

Indian Bullfrogs (Hoplobatrachus tigerinus): Observations of Predation and Cannibalism in Hapure, Dang District, Nepal

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The Indian Bullfrog, *Hoplobatrachus tigerinus* (Daudin 1802), is a voracious predator, consuming a variety of invertebrates (snails, insects, prawns, land crabs) and vertebrates (anurans, including conspecifics, lizards, snakes, birds, and small mammals) (Chanda 2002; Daniel 2002; Datta and Khaledin 2017; Gautam and Bhattarai 2020a; Khan 1973; Khatiwada et al. 2016; Mohanty and Measey 2018; Parajuli and Budha 2006; Rahman et al. 2012; Sapkota et al. 2022; Tripathi 2018). Anurans are known prey of fishes, turtles, frogs (including conspecifics), snakes, crocodiles, birds, and small mammals (Gautam and Bhattarai 2020b; Hossain 2016; Lodé 2010; Toledo et al. 2007; Wadeker 1963).

At 1300 h on 17 September 2021, the first author received a rescue call from a neighbor in Hapure, Dang District, Nepal (28.1900, 82.1333). Upon arrival, he found a Checkered Keelback (*Fowlea piscator*) swallowing an adult *H. tigerinus* (Fig. 1). The snake, disturbed by the gathering

crowd, attempted to escape with the frog but, when followed, released the frog. Predation on Indian Bullfrogs by *F. piscator* was reported previously by Hossain (2016).

At 1900 h on 7 June 2022, in Hapure, Dang District, Nepal (28.1894, 82.1317), the first author encountered an adult *H. tigerinus* ingesting a smaller conspecific (Fig. 2). After being disturbed the larger frog released its prey and jumped into a nearby pond. Cannibalism has been reported by tadpoles (Saidapur 2001; Rajput et al. 2011; Phuge et al. 2023) and, although cannibalism of adult *H. crassus* was reported by Sapkota et al. (2022), to the best of our knowledge, this is the first documented case of attempted cannibalism of an adult conspecific by *H. tigerinus* from Nepal.

At 1800 h on 18 November 2023, in Hapure, Dang District, Nepal (28.1893, 82.1317), the first author found an adult *H. tigerinus* trapped in a 1-m deep pit and an Asian House Shrew (*Suncus murinus*) sticking its snout out of an



Figure 1. A Checkered Keelback (*Fowlea piscator*) preying on an Indian Bullfrog (*Hoplobatrachus tigerinus*) in Hapure, Dang District, Nepal. Photograph by Sandeep Oli.



Figure 2. An adult Indian Bullfrog (*Hoplobatrachus tigerinus*) preying on a smaller conspecific in Hapure, Dang District, Nepal. Photograph by Sandeep Oli.



Figure 3. An Asian House Shrew (*Suncus murinus*) feeding on an Indian Bullfrog (*Hoplobatrachus tigerinus*) in Hapure, Dang District, Nepal. Photograph by Sandeep Oli.

inlet hole in the side of the pit. When the latter approached the frog, it emitted a distress call, but the shrew grasped the frog's snout and held on. After half an hour, the shrew broke the frog's upper jaw. Two hours later, the frog died (Fig. 3). After another 2.5 hours, the shrew had consumed one quarter of the frog. By 0800 h the next morning, nothing was left of the frog. Predation of *H. tigerinus* by *S. murinus* has been reported previously in Nepal (Gautam and Bhattarai 2020b) and Bangladesh (Rabbe and Roy 2021).

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Literature Cited

Chanda, S.K. 2002. Handbook of Indian Amphibians. Zoological Survey of India, Kolkata, India.

Daniel, J.C. 2002. *The Book of Indian Reptiles and Amphibians*. Bombay Natural History Society, Oxford University Press, Bombay, India.

Datta, A.K. and S. Khaledin. 2017. Observations on an Indian Bull Frog swallow-

- ing an Asian Common Toad, and a Checkered Keelback on a Skipper Frog. Frog Leg #132. Zoo's Print 32: 28–29.
- Gautam, B. and S. Bhattarai. 2020a. Notes on anurophagy by bullfrogs, Hoplobatrachus spp. (Anura: Dicroglossidae) in eastern Nepal. Reptiles & Amphibians 27: 77–78. https://doi.org/10.17161/randa.v27i1.14463.
- Gautam, B. and S. Bhattarai. 2020b. Predation on the Indian Bull frog Hoplobatrachus tigerinus (Daudin 1802) (Anura: Dicroglossidae) by the Asian House Shrew Suncus murinus (Linnaeus 1766) (Soricomorpha: Soricidae) from Nepal. Journal of Animal Diversity 2: 37–41. https://doi.org/10.29252/ JAD.2020.2.3.6.
- Hossain, M.L. 2016. Food habits of checkered keelback, *Xenochrophis piscator* (Schneider, 1799), in Bangladesh. *Bangladesh Journal of Zoology* 44: 153–161. https://doi.org/10.3329/bjz.v44i1.30185.
- Khan, M. 1973. Food of tiger frog, Rana tigerina Daudin. Biologia (Lahore) 19: 93-107.
- Khatiwada, J.R., S. Ghimire, S.P. Khatiwada, B. Paudel, R. Bischof, J. Jiang, and T. Haugaasen. 2016. Frogs as potential biological control agents in the rice fields of Chitwan, Nepal. *Agriculture, Ecosystems & Environment* 230: 307–314. https://doi.org/10.1016/j.agee.2016.06.025.
- Lodé, T. 2010. Polecat predation on frogs and toads at breeding sites in western France. *Ethology Ecology & Evolution* April 1996: 115–124. https://doi.org/10.1080/08927014.1996.9522922.
- Mohanty, N.P. and J. Measey. 2018. What's for dinner? Diet and potential trophic impact of an invasive anuran *Hoplobatrachus tigerinus* on the Andaman Archipelago. *PeerJ* 6: e5698. https://doi.org/10.7717/peerj.5698.
- Parajuli, Y.R. and P.B. Budha. 2006. Prey diversity of Hoplobatrachus tigerinus (Daudin, 1802) (Amphibia: Anura: Ranidae) and its ecological role in an agro-ecosystem in Pokhara valley, West Nepal. Nepalese Journal of Zoology 1: 33–36.
- Phuge, S., A. Sequeira, S.M. Padhye, and R. Pandit. 2023. A morphometric analysis of developing cannibalistic Indian Bullfrog, *Hoplobatrachus tigerinus* (Daudin 1803), tadpoles. *Reptiles & Amphibians* 30: e17904. https://doi.org/10.17161/randa.v30i1.17904.
- Rabbe, M.F. and R.C. Roy. 2021. Attempted predation by an Asian House Shrew, Suncus murinus (Linnaeus 1766), on an Indian Bullfrog, Hoplobatrachus tigerinus (Daudin 1802), in Bangladesh. Reptiles & Amphibians 28: 504–505. https://doi.org/10.17161/randa.v28i3.15661.
- Rahman, S.C., W.I. Opu, and K.R. Das. 2012. Lycodon aulicus (Common Wolf Snake). Predation. Herpetological Review 43: 346.
- Rajput, A.P., B.A. Shanbhag, and S.K. Saidapur. 2011. Absence of kin discrimination in cannibalistic anuran tadpoles of the frog *Hoplobatrachus tigerinus* (Daudin). *Indian Journal of Experimental Biology* 49: 362–365.
- Saidapur, S.K. 2001. Behavioral ecology of anuran tadpoles: the Indian scenario. Proceedings of the Indian National Science Academy 67B: 311–322.
- Sapkota, S., B.P. Bhattarai, M.R. Mishra, J.N. Adhikari, and J.R. Khatiwada. 2022. Diet composition and overlap of sympatric amphibians in paddy fields of Nepal. *Herpetological Conservation and Biology* 17: 155–164.
- Toledo, L.F., R.S. Ribeiro, and C.F.B. Haddad. 2007. Anurans as prey: An exploratory analysis and size relationships between predators and their prey. *Journal of Zoology* 271: 170–177. https://doi.org/10.1111/j.1469-7998.2006.00195.x.
- Tripathi, R. 2018. Predation record on *Duttaphrynus* species by *Hoplobatrachus* tigerinus (Daudin 1802). Frog Leg #134. Zoo's Print 33: 10–11.
- Wadeker, D.L. 1963. The diet of Checkered Keelback snake (*Xenochrophis piscator*). *Journal of the Bombay Natural History Society* 60: 263–268.