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# Journal of Threatened Taxa

10.11609/jott.2022.14.10.21903-22038  
[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

26 October 2022 (Online & Print)  
14(10): 21903-22038  
ISSN 0974-7907 (Online)  
ISSN 0974-7893 (Print)

Open Access





ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher  
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www.wild.zooreach.org

Host  
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43/2 Varadarajulu Nagar, 5<sup>th</sup> Street West, Ganapathy, Coimbatore, Tamil Nadu 641035, India  
Ph: +91 9385339863 | [www.threatenedtaxa.org](http://www.threatenedtaxa.org)  
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Cover: Himalayan Gray Langur *Semnopithecus ajax* (adult female) © Rupali Thakur.



## First report of melanism in Indian Flapshell Turtle *Lissemys punctata* (Bonnaterre, 1789) from a turtle trading market of West Bengal, India

Ardhendu Das Mahapatra<sup>1</sup> , Anweshan Patra<sup>2</sup> & Sudipta Kumar Ghorai<sup>3</sup>

<sup>1,3</sup>Coastal Ecology Research Laboratory, P.G. Department of Zoology, Egra S.S.B. College, Egra, Purba Medinipur, West Bengal 721429, India.

<sup>2</sup>Society for Nature Conservation, Research and Community Engagement; Nalikul, Hooghly, West Bengal 712407, India.

<sup>1</sup>ardhendudas1994@gmail.com, <sup>2</sup>anweshan.patra@gmail.com, <sup>3</sup>sudiptag8@gmail.com (corresponding author)

Melanism is excessive production of the dark-colored pigment melanin in the skin or skin appendages either as intraspecific polymorphisms or as fixed differences between closely related species (Chavin 1969; True 2003). The Indian Flapshell Turtle *Lissemys punctata* (Bonnaterre, 1789), is a freshwater softshell turtle species distributed throughout Bangladesh, India, Myanmar, Nepal, and Pakistan (Bhupathy et al. 2014). This omnivorous species is found in a variety of natural aquatic habitats, ranging from rivers and streams to reservoirs, marshes, ponds, lakes, salt marshes, rice fields and can adapt to polluted aquatic systems, e.g., irrigation canals, tanks gutter, drainage systems, and canals in municipal areas (Das 1991; Moll & Moll 2004; Shah & Tiwari 2004; Hossain et al. 2008). Three subspecies of *L. punctata* are currently recognized namely; *L. punctata punctata*, *L. punctata vittata*, *L. punctata andersoni* (Bhupathy et al. 2014). According to the Wildlife Protection Act, 1972 of India, *L. punctata* is under Schedule-I and listed in CITES Appendices II and listed in IUCN as Vulnerable (Rahman et al. 2021). However, this turtle is one of the most overexploited and traded turtle species for its meat and medicinal products in local markets and international markets across its geographic ranges (Choudhury & Bhupathy

1993; Krishnakumar et al. 2009; Bhupathy et al. 2014; Mendiratta et al. 2017). From the early 1990s to date published reports suggest that the West Bengal state involves huge exploitation of *L. punctata* for the local market and international trade (Saha 1986; Das 1991; Whitaker 1997; Choudhury et al. 2000; Mendiratta et al. 2017). Mahapatra et al. (2009) reported *L. punctata* traded from coastal districts of Odisha to West Bengal on regular basis. The species is covertly sold as food in many markets of West Bengal till date. A kilogram of turtle meat can be sold for a minimum of INR 400 (USD 5.24) in these markets (Patra 2019). For the first time we report melanism in *L. punctata* from an illegal meat market near Alangiri, East Medinipur District, West Bengal. During a market survey on 08 March 2020, we found three turtle sellers in Alangiri bazaar, Purba Medinipur district, West Bengal (21.86°N & 87.46°E, elevation 11 m) one of them was selling turtles along with fishes (Image 1). Each seller brought approximately 60 kg of turtles (approx. 48 individuals) to market and sold INR 430 (USD 5.64). Locals and the turtle vendors revealed that they sell turtles throughout the year on two market days a week and the turtles were mostly imported from the neighboring state, Odisha. We rescued nine turtles from the seller who was selling turtles along with fishes

**Editor:** Raju Vyas, Vadodara, Gujarat, India.

**Date of publication:** 26 October 2022 (online & print)

**Citation:** Mahapatra, A.D., A. Patra & S.K. Ghorai (2022). First report of melanism in Indian Flapshell Turtle *Lissemys punctata* (Bonnaterre, 1789) from a turtle trading market of West Bengal, India. *Journal of Threatened Taxa* 14(10): 22032–22035. <https://doi.org/10.11609/jott.8025.14.10.22032-22035>

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**Funding:** None.

**Competing interests:** The authors declare no competing interests.

**Acknowledgements:** We are thankful to Mr. Kamal Das, Future Institute of Engineering and Management, Sonarpur, Kolkata for helping us during the turtle rescue.





Image 1. Turtle sold along with fishes by one seller out of three sellers in an open market. Turtles were rescued from him.

and brought to our lab. The melanistic turtle was found among these rescued turtles (Image 1). The melanistic turtle and other turtles were identified as *L. punctata*, based on the following morphological characteristics: domed-shaped oval carapace, femoral flaps, and nasal septal ridges. The turtles were placed in a 12 × 8 ft room and the surface of the ground was covered by 5:5 soil and sand mixtures. Turtles were fed by small fishes and aquatic plants (*Eichhornia crassipes*). Turtles were released after 5 days in a canal containing floating vegetation. The following morphometric measurements were taken in melanistic *L. punctata*: Curve Carapace length (CCL) = 172 mm; Curve Carapace Width (CCW) = 157 mm; Plastron Length (PL) = 159 mm; Plastron Width (PW) = 127 mm; Weight = 630 g; sex not identified. The turtles were sold out in less time but at a higher price compared to fishes. The melanistic individual had black-colored dorsum, limbs, neck, and head. The irises of the eyes were slightly darker compared to the normally colored individual of the same species. The anterior corneal corner/nictitating membrane is slightly white. A thin white strip was present over the upper eyelid. The point of the nostril contains a few white spots. Scattered

black spots are present across the plastron. The forelimbs and hind limbs are completely black. Carapace, neck, and plastron contains many injuries, may be due to capture, transport, and keeping (Image 2B–E).

Two types of color anomaly, e.g., albinism and leucism have been reported between three subspecies of *L. punctata*. Albinism was observed in *L. p. vittata* reported by D'Abreu (1928) and in *L. punctata* by Vyas (1997), Palot & Radhakrishnan (2004), Rufus (2009), Mahapatra et al. (2009), Vaghela & Kamble (2021), Vittapu et al. (2022) from India, and Hossain & Sarkar (1999) also reported an albino *L. punctata* from Bangladesh. Chromatic leucism in *L. punctata* has been reported by Devkota et al. (2020) from Nepal and Rabbe et al. (2021) reported from Bangladesh.

Despite being a legally protected species under Schedule-I in the Wildlife Protection Act, 1972 of India, *L. punctata* is sold in open markets in different parts of West Bengal. Turtles are sold throughout the year and the distance from the turtle trading market (Alangiri) to Forest Range Office and Police Station (Egra) is about 10 km, but no legal action has been taken against these illegal activities. A systematic market survey and study



**Image 2.** A—Full body of melanistic *Lissemys punctata* | B—Carapace of melanistic *L. punctata* shows injuries | C—Plastron of melanistic *L. punctata* with the discrete distribution of black patches | D—Close-up view of snout to neck of melanistic *L. punctata*. © Ardhendu Das Mahapatra

on community perception are needed to understand the dynamics and factors influencing turtle trading in West Bengal. Enforcement of laws and mass community awareness are suggested to stop illegal turtle trading and consumption.

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**Journal of Threatened Taxa** is indexed/abstracted in Bibliography of Systematic Mycology, Biological Abstracts, BIOSIS Previews, CAB Abstracts, EBSCO, Google Scholar, Index Copernicus, Index Fungorum, JournalSeek, National Academy of Agricultural Sciences, NewJour, OCLC WorldCat, SCOPUS, Stanford University Libraries, Virtual Library of Biology, Zoological Records.

NAAS rating (India) 5.64

Print copies of the Journal are available at cost. Write to:  
The Managing Editor, JoTT,  
c/o Wildlife Information Liaison Development Society,  
43/2 Varadarajulu Nagar, 5<sup>th</sup> Street West, Ganapathy, Coimbatore,  
Tamil Nadu 641035, India  
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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

October 2022 | Vol. 14 | No. 10 | Pages: 21903–22038

Date of Publication: 26 October 2022 (Online & Print)

DOI: 10.11609/jott.2022.14.10.21903-22038

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