

Short communications

Report of a case of progressive greying in the Moorland Chat *Pinarochroa sordida* in Bale Mountains National Park, Ethiopia

Processes controlling bird colouration and patterning, including a variety of pigimentary and structural mechanisms, have been extensively studied in recent years (Mason & Bowie 2020, Price-Waldman & Stoddard 2021). In addition to phenotypic variation undergoing natural and sexual selection, individuals with an atypical plumage are occasionally or routinely observed in nature in various bird species (Gayen *et al.* 2022, van Grouw 2013). As reviewed by van Grouw (2021), the seven most common types of colour aberrations in birds result from defects in the development of melanin cells (Leucism, Progressive greying), defects in melanin synthesis (Albino, Brown, Ino), defects in the melanin deposit into feathers (Dilution) or defects in the production and distribution of melanin (Melanism). Melanin aberrations impact the production or deposition of melanin pigments, but not of other colour pigments such as carotenoids, allowing observers to see colours and patterns normally hidden by melanin. Therefore, sightings of atypical birds may be used by researchers to understand the evolution and underlying genetics of bird colour and patterning (Aguillon & Shultz 2022). In this broader evolutionary context, but also in terms of biodiversity management, reporting sightings of atypical birds in indexed journals is important.

Here, we report the observation of an abnormally coloured Moorland Chat *Pinarochroa sordida* (also previously named *Cercomela sordida*), displaying a lack of melanin over almost all of its plumage. The Moorland Chat is a monotypic species comprising four recognized subspecies in northeast Africa, with *P. sordida sordida* occupying high altitude moorlands in Ethiopia. Individuals of the species are typically dark brown with a paler grey-brown below and a tail showing a black-and-white inverted “T” pattern; bill, legs and feet are black; eyes are dark brown (Redman *et al.* 2009).

The individual was first observed in Bale Mountains National Park, Ethiopia, on 3 October 2022 from 09:03 to 09:15 (local time) near Fincha Habera waterfall (7°01'01" N, 39°43'19" E; 3463 m.a.s.l.). The surrounding habitat comprised alpine grassland on a rocky slope dominated by *Kniphofia foliosa*. The bird was displaying a typical behaviour; foraging, hopping and low flying near the ground or among *Kniphofia* flower stems. It came to within 2–3 m of the observers multiple times, permitting detailed observation of its plumage and high-resolution photography (Fig. 1). The individual was an adult of undetermined sex (there is no sexual dimorphism in this species). Its plumage was white with some dark brown or partially dark brown feathers in the wing and tail (Fig. 1a). Small light brown patches were apparent on the chest (Fig. 1b), while in the down layer, some feathers patchily distributed across the body were dark brown (Fig. 1c, 1d). In flight (Fig. 1e), it was apparent that at least three feathers in the primaries and two in the secondaries were partly or normally pigmented, although the bird was undergoing a post-breeding moult and several of the secondaries were missing. Pigmentation appeared patchy on the tail feathers. The bill, tarsi and feet were pinkish pale yellow, while the eyes had the usual dark brown colour. It was also seen perched a few metres away from a normally-coloured Moorland Chat (Fig. 1f), without any antagonistic interactions observed.



Figure 1. Moorland Chat *Pinarochroa sordida* photographed in Bale Mountains National Park, Ethiopia, displaying a lack of melanin over almost all of its plumage, probably as a result of progressive greying. Pictures show the back (a), front (b), left side (c), right side (d), tail and wings in flight (e) of the white-feathered individual, and a normal Moorland Chat (f) for comparison. Photos: Carine Lavril (a, c, d) and Adrien Lesaffre (b, e, f).

Partly coloured feathers and asymmetrical whiteness are unlikely to be caused by leucism (van Grouw 2006). As such, loss of pigmentation in feathers, bill and legs of this individual most probably result from progressive greying (a condition causing progressive loss of melanin pigment), which is often the most common cause for lack of pigmentation in feathers (van Grouw 2021). Although progressive greying in birds is not generally related to old age (geriatric greying), it may be in some cases, such as in Eurasian Jackdaws *Corvus monedula*, where the presence of some pigmentation in affected feathers also suggest a decreased activity of melanin cells rather than their complete disappearance (van Grouw 2021). The partly pigmented feathers in this Moorland Chat may indicate that progressive greying in this species could be related to senescence as well. Different forms of progressive greying occur (some heritable and others not), but the causes of most are currently unknown (van Grouw 2021, van Grouw & Hume 2016). Also, different mutations (in addition to feathers bleaching by sunlight) or external factors (e.g., food deficiency or illness) may result in an absence of pigment in feathers. Therefore, correctly identifying the nature and causes of aberrant plumage may be challenging without knowing the history of the bird (van Grouw 2013, 2021). Confirming progressive greying will require re-sightings of the

same individual after each moult. As the individual appeared to be in a late stage of the condition, it may turn completely white after its next moult.

Two previous publications refer to observations of Moorland Chats described as “partially leucistic”. The first observation concerned an individual near Debre Birhan, Ethiopia, that was all grey with a partly white head and white remiges and tertials (Ash & Atkins 2009). The second report comprised three birds in a mixed passerine flock that presented a partly white head and white spots on wing feathers, seen in the same area as the present observation (720 m away; Sultan *et al.* 2022). While our observation is not the first record of a white-feathered Moorland Chat, it stands out because of the particularly extended white pattern of this individual (80% of its body compared to approximately 15% in previous reports) and the evidence of progressive greying, a first for this species. Also, contrary to the previous report, the individual we observed was not part of a flock and seemed to be resident in the area. It was subsequently re-observed at the same location every day from 4 to 7 October 2022.

Populations exposed either to inbreeding, high environmental stress or urban environments may show higher frequency of plumage aberrations (Bensch *et al.* 2000, Izquierdo *et al.* 2018, Møller & Mousseau 2001). As they appear more conspicuous, white-coloured birds may be harassed by conspecifics (Withgott & McMahon 1993) or exhibit a lower survival than normally-coloured individuals (Ellegren *et al.* 1997). But it is not necessarily the case, and some colour-aberrant birds survive and reproduce well (Bensch *et al.* 2000, van Grouw 2021). The repeated observations of white-feathered Moorland Chats in the same area may potentially indicate the establishment of a small population. Atypical birds usually generate some attention in the birding public, but are often overlooked by the scientific community, despite the interesting research potential they may bring (Aguillon & Shultz 2022). This observation adds to the unique fauna and flora known to be present in Bale Mountains National Park, but a more detailed survey and a monitoring of the Moorland Chat population in the area are necessary to shed light on the various remaining questions.

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