



Natural History Observations of Coralsnakes (*Micrurus* spp.) in Costa Rica

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Snakes are known to use a wide variety of defensive strategies that include various methods of escape (fleeing, swimming, even jumping and gliding), feigning death (thanatosis or tonic immobility), maintaining a defensive posture while alert and facing the aggressor, and aposematism (including sonic aposematism) (Greene 1988). Death feigning, which serves to avert the interest of a predator (Edmunds 1974), has been reported in a variety of species of snakes (Greene 2018; Humphreys and Ruxton 2018).

Coralsnakes (*Micrurus* spp.) employ a wide arsenal of defenses (Roze 1996). If aposematic coloration fails to deter a predator, flight is usually the first option. If, for any reason, escape is not feasible, coralsnakes may exhibit erratic and violent body movements, hiding the head while waving the tail, thereby attracting attention to that less-vital part of the body and perhaps surviving the attack. As a last resource, a coralsnake will try to bite. Regardless, coralsnakes are known prey (reviewed in Campbell and Lamar 2004) of many predators, including

mammals (e.g., peccaries, opossums, mustelids, felines), birds (e.g., raptors, motmots, puffbirds, shrikes, anis, trumpeters), other snakes (*Lampropeltis* spp., *Erythrolamprus aesculapii*, *Bothrops atrox*, and other coralsnakes), Smooth-fronted Caiman (*Paleosuchus trigonatus*), and even some amphibians (e.g., American Bullfrogs, *Lithobates catesbeianus*, and cane toads, *Rhinella* spp.). Herein we report tail-curling and thanatosis in a Many-banded Coralsnake (*M. multifasciatus*) and provide the first report of a fish preying on a coralsnake.

Thanatosis in coralsnakes has been reported in the Brazilian Short-tailed Coralsnake (*M. brasiliensis*) (Roze 1996) and in Texas Coralsnakes (*M. tener*) (Gehlbach 1970). Also, Valencia et al. (2016) noted that some coralsnakes exhibit this behavior but provided no further information. The Many-banded Coralsnake (*M. multifasciatus*) is a rarely encountered species that ranges from southern Nicaragua through Costa Rica to eastern Panama. While raking a garden in Río Blanco, Guápiles, Pococí, Limón Province, Costa Rica, on 12 January



Fig. 1. A Many-banded Coralsnake (*Micrurus multifasciatus*) curling its tail as a defense mechanism (left) and subsequently feigning death (right). Photographs by Rosbil González.



Fig. 2. An unidentified coralsnake (*Micrurus* sp.) being ingested by a Pale Catfish (*Rhamdia guatemalensis*). Photograph by Jason Ugalde.

2022, RG noticed a Many-banded Coralsnake exhibiting tail-curling behavior (Fig. 1). After being totally exposed and photographed, the snake suddenly inverted its body and became motionless. It remained moribund for around two minutes (Fig. 2) before slowly assuming a normal posture and escaping.

While fishing in a creek at Isla de Israel, Sarapiquí, Heredia Province, Costa Rica, Jason Ugalde Murillo observed a catfish about 15 cm in length (probably a Pale Catfish, *Rhamdia guatemalensis*) ingesting a coralsnake (Fig. 3). The anterior part of the snake's body had already been swallowed, rendering further identification difficult. Two of the three species of coralsnakes (the Misquito Coralsnake, *M. mosquitensis*, and the Arrow-headed Coralsnake, *M. alleni*) in that region of Costa Rica have light-black-light bands separating the red bands. The two species are quite similar in general appearance (both were once considered subspecies of the Central American Coralsnake, *M. nigrocinctus*) and can only be distinguished from each other by the shape of the cephalic rings (Savage 2002), which in this case had already been ingested. The habitat suggests that the snake was *M. alleni* because this species often is regarded as semi-aquatic and frequently forages for eels in streams (Roze 1996). However, the vibrant coloration evident in the photograph is suggestive

of *M. mosquitensis* (Leenders 2019). Although adept predators, catfishes (Siluriformes) also are scavengers (e.g., Ferraris 1993), thus we cannot rule out the possibility that the snake was dead when swallowed or even if the snake was intact or had been killed and dismembered.

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