

A photographic record of partial leucism in Greater Coucal *Centropus sinensis* (Stephens, 1815) (Cuculiformes: Cuculidae) from Chhattisgarh, India

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Abstract Leucism is a colour anomaly defined by a lack of pigmentation, which may be partial or full in any individual. Although genetic and environmental factors contribute to a high incidence of plumage colour aberrations in wild birds, the true incidence of these aberrations in wild populations has been studied very less. The present report describes an instance of partial leucism in a Greater Coucal (*Centropus sinensis*) from Chhattisgarh, India. This colour aberration in this species was first documented in 1990. More research is needed to determine the exact reasons for the high incidence of partial leucism in wild birds, which might include nutrition, lifespan, behaviour, parasitism, or other environmental factors.

Keywords: colour aberrations, leucism, Greater Coucal, Chhattisgarh, India

Összefoglalás A leucizmus a pigmentáció hiányából következő színrendellenesség, amely egyedenként lehet részleges vagy teljes. A vadon élő madarak tollazati színrendellenességeinek nagy számú előfordulásához genetikai és környezeti tényezők is hozzájárulnak. Ezeknek a rendellenességeknek az előfordulását a vadon élő populációkban alig tanulmányozták. A jelen tanulmány az indiai Chhattisgarh-ban megfigyelt nagy bozótkakukk (*Centropus sinensis*) részleges leucizmusának egy esetét írja le. Ezt a színrendellenességet 1990-ben figyelték meg először a fajnál. A vadon élő madarak részleges leucizmusa okainak meghatározására, beleértve a táplálkozást, az élettartamot, a viselkedést, a parazitizmust vagy más környezeti tényezőket, további kutatásra van szükség.

Kulcsszavak: színrendellenesség, leucizmus, nagy bozótkakukk, Chhattisgarh, India

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Introduction

Birds rely on plumage colouration for concealment (Barragán-Faras *et al.* 2019), mate selection (Hill *et al.* 1999), social communication (Senar *et al.* 2006), and a variety of other behavioural and physiological functions. Colouration in birds is usually caused by pigments, nano- and macrostructure, or a combination of them (e.g. Laczi *et al.* 2019). Melanins and carotenoids are the primary pigments involved in bird colouration (e.g. LaFountain *et al.* 2015, Eliason *et al.* 2016). Furthermore, pigment-related colour abnormalities within a species are quite common in addition to differences in colour across species (Van Grouw

2006, 2013, McCardle 2012). It has been reported that wild-living birds exhibit several colour aberrations in their plumage or bare parts of their bodies. Among the mutations that have been observed, albinism (e.g. Laczi *et al.* 2019), leucism (e.g. Izquierdo *et al.* 2018), browns (e.g. Van Grouw *et al.* 2011), and diluted (e.g. Weidensaul *et al.* 2015) are the most frequently reported and most likely to occur. In the case of leucism, a particular pigment (e.g. eumelanin or pheomelanin) is completely absent in the entire plumage or selected feathers (Nemésio 1999, Van Grouw 2013). The majority of cases of leucism are caused by the expression of mutant alleles that prevent melanoblasts (early melanin pigment cells) migrating from the embryonic neural crest to the skin. This causes white feathers and pink skin where melanoblasts are missing (Bensch *et al.* 2000, Van Grouw 2014). In some cases, leucism can result from genetic disorders affecting melanin synthesis. Leucistic birds, in contrast to albino birds, have normal pigmentation in other parts of their bodies, such as their bills, eyes, and legs (Van Grouw 2006). The present study reports a partial leucism in Greater Coucal *Centropus sinensis* from Chhattisgarh, India.

Notes and Observations

On February 20, 2022, we saw an adult Greater Coucal with partial white feathers perching on an electric wire near the Kartala village (22°18'07.0"N 82°59'57.1"E; Elevation 286 MSL) in the Korba district of Chhattisgarh, India (*Figure 1*). The recorded area was mostly farmlands and typically devoted to cultivating crops and rearing cattle. Additionally, the area is surrounded by sparse woody vegetation. The field observations and notes were made with Monarch (10×42) binoculars, and photos were taken with a Nikon P900 point-and-shoot camera. The identification key for colour aberrations provided by Mahabal *et al.* (2016) was used to name the feather aberration.

Greater Coucal is a large, non-parasitic member of the Cuculiformes with a long and hefty black tail, and intense red eyes. Both males and females are similar in appearance and they can grow up to 45–50 cm in length, including the tail. The wings and back are chestnut brown, while the underwing coverts are black. The juveniles seem considerably more subdued than the adults, with white bars on the tail and underparts, and varying degrees of black streaks on the wings and top parts. Greater Coucals resemble their smaller sister species, the Lesser Coucal (*Centropus bengalensis*), but they are bigger and have a longer beak and bright red eyes. The adult Greater Coucal lacks the white stripes seen on the wings of the Lesser Coucal (Grimmett *et al.* 2011, Ebird 2022).

A case of partial leucism was recorded in a Greater Coucal from Chhattisgarh, India (*Figure 2*). The individual was observed from a safe distance for about 10–15 minutes. The bird's feathers were partially unpigmented, with white patches on the dorsal side. Most of the primary and secondary wing feathers were fully white, with few partially coloured feathers. However, primary coverts, alula, lesser coverts, median coverts, greater secondary coverts and tertiary were normally coloured. A few tail feathers were also partially white. The bird was observed perching on an electric wire and vocalised normally. It was not an albino as it had normal coloured eyes and all its other features were inherent as a Greater Coucal, except for the dorsal body colour. Leucism can be distinguished from albinism

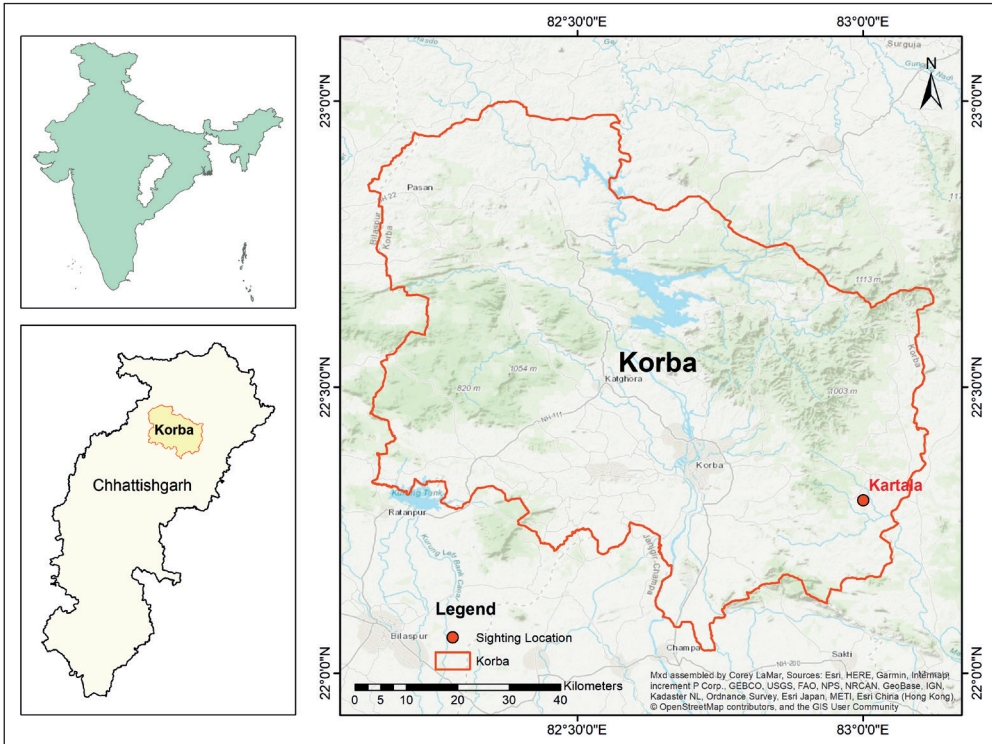


Figure 1. Map representing the recorded location of partial leucistic Greater Coucal

1. ábra A részlegesen leucisztikus nagy bozótkakukk megfigyelési helye

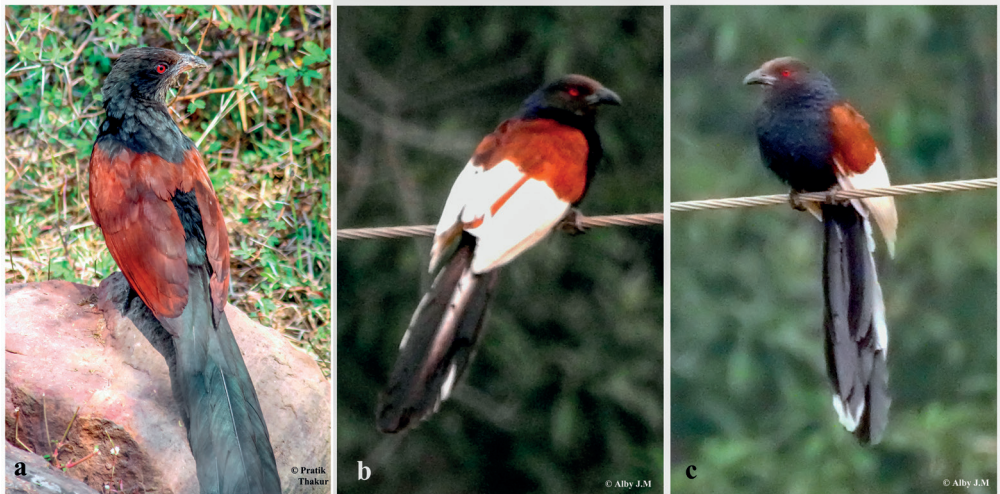


Figure 2. Photographs representing dorsal (b) and ventral (c) view of the recorded partial leucistic individual compared with a normal Greater Coucal (a)

2. ábra A részlegesen leucisztikus egyed hátoldali (b) és hasoldali (c) nézete egy normál színű nagy bozótkakukkhöz képest (a)

by the colour of the eyes and feathers as well as the bare parts of the bird. In leucism, the number of white feathers varies and the eyes are usually normal (Mahabal *et al.* 2016).

The occurrence of leucism and albinism can be influenced by environmental factors such as diet, age, disease, and chemical exposure like pesticides (Narayana *et al.* 2015). Among the chronicles of colour aberrations in Indian birds between 1886 and 2015 (Mahabal *et al.* 2016), there is only one case of partial leucism reported across the distribution range of the species in Uttar Pradesh (Ghosal & Ghose 1990). Some of the other bird species reported by leucism in India are Lesser Whistling Duck *Dendrocygna javanica* (Gayen *et al.* 2021), Indian Robin *Saxicoloides fulicatus* (Kasambe & Telkar 2021), Jungle Myna *Acridotheres fuscus* (Samal *et al.* 2021), Coppersmith Barbet *Psilopogon haemacephalus* (Gayen *et al.* 2022). The present study represents the first photographic report of partial leucism in a Greater Coucal from Chhattisgarh, India. Further research is required to determine the true causes of the high frequency of partial leucism detected in wild birds.

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References

- Barragán-Farías, K. A., Pérez-Casanova, R. A., Galindo-Cruz, A., Hudon, J. & Rosas-Espinoza, V. C. 2019. Description of a xanthochroic House Finch (*Haemorhous mexicanus*) from Jalisco, Mexico. – The Wilson Journal of Ornithology 131(4): 850–855. DOI: 10.1676/1559-4491-131.4.850
- Bensch, S., Hansson, B., Hasselquist, D. & Nielsen, B. 2000. Partial albinism in a semi-isolated population of Great Reed Warblers. – Hereditas 133(2): 167–170. DOI: 10.1111/j.1601-5223.2000.t01-1-00167.x
- Ebird 2022. Greater Coucal. – <https://ebird.org/species/grecou1/IN>. Accessed November 25 2022
- Eliason, C. M., Shawkey, M. D. & Clarke, J. A. 2016. Evolutionary shifts in the melanin-based color system of birds. – Evolution 70(2): 445–455. DOI: 10.1111/evo.12855
- Gayen, D., Roy, S., Adhurya, S., Singhamahapatra, A., Seal, S. & Dutta, A. 2022. “Leucism resulting in xanthochroism” – A report on colour aberration in Coppersmith Barbet from Asia. – Ornis Hungarica 30(1): 69–79. DOI: 10.2478/orhu-2022-0005
- Gayen, D., Saha, S. & Adhurya, S. 2021. Report of partially leucistic Lesser Whistling Duck from West Bengal, India. – Zoos’ Print Journal 36: 31–33.
- Ghosal, D. K. & Ghose, R. K. 1990. Partial albinism in a specimen of the Crow Pheasant, *Centropus sinensis sinensis* (Stephens). – Records of the Zoological Survey of India 87(4): 337.
- Grimmett, R., Inskipp, C. & Inskipp, T. 2011. Birds of the Indian Subcontinent, 2nd ed. – London: Oxford University Press & Christopher Helm, pp. 1–528.
- Hill, G. E., Nolan, P. M. & Stoehr, A. M. 1999. Pairing success relative to male plumage redness and pigment symmetry in the House Finch: temporal and geographic constancy. – Behavioral Ecology 10(1): 48–53. DOI: 10.1093/beheco/10.1.48
- Izquierdo, L., Thomson, R. L., Aguirre, J. I., Díez-Fernández, A., Faivre, B., Figuerola, J. & Ibáñez-Álamo, J. D. 2018. Factors associated with leucism in the Common Blackbird *Turdus merula*. – Journal of Avian Biology 49(9): e01778
- Kasambe, R. & Telkar, D. 2021. Sighting of a partially leucistic Indian Robin *Saxicoloides fulicatus* at Akola, Maharashtra, India. – Newsletter for Birdwatchers 54(3): 30–32.

- Laczi, M., Hegyi, G., Kötél, D., Csizmadia, T., Löw, P. & Török, J. 2019. Reflectance in relation to macro- and nanostructure in the crown feathers of the Great Tit (*Parus major*). – *Biological Journal of the Linnean Society* 127(1): 113–124. DOI: 10.1093/biolinnean/blz016
- Laczi, M., Herényi, M., Hegyi, G. & Török, J. 2019. First record of true albinism in a natural population of Collared Flycatchers *Ficedula albicollis*. – *Ardea* 107(3): 340–343. DOI: 10.5253/arde.v107i3.a8
- LaFountain, A. M., Prum, R. O. & Frank, H. A. 2015. Diversity, physiology, and evolution of avian plumage carotenoids and the role of carotenoid–protein interactions in plumage color appearance. – *Archives of Biochemistry and Biophysics* 572: 201–212. DOI: 10.1016/j.abb.2015.01.016
- Mahabal, A., Van Grouw, H., Sharma, R. M. & Thakur, S. 2016. How common is albinism really? Colour aberrations in Indian birds reviewed. – *Dutch Birding* 38: 301–309.
- McCardle, H. 2012. Albinism in wild vertebrates. – MSc Thesis Texas State University, San Marcos, Texas, USA
- Narayana, B. L., Surender, G. & Vasudeva, R. V. 2015. A note on deformities in the Rosy Starling (*Pastor roseus*), Telangana, India. – *TAPROBANICA: The Journal of Asian Biodiversity* 7(4): 258–259.
- Nemésio, A. 1999. Plumagens aberrantes em Psittacidae neotropicais-uma revisão [Aberrant plumage in neotropical Psittacidae-a review]. – *Melopsittacus* 2(2/4): 51–58. (in Portuguese)
- Samal, A., Mishra, P. & Fullonton, S. 2021. First glimpse of a leucistic Jungle Myna from Odisha, India. – *Entomology Ornithology Herpetology* 10: 239.
- Senar, J. C. 2006. Color displays as intrasexual signals of aggression and dominance. – In: Hill, G. E. & McGraw, K. J. (eds.) *Bird Coloration Vol. II. Function and Evolution*. – Cambridge: Harvard University Press, pp. 87–136. DOI: 10.2307/j.ctv22jnr8k.6
- Van Grouw, H. 2006. Not every white bird is an albino: sense and nonsense about colour aberrations in birds. – *Dutch Birding* 28(2): 79–89.
- Van Grouw, H. 2013. What colour is that bird. – *British Birds* 106: 17–29.
- Van Grouw, H. 2014. Some black-and-white facts about the Faeroese White-speckled Common Raven *Corvus corax varius*. – *Bulletin of the British Ornithologist's Club* 134: 4–13.
- Van Grouw, H., Russell, S. & Merne, O. J. 2011. Notes on colour aberrations in Common Guillemot *Uria aalge* and Northern Gannet *Morus bassanus*. – *Seabird* 24: 33–41.
- Weidensaul, S., Stoffel, M., Monroe, M. S., Okines, D., Lane, B., Gregoire, J., Gregoire, S. & Kita, T. 2015. Plumage aberrations in Northern Saw-whet Owls (*Aegolius acadicus*). – *Journal of Raptor Research* 49(1): 84–88. DOI: 10.3356/jrr-13-00073.1

