

MELANISM IN A COMMON MURRE *URIA AALGE* IN KACHEMAK BAY, ALASKA

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ABSTRACT

SCHOEN, S.K., ARIMITSU, M.L., MARSTELLER, C.E. & HEFLIN, B.M. 2022. Melanism in a Common Murre *Uria aalge* in Kachemak Bay, Alaska. *Marine Ornithology* 50: 225–227.

In accord with melanism being uncommon in birds, we could find only six published records of completely melanistic Common Murres *Uria aalge*, one of the most widely and intensively studied of all seabirds. We added to the record by observing a Common Murre in completely dark, melanistic alternate plumage every summer from 2017 to 2021 at Gull Island in Kachemak Bay, Alaska, USA. In 2017, the bird frequented the colony periphery, indicating that it could have been a subadult. Subsequently, it occupied the same narrow rock ledge within the colony every summer from 2018 to 2021, an indication that it may have been attempting to breed. Because we have been conducting long-term monitoring on Gull Island, we are in the unique position to be able to monitor the attendance and reproductive performance of this distinctively marked murre into the future.

Key words: Common Murre, *Uria aalge*, melanism, Kachemak Bay, Alaska

In the normal plumage of the Common Murre *Uria aalge*, the most intensively studied marine bird in the Northern Hemisphere, the underparts are mostly white, the upperparts are dark brown, the secondaries are tipped white, and the flanks and thighs are striated brown and white (Ainley *et al.* 2021). Eumelanin is responsible for black, gray, and/or dark brown feathers, and aberrations from normal plumage can be caused by mutations of the genes that regulate the production and deposition of these feather pigments (van Grouw *et al.* 2011, van Grouw 2021). For example, other color mutations in murres (some reviewed in Ainley *et al.* 2021) include brown and dilution, which result in more common variations of pale feather colors; leucism, which results in lack of pigment; and melanism, in which pigments are observed in places they do not usually occur (van Grouw *et al.* 2011, van Grouw 2021).

Melanism is much less common than other color aberrations in birds (Gross 1965). Despite the Common Murres' large and well-studied populations, we are aware of only six completely melanistic individuals: one collected from Buckton, England, in 1896 (van Grouw *et al.* 2011); one collected from the Farallon Islands, USA, in 1911 (Loomis 1918, *cf.* Pyle 2013); one observed in Yorkshire, England, in 1912 (Clarke 1913); one collected in Comox, Canada, in 1931 (Storer 1952); one noted at an unknown location in 1932 (Schaanning 1932 in Gross 1965); and one photographed southeast of the Farallon Islands in 2013 (Pyle 2013). To the best of our knowledge, our observations are the seventh published record of a completely melanistic Common Murre and the first to be observed across multiple years occupying the same nest site.

We observed a Common Murre in completely dark brown, melanistic plumage (Fig. 1) at the breeding colony on Gull Island (59.59°N, 151.33°W) in Kachemak Bay, Alaska, every summer from 2017 through 2021. It could have been a subadult when first observed (03 July 2017), as it frequented suboptimal breeding habitat that was

closer to the intertidal zone and away from the majority of breeding murres. Its presence at the periphery of the main breeding habitat is in accord with the behavior of subadults (two to three years old), who arrive at colonies later in the year than adult breeders (Ainley *et al.* 2021). From 2018 to 2021, this melanistic murre has been observed annually occupying a different location within the colony, in a more



Fig. 1. Melanistic Common Murre *Uria aalge* flies above the Gull Island breeding colony in Kachemak Bay, Alaska, USA, 2018. Credit: Sarah Schoen, U.S. Geological Survey (public domain)

densely populated nesting area in prime habitat: the same narrow rock ledge next to an overhung back wall (Figs. 2, 3). Thus, it likely had established a breeding territory beginning in 2018, consistent with first-time breeding at three to seven years of age (Ainley *et al.* 2021). In 2019, we observed the murre holding a display fish at its site (Fig. 3), possibly indicating actual breeding. No egg or chick, however, could be confirmed, but that is unsurprising given the colony's multiple breeding failures in recent years (Piatt *et al.* 2020, Arimitsu *et al.* 2021, Schoen *et al.* 2022).

Pyle (2013) discussed variation in the basic (winter) plumage of Common Murres in California, including two completely melanistic specimens collected near the Farallon Islands, and suggested that such abnormal dark coloration to the basic plumage could result from asynchrony of the hormone signaling and molt cycles rather than polymorphism. The return of the melanistic bird to our study site suggests, alternatively, that its plumage resulted from a genetic mutation that continued to affect melanism deposition across multiple complete molts, as consistent asynchrony between hormones and the timing of molt would not be expected over multiple years.

Plumage abnormalities can influence an individual's fitness and survival (Bond & Diamond 2016). For instance, Finger *et al.*

(2017) suggested that for mid-water, pursuit-diving seabirds such as the Chinstrap Penguin *Pygoscelis antarcticus*, melanism could compromise the benefits of camouflage for hunting and predator protection that are typically conferred through countershading. However, some color-aberrant Adelie Penguins *Pygoscelis adeliae*, including melanistic ones, appear to live normal lives (Levinson *et al.* 2021). The melanistic murre we observed may have experienced undue harassment owing to its appearance. In 2018, we observed it being chased off its nest site by a Black-legged Kittiwake *Rissa tridactyla*, which bit the murre's foot and caused it to fall into the water (Fig. 4). Ultimately, because of the high nest-site fidelity observed in murres (Ainley *et al.* 2021) and because Gull Island is part of our long-term monitoring effort (Arimitsu *et al.* 2021, Schoen *et al.* 2022), this individual may supply insights into murre behavior, or at least show whether color-aberrant murres are treated differently.

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Fig 2. Melanistic Common Murre *Uria aalge* (all dark) at its nesting site on Gull Island in Kachemak Bay, Alaska, USA, 2019. Credit: Sarah Schoen, U.S. Geological Survey (public domain)



Fig 3. The melanistic Common Murre *Uria aalge* holds a display fish at its breeding site on Gull Island in Kachemak Bay, Alaska, USA, 2019. Credit: Sarah Schoen, U.S. Geological Survey (public domain)



Fig 4. A Black-legged Kittiwake *Rissa tridactyla* harasses the melanistic Common Murre *Uria aalge* forcing it off its breeding site in Kachemak Bay, Alaska, USA, 2018. Credit: Sarah Schoen, U.S. Geological Survey (public domain)

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