

Abberant Plumages in a Carolina Wren and two House Wrens from Kansas

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Albinism is the absence of melanin pigment in organisms. Albino birds have been classified into four groups (Pettingill 1958). Total (or pure) albinos have a complete absence of melanin pigment in the entire bird. Incomplete albinos exhibit a lack of pigment in the plumage, eyes, or unfeathered parts, but not all three. Imperfect albinos have reduced or diluted pigment in one of these three areas. In individuals which are classified into this third category, the pigment is never completely absent. The fourth class, partial albinos, exhibit total pigment loss from only a few feathers; the pigment-free areas may be symmetrical or asymmetrical. Pure albinos are very rare, constituting only 7% of the 1847 cases of albinism summarized by Gross (1965).

Albinos of any class are quite rare in wrens (Family Troglodytidae). Jacques Larivée (personal communication) lists one partial albino Marsh Wren (*Cistothorus palustris*) in his database of the Birds of Quebec; no other albino wrens of any species have been documented by participants in this long-term survey. Ross (1963) writes that "Albinism is extremely rare among owls, hummingbirds, wrens and titmice."; he listed three individuals of three species of wrens in his summary. Gross (1965) did not list individual species of wrens, but his review article listed only 73 individuals of 4 species of wrens documented prior to 1965. Contrasting this to the 152 individual albino American Robins (*Turdus migratorius*) or 104 albino individual House Sparrows (*Passer domesticus*) listed in this review, it is apparent that albino wrens are relatively uncommon. Here we report some observations of a partial albino Carolina Wren (*Thyrothorus ludovicianus*) and an imperfect albino House Wren (*Troglodytes aedon*) on Fort Riley (KS) during the summer of 2000, as well as an observation of a partial albino House Wren on the nearby Konza Prairie Biological Station in the summer of 1995.

On June 11, 2000 a female Carolina Wren was captured during banding operations at the MAPS (Monitoring Avian Productivity and Survival) station south of the Kansas River on Ft. Riley (lat/long coordinates here). This bird (Fig.1) exhibited symmetrical, partial albinism. Several primaries, secondaries, and rectrices were white or partially white; the bird was otherwise normally plumaged.

On June 25, 2000 a male House Wren was captured during banding operations at the MAPS station at Estes Draw on Ft. Riley (lat/long coordinates here). This bird (Fig. 2) was an asymmetrical, imperfect albino, with diluted pigment in the wing coverts and secondaries on its right wing. The bird was otherwise normally plumaged. This bird was recaptured at the same site on July 2, 2000 and exhibited similar plumage features at that time.

An asymmetric, partial albino male House Wren was observed on Konza Prairie Biological Station by Kennedy in 1995, during a study of nest box use by House Wrens and Bewick's Wrens (*Thryomanes bewickii*). This bird was not captured, but photographs were obtained, one of which is shown in Figure 3. Nestlings from this nest box did not survive, so no data are available on the inheritance (if any) of this particular plumage pattern. Kennedy has been conducting research on this species and other wren

species since 1983, and this is the only albino wren of any species that she has observed.

Seneca (1985), in reporting an incomplete albino Carolina Wren, noted that there were only two prior records of albinism in this species. Both were partial albinos; one reported by Ross (1963) and another listed in Terres (1980). As noted above, no records for albinos in this species are found in the Birds of Quebec database, and the species does breed in southwestern Quebec (Cyr and Larivée 1995). Haggerty and Morton (1995) do not discuss aberrant plumages in their account for *The Birds of North America*, so it is unclear if additional reports were found by these authors for the period between 1963 and 1995.

Ross (1963) includes two records of albinism in House Wrens. A total albino specimen is in the collection of the Academy of Natural Sciences, Philadelphia. He also noted a report of a partial albino individual of this species; no other details were provided for this bird. Johnson (1998) lists one report of a complete albino male that attracted a mate and produced young in Minnesota.

The cause of albinism is generally attributed to lack of activity of the enzyme tyrosinase, a key component of the pathway leading to the formation of melanin (White, et al. 1964). Pure or total albinos simply lack tyrosinase activity in the entire organism. Mechanisms leading to loss of tyrosinase activity in local regions of a birds skin have not been elucidated, but presumably involve mutations or other known mechanisms of gene inactivation. However, Phillips (1954) reported an instance of partial albinism in a Great-tailed Grackle (*Quiscalus mexicanus*), where a sliver under the skin apparently caused some feathers in the head and lores to lack pigment. It seems possible that local inflammations associated with elevated local skin temperatures could lead to pigmentation defects in bird feathers. Temperature sensitivity of tyrosinase in Siamese cats (Hubel and Weisel, 1971), for example, results in pale pelage near the body core and darker (more pigmented) pelage at the extremities of ears, tail and paws. It is thus possible that some localized asymmetric pigmentation defects could be due to local inflammations during a critical period of feather growth. This is certainly a possible explanation for the asymmetric pigmentation loss observed in the House Wren in Figure 3.

The observation that some families of birds are more prone to albinism than others is interesting, but the biological causes underlying these observations remains unclear. Hopefully continued documentation of aberrant plumages in all families of birds will eventually lead to generation of testable hypotheses to explain these fascinating and striking plumage patterns.

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Figure 1 – Partial Albino Carolina Wren



Figure 2 – Imperfect Albino House Wren



Figure 3 – Partial Albino House Wren