

Predation on the Common Sun Skink, *Eutropis multifasciata* (Kuhl, 1820), by the Sunbeam Snake, *Xenopeltis unicolor* (Reinwardt, 1827), in Sarawak, Borneo

Thanisha Kumar¹, Nik Sasha Khatrina Khairuddin², and Indraneil Das^{1,*}

Eutropis multifasciata is a forest-dwelling lizard broadly distributed in forested and disturbed habitats across Southeast Asia. It is associated with leaf litter and anthropogenic structures and occurs abundantly in primary and secondary lowland forests, mangroves, peat swamps, plantations, and clearings (Das, 2010). It is often found in urban environments, basking in sun spots or sheltering under rotting logs, in the leaf litter, and in tree buttresses. As typical of skinks, the species is agile and tends to escape when approached, making it difficult to track. Regardless of these strategies skinks are known prey of snakes, birds, and lizards (e.g., Karunarathna et al., 2017; Franco and Minggu, 2019). *Eutropis multifasciata* has been reported as prey of *Varanus dalubhasa* Welton et al., 2014 (Dela Cruz and Abuid, 2017) and also as prey of *Lycodon capucinus* H. Boie in F. Boie, 1827 (O'Shea et al., 2018). *Xenopeltis unicolor* is a member of the snake family Xenopeltidae, widespread in Southeast Asia and attaining a length up to 1 m. It is nocturnal and fossorial and commonly encountered on the ground near water bodies (Das, 2010).

The following observations were made during a field study on the life history of *E. multifasciata* at the Sebungan Oil Palm Estate, Bintulu, Sarawak, Malaysia (3.1653°N, 113.3544°E, WGS84, elevation 14 m). An adult male *E. multifasciata*, with snout-vent length (SVL) 108.7 mm, total length (TL) 255.4 mm, and weight 40 g, was fitted with a temperature-sensitive radio transmitter (Holohil BD-2; weight 1.4 g, frequency

219.054; Fig. 1) on the scapular region (for the radio-tracking protocol, see Wong and Das, 2020). It was released at the point of capture on 30 August 2022 and tracked daily for collection of data related to movement and thermal behaviour. On 17 September 2022, transmitter signals were received from an area covered with dry palm leaves along a ditch (Fig. 2A). Between 18 September 2022 and 21 September 2022, the skink was not sighted, and only modest (2.5–16.0 m) daily displacements and body temperature (22–31°C) were recorded using the transmitter.



Figure 1. Adult male *Eutropis multifasciata* fitted with a Holohil BD-2 radio transmitter at Sebungan Oil Palm Estate, Sarawak, Malaysia. Photo by Thanisha Kumar.

¹ Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

² Peat Ecosystem & Biodiversity Unit, Biology and Sustainability Research Division, Malaysian Palm Oil Board, 6, Persiaran Institusi, Bandar Baru Bangi, 43000 Kajang, Selangor, Malaysia.

* Corresponding author. Email: idas@unimas.my

On 22 September 2022, the transmitter signals originated from a water puddle within peat soil (Fig. 2B), ca. 0.5 m below the soil surface. After a 1.5 h search, at 10:11 h, an adult *Xenopeltis unicolor* was discovered at the site (Fig. 2C). The snake was identifiable by the iridescent scales and distinctive wedged-shaped head. Its head and body were deep inside the root-bound soil, and a total length of 0.7 m was estimated for the snake. The predator and the ingested transmitter were left *in situ*, and in the morning and evening on the same day, the thermal recordings were 40–45°C with displacements of 2.5–3.5 m and transmitter signals becoming progressively weaker. Similar faulty thermal readings have been recorded for squamates in local radio-telemetric studies (V. Leah, pers. comm.). As of 01:45 h on 23 September 2022, signals were no longer

detected and the transmitter was believed to have malfunctioned. The snake was not encountered again.

The skink was last sighted on 18 September 2022, and the individual is estimated to have moved 21.6 m during the period (Fig. 3). From 18–21 September 2022 we made no sightings of the skink. The displacement range in this period was 2.5–16.0 m/day (mean 8.5 m). The body temperature range was 22–31°C (mean 28°C) for three consecutive days. It is assumed that predation occurred during the period.

The diet of *Xenopeltis unicolor* has been reported to include frogs, snakes, lizards, and small mammals (David and Vogel, 1996; Das, 2010). Specific squamate records include Martins and Rosa's (2012) observations of a *Sphenomorphus* skink, a representative of a predominantly diurnal, terrestrial group of lizards, and



Figure 2. (A) Adult male *Eutropis multifasciata* between dry palm leaves. (B) Site of encounter with *Xenopeltis unicolor* associated with the radio transmitter signal. (C) Part of the snake's tail in peat soil. Photos by Thanisha Kumar.

Hodges's (2020) description of predation on *Gekko gekko*, a nocturnal, arboreal gecko, found on the ground at the time of the feeding event. Possession of specialized dental features in these snake is assumed to assist with grasping and swallowing rigid-bodied, smooth-scaled prey, such as skinks (Savitzky, 1981). These observations are the first to document predation of *Eutropis multifasciata* by *Xenopeltis unicolor*.

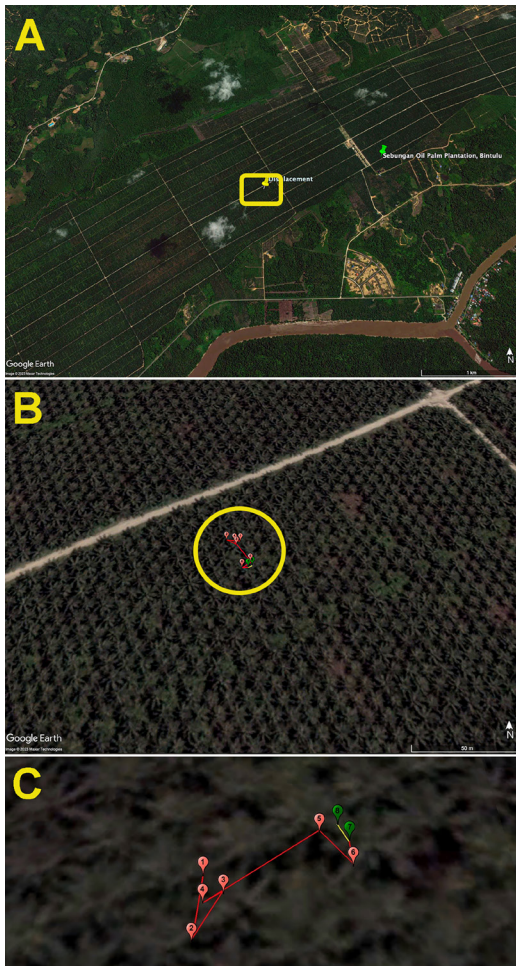


Figure 3. Satellite maps of the movement by *Eutropis multifasciata* and *Xenopeltis unicolor* at the Sebung Oil Palm Plantation, shown at different map zoom levels. (A) Map of the general oil plantation area with the yellow frame indicating the location of the next, zoomed map (B). Scale in A = 1 km, scale in B = 50 m. (C) Rotated and zoomed map showing a close-up of the palm trees where the lizard was recorded between 18–22 September 2022. Numbers indicate movement in chronological order (1–8). Numbers 7 and 8 represent the movement of *X. unicolor*. The red and yellow lines indicate the straight-line distance between recorded points. Map data ©2022 Google.

Acknowledgements. We thank the Malaysian Palm Oil Board (MPOB; GL/I01/MPOB/03/2021) for funding and permission to conduct research in their plantations and forests, and the MPOB staff, Royston Stephen, Tarien Kasi, and Jonathan Anderson, as well as personnel from Sarawak Oil Palms Berhad, including Ivan Chiron Yaman of Sarawak Oil Palm, for field support. Thanks are also due to Zolkipli Bin Mohamad Aton, Controller of Wild Life and National Parks & Nature Reserves Sarawak, for approval to conduct this research (permit no. SFC.810-4/6/1(2021)-033). We thank Veronica Leah for sharing information on thermal studies on *Lanthanotus borneensis*. We acknowledge the staff of the Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak (UNIMAS), including Jayasilan Mohd-Azlan, Jongkar Grinang, Rahah Mohd. Yakup, and Mohamad Hasri Al-Hafiz, for support of the research project, and the Research, Innovation and Enterprise Centre, UNIMAS, particularly Lo May Chiun and her staff, for administrative support. Finally, we are grateful to Awang Khairul Ikhwan, Veronica Leah, Sarah Fadhill, and Abigail Robinson for their field assistance, Aaron M. Bauer for a pre-review, and an anonymous colleague for reviewing the manuscript.

References

- Das, I. (2010): A Field Guide to the Reptiles of Southeast Asia. London, UK, New Holland Publishers. 376 pp.
- David, P., Vogel, G. (1996): Snakes of Sumatra: Annotated Checklist and Key with Natural History Notes. Frankfurt am Main, Germany, Edition Chimaira. 259 pp.
- Dela Cruz, C.J., Abuid, F.G.P. (2017): Natural history notes. *Varanus dalubhasa*. Diet. Herpetological Review **48**: 644.
- Franco, F.M., Minggu, M.J. (2019): When the seeds sprout, the hornbills hatch: understanding the traditional ecological knowledge of the Ibans of Brunei Darussalam on hornbills. Journal of Ethnobiology and Ethnomedicine **15**: e46.
- Hodges, C.W. (2020): *Xenopeltis unicolor* (Serpentes: Xenopeltidae) predation on *Gekko gekko* (Lacertilia: Gekkonidae) in Nakhon Ratchasima, Thailand. Tropical Natural History **20**: 265–267.
- Karunaratna, S., Thilina Surasinghe, T., Dissanayake, D., Botejue, M., Gabadage, D., Madawala, M. (2017): Dietary habits and the predators of the Bengal Monitor *Varanus bengalensis* in Sri Lanka. Biawak **11**: 28–39.
- Martins, B.H., Rosa, G.M. (2012): *Xenopeltis unicolor* Boie, 1827 predation upon *Sphenomorphus* sp. Taprobanica **4**(1): 48–51.
- O'Shea, M., Kusuma, K.L., Kaiser, H. (2018): First record of the Island Wolfsnake, *Lycodon capucinus* (H. Boie in F. Boie 1827), from New Guinea, with comments on its widespread distribution and confused taxonomy and a new record for the Common Sun Skink, *Eutropis multifasciata* (Kuhl 1820). Reptiles & Amphibians **25**(1): 70–84.
- Savitzky, A.H. (1981): Hinged teeth in snakes: an adaptation for swallowing hard-bodied prey. Science **212**: 346–349.
- Wong, J.W., Das, I. (2020): Predation on *Gonocephalus liogaster* (Günther, 1872) (Agamidae) by *Ptyas carinata* (Günther, 1858) (Colubridae) in Sarawak, Borneo. Herpetology Notes **14**: 349–351.