

Recognize Great White Heron *Ardea occidentalis* as a species

Effect on the NA Checklist:

This would elevate to species rank a taxon formerly treated as a separate species (Great White Heron *Ardea occidentalis*).

Background:

The Great White Heron was treated as a species separate from Great Blue Heron (*Ardea herodias*) from its original description for more than a century through 1973, when AOU lumped it with Great Blue Heron based on evidence summarized in McGuire et al. (2019).

New information:

In the interest of streamlining proposals, I am not going to lay out all the details and will assume that committee members will read McGuire et al. (2019), where all the critical data are presented from the contact zone between the taxa.

The key points in my opinion are as follows:

1. The evidence for the 1973 lump was weak at best.
2. The notion that Great White Heron (GWHE) is a color morph of Great Blue Heron (GBHE) is convincingly dismantled.
3. The former recognition of the Würdemann's Heron (intermediate between GBHE and GWHE in plumage) as a valid subspecies has caused great confusion. It occurs entirely within the range of GWHE and represents gene flow between GBHE and GWHE. It continues to confound interpretation of the situation.
4. Mating between white birds and any individuals with blue plumage (a continuum of plumage phenotype from phenotypically pure GBH through the Würdemann's plumage type) was significantly non-random, i.e. assortative, e.g. 97 of 114 pairs (85%) were pure white-white or blue-blue.

Analysis and Recommendation:

As McGuire et al. emphasized, this is one of those inevitable borderline situations that create havoc for categorical classification schemes. McGuire et al. would be the first to point out that the situation is incompletely understood. However, here is what is known from the available evidence: when given the chance to pair, white birds pick white birds and blue birds pick blue birds to a much greater degree than expected by chance. In other words, these two taxa regard each other as "different" when it comes to mate choice. Thus, gene flow is reduced by assortative mating, and thus the two taxa should be ranked as separate species according to

the most frequently applied operational definition of the BSC. I think the data are sufficient to place the burden-of-proof on treatment as the same species. Further, the data used to lump the two were woefully inadequate by modern standards, and the decision to lump them was a manifestation of the eagerness to do so in the Lumperama era.

In a comparative framework, the contact zone between these two resembles empirically that of Lazuli and Indigo buntings, Rose-breasted and Black-headed grosbeaks, White and Scarlet ibises, and others that we treat as separate species: gene flow is substantial but far from “free”; the contact zone is strongly dominated by phenotypically pure birds, and the frequency of mixed pairs is low. Free gene flow would produce a hybrid swarm at the contact zone; after 10 generations of free interbreeding, the chances of finding any pure birds in a closed system would be less than 1% (vs. at least 85% empirically in this system). Of course the real world contact zone is not a closed system, yet the level of immigration required to maintain 85% pure phenotypes seems unreasonably high.

English name:

Ardea occidentalis was known as Great White Heron throughout its history; it is an appropriate name, and I see no reason to change it. As for considerations for new names due to splitting daughter species from parent, there is no need to do so under C.3 in our draft English names guidelines.

Literature Cited:

McGuire, H. L., S. S. Taylor, and F. H. Sheldon. 2019. Evaluating the taxonomic status of the Great White Heron (*Ardea herodias occidentalis*) using morphological, behavioral and genetic evidence. *Auk* 136: uky010. <https://doi.org/10.1093/auk/uky010>

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