

Predation of the Javan spitting cobra (*Naja sputatrix*) on a Painted Bronzeback (*Dendrelaphis cf. D. pictus*) in the Sangiran area, central Java, Indonesia

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Introduction:

The Javan spitting cobra, *Naja sputatrix* (Boie, 1827) (Family Elapidae) is widely distributed from western Java to eastern East Nusa Tenggara (De Lang, 2011). It is a medium-length, heavy-bodied cobra that occupies a wide variety of habitats including dry woodlands, deciduous monsoon forests and cultivated fields and hills (Auffenberg, 1980; Suhono, 1986; Boeadi et al., 1998). The fangs of *N. sputatrix* are characterized by reduced, rounded venom discharge orifices, capable of spraying venom as a defense mechanism (Bogert, 1943; Wüster and Thorpe, 1992).

The systematics of Asiatic cobra genus *Naja* has long been contentious. Previously, all Asiatic *Naja* were placed in a single species (*Naja naja*) with up to 10 subspecies (Klemmer, 1963; Harding and Welsch, 1980). More recent work has shown that most of these subspecies form distinct species (Wüster and Thorpe, 1989; 1990; 1991; Wüster et al., 1995; Wüster, 1996).

Asiatic cobras of the genus *Naja* have been reported to feed on rodents, frogs, lizard's eggs and other snakes (Mao, 1970; Daniel, 2002;

David and Vogel, 1996; Stuebing and Inger 1999.). Prey remains assessed from gut contents of 84 *N. sputatrix* from central Java were found to be 59% mammalian (likely rats) with the remainder dominated by frogs (Boeadi et al., 1998).

Naja sputatrix are the third most intensively commercially used snake taxon in Indonesia (CITES, 2000) and the only snake taxon for which an annual harvest quota is provided by the Indonesian government (Iskandar and Erdelen, 2006). As of 1998, between 44,855 and 109,650 *N. sputatrix* (Erdelen, 1998; Boeadi et al., 1998; Sugardjito et al., 1998) were harvested for leather meat and blood (the latter two consumed primarily by ethnic Chinese customers). At least 2,000,000 Asiatic cobras were exported between 1990 and 1998 (for all purposes including the pet trade), greatly exceeding government quotas (CITES, 2000). The most current export quota for Indonesia, last updated in 2011, is 450 specimens for the pet trade and 134,550 for the skin trade (CITES website; Iskandar et al., 2012). Most specimens were obtained from human-modified habitats such as rice fields. Anecdotal evidence suggests that species

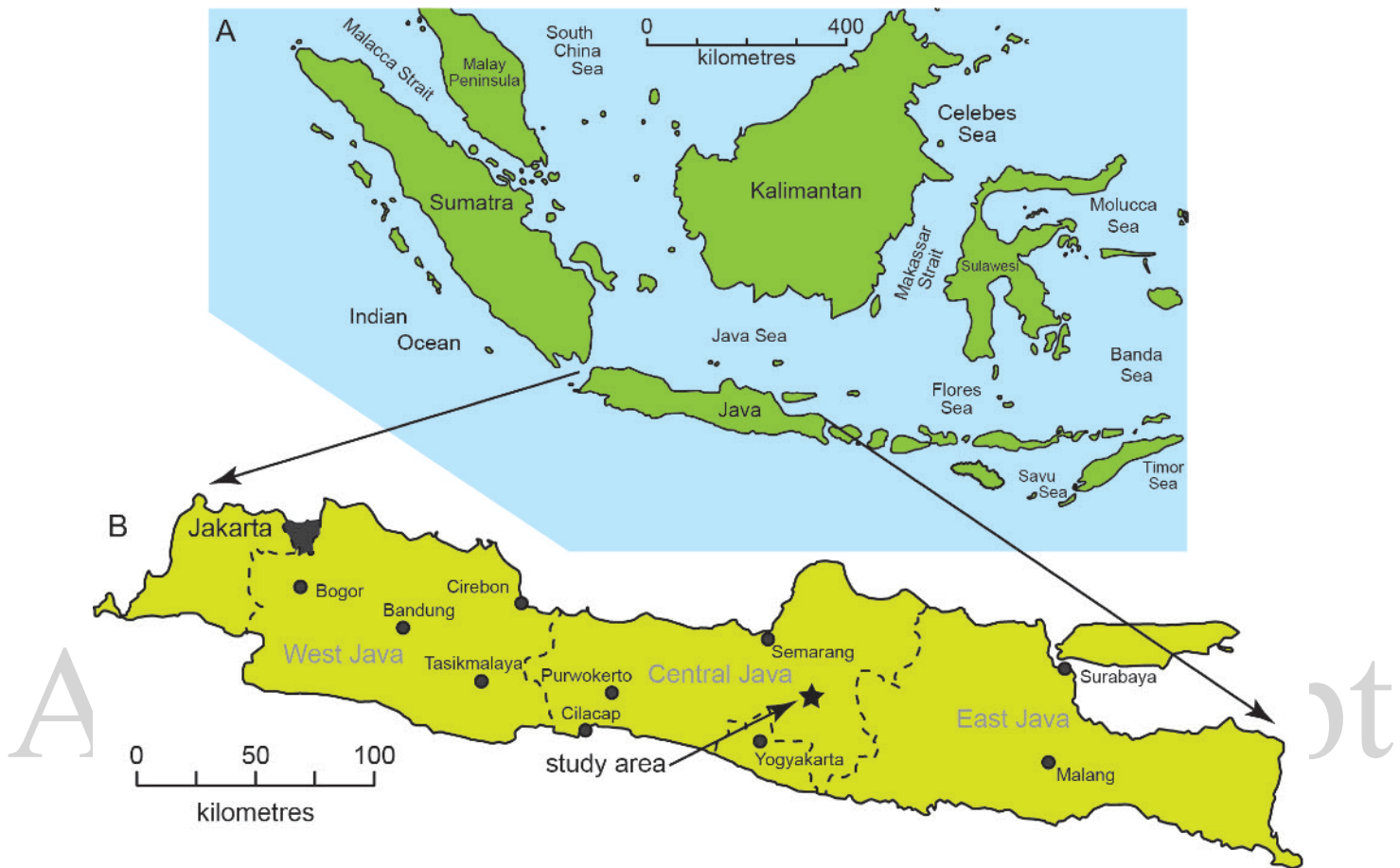


Figure 1. Location map of the study area. The *Naja sputatrix* predation discussed herein occurred near the village of Ngargorejo in Central Java province, Indonesia (star) at 07° 27' 39.95"; 110° 51' 15.13".



Figure 2. Javan spitting cobra (*Naja sputatrix*) swallowing a painted bronzeback (*Dendrelaphis pictus*). The cobra is ~85 cm in length whereas the bronzeback is close to ~96 cm. Photographed from a distance of 5 metres using a Canon EOS 70D with a Canon EF 100-400mm f4.5-5.6 IS USM lens.

numbers have declined in recent years however the IUCN Red list categorizes *N. sputatrix* as 'least concern' (Iskandar et al., 2012).

Snakes remain Indonesia's least understood reptiles from a conservation and population perspective (Iskander and Erdelen, 2006). Despite the abundance of *N. sputatrix* in Java, and its importance in trade and as a component of numerous ecosystems, only a single published systematic analysis of the food preferences of *N. sputatrix* is available (Boeadi et al., 1998). Herein we describe the attempted predation by an individual *N. sputatrix* on a painted bronzeback snake (*Dendrelaphis pictus*; family Colubridae).

Observation and Discussion:

On the afternoon of April 15, 2017 (ca. 15:45) a small (~80 cm) *Naja sputatrix* was encountered by palaeontological field researchers in a dry creek bottom in a wooded area fringing extensive rice fields near the village of Ngargorejo in Central Java province, Indonesia (07° 27' 39.95"; 110° 51' 15.13"; Figure 1). *Naja sputatrix* in central Java generally retreat rapidly and thus are rarely observed in the open. This individual however was observed in an open area, approximately 1 metre from cover, with a partially swallowed *Dendrelaphis pictus* in its mouth (Figure 2). The *N. sputatrix* was thus unable to escape quickly. Initially it attempted to slither to cover with its prey however our approach apparently startled the *N. sputatrix* sufficiently that it started to regurgitate its prey. Although we backed off to give it space, the *D. pictus* was entirely regurgitated and the *N. sputatrix* rapidly escaped into dense brush on the side of adjacent rice fields. An hour later, when we

passed by the original location, the dead *D. pictus* remained abandoned in the dry streambed.

Both the *N. sputatrix* and the *D. pictus* appeared to be in good health with smooth scales and muscles and no visible ectoparasites. The *D. pictus* was quite slender but measured 960 mm from snout to tip of tail (335mm cloaca to tail tip). The *N. sputatrix* could not be measured directly but in comparison with the *D. pictus* it is estimated that it was 800-850 mm in total length. Owing to the healthy nature of the victim, and observation of a single puncture mark 11 cm's posterior to the head, it is presumed that the cobra had killed its prey through a venomous bite. Curiously, *N. sputatrix* is typically nocturnal (Boeadi et al., 1998) while *D. pictus* is diurnal. They would thus seem unlikely to encounter each other under typical circumstances.

Asian grass frogs (*Fejervarya limnocharis*), *D. pictus* and common sun skinks (*Eutropis multifasciata*) were commonly observed during our fieldwork, particularly on the edges of rice fields. An individual *D. pictus* was observed preying upon a small frog (presumably *F. limnocharis*) approximately 100 metres west of the *N. sputatrix* predation site. It is presumed that these frogs are also preyed upon by *N. sputatrix*. The present sighting is clear evidence that, in addition to frogs and rodents (Boeadi et al., 1998), snakes are also a component of the diet of *N. sputatrix*. Additional work is necessary to assess whether *N. sputatrix* have adapted their behaviour to hunt this specific diurnal prey.

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