DISCOVERY

First photographic record of albinism in chital (*Axis axis*) from Chitwan National Park, Nepal

Abhinaya Pathak[1*], **Arjun Tamang**[2], **Bishal Sintan**[3], **Sujan Khanal**[4], **Bikash Pathak**[5], **Prashamsa Paudel**[6]

To Cite:
Pathak A, Tamang A, Sintan B, Khanal S, Pathak B, Paudel P. First photographic record of albinism in chital (*Axis axis*) from Chitwan National Park, Nepal. *Discovery* 2023; 59: e16d1018

Author Affiliation:
[1]Department of National Parks and Wildlife Conservation, Babarmahal, Kathmandu, Nepal
[2]Nature Guide Association, Chitwan, Nepal
[3]Chitwan National Park, Kasara, Chitwan, Nepal
[4]Institute of Forestry, Pokhara Campus, Tribhuwan University
[5]Community Based Anti-Poaching Unit, Chitwan, Nepal
[6]Central Department of Zoology, Kathmandu, Nepal

Contact details

Abhinaya Pathak	abhinayapathak17@gmail.com
Arjun Tamang	tamangarjun123456@gmail.com
Bishal Sintan	bishal.sintan.7@gmail.com
Sujan Khanal	info.sujankhanal@gmail.com
Bikash Pathak	pathakbikash2013@gmail.com
Prashamsa Paudel	prashamsapaudel1@gmail.com

[*]**Corresponding Author**
Department of National Parks and Wildlife Conservation, Babarmahal, Kathmandu,
Nepal
Email: abhinayapathak17@gmail.com

Peer-Review History
Received: 03 January 2023
Reviewed & Revised: 07/January/2023 to 18/January/2023
Accepted: 21 January 2023
Published: February 2023

Peer-Review Model
External peer-review was done through double-blind method.

Discovery
pISSN 2278–5469; eISSN 2278–5450

URL: https://www.discoveryjournals.org/discovery

DISCOVERY SCIENTIFIC SOCIETY

ABSTRACT

Chital or spotted deer (*Axis axis*) is one of the important cervid in Chitwan National Park of Nepal. They are easily observed roaming around. However, albino chital is barely found in the park. This study presents the first photographic report of albino chital in buffer zone community forest of the park. Albinism is associated with melanin and rare mutation.

Keywords: chital, Chitwan National Park, buffer zone, albinism, melanin

1. INTRODUCTION

Chital or spotted deer (Axis axis) (Kingdom: Animalia, Phylum: Chordata, Order: Mammalia, Class: Cetartiodactyla, Family: Cervidae) are extant in Nepal, India, Bangladesh, Bhutan and Sri Lanka. Chital are found in a variety of habitats, but doesn't prefer habitat that characterizes dense moist (evergreen) forests and open semi-desert or desert (Duckworth et al., 2015). In Nepal, the highest population densities approximately 200 chitals per sq. km were reported from the Bardia National Park (Naess and Andersen, 1993; Moe and Wegge, 1994). In a study from Nepal, a total of 207 line transects covering 372.4 km was assessed for tiger prey-base in Chitwan National Park (henceforth, CNP) which revealed the total number of group observations of chital were 18 in Chure hills whereas 153 in plains with total of 171. Similarly, number of individual chital counted were 262 for Chure hills and 1354 for plains with total count of 1616. Regarded as the most abundant prey ungulate species, tiger prey density comprises 52 chitals per sq. km in CNP (DNPWC, 2020).

2. METHODOLOGY

Study area

CNP is the first protected area of Nepal which spreads over four districts, i.e., Chitwan, Nawalparasi (East of Bardaghat Susta or Nawalpur), Parsa and Makwanpur and three provinces, i.e., Bagmati, Madhesh and Gandaki of Central Nepal. Geographically, it is situated between N 270 20' 19" to 270 43' 16" longitude and E 830 44' 50" to 840 45' 03" latitude whereas its buffer zone lies between N 270 28' 23" and 270 70' 38" longitude and E 830 83' 98" and 840 77' 38" latitude. Established on September 20, 1973, CNP was enlisted as a world heritage site under the natural category of UNESCO in 1984. Alongside, it is the first park

in the world to receive Conservation Assured Tiger Standards (CAT|S) award in 2015. CNP and its buffer zone possesses both Ramsar site and Important Bird Area (IBA). This park is renowned for last surviving illustration of the natural ecosystems of the Terai region which caters vital habitat for important population of several globally threatened species, such as, Greater One-horned Rhinoceros, Royal Bengal Tiger, Gharial Crocodile and Bengal Florican. Nevertheless, the park boasts 70 species of mammals, more than 576 species of birds, 47 species of reptiles, 55 species of amphibians and 120 species of fishes (CNP, 2015; 2021).

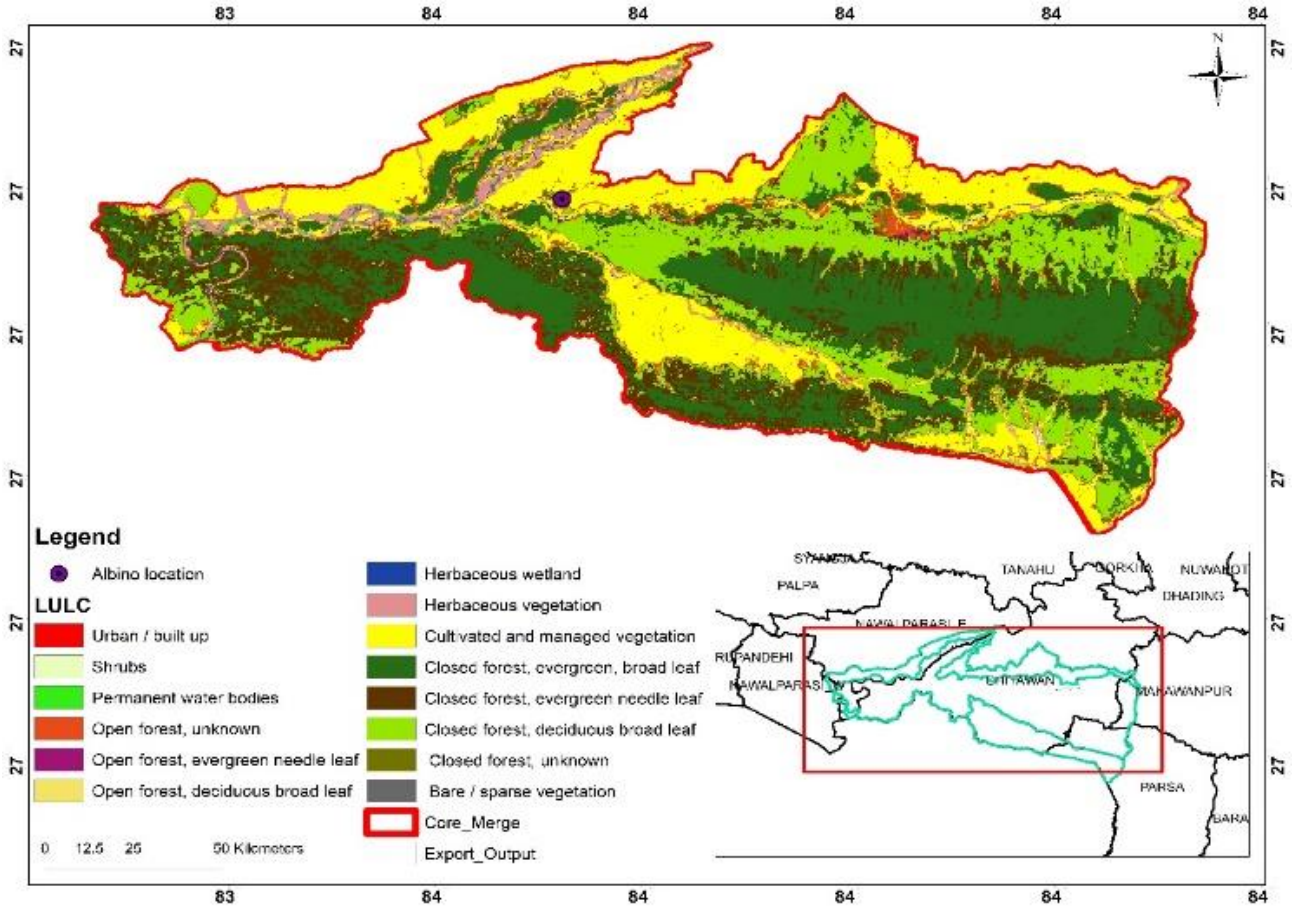

Figure 1 Map of CNP and its Buffer Zone of Nepal with the observation location of adult albino chital.

3. DISCUSSION

Albinism in Animal

Variation in color patterns displayed by mammals is influenced by the presence and distribution of pigmentation in their skin, hair and eyes and is especially related to melanin. A few rare mutations cause chromatic disorders, such as albinism, leucism, piebaldism, hypomelanism and melanism (Lucati & López-Baucells, 2017). Albinism is an inherited condition where the melanin is absent (lack the tyrosinase enzyme), in which individuals do not have any pigmentation on their skin, hair and eyes, skin resulting in snow white body with pink limbs, snout and ears (Menon, 2003; Hayashi & Suzuki, 2018; Van Grouw, 2006; Acevedo et al., 2009). On the contrary, melanism, which is related to dark outer pigmentation is also observed in animals. For instance, Pathak et al., (2021) reported the first photographic record of melanistic leopard in Nepal. Albinism differs among animal groups. It is estimated that true albinos occur with a frequency of about one in 10,000 births (Binkley, 2001).

Apart from hereditary, albinism can be caused by diet, aging, shock, illness, injury and low-quality habitat (Sage, 1962). Albino animals are prone to predation i.e., lack of crypsis around it (Uieda, 2000; Sandoval-Castillo et al., 2006; Acevedo et al., 2009), in addition to a number of pathologies that can arise in association with albinism, such as visual or immunological defects (Abreu et al., 2013). Albino animal has poor eye sight due to lack of eye pigment which affects vision, more difficulty in searching food or avoid danger (Miller, 2005). Further, they are susceptible to sunburn and cancer due to lack of melanin (Halls, 2010). Because of all these reasons, the mating ability is reduced and likely to demise before they transfer the unique genes. Due to their rarity, they are targeted by poachers for illicit trade (Dharmarathne and Wijesinghe, 2020).

Figure 2 Adult albino chital observed at Radha Krishna buffer zone community forest of Chitwan National Park, Nepal during January, 2020. (Photo: © Arjun Tamang)

4. CONCLUSION

To conclude, albinism in chital has been recorded across India (Sayyed et al., 2015; Patel, 2020). Patel, (2020) observed absence of herd or other sympatric ungulates assuming that chital fawn may have rejected from the herd for its unusual appearance. However, in our observation we didn't observe such condition as the albino chital was found with its herd foraging in the forest. Further, some villagers reported that the albino chital was chased and subsequently killed by feral dogs after few days of observation.

Acknowledgements

We express our special thanks to Department of National Parks and Wildlife Conservation and Chitwan National Park for the support to conduct this research. We further extent our gratitude to local communities for providing necessary information about the species and displaying profound interest for its conservation.

Informed consent

Not applicable.

Ethical approval

Chital (*Axis axis*) from Chitwan National Park, Nepal was observed in the study. The Animal ethical guidelines are followed in the study for species observation & identification.

Conflicts of interests

The authors declare that there are no conflicts of interests.

Funding

The study has not received any external funding.

Data and materials availability

All data associated with this study are present in the paper.

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