

Color Aberration in a Black Phoebe in the Central Valley of California

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The occurrence of aberrant coloration is not particularly uncommon in birds, with most cases resulting from an abnormal amount of melanin pigments in some or all feathers (van Grouw 2013). The condition, however, seems to be somewhat rare in the family Tyrannidae. Tyrannid species with individuals documented to have melanin deficiencies in feathers include the Ash-throated Flycatcher (*Myiarchus cinerascens*; Van Tyne and Sutton 1937, Cardiff and Dittmann 2002), Scissor-tailed Flycatcher (*Tyrannus forficatus*; Ligon 1964), Eastern Phoebe (*Sayornis phoebe*; Hostetler 1934, Werner et al. 1984), Say's Phoebe (*S. saya*; Schuckman and Wolf 2019), and Black Phoebe (*S. nigricans*; Wolf 1997). Reports of abnormally light Black Phoebes have, on rare occasions, appeared in non-scientific outlets (e.g., news websites, internet blogs), however only a single account of the phenomenon appears in the ornithological literature (Wolf 1997). Here, I report the occurrence of aberrant light coloration in a Black Phoebe from the Central Valley of California and discuss the specific type of color aberration of this individual.

On 30 December 2019 at 15:10, I observed and photographed a Black Phoebe with an atypical color pattern near the northwest section of the Merced National Wildlife Refuge (NWR) auto tour route (Tour Loop Route Road, 37.1704, -120.6262). The individual foraged above wetland habitat, flying just above the surface of the water and periodically landing on low-growing pond vegetation. While perched, the individual exhibited tail-wagging motion typical of Black Phoebes. The bird was mostly white with a light brown head and very faint light tan inverted "V" mark on the breast (Figure 1). Some of the wing and tail feathers had a light tan washing, whereas the belly and back were entirely white. The bird was readily identified as a Black Phoebe based on general morphology, plumage pattern (color notwithstanding), behavior, and habitat.

Substantial confusion and inconsistency exist, in both the general and scientific literature, regarding the names of specific forms of color aberrations in birds (van Grouw 2013). The term "leucistic" has been widely and liberally applied to any condition where there is an absence or reduction of pigment, particularly melanin, that is restricted to some or all feathers. (In contrast, albinism is the condition where melanin is completely lacking in all feathers,

the eyes, and skin). In a stricter and more accurate sense, however, leucism applies specifically to color aberrations that result from the absence of melanin-producing cells in some or all areas of the skin. In the absence of these pigment cells, growing feathers in these areas of the skin are not provided with pigment. Leucism typically results in an all-white plumage, or one with a distinct, often bilaterally symmetrical patchwork of all-white feathers mixed with normal-colored feathers, a pattern often referred to as “pied” (van Grouw 2013, 2014). The bird I observed clearly did not exhibit either of these aberrant color patterns (Figure 1). Instead, the color aberration of this bird seems more consistence with what is referred to as “brown” condition.



Figure 1. Aberrant Black Phoebe (*Sayornis nigricans*) at the Merced National Wildlife Refuge, Merced Co., California. The specific type of color aberration in this bird is best referred to as “brown” rather than “leucistic.” The image was taken at the northwest portion of the Auto Tour Route of the refuge, 30 December 2019. *Photo by Franklin Yancey.*

The brown aberration is more common in birds than leucism but often is misidentified as leucism. The brown condition results from a mutation that qualitatively reduces eumelanin, the dominant form of melanin in bird feathers. The number of melanin-producing cells in the skin is normal, but

eumelanin synthesis by the cells is hindered by the failure of eumelanin to become fully oxidized. This condition results in normally black areas of the bird appearing brown. Feathers with incompletely oxidized eumelanin are very subject to bleaching from exposure to sunlight, and brown often will fade to almost white. (See van Grouw 2013 for a comprehensive discussion and comparison of color aberrations in birds).

The aberrant Black Phoebe at Merced NWR seems likely to have been present there for at least two months, as evidenced by reports from late October through December in a handful of birding blogs noting a “leucistic” Black Phoebe in the same general area. In addition, a 28 October eBird checklist from the refuge includes a “leucistic” Black Phoebe. Interestingly, a close look at images submitted with the eBird checklist reveals an individual with much more extensive and darker pigmentation than shown on the phoebe in Figure 1 (see <https://ebird.org/checklist/S61006824> for comparison).

Given the rarity of the brown plumage pattern in Black Phoebes, the presence of multiple individuals with this abnormality at the same general time and locality seems unlikely. Rather, it seems most likely that they were the same individual and the differences in the photographic images were due to time of day, lighting, exposure, or feather wear. Additionally, the degree of paleness in a brown-affected individual can increase over a short period of time due to high sensitivity of feathers to bleaching, as previously noted. Notwithstanding this likelihood, as a recessive sex-linked (X-linked) genetic trait (van Grouw 2013), brown condition is usually passed on to female offspring from a carrier father (given that females are the heterogametic sex in birds). Therefore, it is conceivable that multiple affected offspring (particularly sisters) could be produced from a single brood and reside in close proximity.

ACKNOWLEDGMENTS

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This first Yolo County Worm-eating Warbler (*Helmitheros vermivorum*) was found at Willowbank Ditch in South Davis, California by Zane Pickus on 10 October 2019. Though a very elusive bird, It continued to be reported on eBird through 29 February 2020. Photo © Ed Harper