

REDISCOVERY OF THE WHITE-SPOTTED CAT SNAKE, *BOIGA DRAPIEZII* IN SINGAPORE (REPTILIA: SERPENTES: COLUBRIDAE)

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INTRODUCTION

The serpentine members in the colubrid genus *Boiga* Fitzinger, 1826, are commonly referred to as cat snakes, owing to their characteristic feline-like eyes that demonstrate pupil constriction to a vertical slit under bright conditions (Manthey & Grossmann, 1997). In Singapore, there have been sustained records of at least three species of cat snakes, namely: (1) gold-ringed cat snake, *Boiga dendrophila* (Boie, 1827), (2) dog-toothed cat snake, *Boiga cynodon* (Boie, 1827), and (3) Jasper cat snake, *Boiga jaspidea* (Duméril, Bibron & Duméril, 1854), with the first species most regularly encountered (Teo & Rajathurai, 1997; Baker & Lim, 2008). The occurrence of a 4th species, the white-spotted cat snake, *Boiga drapiezii* (Boie, 1827), is hereby verified, since it was last reported for Singapore more than a century ago. Our confirmation is based on a recent encounter with a live specimen within the Central Catchment Nature Reserve.



Fig. 1. The sub-adult *Boiga drapiezii* encountered at Nee Soon Swamp Forest on the night of 14 Nov.2009 at ca. 2045 hours. Its total length was 135 cm, inclusive of a tail length of 35 cm. (Photograph by: Nick Baker).

OBSERVATION

While conducting a nocturnal faunal survey at the Nee Soon Swamp Forest on the 14 Nov.2009 (ca. 2045 hours), a sub-adult *Boiga drapiezii* was first spotted by TML as it was silently climbing among the slender branches of overhead vegetation, at ca. 3 m above the forest floor. The branches were then lowered gently to facilitate closer examination, photographic documentation and detailed measurements (Fig. 1). Its total length (snout to tail tip) was 135 cm and tail length was 35 cm. Its gender was undetermined.

The snake exhibited a calm, yet cautious disposition, and did not display any signs of aggression. At times, it would attempt to stretch forward slowly, maintaining the slender anterior of its body at a remarkably straight incline (Fig. 2). Such an ability to gain maximum reach is a clear testimony to its largely arboreal lifestyle, as it would have to constantly negotiate through a network of branches and vines in the forest. Such behavior was similarly noted for this species in Borneo (Stuebing & Inger, 1999: 123).

Upon closer inspection, the small white dots on its body were discernible at the posterior apices of the lateral scales (Fig. 3). A series of regularly spaced red and white rosette patterns were also present along the ventro-lateral margin. Around its neck region, there were remnants of its skin slough, clear signs that the snake had only recently moulted (Fig. 4).

Under subdued light conditions, the snake was able to revert quickly to its night vision mode, with the dilation of its highly responsive pupils. Conversely, these pupils may constrict progressively to a narrow, vertical slit with increased light intensity (Fig. 5). A brief examination of the underside of its head was also carefully conducted to note the arrangement and condition of the scales (Fig. 6). After all the essential details were recorded, the snake was promptly and gently coaxed back to its dense forest habitat.



Fig. 2. The snake demonstrated its ability to extend the front portion of its body, while maintaining it at a straight incline. This enabled it to maximise its forward reach as it climbs from one branch to another. (Photograph by: Nick Baker).



Fig. 3. Lateral close-up of mid-body (head towards left). Note presence of small, white spots at the posterior apices of various scales on its flank. Note also the red and white rosette patterns along the ventro-lateral margin. (Photograph by: Nick Baker).



Fig. 4. Lateral close-up of head region. The remnants of loose skin slough around its neck indicated that this snake had recently moulted. Note complete pupil dilation of right eye, which enabled the snake to see well in nocturnal conditions. (Photograph by: Nick Baker).



Fig. 5. Frontal close-up of head. Note vertical constriction of cat-like pupils, a natural response to brighter conditions. (Photograph by: Tzi Ming Leong).



Fig. 6. Ventral close-up of head to examine the arrangement of scales. (Photograph by: Nick Baker).

HISTORICAL RECORDS AND GEOGRAPHIC DISTRIBUTION

The earliest published record of *Boiga drapiezii* in Singapore was by Major Stanley Smyth Flower (1871–1946), who obtained a specimen in the Bukit Timah area, and mentioned a Singapore specimen in the British Museum (present Natural History Museum) in London (Flower, 1896: 889, as *Dipsadomorphus drapiezii*). This original record was subsequently cited (as *Dipsadomorphus drapiezii*) by Boulenger (1912: 171) and de Rooij (1917: 197), then later (as *Boiga drapiezii*) by Sworder (1923: 67).

Although there have been no substantiated local records since then, selected herpetological literature continued to cite “Singapore” as a locality where *Boiga drapiezii* is known to occur (e.g. David & Vogel, 1996: 67; Manthey & Grossmann, 1997: 322; Cox et al., 1998: 73; Stuebing & Inger, 1999: 122; Iskandar & Colijn, 2002: 39). Local publications that featured the Singapore herpetofauna either omitted this species from their coverage (e.g. Lim & Lee, 1989; Lim & Lim, 1992; Teo & Rajathurai, 1997; Davison et al., 2008), or regarded its occurrence in Singapore as “indeterminate” at best (Baker & Lim, 2008: 169).

The natural distribution of *Boiga drapiezii* is typically Sundaic, having been recorded from the Malay Peninsula (southern Thailand and Peninsular Malaysia), Borneo, Natuna Islands (South China Sea), Sumatra (including the Mentawai Islands), and Java (type locality), where the species was first described in 1827. It is also recorded from the southern Philippines (Sulu Archipelago), as well as from Ambon (de Rooij, 1917: 197; David & Vogel, 1996: 67; Iskandar & Colijn, 2002: 39). On the Malay Peninsula, Tweedie (1983: 79) found it to be “fairly common in the southern half”.

MORPHOLOGY AND NATURAL HISTORY

Unlike the muscular and robust *Boiga dendrophila*, *Boiga drapiezii* has a very slender and laterally compressed body instead. Its head is relatively wide, with large eyes that are about as wide as the length of the snout. There are 19 rows of smooth scales at mid-body; eight to nine upper labials, with the third to fifth (or sixth) touching the eye; 250 to 287 ventral scales; and 114 to 173 sub-caudal scales. The species is known to attain a maximum total length of 210 cm.

Tweedie (1954: 113–115, Fig. 2; 1983: 77–79, Fig. 17) systematically noted that *Boiga drapiezii* occurs in two distinct colour forms that are neither correlated with sex nor size. The first colour pattern, as observed in our Singapore example, is predominantly reddish-brown, with distinct red, triangular saddles uniformly distributed along its length. The other is largely greyish-green with dark, oblique dashes along its flanks.



Fig. 7. An example of a grayish-green form, encountered at a forest reserve in Johor, Peninsular Malaysia on 25 Aug.2006 at ca. 2215 hours. (Photograph by: Norman T-L. Lim).

The reddish-brown form has been variously illustrated (Cox et al., 1998: 73; Das, 2006: 23; 2007: 137; Manthey & Grossmann, 1997: 322). The greyish-green form appears to be less commonly encountered, but has also been illustrated (Cox et al., 1998: 73; Stuebing & Inger, 1999: 122, 123). Both colour forms have a narrow pale mid-dorsal line on the posterior part of the body and tail, and a series of white spots along the edges of the ventrum. The top of the head is finely stippled with dark brown. The underside is whitish, mottled with dark brown, and a lateral pair of blackish stripes runs down the length of the body onto the tail (Tweedie, 1983: 79).

Outside of Singapore, an adult example of a reddish-brown *Boiga drapiezii* has been encountered by TML in a forest reserve near Jemaluang, Johor, Peninsular Malaysia in Jul.2001. A greyish-green form of this species was photographed in forest along the Panti Bunker Trail, Johor, Peninsular Malaysia by Norman T-L. Lim, on the night of 25 Aug.2006 (Fig. 7). While initial observations and reports suggest the co-occurrence of both colour morphs (Tweedie, 1954: 115; B. L. Lim, pers. comm.), the degree of sympatry of these two forms and their relative geographic predominance requires further investigation of a larger sample size in order to ascertain the possible patterns of phenotypic expression. In addition, comparison of DNA analysis results would also help to shed light on the perceived genetic 'distance' between the two morphs (B. L. Lim, pers. comm.).

This arboreal snake occurs in lowland primary, secondary, and swamp forests to about 1,100 m elevation. It feeds on large insects, frogs, tree-dwelling lizards such as species of *Draco*, birds, and bird eggs. Between four to 10 eggs are said to be laid inside the nests of arboreal termites or termite-infested wood. As with its congeners, it is rear-fanged and believed to be mildly venomous. (Tweedie, 1983: 79; David & Vogel, 1996: 67; Cox et al., 1998: 73; Stuebing & Inger, 1999: 122, 123; Das, 2006: 23; Das, 2007: 137).

DISCUSSION

The present rediscovery of *Boiga drapiezii* in Singapore, after a prolonged 'silence' of 113 years, is certainly a cause for celebration for local wildlife conservation. Along with the recent sighting of the Dumeril's monitor lizard, *Varanus dumerilii* (Schlegel, 1839) by Yong et al. (2008), the importance of continued preservation and protection of Nee Soon Swamp Forest as a primary habitat for many localised vertebrate species needs to be reiterated. Together with *Boiga jaspidea*, its reported reliance on termite colonies for potential oviposition sites reminds us of the intimate relationships and ecological balance that exist in such fragile, yet biologically diverse forests remaining on our island.

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