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SHORTER CONTRIBUTIONS

HYPOMELANISM IN TWO BIG BROWN BATS AND POTENTIALLY THE FIRST DOCUMENTED OCCURRENCES IN VIRGINIA

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ABSTRACT

In June of 2024, a female juvenile *Eptesicus fuscus* (Palisot de Beauvois, 1796) was admitted to Bat Conservation & Rescue of Virginia (BCRV) that exhibited unusual coloration. A few weeks later, a similar male *E. fuscus* was also transferred to BCRV. These bats are believed to be the first occurrences of a hypomelanistic bat in Virginia. Recording the phenotypic diversity of this species is important for researchers and conservationists alike because of the value that this species holds within Virginia's ecosystem.

Keywords: *Eptesicus fuscus*, phenotypic characteristics.

Bat Conservation & Rescue of Virginia is a nonprofit organization that specializes in rehabilitation of native bat species and advocates for bat conservation. Recently, a juvenile female Big Brown Bat (*Eptesicus fuscus* [Palisot de Beauvois, 1796]) was found near Chesterfield, Virginia in Chesterfield County that exhibited phenotypic characteristics different from typical *E. fuscus* (Fig. 1A). Normally, *E. fuscus* exhibit a uniformly brown dorsal pelage, with colors ranging from light brown/blonde to dark mahogany, dark brown to black patagia and facial skin, and eye color from dark brown to black (Fig. 1B). The atypical Chesterfield juvenile has dorsal and ventral pelage of a sandy hue. Her membranes are pale and translucent, and her eyes are a dark red. These characteristics are consistent with a reduced level of pigmentation; however, this animal does not appear to be a true albino as she lacks the characteristic white fur and light red eyes of an albino.

Absent any citations to the contrary, we believe that this bat is the first documented case of hypomelanism in *E. fuscus* within Virginia.

On 30 June 2024 a juvenile male *E. fuscus* with similar coloration was recovered in the incorporated city of Alexandria, Virginia, ca. 193 km NE from the first (Fig. 1C, D). There is no evidence to suggest that these two juveniles are related or even arise from the same metacolony. *E. fuscus* are not known to inhabit particularly large home ranges; Menzel et al. (2001) reported an average home range of 2906 ha, which suggests that individuals from colonies ca. 193 km apart would not overlap. Further, *E. fuscus* are considered a sedentary species not known to migrate distances greater than ca. 50 km between summer and winter ranges (Fleming, 2019). We are unsure if this is a rare condition or an unremarked variation. In 23 years of bat rehabilitation and almost 2,000 big brown bats entering the care of author L. Sturges, none have previously shown a similar color variation. Further, big brown bats are commonly netted during population studies in Virginia, and this morph has not been noted in published literature. The presence of a second juvenile specimen entering a rehabilitation facility in a single year is remarkable given no earlier records can be found. However, netting surveys are more likely to capture adults and volant juveniles, and it is possible that this color variation is associated with low or no survivability. In fact, of the two juveniles admitted to BCRV, one died shortly after volancy of unknown cause and the other is exhibiting subpar flight/navigation ability.

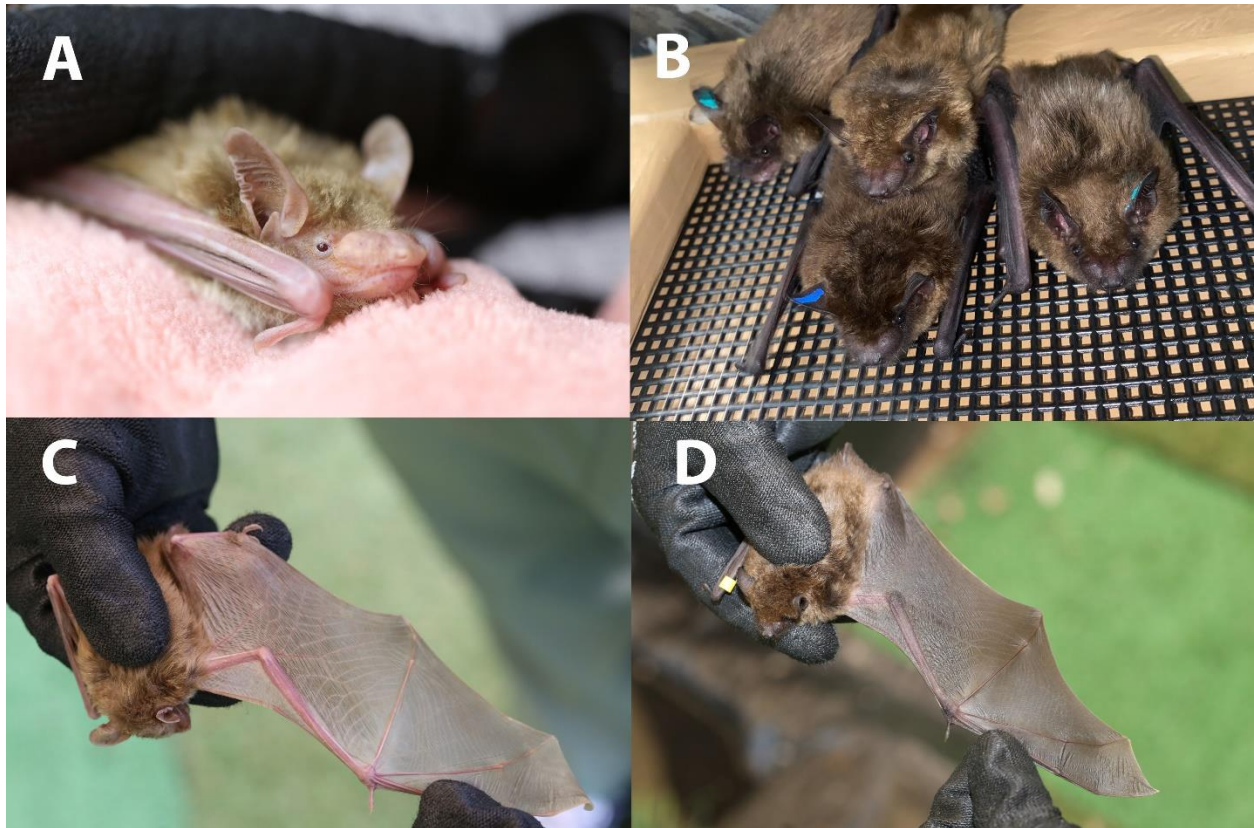


Figure 1. Big Brown Bats (*Eptesicus fuscus*) with atypical and typical pelage pigmentation. (A) Female hypomelanistic Big Brown Bat from Chesterfield County, 20 June 2024; (B) Cluster of Big Brown Bats with typical pigmentation, 5 August 2024; (C) Male outstretched wing displaying atypical hypomelanistic variation of patagium, 26 July 2024; (D) Male outstretched wing with typical patagium pigmentation, 26 July 2024. Photos by L. Burbulis.

Chiropterans display a wide array of pigmentation variations, from bright white Honduran fruit bats (*Ectophylla alba* H. Allen, 1892), to eastern tube-nosed bats (*Nyctimene robinsoni* Thomas, 1904) with bright yellow spots, to various stripes, patches, and patterns. Further, albinism and pigmentation anomalies have been described in multiple species of bats worldwide (Wilson, 2000) However, accurately describing pigmentation anomalies in bats is limited, owing to terminology inconsistencies. Lucati & Lopez-Baucells (2016) attempted to standardize melanin abnormality descriptions to better our understanding of the subject. The authors describe key differences among albinism, leucism, hypomelanism, and piebaldism. Although albinism and hypomelanism are both hereditary, they do not have the same mechanism by which pigment is lost. Albinism arises from a lack of the tyrosine enzyme, resulting in an absence of melanin production in melanocytes. This absence produces the distinctive white fur, pink skin, and pale red eyes of true albinism. Hypomelanistic individuals produce melanin, but in reduced amounts. Whatever the mechanism that resulted in these two bats' unique coloration, 'hypomelanistic' appears the most fitting term to describe them. We welcome input/correction on the topic from experts in pigmentation anomalies in wildlife, particularly bats.

Bat Conservation & Rescue of Virginia is an organization dedicated to conservation and rehabilitation of Virginia's native bat species. All rehabilitation is carried out by persons permitted by the Virginia Department of Wildlife Resources.

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