

Short Note

***Protobothrops mucrosquamatus* (Cantor, 1839), a Highly Venomous Species Added to the Snake Fauna of Thailand (Squamata: Viperidae)**

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The Brown spotted pitviper, *Protobothrops mucrosquamatus* (Cantor, 1839) is a well-known venomous snake of the family Viperidae, subfamily Crotalinae, that has wide distribution in Asia, including Northeast India (states of Arunachal Pradesh, Mizoram, and Nagaland), Myanmar (north: Kachin State), Laos (centre: Khammouan Province), China (widespread in the south, centre and east: provinces of Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan

and Zhejiang.), Taiwan, and Vietnam (north and centre)^{1,2,3,4,5,6,7}. This species has been cited from Bangladesh⁷ but we could not find any authenticated reference.

Thailand is located out of the main known range of this species, mostly Indo-Himalayan and Chinese. This report presents the first record of *Protobothrops mucrosquamatus*, known as the Brown spotted pitviper, from Thailand. A female was obtained from Ban Luang district, Nan Province, in northern Thailand (Fig. 1). The specimen was killed after having bitten a



FIGURE 1. (Red) Previous reported distribution of *Protobothrops mucrosquamatus*; (Green) Nan province, new distribution area in this report.



FIGURE 2. Dorsal character of *Protobothrops mucrosquamatus*

man on his foot in the deciduous forest. The snake corpse was brought to the hospital and consulted for identification from Ramathibodi Poison Center then preserved in buffered formalin 10% before being transferred to further examined and identification at Queen Saovabha Memorial Institute (QSMI), The Thai Red Cross Society.

Morphometric measurements and meristic characters counts are followed to David et al., 2008⁸. Ventral scales were counted according to Dowling, 1951⁹. The terminal scute is not included in the number of subcaudals. Dorsal scale row counts are given at midbody, i.e. at half of the total number of ventral scales. Paired meristic characters are given at left or right. The preserved specimen was deposited in the QSMI Snake Farm collection with the voucher number QSMI 1525. Morphological characters are typical of *Protobothrops mucrosquamatus*. The background color is grayish-brown with large brown, black-edged blotches along the dorsal part of the

body, and smaller blotches along both the lateral sides (Fig. 2). Head is reddish-brown with a black streak extending from eye to angle of mouth (Fig. 3). Ventral is grayish-brown with small triangular white spot scattered along the ventral surface (Fig 4). Tail is brown with all paired subcaudals. The anal plate is undivided. Upper head scales are small, head and dorsal scales are keeled posteriorly. Measurements and counts are reported in Table 1.

According to the meristic characters and pattern of colouration, we identify this specimen without doubt as *Protobothrops mucrosquamatus*. This specimen is the first one this species ever recorded in Thailand, and even the first record of the genus *Protobothrops* in this latter country. The locality in Nan Province constitutes an extension of its range of about 350 km from the closest locality in Yunnan Province, China. This species should be searched in other forested, hilly areas of northeastern Thailand.



FIGURE 3. Head character of *Protobothrops mucrosquamatus* at lateral, ventral, and dorsal views, respectively from left to right.

The Brown spotted pitviper, also known as the Chinese Habu or Taiwanese Habu, is one of the most important species responsible for cases of snake envenoming in Taiwan¹⁰. The bite of *Protobothrops mucrosquamatus* can cause various local symptoms; intense local pain, inflammation, extensive swelling of the entire limb (in patients bitten on the hand and foot), edema, ecchymosis, bruising, bleeding from fang marks and blister formation^{10,11}. The development of systemic symptoms and life-threatening complication, such as coagulopathy, severe rhabdomyolysis and

acute renal failure were also described¹⁰. World Health Organization (WHO) also considered the Brown spotted pitviper as a medically important snake in several countries. It is considered to be the highest medically important (Category 1) in Taiwan and in China and as secondary medically important (Category 2) in India, Vietnam, Myanmar (Kachin) and Laos. That means the Brown spotted pitviper is a highly venomous snakes capable of causing morbidity, disability or death, but exact epidemiological or clinical data may be lacking and/or are less frequently implicated



FIGURE 4. Ventral character of *Protobothrops mucrosquamatus*

TABLE 1. A summary of measurements and scale counts in *Protobothrops mucrosquamatus*

Specimens	Total length (mm)	Tail length (mm)	Dorsal scale rows	Ventrals	Subcaudals	Supralabials
QSMI 1525	820	127	25	225	78	9
Species (*)	1,280 (max) ♀	282 (max) ♀	25-27 (rarely 23 or 29)	194-233	70-108	9-11

(*): values for the species drawn from Leviton *et al.* (2003)² and Zhao (2006)⁵.

and required antivenom treatment¹². Fortunately, the patient who was bitten in this report did not develop any significant clinical sign after having been admitted in hospital, in which he remained for 3 days for blood monitoring profile. The bite was recorded as a “dry-bite”.

Thailand had no record of *Protobothrops mucrosquamatus* envenoming and treatment previously, therefore this report confirmed the existing of another clinically important venomous snake that should be concerned in medical aspect. The antivenom treatment for *Protobothrops mucrosquamatus* bite was reported^{10,13}. But there is no antivenom and no cross neutralization study of available antivenom in Thailand. Therefore, further study on the Brown spotted pitviper antivenom and/or cross neutralization of available antivenom of related species will provide better information in case of envenoming by this species in Thailand.

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