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Short Communication

Successful Hatching of Rescued Eggs of Two *Naja* Species from Assam, India

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Abstract: Human-snake negative interaction is common in rural Assam, particularly during the breeding season when cobras often deposit eggs inside houses or other structures. Such encounters frequently lead to destruction of eggs, posing a threat to local populations of ecologically important species. We report two cases of successful hatching from rescued cobra (*Naja* spp.) eggs in Assam. In the first case, thirteen eggs of a Monocled Cobra (*Naja kaouthia*) were recovered from beneath the mud floor of a residence in Lakhimpur district and incubated in a container lined with straw and hay. All hatched successfully after sixteen days. The second case is from Kokrajhar district, where eleven eggs of a Spectacled Cobra (*Naja naja*) were rescued from a school, and were incubated under controlled conditions (27–32 °C, 70–80% humidity), and eight of them hatched after fourteen days. Given the paucity of such documentation from the region, the present findings offer practical and replicable models for wildlife rescuers, forest departments, and conservation practitioners for the safe handling and management of rescued cobra eggs.
Keywords: Monocled Cobra, Spectacled Cobra, egg rescue, human-snake conflict, Assam, incubation

Introduction

The Monocled Cobra (*Naja kaouthia*) and Indian Cobra (*Naja naja*) are medically important elapids distributed across South and Southeast Asia, including northeastern India (Whitaker & Captain, 2004). Both species are easily recognized by distinctive hood markings—*N. kaouthia* by a circular "monocle" and *N. naja* by a spectacle-shaped pattern (Sharma, 2003). Most reptiles (especially snakes) were rescued not because of injury, but because the local residents wanted them removed (Shine and Koenig 2001). In Assam, expanding human settlements and agricultural activity have intensified interactions between cobras and people. During the breeding season, cobras often deposit eggs inside earthen floors, crevices, and other human structures, situations that frequently provoke retaliatory destruction by residents (The Assam Tribune, 2022; Wildlife Trust of India, 2021). The eggs, laid in a vulnerable area exposed to human activity, faced a high risk of being disturbed or destroyed. Previous reports have documented the successful hatching of rescued eggs of Naja species under captive conditions (Roshnath *et al,* 2015; Das and Biswas 2017).

This paper describes two case reports of successful hatching of Monocled Cobra and Spectacled Cobra eggs from Assam, using naturalistic and artificial incubation methods. These observations provide baseline evidence of the feasibility of egg rescue and hatching as a conservation tool in human-dominated landscapes.

Methods

Case 1: Monocled Cobra (*Naja kaouthia*)

On 12 August 2024, a family in Chowkham Gaon, North Lakhimpur district, Assam reported the presence of a Monocled Cobra (locally known as Sokori feti) inside their home. A rapid response team along with forest officials was dispatched but the snake could not be located. During inspection, thirteen eggs were discovered beneath a large crack in the mud floor of the house. To prevent destruction, the eggs were carefully collected by hand and placed in a cylindrical plastic container (180 mm diameter × 350 mm height) lined with a basal layer of straw and hay (~80 mm thickness) to simulate natural nest conditions. Following placement of the nesting material, the internal temperature of the container remained close to ambient room temperature (approximately 30-31 °C). Eggs were individually labelled to mark the upper surface and positioned in their original orientation on the straw bed, providing a total placement area of approximately 2500 mm² for all eggs. The container was kept at room temperature in a shaded, well-ventilated area and monitored daily (Figure 1).

Case 2: Spectacled Cobra (*Naja naja*)

In 23 May 2025, during a routine rescue operation in Kokrajhar district, Assam, eleven cobra eggs were recovered from a school. According to reports, the eggs were initially collected by local residents and handed over to nearby forest officials, who subsequently transferred them the following day to the Wildlife Transit Home in Kokrajhar, Assam. The eggs were incubated under controlled conditions as per the procedure followed by Vyas. R, 1998, with slight modifications. Eggs were placed in a plastic incubation box (57 × 41 × 34/ cm) containing a sawdust substrate. Temperature was maintained between 27–32/ °C using a 60-Watt overhead incandescent bulb as the heat source. The bulb was positioned above the incubation box to provide uniform heating without direct exposure to the eggs or substrate. A water-filled Petri dish (90 mm diameter × 15 mm height) was placed at the base of the box to maintain humidity at 70–80%. Environmental parameters were monitored using a digital hygrometer. Conditions were checked daily (Figure 2). Candling revealed vascularization in eight eggs, confirming embryonic development during the incubation period.

Fig. 1. Placing of the rescued eggs of Monocled Cobra in a container with hay and straw.

Fig. 2. Placing of the rescued eggs of Spectacled Cobra in a container under controlled environment.

Results

After approximately sixteen days of incubation, all thirteen eggs of the Monocled Cobra hatched successfully on 28 August 2024 (Figure 3). The hatchlings were about 8 inches long, were active and healthy and were released into a nearby reserve forest. Similarly, for the second case, after about fourteen days of incubation under controlled conditions, eight of the eleven Spectacled Cobra eggs hatched successfully on 6th June 2025 (Figure 4), and the neonates were 8-9 inches long, and were confirmed viable before being released into suitable forest habitat away from human settlements.

Discussion

These two cases demonstrate the feasibility of rescuing and incubating cobra eggs as a practical response to human- snake negative interaction in Assam (Figure 5). In rural communities, cobra eggs are often deposited inside dwellings and are usually destroyed due to fear of envenomation. Egg rescue and incubation offer an alternative strategy that ensures embryo survival while addressing local safety concerns. Case 1 showed that low-cost (field setting without specialized equipment), naturalistic methods, such as using straw- and hay-lined containers, can effectively mimic natural nest conditions. This

Table 1. Summary of rescued cobra eggs, incubation method and hatching outcomes.

Case	Species	Number of Eggs	Location Found	Incubation Method	Duration to Hatch (From day of rescue)	Hatching Success	Release Location
1	*Naja kaouthia* (Monocled Cobra)	13	Under mud floor of house, Chowkham Gaon	Naturalistic (straw and hay in container)	~16 days	13/13 (100%)	Nearby reserve forest
2	*Naja naja* (Spectacled Cobra)	11	Human settlement, Kokrajhar District	Controlled (temp 27.05-32.32°C, humidity 70-80%)	~14 days	8/11(73%)	Nearby forest habitat

Fig. 3. Hatching of eggs of Monocled Cobra.

Fig. 4. Hatching of eggs of Spectacled Cobra.

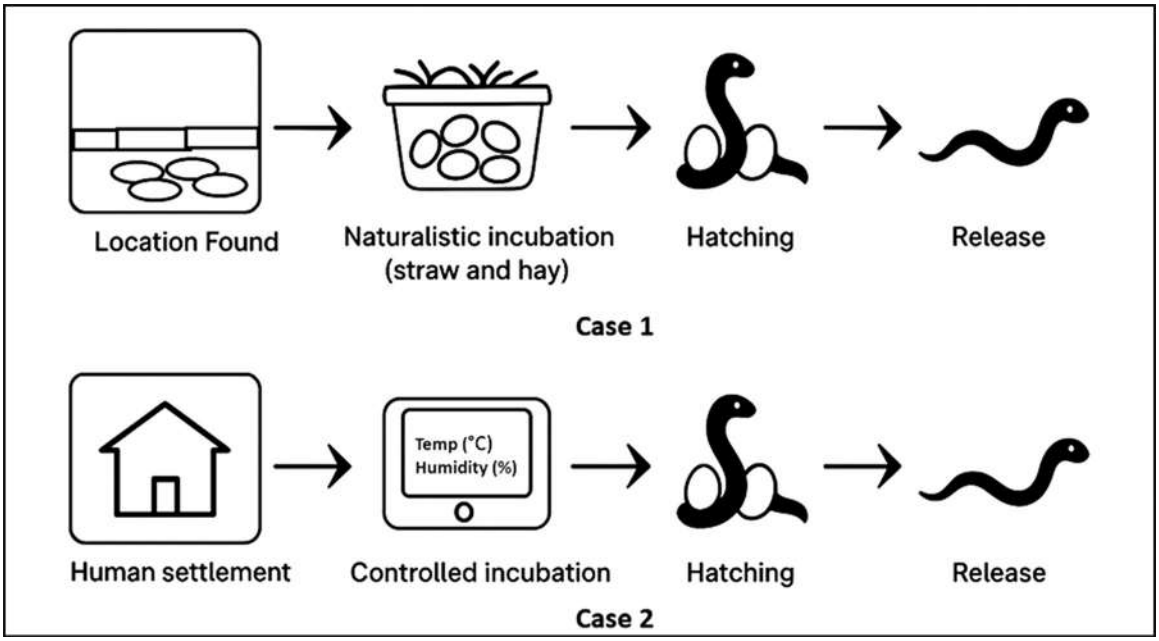

Fig. 5. Successful hatching of rescued cobra eggs in Assam: Case 1 (*Naja kaouthia*) under naturalistic incubation and Case 2 (*Naja naja*) under controlled environment.

approach is especially valuable in field situations where technical resources are limited. Case 2 indicated that controlled incubation provides greater predictability and closer monitoring, though the lower success rate (73%) was likely influenced by repeated handling during translocation. Candling revealed egg shrinkage and absence of vascularization in the unhatched eggs, which were later discarded to prevent infection. In both cases, hatching occurred within 14–16 days of collection, much shorter than the typical incubation period of 45-70 days reported for *Naja kaouthia* and *Naja naja* under natural conditions (Whitaker & Captain, 2004; Vyas, 1998). This suggests that the eggs had already undergone significant embryonic development prior to rescue, with artificial or naturalistic incubation merely supporting completion of the process. Correct egg orientation is critical for embryonic survival in snakes, as embryos attach to the upper surface of the eggshell shortly after oviposition; rotation of eggs has been shown to cause high mortality (Packard *et al.* 1982). Field observations and artificial incubation studies further emphasize maintaining original egg position during rescue and incubation (Dovè *et al.* 2021; Deeming & Ferguson 1991). Egg orientation was maintained in Case 1 but could not be verified in Case 2 because of repeated handling and transport. While hatching success was high in Case 1, outcomes may also depend on factors such as rescue history, condition of eggs at collection, and duration in captivity. Successful hatching ultimately depends on maintaining optimal temperature and humidity (Packard, 1991; Overall, 1994). Although success in Case 2 was lower than in Case 1, controlled incubation still provided reliability and confidence during the process. With refinements, shortcomings can be minimized in future interventions.

Conclusion

The successful hatching of rescued eggs from two *Naja* species in Assam highlights the importance of rescue following the standard procedure and rehabilitation practices in mitigating human-snake negative interaction. Such practices, can strengthen community engagement and may foster more positive attitudes toward snakes, reduce retaliatory killing, and promote human-snake coexistence.

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References

The Assam Tribune. 2022. 35 snakes rescued from newly constructed house in Assam's Nagaon. *The Assam Tribune* available online at: https://assamtribune.com/assam/35-snakes-rescued-fromnewly-constructed-house-in-assams-nagaon-1537666

Das S and Biswas A. 2017. Notes on the breeding ecology of monocled cobras (*Naja kaouthia*) from areas adjacent to the Sundarban, India. *Herpetological Bulletin*. 140: 33-34.

Dovè A, Stvarnik M, Lindtner Knific R, Greguriæ Graèner G, Klobuèar I and Zorman Rojs O. 2021. Monitoring of unhatched eggs in Hermann's Tortoise (Testudo hermanni) after artificial incubation and possible improvements in hatching. *Animals*. 11(2): 478.

Ferguson MW and Deeming DC.(Eds.).1991. *Egg incubation: its effects on embryonic development in birds and reptiles*. Cambridge University Press. Pp.: 448.

Overall KL. 1994. Lizard egg environments. In: Vitt LJ and Pianka ER (eds.). *Lizard ecology: Historical and experimental perspectives*. Princeton University Press, Princeton. Pp.: 51-72.

Moreira PL and Barata M. 2005. Egg mortality and early embryo hatching caused by fungal infection of Iberian rock lizard (Lacerta monticola) clutches. The Herpetological Journal. 15(4): 265-272.

Packard GC. 1991. Physiological and ecological importance of water to embryos of oviparous reptiles. In D. C. Deeming and M. W. J. Ferguson (eds.). Egg Incubation: Its Effects on Embryonic Development in Birds and Reptiles. Pp.: 213-228.

Packard GC, Packard MJ and Boardman TJ. 1982. Structure of eggshells and water relations of reptile eggs. *Physiological Zoology*. 55: 340-354.

Roshnath R, Basheer A and Divakar N. 2015. Rescued spectacled cobra (*Naja naja*) eggs hatched in captivity. *Newsletter of the South Asian Reptile Network*. 17: 30-32.

Sharma RC. 2003. *Handbook: Indian Snakes*. Zoological Survey of India, Kolkata, India. Pp.: 292.

Shine R and Koenig J. 2001. Snakes in the garden: an analysis of reptiles "rescued" by community-based wildlife carers. Biological Conservation. 102(3): 271-283.

Vyas R. 1998. Breeding of Indian Spectacled Cobra Naja naja. ZOO'S PRINT. 13(10): 40.

Whitaker R and Captain A. 2004. *Snakes of India: The field guide*. Draco Books, Chennai. Pp.: 504.

Wildlife Trust of India. 2021. Forest department officials rescue snakes in Assam. https://www.wti.org.in/news/forest-department-officials-rescue-snakes-in-assam