

## FIRST REPORT OF ABNORMAL PLUMAGE IN THE ANHINGIDAE

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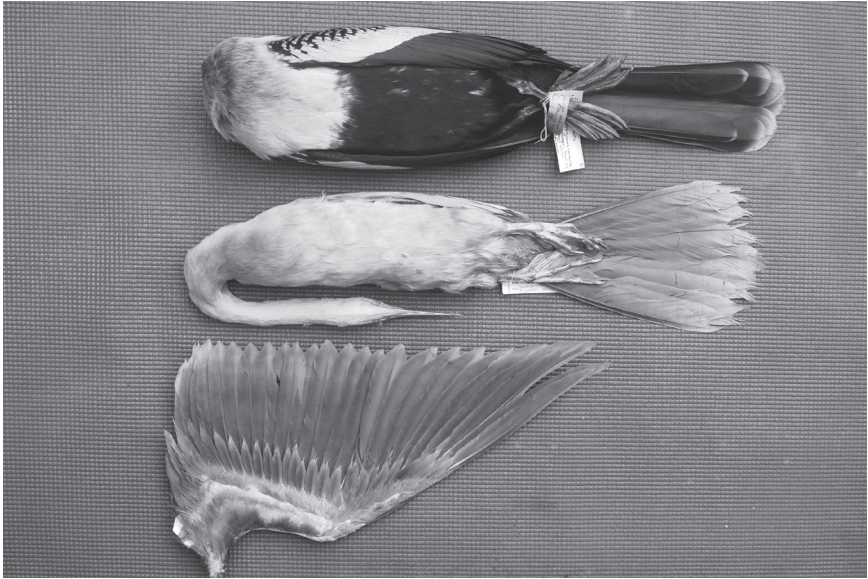
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**Abstract.**—Plumage abnormalities are rarely reported for species of Pelecaniformes and have not been recorded for most species of this order. I describe a noneumelaninic schizochroic female Anhinga (*Anhinga anhinga*) collected in South Carolina in 1987, the first reported case of aberrant plumage in this species.

Here I report a specimen of what is apparently the first known occurrence of abnormal plumage coloration in the Anhinga (*Anhinga anhinga*). The specimen is the fawn variant of schizochroism, a condition resulting from the complete absence of the black or gray pigment eumelanin, with the retention of the brown or buff pigment phaeomelanin, which is normally masked by eumelanin. I compare the plumage of this female with that of normally-colored females. I relate the occurrence of this case of schizochroism to the reported incidence of plumage abnormalities among other species of Pelecaniformes.

### RESULTS

In 1988 I was given a specimen of a female Anhinga with abnormal, drab-brown plumage. It was salvaged from a freshwater pond near Kingstree, South Carolina, 19 August 1987. It was prepared as a study skin with right wing detached and spread (Fig. 1). The color of the specimen, is “fawn” or “cinnamon”, which is characteristic of schizochroic plumage (Harrison 1985). The colors of some feather tracts differ slightly in intensity. The tertials and feathers of the humeral tract are raw umber (color 123 of Smithe 1975). The dorsal surfaces of the rectrices and remiges are tawny olive (223D). Ventrally, the proximal  $\frac{3}{4}$  of the rectrices are sayal brown (223C); distally, they are the lighter color tawny olive, possibly due to ultraviolet fading. The contour feathers are predominately tawny olive (or “tawny buff”; Frederick and Siegel-Causey 2000), similar to the breast feathers of a normally-colored female Anhinga (Fig. 1). The webbing of the feet is raw umber; the rest of the softparts, including the gular pouch, bill, feet and legs, are yellow ocher (123C). Although the bird is in fresh plumage, the tips of the rectrices are much frayed; remiges are slightly frayed.



**Figure 1. Above: Skin of female Anhinga with normally pigmented plumage. Below: Specimen (wing and body) of schizochroic female Anhinga.**

#### DISCUSSION

The predominant color of many bird plumages is a “dull brown” (Harrison 1985), resulting from a mixture of two melanins, brown (phaeomelanin) and black (eumelanin). Noneumelanic schizochroism occurs when the plumage lacks eumelanin, and only phaeomelanin is present (Hailman 1984, van Grouw 2006), leading to a plumage that appears a pale buff-brown (Harrison 1985). Such plumage has also been called the “fawn variant” of “melanic schizochroism” (Buckley 1969), the non-eumelanic variation of schizochroism (Harrison 1985), and aeumelanism (Davis 2007). This plumage abnormality is controlled by a recessive sex-linked gene and in the wild usually occurs only in females (Harrison 1985).

In normally pigmented female Anhingas, both juveniles and adults, the feathers of the neck and upper breast are tawny buff; the lower abdomen, flight feathers and their coverts are gloss green (Schroger 1962) or Hooker’s green (Smithe 1975). The greater coverts and scapulars have lengthwise silvery streaks. As described above, the schizochroic bird’s plumage is entirely fawn or cinnamon. The tips of its rectrices and remiges are unduly frayed (Fig. 1), a condition often reported for abnormally plumaged birds, in which reduced pigmentation has weakened the feather structure. Such a condition may reduce mobility, thus lowering survivability (Harrison 1984).

Color aberrations are extremely rare in Pelecaniformes (Ross 1963, Gross 1965). Based on correspondence and examination of museum specimens, the latter author listed four individuals of two species of Phalacrocoracidae and one individual of Sulidae. These five birds represented < 1% of 847 cases of “albinism”, which Gross loosely defines as complete or partial absence or dilution of “pigment or melanin”. Since Gross’s report, a nestling Red-tailed Tropicbird (*Phaethon rubricauda*) with leucism (all pigments reduced in intensity (“diluted”; Harrison 1985) was collected in 1965 on Easter Island, Midway Atoll (U.S. National Museum 495 860; Clapp and Huber 1970). Nesbitt and Barber (1984) photographed, and observed on multiple occasions, a noneumelanic schizochroic Brown Pelican (*Pelecanus occidentalis*) in Florida. An “albino” Neotropic Cormorant (*Phalacrocorax brasilianus*) was reported from the Brazilian Amazon (Mallet-Rodrigues 2001). An “albino” Brown Booby (*Sula leucogaster*) was observed in coastal Brazil (Coehlo and Alves 1991). The bird described here apparently represents the first documentation of a plumage abnormality in the Darter family (Anhingidae), and one of the few known cases in Pelecaniformes.

As discussed by Gross (1965), the frequency of reports of abnormally-colored birds may be affected by the degree of their association with man; for example, there are many reports of color abnormalities for game birds and House Sparrows (*Passer domesticus*). The lack of reports for aberrant-colored Anhingas may be related to the relative isolation and inaccessibility of a species that inhabits swamps, saw grass marshes and mangroves (Frederick and Siegel-Causey 2000). Documenting the frequency and distribution of abnormally plumaged birds may have conservation implications if these aberrations are related to the presence of contaminants (Bourne et. al 1977). This is especially true of aquatic birds found in freshwater wetlands. Plumage abnormalities should be recorded in the ornithological or birding literature (Davis 2007).

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