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Rare Dark American Kestrel – Melanistic or Sooty?

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On April 13 in Seward County, we noticed a dark bird flying relatively low over fields east of Seward near 224th and Bluff Rd. Initially, because of its size, dark coloration and pointed wingtips, we were unsure of its identification and followed the bird to get better looks and identify it. We were able to observe and photograph the bird perched (Figure 1). We also observed the bird hovering and diving to the ground



Figure 1. Photo of unusually dark American Kestrel perched in tree in Seward County near 224th and Bluff Rd. Photo taken April 13, 2022, by Joe Gubanyi.

multiple times in search of prey. After better looks, based on size, wing shape, hooked beak, claws, and behavior (repeated hovering over field), we concluded the bird was an American Kestrel (*Falco sparverius*). Joel and Camden returned later in the day and were able to relocate the bird. Camden got photos of the kestrel in flight showing additional details (Figure 2). We believe the observed bird was a female based on barring in the tail.

As can be seen in the photos, the head and body patterns normally seen in American Kestrels are absent. Barring can be seen in both the underwings and the tail (Figures 1 and 2) while light-colored feathers are visible in the vent and belly. Both the cere and feet are yellow/orange normally seen in kestrels. Initially, we thought the bird was a melanistic American Kestrel. There is widespread misunderstanding about the causes of dark coloration in birds (Davis 2007; van Grouw 2017), so we shared the photos with people who had studied dark coloration in birds. Some believed the bird was melanistic and others believed it was soot-covered. We will discuss both below.

Melanism in birds is known to be caused by mutations in a number of genes. Two important genes are ASIP, which controls the distribution of melanin and MC1R which determines the type of melanin produced (eumelanin or pheomelanin). More recent work has shown the genetics behind melanism in birds is more complex as it is in mammals (van Grouw 2017). In some species (i.e., Vermilion Flycatchers in Peru and the Senegal Coucals in Africa) melanistic and normally pigmented populations are found in different habitats with the two morphs freely interbreeding where



Figure 2. Photo of unusually dark American Kestrel in flight in Seward County near 224th and Bluff Rd. Photo taken April 13, 2022, by Camden Sesna.

populations overlap (van Grouw 2017). We found only one published record of a melanistic American Kestrel, which was seen in Michigan in 1986 (Carpenter and Carpenter 1988). They described the bird, which they banded and photographed, as partially melanistic with mostly black upper parts while the underside was normal in coloration. In the photograph, which was in black and white and from a dorsal view, black-and-white mottling on the back and scapulars can be seen as well as a rear view of the barring seen on a normal kestrel head. In contrast to the kestrel seen by Carpenter and Carpenter, the bird we observed was dark on its entire body and head except for black/white barring in the underwings and tail and light-colored feathers in the vent and belly (Figures 1 and 2).

Given the rarity of melanism in American Kestrels, we contacted Hein van Grouw, who has researched melanism and dark coloration in birds (van Grouw 2017). Van Grouw concluded that the American Kestrel was not melanistic, but the feathers had been covered in soot or some other dark substance. Birds that have recently been in a sooty environment would have soot on their feet, which unlike feathers covered in soot, will wash away over time (Hein van Grouw, personal communication). Based on the color of the feet in Figure 1, van Grouw stated that the event that caused the staining of the feathers happened well before we observed the kestrel. Van Grouw noted that two reports of melanistic Eurasian Kestrels, *Falco tinnunculus*, one in Greece (Kotsakis 2020) and one in the United Kingdom (Birdforum 2008) were soot-covered and not melanistic. The coloration in both birds looked similar to the kestrel we saw although they had dark feet (not characteristic of melanism) indicating that the exposure to the event that caused the soot covering was recent.

We also asked researchers at the American Kestrel Partnership (<https://kestrel.peregrinefund.org/>) what they thought caused the dark coloration in the kestrel. They shared the photos with Bryce Robinson from Ornitholgi (<https://ornithologi.com/about/>) who has experience studying dark coloration in raptors. He believed the kestrel was soot-covered or stained and stated that melanistic birds should have an equally spread dark coloration in areas with melanin-based plumage. This was not the case as can be seen in Figure 2 which shows relatively pale underwings in contrast to darker parts of the body. Bryce Robinson believed this occurred because the bird's wings were folded at times resulting in less soot on the underwings.

Because birds molt annually, soot-covered feathers are shed and replaced by soot-free feathers (DuBay and Fuldner 2017). The peak molting period for body feathers in American Kestrels begins around the first week in May extending through August with some birds continuing through September. Primary feathers begin and end molting a little earlier than body feathers (Smallwood and Bird 2020). Given that the bird was observed on April 13, it would have been 6+ months since its last molt and it would have had opportunities to be in sooty environments.

DuBay and Fuldner (2017) measured the amount of carbon on feathers of 1300+ bird specimens from natural history museums collected in the U.S. Manufacturing Belt between 1880 and 2015 to determine the effect of soot-based air pollution on birds. Several photographed specimens in the article have similar feather shading to the kestrel we saw. The cause of the darker soot-covered birds in DuBay

and Fuldner's study was attributed to widespread air pollution during the peak of the industrial revolution when those specimens were collected. DuBay and Fuldner showed a positive correlation between carbon density on bird feathers and coal consumption at the time specimens were collected. Due to improvements in air quality, the possible cause of soot-covered feathers in the American Kestrel we observed would have been due to a local source of soot (i.e., roosting/foraging near a coal-burning power plant). Given DuBay and Fuldner's work, soot-covered bird specimens at the Nebraska Museum of Natural History were looked at to see how they compared to the observed American Kestrel. There were numerous old specimens that were soot-covered because of a fire at the museum in 1912. Because the specimens were on their backs, they were soot-covered on the ventral side. Feathers on some specimens were quite dark, like the American Kestrel we observed.

We searched the internet and publications for evidence of living kestrels that were soot-covered and found no records. Ironically, we did find another sighting in Nebraska via word of mouth. Jerry Toll, a Nebraska raptor bander, shared a photograph of a dark-colored kestrel seen in central Omaha, circa May 2001. The bird was nesting in a cavity in a telephone pole. The bird is somewhat disheveled in the photo, possibly due to the small size of its nest cavity in the telephone pole, which was covered in creosote. We sent photos of this bird to Hein van Grouw who said this bird was also covered in soot or some other dark substance and not melanistic.

American Kestrels are found year-round in Nebraska but are represented by different populations (Silcock and Jorgensen 2022). While most breeding kestrels migrate south, there is evidence that some breeding kestrels (usually females) remain year-round near breeding sites. Male kestrels are more common in winter in Nebraska with the vast majority being winter residents from northern breeding sites (Silcock and Jorgensen 2022). American Kestrels in North America migrate with April being the peak time in spring migration (Smallwood and Bird 2020); thus, although the observed kestrel might have overwintered in Nebraska, it is more likely that it may have become soot-covered during winter months somewhere south of Nebraska.

Studies have shown that most wintering American Kestrels roost in human-made structures including buildings, radio towers, petroleum equipment, and farm equipment (Doody 1994; Ardia 2001; Crouch 2018). It is possible that the kestrel roosted/foraged near a human made structure not far from a soot-producing source. Another possibility is that the kestrel roosted/foraged near wildfires in its winter habitat. American Kestrels are known to gather near controlled burns and wildfires to hunt along the edge of the fire (Tesky 1994). Texas, a likely wintering area for American Kestrels from Nebraska, has two wildfire seasons, a winter/spring season and a late summer/early fall season (Cohen 2013). In 2021 Texas had the second highest number of wildfires (>5500) behind California (<https://www.statista.com/statistics/1269724/number-of-us-wildfires-by-state/>). Based on this information, we believe the observed American Kestrel would have been in environments during winter where it could have become soot covered.

Although we cannot state with certainty, we believe the kestrel seen in Seward County and the one photographed in Omaha circa 2001 were soot-covered. If so, they would be the only records we know of living soot-covered American Kestrels in North America.

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LITERATURE CITED

- Ardia DR. 2001. Winter roosting behavior of American Kestrels. *Journal of Raptor Research* 35(1):58-61.
- Birdforum. 2008. <https://www.birdforum.net/gallery/melanistic-kestrel.200756>.
- Carpenter TW, Carpenter AL. 1988. The occurrence of melanism in an American Kestrel. *Journal of Raptor Research* 22(2):72.
- Cohen J. 2013. TM Informer: What is wildfire season? *Texas Monthly*. <https://www.texasmonthly.com/articles/tm-informer-what-is-wildfire-season/>
- Crouch CG. 2018. American Kestrel nonbreeding roost use and behavior in South Texas. *Journal of Raptor Research* 52(3):370-378.
- Davis JN. 2007. Color abnormalities in birds: A proposed nomenclature for birders. *Birding* 39:36-46.
- Doody JS. 1994. Winter roost-site use by female American Kestrels (*Falco sparverius*) in Louisiana. *Journal of Raptor Research* 28(1):9-12.
- DuBay SJ, Fuldner CC. 2017. Bird specimens track 135 years of atmospheric black carbon and environmental policy. *The Proceedings of the National Academy of Sciences* 114(43) 11321-11326 <https://doi.org/10.1073/pnas.171023911>.
- Kotsakis M. 2020. <https://www.birdguides.com/gallery/birds/falco-tinnunculus/1040986/>.
- Silcock WR, Jorgensen JG. 2022. American Kestrel (*Falco sparverius*). In *Birds of Nebraska* — Online. www.BirdsofNebraska.org
- Smallwood JA, Bird DM. 2020. American Kestrel (*Falco sparverius*), version 1.0. In *Birds of the World* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.amekes.01>
- Tesky JL. 1994. *Falco sparverius*. In: Fire effects information system, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). www.fs.fed.us/database/feis/animals/bird/fasp/all.html [2022, July 8].
- van Grouw H. 2017. The dark side of birds: melanism—facts and fiction. *Bulletin of the British Ornithologists' Club* 137(1):12-36.