

A rare case of melanistic chicks in a Montagu's harrier nest

Zriedkavý prípad melanistických mláďat v hniezde kane popolavej

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Abstract: We report the discovery of a nest of Montagu's harrier (*Circus pygargus*) in northwestern Italy containing three chicks: one normally coloured with white down and two dark morph individuals with grey down. The nest was discovered during wheat harvesting and, because it was left unprotected, the chicks were collected and transferred to a wildlife rehabilitation centre. During captivity, the two grey chicks developed an almost entirely black juvenile plumage. Dark morph individuals are relatively common in Spain but are very rare in other European countries. To our knowledge, dark-morph downy chicks of Montagu's harrier have been very rarely described and illustrated.

Abstrakt: Prinášame správu o objavení hniezda kane popolavej (*Circus pygargus*) v severozápadnom Taliansku, v ktorom sa nachádzali tri mláďatá: jedno s bežným sfarbením a bielym páperím a dva jedince tmavej morfy so sivým páperím. Hniezdo bolo objavené počas žatvy pšenice a keďže bolo nechránené, mláďatá boli odobraté a prevezené do rehabilitačného centra pre voľne žijúce živočíchy. Počas pobytu v zajatí sa u dvoch sivých mláďat vyvinulo takmer úplne čierne juvenilné operenie. Jedince tmavej morfy sú relatívne bežné v Španielsku, ale v ostatných európskych krajinách sú veľmi vzácne. Podľa našich poznatkov boli mláďatá tmavej morfy kane popolavej opísané a ilustrované len veľmi zriedkavo.

Key words: birds of prey, rehabilitation, melanism, Accipitridae, raptor nestlings, Italy, *Circus pygargus*

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Introduction

Colour polymorphism, is a common phenomenon in many birds and consists of the occurrence of two or more different colour morphs; it is relatively frequent among diurnal raptors, affecting approximately 22% of the world species (Galeotti et al. 2003, Robinson et al. 2024), and about in the same proportion (20%) of the 31 Accipitridae taxa of the Western Palearctic (see Forsman 1999). Very often, the different plumages of the polymorphic birds include very dark or black plumage, a condition generally referred to as melanism (van Grouw 2017); when it happens regularly, such individuals are commonly termed "dark morphs."

The frequency of the dark morph is also highly variable across species and within the breeding range of the same species. For example, in the booted eagle (*Hieraaetus pennatus*), dark morph frequency varies from 19% in Spain to 94% in Central Asia (Bosch 2019), in the very variable common buzzard (*Buteo buteo*), true dark morph occurs only in the subspecies *vulpinus* (Forsman 1999, Clark 1999).

Montagu's harrier (*Circus pygargus*) is also known for the striking appearance of dark morph individuals, which represent a small and geographically variable proportion of the population (Clarke 1996). The melanistic variety, or dark morph, of Montagu's harrier is

well described in field guides and general ornithological works (Cramp & Simmons 1980, del Hoyo et al. 1994, Clark 1999, Forsman 1999, Svensson et al. 2022). In contrast, reports of melanistic downy chicks are scarce, especially in the recent literature (Corlett 1930, Studinka 1942, Lontkowski 1995). Here, we describe an unusual observation of a brood of three chicks, one with typical white down and two with entirely grey down.

Materials and Methods

On 7 July 2023, a nest containing three downy chicks was discovered by farmers during wheat harvesting in the plains of Pozzolo Formigaro, near Alessandria, northwestern Italy. Although the chicks were uninjured, the nest cover had been destroyed. Given the presence of dogs, numerous hooded crows (*Corvus cornix*), and other potential predators, the chicks were collected and handed over to the Provincial Gamekeepers of the Alessandria district. They were immediately transported to the LIPU Wildlife Rehabilitation Centre in Tigliole d'Asti, Italy, where they arrived in good condition.

After admission to the LIPU Wildlife Rehabilitation Centre, the three nestlings were housed together in an indoor enclosure (1 × 1 × 0.6 m). Assisted feeding was initiated immediately and carried out three times daily using stainless steel tweezers, a procedure well tolerated by all individuals.

Photographs taken shortly after removal from the nest were then sent to the first author for preliminary identification (Fig. 1). The chicks were in their second down: one showed standard white down, whereas the other two displayed a distinctive grey down and were tentatively identified as Montagu's harriers.

Downy and juvenile plumages are described and illustrated, and the sex of the birds were determined according to characters of iris colours and plumage following Clark (1999), Forsman (1999), and, for two of them, the sex was confirmed by genetic analysis (samples IT3719 and IT3721 of the W.I.N.E.S. blood sample collection stored at the University of Piemonte Orientale, Vercelli, Italy). AI was used to check the English grammar.

Results

The grey chicks showed a white nuchal spot and soft-part colours like those of the normally coloured chick. Over the following month, all individuals developed their juvenile plumage. The two grey chicks acquired an almost entirely black plumage, with only a yellowish-buff spot on the nape and a few rufous-buff upper tail coverts. The underside of the primaries was silvery white with black barring, a pattern also visible on the secondaries and rectrices, though less evident against the darker, greyish-brown background. Legs and feet were yellow, and the iris was dark brown (Figs. 2–4).



Fig. 1. The Montagu's harrier chicks photographed just after their arrival at the LIPU Wildlife Rehabilitation Centre in Tigliole d'Asti (Piemonte, Italy), a few hours after their finding, 7 July 2023. Note the whitish nuchal spot on the grey birds.

Obr. 1. Mláďatá kane popolavej vyfo-tografované krátko po príchode do rehabilitačného centra pre voľne žijúce živočíchy LIPU v Tigliole d'Asti (Piemont, Taliansko), niekoľko hodín po ich nájdení, 7. júla 2023. Všímnite si belavú škvrnu na zátylku týchto sivých vtákov.



Fig. 2. The melanistic individual that died before the programmed release photographed on 30 July 2023. Note the brown iris typical of females.

Obr. 2. Melanistický jedinec, ktorý uhynul pred plánovaným vypustením, vyfotografovaný 30. júla 2023. Všimnite si hnedú dúhovku, typickú pre samice.



Fig. 3. The second melanistic individual photographed on 18 August 2023. Note the brown iris and the very black colour photographed in bright afternoon sunlight.

Obr. 3. Druhý jedinec s melanizmom, vyfotografovaný 18. augusta 2023. Všimnite si hnedú dúhovku a veľmi čiernu farbu zachytenú v jasnom popoludňajšom slnku.

Based on iris colour and the pattern of the outer primaries, the melanistic individuals were identified as females. The other chick developed a typical juvenile male plumage, lacking barring on the underside of the four outermost primaries and showing a grey iris (Fig. 5).

Sex determination of one melanistic female and of the normal male was later confirmed by genetic analysis (the third was not blood-sampled).



Fig. 4. The same melanistic individual of Fig. 3, female, 18 August 2023. Note the brown iris, the rufous nape and uppertail coverts (A), and the barred outermost remiges contrasting with the darker secondaries (B).

Obr. 4. Ten istý melanistický jedinec z obr. 3, samica, 18. augusta 2023. Všimnite si hnedú dúhovku, červenohnedú zátylkovú časť a horné chvostové krycie perá (A) a pruhované vonkajšie letky, ktoré kontrastujú s tmavšími sekundárnymi letkami (B).

Two nestlings achieved feeding independence approximately seven days after admission, whereas one melanistic individual required assisted feeding for a longer period.

On 30 July, all three nestlings were transferred to an outdoor aviary (5 × 3 × 2.5 m), where food was provided every other day. On 10 August, the melanistic individual showing delayed feeding autonomy was found dead. No signs of predation were observed, and death may have resulted from insufficient food intake relative to the other individuals. No autopsy was performed because, following a freezer failure, the specimen was accidentally discarded.

In the afternoon of 18 August, the remaining melanistic individual and the normally coloured individual were



Fig. 5. The normal juvenile male, 18 August 2023. Note the grey iris, the large white rump patch (A) and the underside pattern of outermost remiges lacking bars (B).

Obr. 5. Bežný juvenilný samec, 18. august 2023. Všímajte si sivú dúhovku, veľkú bielu škvrnu na chvostovej časti (A) a vzor na spodnej strane vonkajších letiek, na ktorých chýbajú pruhy (B).

transferred to a flight tunnel (30 × 4 × 3 m). Taking advantage of this opportunity, we collected many photographs and blood samples from the two birds (Figs. 3–5). On 20 August, both birds were released into an open area of the rehabilitation centre and immediately flew away without stopping or returning.

Discussion

The recessive dark morph of Montagu's harrier is likely caused by a mutation of the *agouti* gene (van Grouw 2017). Melanistic individuals may experience reproductive disadvantages and are relatively common only in the westernmost parts of the species' breeding range (Clarke 1996, Simmons 2000, Pandolfi 2000), becoming progressively rarer toward the east. Their

frequency ranges from 2–5% of individuals migrating at Gibraltar (Clarke 1996), while higher percentages (1–25%) have been reported in Spain, depending on region and period (Arroyo 1995; Jubete 1997). An exceptional situation occurs in Galicia (northwestern Spain), where up to 45% of individuals are melanistic, with a slight female bias (Vázquez Pumariño 2014).

The dark morph is much rarer elsewhere. In France, melanistic individuals account for only 0.3% of the population (Vázquez Pumariño 2014). In Italy, observations are exceptionally scarce. Pandolfi (2000) reported three melanistic juveniles from a nest discovered in central Italy in 1999, despite both parents being light morphs. Subsequent observations at Italian raptor migration watch points suggest that dark morphs represent approximately 1% of Montagu's harriers (Premuda et al. 2004).

In Italy, Montagu's harrier is an uncommon breeder, with an estimated population of 260–380 pairs and fluctuating local trends (Brichetti & Fracasso 2018). In northwestern Italy, the population appears to have declined since the late twentieth century (Toffoli 2000), with the Alessandria district representing one of the last remaining breeding areas (Ghiggi & Grasso 2024).

Our observation is particularly noteworthy because the nestlings were still in down, a condition rarely documented in melanistic individuals. Only a few historical records describe chicks with grey down: three nests in Great Britain (Corlett 1930) and two in Hungary (Studinka 1942). Later references primarily rely on these early accounts (Glutz et al. 1971; Cramp & Simmons 1980; Clarke 1996), with the exception documented in Poland in 1992, concerning a brood of two normal and one dark grey nestlings (Lontkowski 1995).

Parental morphs of melanistic broods appear variable. In Italy, parents were reported to be normally coloured (Pandolfi 2000), whereas in the cases reported by Corlett (1930), Studinka (1942) and Lontkowski (1995) only one parent was melanistic. Unfortunately, the parents' morphs in the present study remained unknown.

Our observations provide new insights into melanism in Montagu's harriers in Italy, juvenile plumage development, and the successful captive management of nestlings. The presence of both normally coloured and melanistic chicks in the same nest, combined with the opportunity to document postnatal plumage development, represents a rare case. Improved understanding of the genetic basis and ecological implications of plumage colouration may contribute valuable insights for the conservation of this species and its habitats. Given that

melanin-based colouration may play a role in adaptation to climate warming (Roulin 2014), further research on survival and reproductive success in relation to plumage morph is warranted.

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