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Predation of Reinhardt's Lined Snake (*Cyclocorus lineatus*) on a toadlet Cane Toad (*Rhinella marina*), Luzon, Philippines

Marvin Jay R. SARMIENTO & Maricon G. VARGAS mrsarmiento2@up.edu.ph, mgvargas@up.edu.ph

Observers: Marvin Jay R. Sarmiento, Maricon G. Vargas.

Photographs by: Marvin Jay R. Sarmiento. **Subjects identified by**: Marvin Jay R. Sarmiento.

Location: Municipality of Virac, Catanduanes Province, Luzon Island, Philippines.

Elevation: 33 metres ASL.

Habitat: Grassland, with puddles of water. **Date and time:** 20 August 2021, 07:18 hrs.

Identity of subjects:

(i) Reinhardt's Lined Snake, Cyclocorus lineatus (Reptilia: Squamata: Cyclocoridae).

(ii) Cane Toad, Rhinella marina (Amphibia: Anura: Bufonidae).

Description of record: An adult Reinhardt's Lined Snake was observed swallowing a toadlet Cane Toad, but it died a minute or two after seizing the toad by the head (Fig.1). The snake tried to regurgitate the toadlet, whilst swinging its head laterally, but it failed to do so; the snake started to lose its strength and ceased moving thereafter. Consequently, the body of the toadlet was ripped off as the snake rubbed it against a rough, rocky surface (Fig. 2).





Figure 1.

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Figure 2

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Remarks:

The snake was identified as a juvenile Reinhardt's Lined Snake (*Cyclocorus lineatus*) based on (i) white spots present on lateral edge of ventrals, (ii) venter with many dark usually triangularly-shaped blotches, (iii) five infralabial scales in contact with chin shields and fourth infralabial scale either not in contact with or barely in contact with posterior chin shield (Weinell et al, 2019). Reinhardt's Lined Snake is endemic to the Philippines and is recorded in islands of the Babuyan group, Greater Luzon PAIC (Pleistocene Aggregates Island Complex) and Greater Mindoro PAIC.

Luzon populations of *Cyclocorus lineatus* have commonly been encountered under the cover of rocks, loose soil, logs, and other debris along banks of streams and rivers (Brown et al, 2013). It is a fossorial snake with earthworms as its usual diet (Weinell et al, 2020)

The Cane Toad was intentionally introduced in the Philippines as a part of a national pest control programme (Merino, 1936). It feeds on almost any terrestrial animal and competes with endemic and native amphibians for food and territories (Mayer et al, 2015), making it as one of the biological threats in the country. Its toxic secretion is known as Marinobufagenin; this is a bufadienolide compound detected mainly in skin and parotoid gland (Lenaerts et al, 2019). Toads synthesize potent cardiotonic steroids known as bufadienolides (BDs) from cholesterol and store those toxins in high concentrations in their cutaneous glands. These toxins protect toads from the majority of predators, including most snakes that readily consume other species of frog (Mohammadi, 2017).

References:

Brown, R. M., Siler, C. D., Oliveros, C. H., Welton, L. J., Rock, A., Swab, J., Van Weerd, M., Van Beijnen, J., Jose, E., Rodriguez, D., Jose, E., and Diesmos, A. (2013). The amphibians and reptiles of Luzon Island, Philippines, VIII: The herpetofauna of Cagayan and Isabela Provinces, northern Sierra Madre Mountain Range. ZooKeys. 266. 1-120. 10.3897/zookeys.266.3982.

Lenaerts, C., Wells, M., Hambye, S., and Blankert, B. (2019). Marinobufagenin extraction from Rhinella marina toad glands: Alternative approaches for a systematized strategy. Journal of Separation Science.

Mayer, M., Brown, G. P., Zimmermann, B., Greenlees, M. J. and Shine, R. (2015). Habitat use of the introduced cane toad (*Rhinella marina*) and native frog species in tropical Australia. Journal of Tropical Ecology. -1. 1-10. 10.1017/S0266467415000474.

Merino, G. (1936). 'Introduction of the giant toad, *Bufo marinus*, into the Philippines'. The Philippine Journal of Agriculture 7: 283–286.

Mohammadi, S. (2017). Molecular and Physiological Mechanisms of Toxin Resistance in Toad-Eating Snakes. All Graduate Theses and Dissertations. 5856.

Weinell, J., Paluh, D. J., Siler, C. D., and Brown, R. M. (2020). A New, Miniaturized Genus and Species of Snake (Cyclocoridae) from the Philippines. Copeia. 108. 10.1643/CH2020110.

Weinell, J., Hooper, E., Leviton, A. E., and Brown, R. M. (2019). Illustrated Key to the Snakes of the Philippines. 66. 1-49.