Unexpected Arboreality by a Malayan krait (*Bungarus candidus*) in Thailand

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Introduction:

The Malayan krait *Bungarus candidus* is distributed throughout much of Southeast Asia and thought to primarily inhabit forests, plantations, and adjacent agricultural lands (Chan-ard et al., 2015; Wogan et al., 2012; Knierim et al., 2018). Malayan kraits produce potent venom, causing neurotoxic effects, potentially leading to respiratory ptosis and death in humans (Looareesuwan et al., 1988). Many studies have focused on krait's potent venom and the synthesis of anti-venom to treat bites (Othman et al., 2014; Rusmili et al., 2014). However, few studies have investigated the scantly understood ecology of Malayan kraits. Currently, only three studies have assessed the spatial use and ecological habits of Malayan kraits (Knierim et al., 2018; Crane et al., 2016; Mohammadi et al., 2014), none of which reported arboreality. Herein we report our observations on the arboreal behavior of a wild Malayan krait in Northeast Thailand.

Observation and Discussion:

We observed the Malayan krait climbing up a tree at 22:30 h on 12 May 2018 during a night survey at the Sakaerat Biosphere Reserve, Nakhon Ratchasima, Thailand (14.4991° N, 101.9413° E; 349 m ASL.). We initially spotted the krait at an approximate height of 2.5 m above the ground. The tree trunk was near vertical; however, the krait made use of adjacent branches and vines to assist in its ascent (Figure 1A). The ambient temperature was (24.3ºC) and relative humidity (94.4%) during our observation. We immediately captured the individual to determine sex and record biometrics.

The individual was an adult male, weighing 346.1 g and measuring 121.2 cm snout to vent length (SVL) and 137.2 cm total length. We released the krait at its initial position on the tree the following night. Upon release, the krait proceeded to climb to the top of the broken trunk, approximately 5 m above the ground (Figure 1B). Our survey and handling methods were carried out with the approval of Suranaree University of Technology's Animal Use and Ethics Committee and permitted by the National Research Council of Thailand (permit No. 0002/10662).

Our novel observation contributes to the limited ecological knowledgebase on the cryptic, yet medically significant, Malayan krait. Interestingly, several species of non-venomous snakes of the family Colubridae co-occur geographically with kraits, while also exhibiting similar banding patterns. These

Figure 1. Initial location of krait 2.5 m above ground on tree trunk (A), continued climbing following release (B).

species likely mimic kraits through Batesian mimicry, taking advantage of predator's aversion to the potentially lethal warning colors. Some banded species from our study site, such as the Malayan bridal snake, *Dryocalamus subannulatus*, even display threat behaviors resembling those of kraits (Karraker et al., 2014). The Malayan bridal snake is an arboreal species (Grismer et al, 2013), whose shared space use with Malayan kraits likely led to the evolution of its advanced mimicry.

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