | 300-365 (339.4) |
| Tarsus | 114.3 mm. (4½ in.) | 84.5-106 (99.8) | 83-110 (101.9) |
| Wingspread | 10 ft. 2 in. | | |

* I am indebted for some of the measurements to Dr. Herbert Friedmann.

The results of a statistical analysis of the variability of wing length in a number of *female* eagles are shown in Figure 1. The measurements used were taken from Alaskan specimens and winter-collected birds from the northern United States, and hence were among the largest available. Wing measurement was chosen because of its prevalence in taxonomic work, and because of its fairly low relative variability. Figure 1 also shows the theoretical characteristics of a hypothetical population represented by the type of *washingtonii*. These characteristics were arrived at by making the logically justifiable assumptions that the coefficients of variability in forms presumed to be closely related are roughly similar, and that Audubon's type was an individual near the mean of its population. Using the coefficient of variability for a known population (of Bald Eagles in this case), one can compute the theoretical standard deviation of the unknown population. Details and discussions of this technique have been given recently by Fisher (1952).

If one assumes Audubon's specimen to have been approximately average in size, virtually no overlap is found between the greatest wing length expected in modern [*i.e.*, known] *female* Bald Eagles and the lowest expected wing length in the hypothetical population. For added safety, I have also assumed Audubon's specimen to have been nearly the largest possible example of its population, and placed a second theoretical mean three standard deviations below the first, computing another expected range from the new mean. Since the second mean is smaller, and the standard deviation varies with the mean, it is necessary in this case to compute a new theoretical standard deviation, although this was not mentioned by Fisher. In this second case, as shown by Figure 1, some overlap would occur, but the separability of populations is still more than 97 per cent of recent eagles from 84 per cent of "Audubon eagles," more than enough by most present-day taxonomists' standards for subspecific recognition. The differences are so great that minor variables,

such as the difference between chord and flat measurements, would not significantly affect the results. We are faced by the single hard fact that Audubon's type, which is all that we have to go on, was far too large to be considered a Bald Eagle of either sex or of either present-day race. Had I compared Audubon's "male" bird with male northern Bald Eagles, it would have been impossible to fit the figure into this page using this scale!

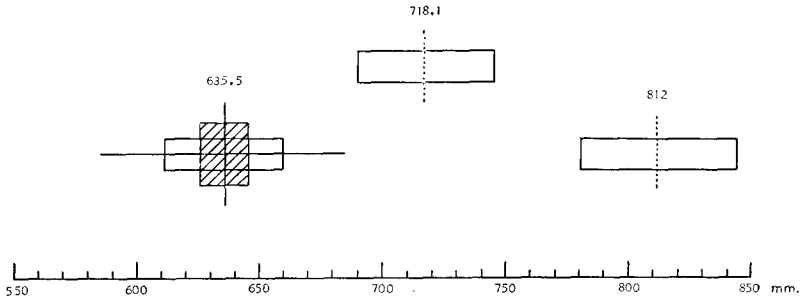


FIG. 1. Variability in wing length of 25 females of *Haliaeetus leucocephalus alascanus*, compared with the theoretical variability in the same measurement of "*Falco Washingtonii*." Shaded rectangle = mean \pm 2 standard errors. Unshaded rectangles = means \pm 1 standard deviation. Horizontal line = observed range of 25 females of *alascanus*. Solid vertical line = mean of *alascanus*. Dotted vertical lines = assumed means of *washingtonii*. *Haliaeetus leucocephalus alascanus*: number of specimens (N) = 25; mean (M) = 635.5; standard deviation (σ) = 24.5; standard error of the mean (σ_m) = 4.9; coefficient of variation (V) = 3.85 (measurements in millimeters). *Falco washingtonii*: (assuming type is average in size) N = 1; M = 812; V = 3.85; σ = 31.3; (assuming type is nearly the largest of population) N = 1; M = 718.1; V = 3.85; σ = 27.7.

Inspection of the other measurements (Table 1) suggests that some or all of them, treated statistically, would also show differences sufficiently great to merit nomenclatural recognition by present standards. I have not gone further, as the argument is carried by one demonstration and, after all, we do not know how (and let me suggest, reluctantly, if) Audubon actually made his measurements.

The assumptions that may now be made are three. Let us consider the least probable, and the most interesting, first. This is the remote possibility, properly derided by many earlier naturalists, that Audubon actually had an eagle of the genus *Haliaeetus*, of the size described, and specifically distinct from *leucocephalus*—a species that became extinct before its existence was otherwise indicated. There is, of course, no evidence from other sources of the presence of such a form in historic times. However, the peculiarity of the tarsal scalation, and the odd conformation of the cere, as shown in Audubon's plate, provide material for speculation of this sort, as neither is at all typical

of the Bald Eagle. The characters of the tarsus have been discussed at some length by Allen (*op. cit.*) and Gilpin (1873), both authors concluding that to blame for the irregularity. The atypical cere does not seem to have been carelessness on the part of Audubon, his engravers, or both, may have been mentioned previously, and was brought to my attention by J. Van Tyne.

It is also thought-provoking to read Audubon's description of the nesting of a pair of the brown Birds of Washington on a cliff at the mouth of Green River, near Henderson (*op. cit.*, pp. 58-60). The possibility, suggested by their choice of the cliff site, that these were in fact Golden Eagles (*Aquila chrysaëtos*) is rendered unlikely by his explicit account of their feeding largely upon fish. The point is that nesting pairs of two immature Bald Eagles probably do not occur at all; they are at any rate so rare that none were known to Bent (1937:322), matings involving even one immature being very unusual. Quite possibly subadult Bald Eagles lack sufficient sexual initiative to bring about successful mating and rearing of a family by two immature birds, although one individual may be capable upon occasion of mating satisfactorily with an adult. Strong evidence against the possible specific validity of Audubon's bird, however, is the fact that no species of *Haliaeetus* other than *leucocephalus* has been discovered in Pleistocene deposits of the United States, and the known fossils are apparently little, if any, larger than large modern Bald Eagles (Howard, 1932:44).

The second possible conclusion is that some genetic or developmental anomaly was responsible for the size of Audubon's bird, assuming it to have been a Bald Eagle. This also seems unlikely, but were it true, the aberration probably could have sprung as readily from one population as from another.

The final possibility, and by far the most probable, is that the measurements are simply unreliable. Whether they were supplied erroneously from memory, resulted from a different system of measurement from that now used, or were accidentally or intentionally falsified does not particularly concern us here. We are clearly not justified in assuming, because Audubon's measurements are too large for *any* Bald Eagle, that the bird must have been a *northern* Bald Eagle. If the measurements are in error, and we have seen the overwhelming probability that they are, there is no way of telling the magnitude of the error or its direction. (Add to this the point that, to keep the discrepancy from being much greater still, we have to assume—with dubious justification—that Audubon mis-sexed his specimen.) No case can be made for the application of the measurements or names based on this specimen to any population of the Bald Eagle.

If Audubon put down the measurements of *washingtonii* from memory, fabricating or exaggerating them to suit his inflamed fancy, the case comes within the meaning of Opinion Number 2 of the International Commission on

Zoological Nomenclature: “. . . we name the objects themselves, not our conception of said objects,” and the name is invalid. In any event, the situation is summed up by Canon XLV of the American Ornithologists' Union Code of Nomenclature (1892:53), which states: “Absolute identification is requisite in order to displace a modern current name by an older obscure one.” Such identification is lacking.

No specimen certainly identified by Audubon as a Washington Eagle appears to exist. The type of *washingtonii*, presented by Audubon to his friend, Dr. Rankin, was apparently not preserved (Allen, *op. cit.*). The northern Bald Eagle, as currently defined (see Peters, *loc. cit.*) does not breed in Kentucky. Consequently it will prove convenient, as well as necessary, to fall back on Townsend's name. The inimitable Elliott Coues once said, prophetically (Gilpin, 1873:430, footnote), “I wonder how many more times the ‘Washington Eagle’ must be put down before it will stay down!” Perhaps his question can finally be answered.

Neither *Falco washingtonii* Audubon nor *Falco washingtoniensis* Audubon is a *nomen nudum*, since they are accompanied by a plate and a figure in the first instance and a plate in the second, but neither name belongs in the synonymy of the Bald Eagle. The Washington Eagle should be placed with hypothetical species such as the Blue Mountain Warbler (*Sylvia montana* Wilson) and similarly unidentifiable forms. The subspecies of the Bald Eagle should henceforth stand as:

- Haliaeetus leucocephalus leucocephalus* (Linnaeus)
Falco leucocephalus Linnaeus
Haliaeetus leucocephalus alascanus Townsend
Haliaeetus leucocephalus alascanus Townsend
Haliaeetus leucocephalus washingtoni Bangs
Haliaeetus leucocephalus washingtoniensis Peters

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