

FEATHER STAINING IN FLORIDA SANDHILL CRANES

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Throughout their range Sandhill Cranes (*Grus canadensis*) acquire stained feathers varying in hue from brick red to yellowish gray, depending on local soil conditions (Walkinshaw 1949). Taverner (1929) discovered this stain of the normally gray feathers to be from ferric oxide. This color change accounts for the misnomer of Little Brown Cranes applied to the Lesser Sandhill Crane (*G. c. canadensis*), as well as for the first description of a Sandhill Crane as the "Brown and Ash Colored Crane," (Edwards 1750).

It was generally believed staining was the unintentional result of preening with dirt, mud, or decaying marsh vegetation on the bill (Walkinshaw 1949). However, Hyde (1968) suggests that adult cranes stain as "an intentional desire to change the color of the feathers associated with the act of pairing or connubial bliss . . . or an innate recognition that a color change would make them less conspicuous during nesting season."

On several occasions I have observed Florida Sandhill Cranes (*G. c. pratensis*) at the same location on Paynes Prairie, Alachua County, Florida, applying soil to their feathers. The site, approximately 80 by 10 m, was on a drainage canal spoil bank. The staining soil was a dark reddish brown, acidic (pH 5.3), loamy fine sand. Iron was 3.2 times more abundant, at approximately 0.7 ppm, in the area of the staining site than in the soil of the surrounding high ground (University of Florida, Soil Science Department, Analytical Research Laboratory, personal contact). The area, traversed daily by cattle, was devoid of vegetation, and the soil was generally loose. Three pen-reared Florida Sandhill Cranes began staining within one week after a bucket of soil from this site was placed in their pen. The disturbed soil and slight elevation, affording good visibility, in addition to local conditions, may have contributed to the site selection by the wild cranes.

Staining is not limited to adult cranes or to the pre-nesting season. On 30 May 1974 a pair of cranes and one young of the year, partially in juvenile plumage, were observed staining at the site. The 3 pen-reared cranes were also less than one year old when they began staining. Staining commonly occurs after periods of feeding in morning and late afternoon and seems to be most prevalent in spring and early summer. The staining process often begins with the feathers on the back, between the scapulars, and proceeds to the upper wing coverts, breast and lower neck. An examination of captured

birds and preserved skins shows that the major unstained areas are the underwing, head, and upper neck. When staining, the bill is used to apply small amounts of soil to individual feathers. Birds also have been observed to trickle a bill full of soil on the back before working it into the feathers. Though the head and upper neck are impossible to reach directly, birds are often observed rubbing the head and neck across their back while staining.

The only other crane known to stain is the likewise gray European Crane (*Grus grus*) (Berg 1931; Walkinshaw 1973). Walkinshaw (pers. comm.) further states that the Sandhill and European Cranes are much less conspicuous on the nest than white cranes and allow much closer approach while nesting than do the other cranes, including those that are mostly gray but do not stain. It appears from this that staining may have cryptic value during the nesting period. Drewian (1973) suggests that staining also has cryptic value during periods when adults are flightless. The fact that the most conspicuously colored cranes, i.e. white cranes, are the rarest would seem to indicate that staining has survival significance, but why has this behavior evolved in two of the duller-colored cranes? Staining by immature, as well as by sexually mature birds, seems to indicate that staining is not altogether related to nesting. Perhaps staining in cranes is a form of cosmetic coloration similar to that occurring in other birds (Vevers 1964) or the result of feather conditioning similar to dusting in other birds (Healy and Thomas 1973). Staining behavior warrants further investigation.

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CORRESPONDENCE

Editor

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I believe I must comment on the article "Singular Brown Pelican Feeding Behavior" (*Fla. Field Nat.*, 2: 44), by S.J. Stedman. This is an interesting observation but I question the interpretation. Additionally, Brown Pelicans on fresh water in Florida are not unusual. I have spent the past six and a half years observing Brown Pelicans in Florida and during this time have observed them on fresh water on numerous occasions and have received several similar observations from other individuals. While I have not observed the specific behavior described in the second paragraph of this note on fresh water, this type of behavior is normal activity of immature birds on salt water. In fact, for a few weeks immediately after fledging, immature birds spend considerable time singly or in small flocks, billing each other, grasping at and pulling branches and leaves through their bills, dipping their bills into the water, lifting and tossing branches, leaves, and other vegetation, making apparent swallowing motions of the pouch and head, and generally learning to manipulate the bill and undoubtedly developing the neural-muscular coordination necessary to begin capturing fish.

I believe that the correct interpretation of this "singular feeding" observations lies not in the fact that Brown Pelicans can utilize fresh water for feeding and that non-fish food is eaten, neither of which is demonstrated in this note, but merely that this was a young, inexperienced bird still in the process of learning to behave as a pelican should.

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