



# Death-feigning in a Red Narrow-mouthed Frog, *Microhyla rubra* (Boulenger 1882), in India

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Death-feigning (thanatosis) is a form of catalepsy or tonic immobility in which animals “play dead” by maintaining a rigid posture or by fully relaxing the muscles (Greene 1988), usually as a response to external stimuli, including predation attempts (Bhattarai et al. 2017). This defense mechanism against predators has been documented in all classes of vertebrates (e.g., Francq 1969; Sargeant and Eberhardt 1975; Greene 1988; Howe 1991; Bertoluci et al. 2007) and even insects (Acheampong and Mitchell 1997). Immobility might discourage sequential attacks by a predator, allowing escape, as demonstrated in experiments by Miyatake et al. (2004). Herein we describe death-feigning behavior in a Red Narrow-mouthed Frog (*Microhyla rubra*) in Chandrapur, Maharashtra, India.

After heavy rainfall during a survey tracing anuran vocalizations at 2110 h on 3 July 2020, we encountered an adult Red Narrow-mouthed Frog (Fig. 1) on a road in the Junona

Forest in Chandrapur (19.936577°N, 79.421016°E). The frog initially tried to escape but as soon as we had it contained in a plastic bottle containing some water, it feigned death. The frog was immobile and inverted, exposing the whitish venter and dark vocal sac, with forelimbs elevated and exposing the palmar surfaces and hindlimbs partially extended and exposing the pinkish thighs. At no time did the frog emit a distress call or discharge cloacal contents. Death-feigning lasted nearly 4 min, after which the frog assumed a normal posture. We observed the frog for some time, during which this behavior was not repeated, and then released it in a nearby pond.

We suggest that death-feigning in this case was a secondary defense mechanism, since the frog was unable to flee. Toledo et al. (2011) stated that this type of behavior is employed when an effort to escape from a potential predator is not successful.

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### Literature Cited

- Acheampong, A. and B.K. Mitchell. 1997. Quiescence in the Colorado potato beetle, *Leptinotarsa decemlineata*. *Entomologia Experimentalis et Applicata* 82: 83–89. <https://doi.org/10.1046/j.1570-7458.1997.00116.x>.
- Bertoluci, J., R.A. Brassaloti, H.O. Sawakuchi, J.W. Ribeiro, Jr., and G. Woehl. 2007. Defensive behaviour with stiff-legged posture in the Brazilian tree toads *Dendrophryniscus brevipollicatus* and *Dendrophryniscus leucomystax* (Anura, Bufonidae). *Alytes* 25: 38–44.
- Bhattarai, S., C.P. Pokheral, and B.R. Lamichhane. 2017. Death feigning behaviour in the Burmese Python *Python bivittatus* Kuhl, 1820 in Chitwan National Park, Nepal. *Russian Journal of Herpetology* 24: 323–326. <https://doi.org/10.26907/2541-7849.2017.24.323-326>.



**Fig. 1.** An adult male Red Narrow-mouthed Frog (*Microhyla rubra*) calling in the Junona Forest, Chandrapur, Maharashtra, India. Photograph by Dinesh Khate.

- org/10.30906/1026-2296-2017-24-4-323-326.
- Francqu, E.N. 1969. Behavioral aspects of feigned death in the opossum *Didelphis marsupialis*. *American Midland Naturalist* 81: 556–567. <https://doi.org/10.2307/2423988>.
- Greene, H.W. 1988. Antipredator mechanisms in reptiles, pp. 1–152. In: C. Gans and R.B. Huey (eds.), *Biology of the Reptilia. Volume 16, Ecology B. Defense and Life History*. Alan R. Liss, New York, New York, USA.
- Howe, J.C. 1991. Field observations of death feigning in the convict tang, *Acanthurus triostegus* (Linnaeus), with comments on the nocturnal color pattern in juvenile specimens. *Journal of Aquaculture and Aquatic Sciences* 6(4): 13–15.
- Miyatake, T., K. Katayama, Y. Takeda, A. Nakashima, A. Sugita, and M. Mizumotoi. 2004. Is death-feigning adaptive? Heritable variation in fitness difference of death-feigning behaviour. *Proceeding of the Royal Society B* 271: 2293–2296. DOI: 10.1098/rspb.2004.2858.
- Sargeant, A.B. and L.E. Eberhardt. 1975. Death feigning by ducks in response to predation by red foxes (*Vulpes fulva*). *American Midland Naturalist* 94: 108–119. <https://doi.org/10.2307/2424542>.
- Toledo, L.F., I. Sazima, and C.F.B. Haddad. 2011. Behavioural defences of anurans: an overview. *Ethology Ecology & Evolution* 23: 1–25. <https://doi.org/10.1080/03949370.2010.534321>.