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ABERRANT PLUMAGE IN TEXAS BIRD SPECIMENS HOUSED IN THE HOUSTON MUSEUM OF NATURAL SCIENCE

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The most frequently occurring structural malformations in birds involve supernumerary limbs, deformed limbs and beaks, and evidence of embryonic conjoined duplication (Pourlis 2011). Functional malformations occur in number and coloration of feathers. These plumage aberrations can be restricted to a single feather, a group of feathers, or the entire body (Pourlis 2011). Albinism is the complete loss of all pigments in plumage and other parts of the body, resulting in birds with white plumage; the coloration becomes darker with increased expression of melanin (Hill 2010). Leucism results from defects in feather pigment cells during development (Cortes-Avizanda et al. 2010); the lack of pigment in part or all of the body is sometimes erroneously designated as albinism or partial albinism (Nogueira and Alves 2011). Birds with atypical white and dark plumage patches or spots gives rise to the terms “piebald” or “piebald” (Rosenberg et al. 2006).

Arnold (2001) provided several examples of birds photographed and housed in the Texas Cooperative Wildlife Collection (TCWC, Texas A&M University) with aberrant plumage and cautioned against mistaking such individuals for rarer species (e.g., confusing a piebald House Sparrow [*Passer domesticus*] for a Snow Bunting [*Plectrophenax nivalis*]). Herein we describe 4 different types of plumage aberrations in Texas avian specimens housed in the Houston Museum of Natural Science’s Vertebrate Ornithology (VO) collection. These specimens were determined to be aberrant in plumage by comparing to normal plumaged specimens (Figs. 1-4) and following Tveten (1993) and Alsop (2001).

SPECIES ACCOUNTS

Albino Northern Shoveler (Anas clypeata)

Although both sexes of Northern Shoveler share a blue speculum, they are otherwise strongly sexually dichromatic. Females have a grey and orange bill and an overall mottled brown plumage; males have a black bill, iridescent green head, white breast and flanks, chestnut sides and belly, white tail feathers, and black on the back and tail coverts.

An albino adult female Northern Shoveler mount (HMNS VO 119; Fig. 1a) is completely white except for 2 brown feathers on the scapulars (Fig. 1b), which is how this specimen was determined to be a female (black in males).

Partial leucistic Harris’ Hawk (Parabuteo unicinctus)

Sexes of Harris’ Hawks are monochromatic, and females are slightly larger than males. Adult plumage is predominantly dark chocolate brown, white rump and tail tip, and rufous-chestnut wing coverts, thighs, and shoulders. Subadults are similar but more drab overall and have streaked underparts.

A ventrally partial leucistic adult female Harris’ Hawk (HMNS VO 3349) was confirmed by comparing this specimen to an adult (HMNS VO 3104) and subadult (TCWC 7706) Harris’ Hawk (Fig. 2). The partial leucistic specimen has large brown and light rufous blotches on the ventral surface; whereas, the adult is a uniform chocolate brown color ventrally and the subadult has vertical white streaks, which are completely lacking in adults.

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Figure 1a. (L to R) Normal plumaged adult male Northern Shoveler (*Anas clypeata*, HMNS VO 3339), albino adult female (HMNS VO 119), and normal plumaged adult female (HMNS VO 3340).



Figure 1b. Two brown scapular feathers on albino female (HMNS VO 119).

Complete leucistic Eastern Meadowlarks
(*Sturnella magna*)

Eastern Meadowlarks are sexually monochromatic with a white striped crown, predominantly brown upperparts, white outer tail feathers and undertail coverts, black streaks on the

sides and flanks, and a yellow breast and belly with a broad black "V" on the chest.

Two complete leucistic Eastern Meadowlarks, a study skin (HMNS VO 636) and a mount (HMNS VO 637), were determined by comparing the much lighter ventral (Fig. 3a, c) and dorsal (Fig. 3b, c) plumage



Figure 2 (L to R) – Normal subadult Harris' Hawk (*Parabuteo unicinctus*, WFSC 7706), ventrally partial leucistic adult (HMNS VO 3349), and normal adult (HMNS VO 3104).

surfaces to a normal Eastern Meadowlark (HMNS VO 1459). The study specimen is predominantly dull greyish white, with the breast, belly, and chin light yellow; there are also traces of light brown in the crown and collar. The mount is much lighter overall, resembling an albino except for a very light grayish body with the chest a slight tint of yellow.

Partial piebald Common Grackle (Quiscalus quiscula)

Adult male Common Grackles are glossy black overall with iridescent purple and dark bronze back, and purplish-blue head, neck, and breast.

An adult male Common Grackle (HMNS VO 1945) with a fully piebald head was determined unique by comparing both ventral (Fig. 4a) and dorsal (Fig. 4b) surfaces of the head to a normal plumaged Common Grackle (HMNS VO 1199). The plumage is still glossy black overall but the head is purplish-blue with scattered white spotting.

DISCUSSION

Arnold (2001) provided several examples of species housed in the TCWC, although specimen numbers and descriptions were not provided. These



Figure 3 – Ventral (Fig. 3a) and dorsal (Fig. 3b) surfaces of normal plumaged adult (L) Eastern Meadowlark (*Sturnella magna*, HMNS VO 1459) compared with complete leucistic (R) adult (HMNS VO 636). Mount of very light leucistic Eastern Meadowlark (Fig. 3c, below) mount (HMNS VO 637).



species include albino Northern Mockingbird (*Mimus polyglottos*), Pygmy Nuthatch (*Sitta pygmaea*), Cassin's Sparrow (*Aimophila cassinii*), and Brown-headed Cowbird (*Molothrus ater*); melanistic Red-tailed hawk (*Buteo jamaicensis*); leucistic American Wigeon (*Anas americana*)

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and Mottled Duck (*Anas fulvigula*); and piebald American Coot (*Fulica americana*), Northern Mockingbird, Northern Cardinal (*Cardinalis cardinalis*), and Brown-headed Cowbird.

Herein we document 4 additional color aberrations in avian plumages. Although these

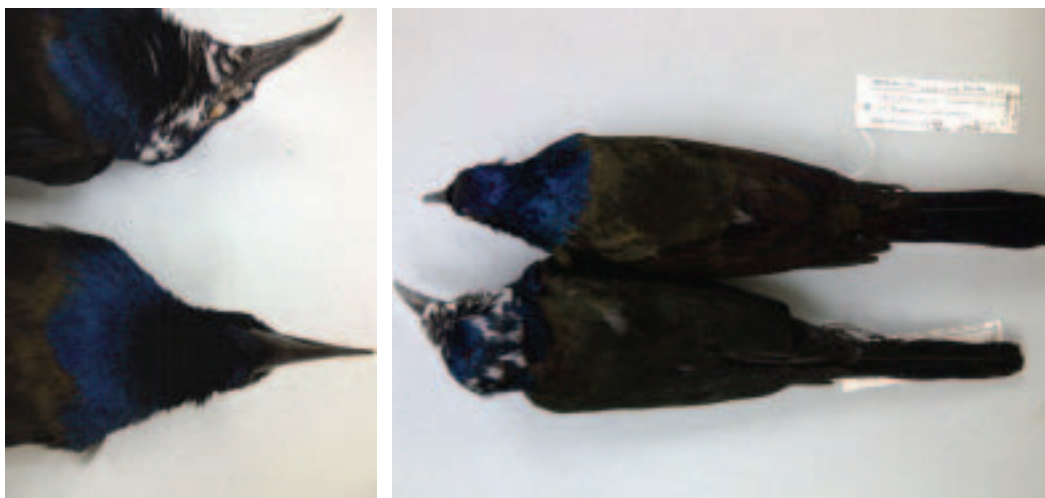


Figure 4 – Ventral head view (Fig. 4a) and dorsal surface (Fig. 4b) of adult male Common Grackle (*Quiscalus quiscula*, HMNS VO 1945) with a fully piebald head (L) compared to a normal plumaged (R) adult male (HMNS VO 1199).

aberrations are caused primarily through genetic defects in melanin, environment and physiology can also be contributing factors.

Bird deformities reflect both the health of avian populations and integrity of habitats (Cuervo and Restrepo 2007). Compared to hidden structural malformations, plumage aberrations are more readily observable to humans (Pourlis 2011). The rarity of aberrant plumage in the wild may be due to shorter life expectancy through intraspecific conflict. Conspicuous plumage can also make individuals more vulnerable to predation or more observable to prey (Alaja and Mikkola 1997). Through the continued study of anomalies like plumage aberrations we can increase our understanding of factors influencing the formation of avian mutations.

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