

The first documentation of a juvenile eastern imperial eagle (*Aquila heliaca*) with an unstreaked body

Prvé zdokumentovanie mlád'at'a orla kráľovského (*Aquila heliaca*) s nežihánym telom

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Abstract: An extremely pale juvenile eastern imperial eagle (*Aquila heliaca*) without the typical dark streaking of the body was observed and photographed wintering in Oman. The bird presented an identification challenge and was initially identified as a tawny eagle (*Aquila rapax*). The possible overlap in the breeding distribution of both species is discussed, together with the possibility for natural hybridisation.

Abstrakt: Mimoriadne bledý mladý orol kráľovský (*Aquila heliaca*) bez typického tmavého žihania na tele bol pozorovaný a odfotografovaný počas zimovania v Ománe. Vták predstavoval výzvu pri určovaní a pôvodne bol identifikovaný ako orol skalný (*Aquila rapax*). V príspevku diskutujeme možné prekrývanie hniezdneho rozšírenia oboch druhov, ako aj o možnosti prirodzenej hybridizácie.

Key words: raptor identification, colouration, colour morph, hybridisation, tawny eagle, Oman, birds of prey

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Introduction

Diurnal raptor species are often difficult to differentiate in the field (Fergusson-Lees & Christie 2001), partly due to a high degree of colour variability; 30% of raptor species show polymorphism (Fowlie & Krüger 2003). The literature on raptor identification is well-developed, and improvements are regularly made, mostly due to the description of new colour morphs and aberrant plumages (Corso & Monterosso 2000, Sternalski et al. 2012).

For some species, it is unclear whether the described individuals are simply rare colour mutations or definable yet rare colour morphs. For example, for the greater spotted eagle (*Clanga clanga*), until very recently, it was not known whether the pale *fulvescens* morph persists into adulthood (Dombrovski 2023).

Material and Methods

On 28 February 2024, I conducted a two-hour count (6:45 – 8:45 AM) of vultures and large eagles at Al Multaqaa landfill, near Muscat, Oman (23.34°N, 58.46°E). The birds were observed with a telescope 20-60x60 and binoculars 10x50. Photographs were made with a digital camera using a 600 mm lens.

Results

A large eagle was initially identified as a tawny eagle, but subsequent scrutiny of the photos challenged this conclusion (Fig. 1). Its size was that of the largest *Aquila* species, and was first photographed displacing a juvenile steppe eagle (*Aquila nipalensis*) perched on the ground. It remained perched and in view for several minutes before



Fig. 1. The eagle in question in different postures (A, B, C). Perching and displacing a steppe eagle while showing its underwing and undertail pattern (A); perching, partially showing the upperwing coverts (B); perched, showing the unstreaked body and pale iris (C).

Obr. 1. Predmetný orol v rôznych polohách (A, B, C). Sediaci a vytlačujúci orola stepného, pričom je viditeľná jeho kresba pod krídlami a pod chvostom (A); sediaci, pričom sú čiastočne viditeľné horné krycie perá (B); sediaci, pričom je viditeľné nežihané telo a bledá dúhovka (C).

taking off and immediately disappearing behind a ridge. It was not seen again.

The eagle was aged as a juvenile by its uniform underwing pattern (Forsman, 2016). It was a very large eagle with a gape that reached the middle of the eye; its iris was pale, its body plumage was of a uniformly light beige, with pale colouration of the throat, chest and belly, without any noticeable streaking, and was the same colour as the undertail and trousers. The lesser and median underwing coverts were of the same light beige colour as the body, while the greater coverts were black with white edges. The underwing primaries had fine, dense barring; the secondaries were similar, but barring extended about 2/3 their length from the base until two-thirds of the secondaries. The upperwing coverts were of the same colour as the body and had fine dark streaking.

Discussion

The large size of the eagle is evident by comparing it to that of the juvenile steppe eagle, which it displaces and suggests a wing span corresponding to that of an eastern imperial eagle. If the bird had a dark-streaked body, it would not have presented challenges for identification and would have immediately been ascribed to a juvenile eastern imperial eagle (Fergusson-Lees & Christie 2001, Svensson et al. 2014, Forsman 2016). However, I was not able to find publications, reports or expert opinions stating that juvenile eastern imperial eagles may lack the characteristic dark streaking on their bodies, which stimulated the detailed reporting of this observation. Due to the unstreaked body with creamy colour, the bird resembles a pale juvenile tawny eagle, of which there are five records from Northern Oman (Jennings 2010), most likely from its nearest known breeding grounds in Pakistan and India (Naorji 2011). However, we were not able to find photographs of these observations. Because plumage variability in the tawny eagle is higher than in any other Western Palearctic *Aquila* eagle, it is the most difficult to identify (Cramp & Simmons 1980, Clark 1992). The race of tawny eagle, occurring in South Asia *A. r. vindhiana* is smaller than the steppe eagle (Cramp & Simmons 1980, Clark 1992), while the observed eagle was larger in comparison with the juvenile steppe eagle it displaced (Fig. 1). Moreover, the observed eagle lacked the dark iris typical for juvenile tawny eagles (Svenson et al. 2009, Naorji 2009) and had barring of the remiges resembling more that of *heliaca*, than *rapax*, as the second has a more diffuse and less striking pattern (D. Forsman, in litt.). However, juvenile tawny eagles may have a pale iris (Macaulaylibrary.org), and the proportion of this trait in the population is unknown, while barring in eastern imperial eagles may vary considerably from strongly barred to no barring on the secondaries (A. Kovacs, in litt.).

Juveniles of the greater spotted and Spanish imperial eagle (*Aquila adalberti*) resemble the observed bird. The first is frequently seen in small numbers around landfills in Oman (Pröhl & Baumgart 2012, McGrady et al. 2021) during the winter and is polymorphic, with five different general morphs, including the very rare pale morph *fulvescens* (Eriksen & Porter 2017). The possibility of the bird being a greater spotted eagle was rejected primarily due to its large size, pale iris and dark-centred underwing coverts. I also considered the possibility of long-distance vagrancy by a Spanish imperial eagle but rejected the bird belonging to this species, as *adalberti* juveniles lack distinct barring on the underwing and also have a dark iris (Svenson et al. 2014).

Given that most of the literature on plumages and ageing of the eastern imperial eagle comes from birds observed in Europe and as colour morphs in raptors may show clinal variation (Martinez et al. 2016), it may be that such type of plumage is more common in parts of Asia and has remained unreported until now. In accordance with this, greater spotted eagles from Asia show much bigger colour polymorphism than birds originating from Europe (Eriksen & Porter 2017). In large eagles, individuals with rare colour morphs can be confined to specific geographic areas or distributed throughout the species range (Fontanilles et al. 2022, Dombrowski 2023). Given that only one specimen with such characteristics is described here, it cannot be concluded whether this is an extreme variant of the plumage or a new colour morph (Ellis & Dunker 2021, Ellis 2024).

Identification problems for large eagles appear when closely related species breed sympatrically, and hybridisation occurs (Lontkowski & Maciorowski 2010, Väli et al. 2010, Meyburg et al. 2020). Given the increasing number of recent records of a natural hybridisation of different *Aquila* eagles (Corso & Forsman 2008, Vali et al. 2010, Forsman 2016, Katzner et al. 2020), even though it is very unlikely, introgression of genes from other *Aquila* eagles cannot be ruled out completely, as the bird may be a backcross or later generation of imperial and tawny eagle.

In the past, tawny and steppe eagles have been considered conspecific (Fergusson-Lees & Chrisite 2001) and form a monophyletic group (Lerner & Mindell 2005). The imperial eagle is known to hybridise with the genetically more distant steppe eagle since mixed pairs of both species and backcrosses have been recorded in Kazakhstan, Russia and Turkey (Rudnick et al. 2008; Karyakin et al. 2016, Horvath et al. 2018), while the eastern imperial eagle has historically been recorded breeding in India, Pakistan and Afghanistan, but without a recent proof (Hume 1890, Ali & Ripley 1978, Fergusson-Lees & Christie 2001, Naoroji 2009, BirdLife International 2024). In November 2015, two immature eastern imperial eagles were observed building a nest in Rajasthan province, India (Mateos & Morales 2016). Towards the western end of its distribution, the tawny eagle breeds in Pakistan (Grimmett et al. 2011), where it used to be very common locally (Koning 1976) and reaches Persian Baluchistan in southeasternmost Iran, where it is resident and breeding has been suspected, but not confirmed during the last decades (Scott 2008, I. Shafaeipour, in litt.). For the case of eastern imperial and steppe eagles, in the future, increased instances of hybridisation are expected as a

side effect of the ongoing decrease of their breeding populations and lack of partners of the same species in the peripheral areas of their range (Karyakin et al. 2016). Hybridisation between steppe and tawny eagles has also been suspected in India (Donald 1952). In genetical terms, hybridisation of eastern imperial eagles with tawny eagles is more likely, compared to hybridisation with steppe eagles, given that the first two are sister species, while the steppe eagle is the sister of both of them (Helbig et al. 2005). Recent satellite tracking of two adult tawny eagles caught wintering in Rajasthan, India, showed that one of the birds migrated to Afghanistan, where transmission ceases, while the other spent the whole summer in central Kazakhstan, where it probably held a territory (Ram et al. 2022; 2024). This indicates that mixed breeding of tawny eagles with the eastern imperial eagles and steppe eagles is not impossible, as the particular observed bird stayed in areas well known for breeding of both species (Karyakin 2018a, b). More research is needed to clarify the current breeding distribution of the eastern imperial, tawny and steppe eagles in their wide contact zone in Asia.

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