



First Records of Albinism or Leucism in Six Species of Snakes from Central India

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Both albinism and leucism have been described in reptiles (e.g., Bechtel 1995; Broghammer 2000). Albinism is the absence of both integumentary and retinal pigmentation, which results in a white or yellowish body and red eyes. Leucism, sometimes considered a form of incomplete albinism involving reduced or absent integumentary pig-

mentation with retention of color in the eyes, is expressed as complete or partial integumentary pigmentation and dark eyes. Coloration plays an important role in predator avoidance through crypsis, mimicry, or aposematism (e.g., Sweet 1985) and also in inter- and intraspecific communication and sexual selection (e.g., Roulin and Bize 2006). Consequently,



Fig. 1. (A/B) An albino juvenile Common Sand Boa/Rough-tailed Sand Boa (*Eryx conicus*). (C) Typically colored juvenile. Photographs by Jagdish Rewatkar (A & B) and Sagar Deshmukh (C).

both of these forms of aberrant coloration are rare in nature because albinistic or leucistic individuals rarely survive and reproduce (e.g., Bechtel and Bechtel 1981; Krecsák 2008). In addition, albinos have sun-sensitive skin, which can affect growth (Spodola and Ditoro 2007), and often have impaired vision (e.g., Creel et al. 1990). Bechtel (1995) estimated that the ratio of albinism in wild vertebrates was 1:10,000 to 1:30,000. Previous studies documenting instances of leucism or albinism in Indian reptiles in general and snakes in particular include Lahiri (1955), Whitaker (1971), Kumar (1988), Basu et al. (2003), Cyril (2009), Sayyed (2012), Vyas (2012, 2013), Vyas et al. (2012), Hoshing et al. (2013), Bhutkar and Mahabal (2014), Jadhav et al. (2014), Adimallaah and Vyas (2015), Kumbar et al. (2016), and Thakur and Trivedi (2018). Also, Mahabal and Thakur (2014) provided a comprehensive report on aberrant coloration and patterns in the Indian herpetofauna. Herein we report first records of leucism or albinism for six species of snakes from Central India.

Common Sand Boa/Rough-tailed Sand Boa, *Eryx conicus* (Schneider 1801). These stout-bodied, medium-sized snakes with strongly keeled scales are abundant in arid localities throughout the Indian Subcontinent, including Pakistan, Nepal, Sri Lanka, and Bangladesh, but excluding the Andaman and Nicobar Islands (Das 2002; Whitaker and Captain 2004). Although mostly crepuscular or nocturnal (Das 2002), these snakes are known to hunt by day (Whitaker and Captain 2004). They are strong burrowers in loose sand or silty soil (Sharma 2007) and generally constrict prey, which includes small mammals, birds, reptiles, amphibians, and even large insects (Smith 1943; Das 2002; Sharma 2007; Whitaker and Captain 2004).

At 0710 h on 8 July 2018, at the Thermal Power Station, Paras, Balapur, Akola, Maharashtra, India (20.716537°N, 76.796762°E), Jagdish Rewatkar rescued an albino juvenile Common Sand Boa (~150 mm total length) that was basking on a rocky trail. The snake was pale pink with red eyes (Fig. 1). It was released into appropriate habitat.

Green Keelback/Lead Keelback, *Rhabdophis plumbicolor* (Cantor 1839). These snakes are distributed throughout India, except along the eastern coast, the Ganges Valley, and the extreme northeastern parts of the country, and are commonly encountered in some areas of Maharashtra (Whitaker and Captain 2004; Deshmukh et al. 2015). They occur mainly in hills at elevations of 600–1,800 m (Daniel 2002).

During a rescue operation at 1810 h on 6 August 2014 in the Shri Residential Colony near Bhagatwadi, Paras, Tahsil-Balapur, Akola District, Maharashtra, India (20.050889°N, 73.713797°E), Jagdish Rewatkar rescued a young, unsexed, leucistic Green Keelback (~300 mm SVL) that was yellowish in color with a light greenish remnant of a mark on the nape, and reddish eyes (Fig. 2). It was released into suitable habitat near the site of collection.

Checkered Keelback/Asiatic Watersnake, *Fowlea piscator* (Schneider 1799). These snakes are among the most frequently encountered aquatic snakes and possibly the most plentiful species of snake in India (Whitaker and Captain 2005). They inhabit the whole of India to Baluchistan and the northwestern frontier provinces and extend into the Indo-Chinese region as far east as Myitkina in upper Burma (Smith 1943). They are very common in central India (Nande and Deshmukh 2007; Deshmukh et al. 2015), where they occur



Fig. 2. (A) Leucistic and typically colored Green Keelback/Lead Keelback (*Rhabdophis plumbicolor*). (B) Typically colored adult. Photographs by Jagdish Rewatkar (A) and Sagar Deshmukh (B).

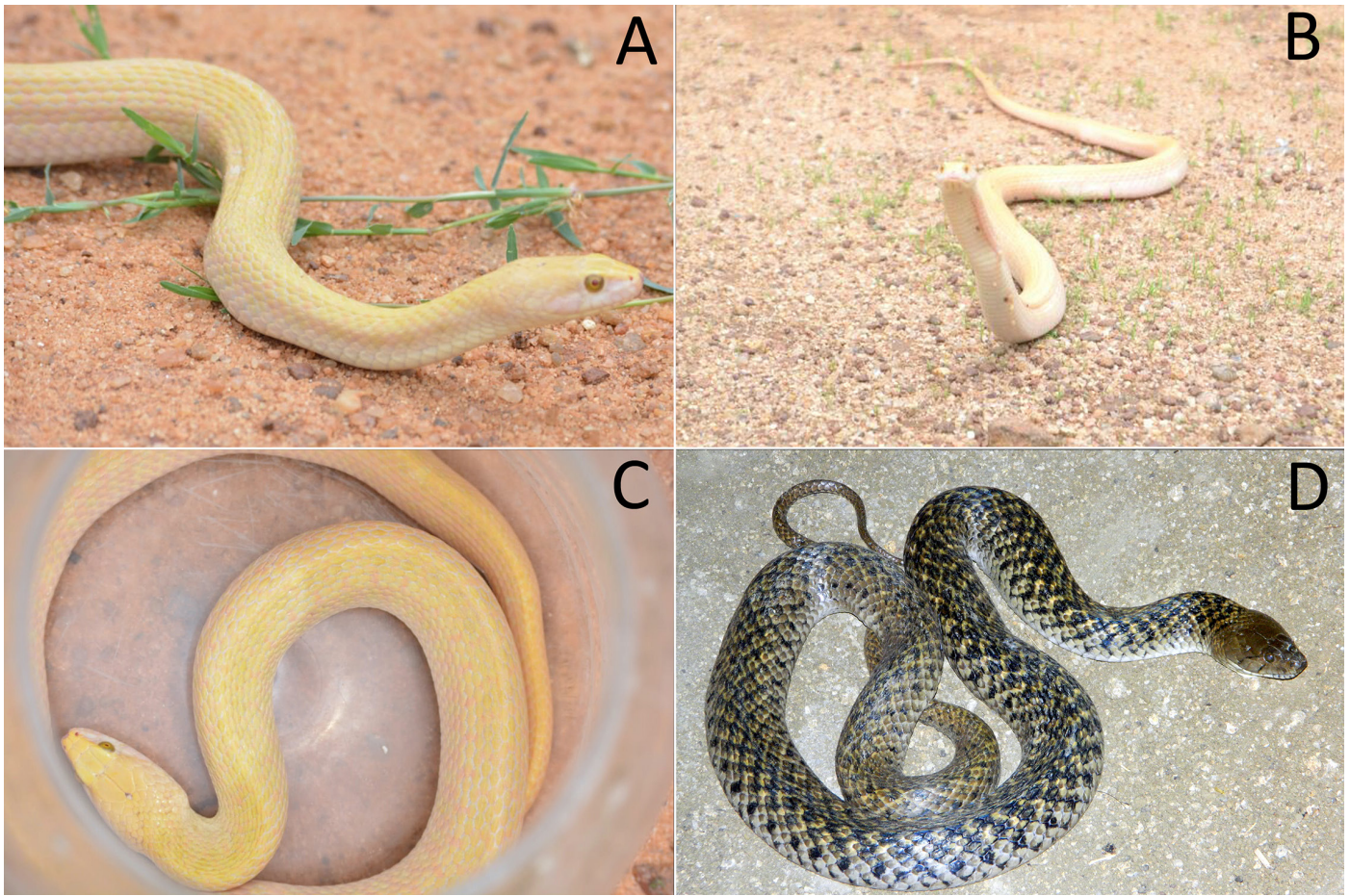


Fig. 3. (A/B/C) Albino Checkered Keelback/Asiatic Watersnake (*Xenochrophis piscator*). (D) Typically colored adult. Photographs by Vijay Pachare (A & B), Sujit Kawale (C), and Sagar Deshmukh (D).

in and around rivers, ponds, and paddy fields. Extremely active, these snakes are capable of jumping off the ground, and in water they swim nimbly and are capable divers (Daniel 2002). They feed on frog eggs, tadpoles, frogs, fish, and occasionally on rodents and birds (Whitaker and Captain 2005).

Vijay Pachare and Sujit Kawale observed a male albino at 2155 h on 12 June 2017 in a small tank at the Sajid Cement Work Factory in Chunala, Rajura, Chandrapur District,

Maharashtra, India (19.789099°N, 79.395534°E). It was active and aggressive. The adult snake (705 mm SVL) had a yellowish body without the usual checkered pattern and greenish eyes with a reddish pupil (Fig. 3). It was released near a natural pond in a nearby forest in Chunala, Rajura, Chandrapur.

Indian Wolf Snake/Common Wolf Snake, *Lycodon aulicus* (Linnaeus 1758). These snakes occur throughout India



Fig. 4. (A) Leucistic Indian Wolf Snake/Common Wolf Snake (*Lycodon aulicus*). (B) Typically colored individual. Photographs by Jagdish Rewatkar (A) and Sagar Deshmukh (B).

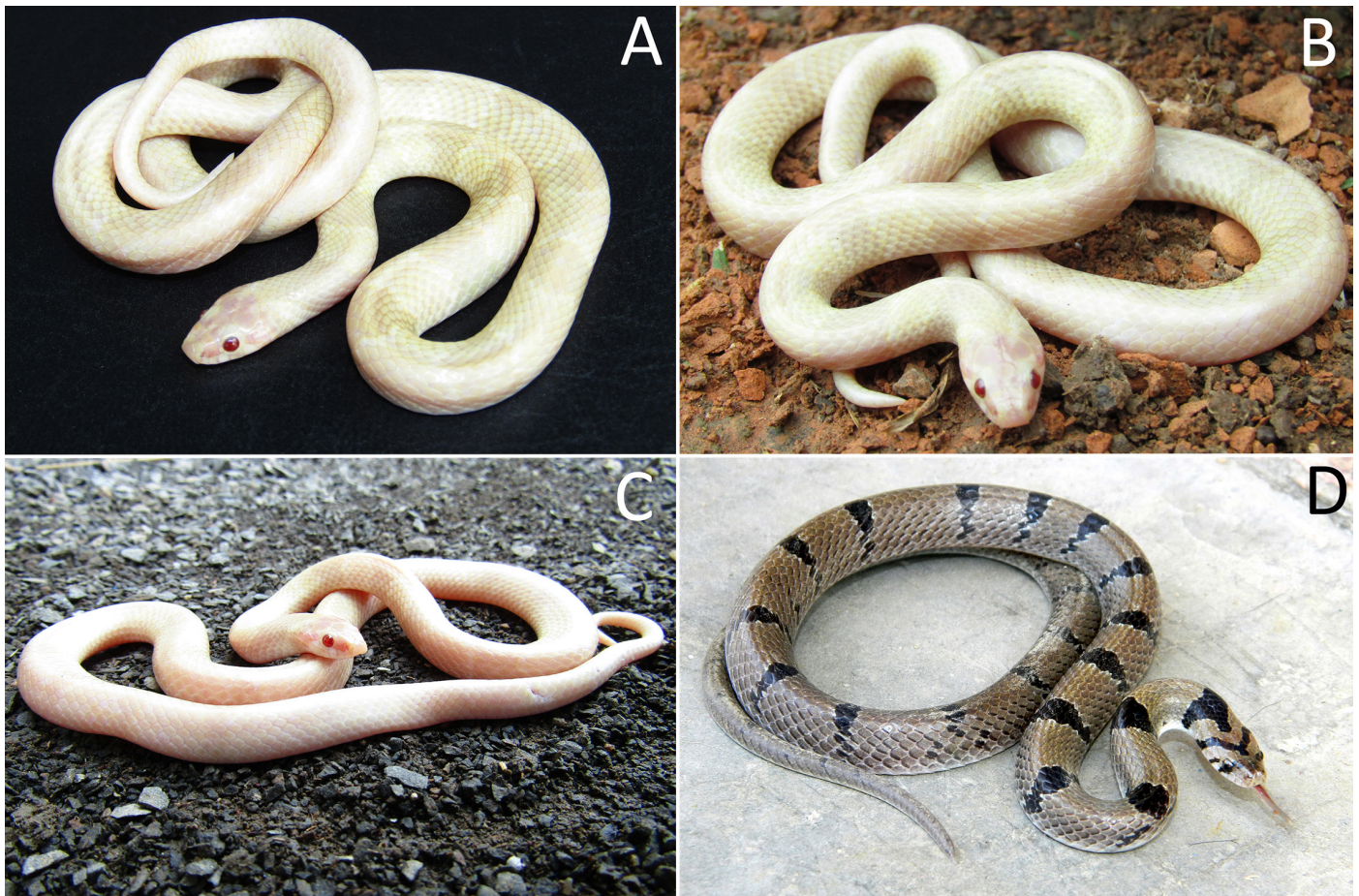


Fig. 5. (A/B/C) Common Kukri Snake/Banded Kukri Snake/Russet Kukri Snake (*Oligodon arnensis*). (D) Typically colored snake. Photographs by Jagdish Rewatkar (ABC) and Sagar Deshmukh (D).

(including Lakshadweep but not the Andaman and Nicobar Islands (Whitaker and Captain 2004). One of the most frequently encountered snakes of the Indian plains and very common in the Nagpur Region of central India (Deshmukh et al. 2015), they are strictly nocturnal and often occur near and in human habitations (Daniel 2002).

Jagdish Rewatkar observed a leucistic individual at 2205 h on 3 August 2018 at the VBH Colony in Paras, Akola, Maharashtra, India (20.680199°N, 77.034660°E). Coloration of the body was pinkish with normally colored yellowish bands (Fig. 4). It was released in an abandoned building.

Common Kukri Snake/Banded Kukri Snake/Russet Kukri Snake, *Oligodon arnensis* (Shaw 1802). This species occurs throughout India (except the Andaman and Nicobar Islands and possibly the extreme northeastern parts of the country) and also is found in Pakistan, Nepal, Bangladesh, and Sri Lanka (Whitaker and Captain 2004). These active little snakes are mainly diurnal and most frequently encountered during the rainy season (Daniel 2002).

During a rescue operation at 2050 h on 12 June 2017, an albino was crossing a road next to railway track in the Panchsheel Nagar Railway Station, Paras, Balapur, Akola, Maharashtra, India (20.729010°N, 77.013809°E). The unsexed snake (350 mm SVL) had a faint pinkish-brown body and red eyes (Fig. 5). It was released into appropriate habitat on the outskirts of Akola City.

Common Indian Krait, *Bungarus caeruleus* (Schneider 1801). These venomous snakes occur throughout India and also are known from Afghanistan, Pakistan, Sri Lanka, Bangladesh, and Nepal. Kraits are nocturnal and are known to feed on snakes (even other kraits) as well as rodents, lizards, and frogs (Whitaker and Captain 2008). They are common in the Nagpur District (Deshmukh et al. 2015).

At 1945 h on 13 October 2017, Jagdish Rewatkar encountered an unsexed adult albino (~610 mm) near the Saraswati High School, Paras, Balapur, Akola, Maharashtra, India (20.719253°N, 76.816279°E). The body was yellowish-white with white bands and its eyes were red (Fig. 6). The snake was released at the site of capture.

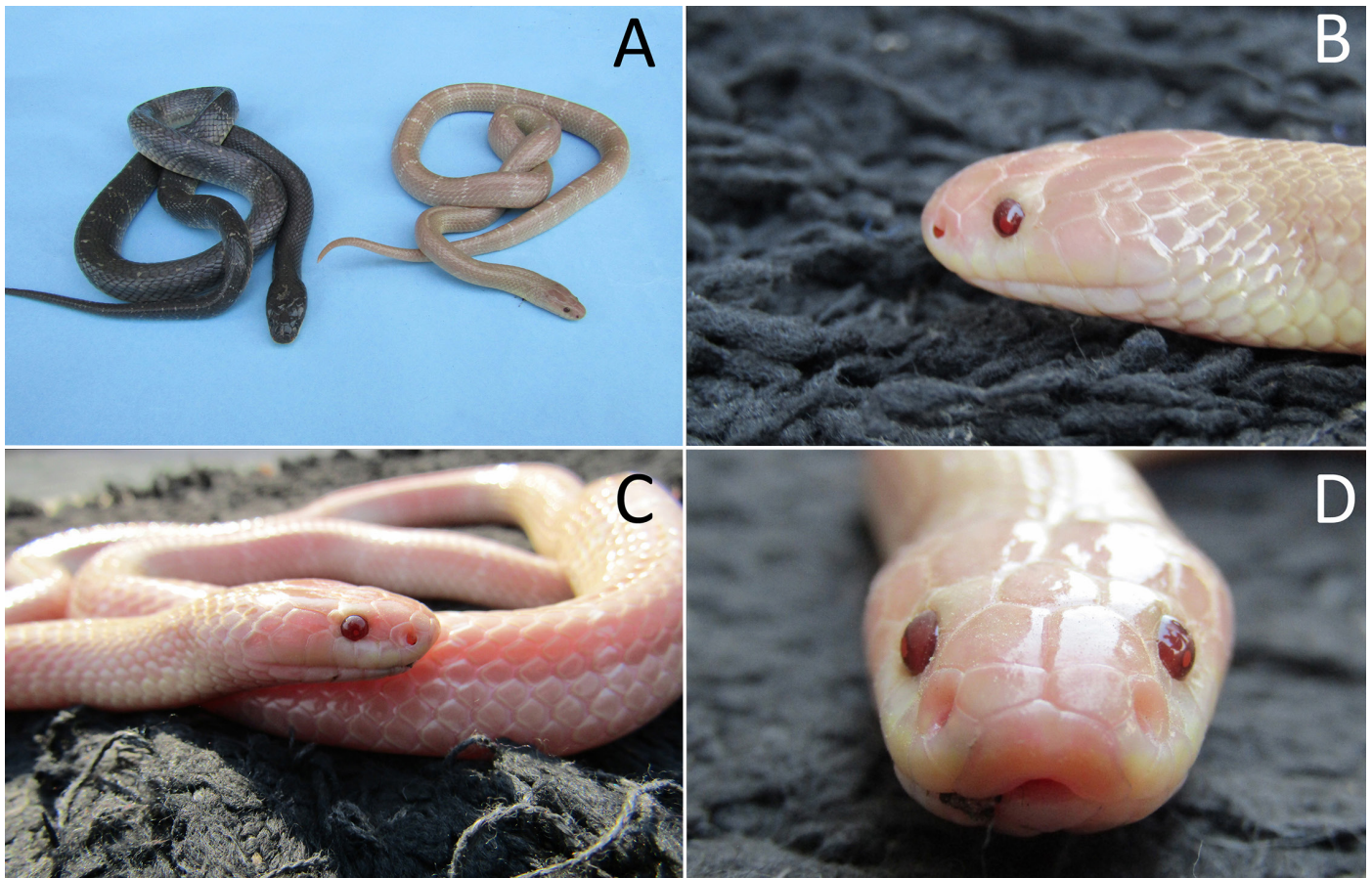


Fig. 6. (A) Albino and typically colored Common Indian Krait (*Bungarus caeruleus*). (B/C/D) Albino showing the red eye. Photographs by Jagdish Rewatkar

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