

NEW RECORDS OF SNAKES (Squamata: Serpentes) FROM HUU LIEN NATURE RESERVE, LANG SON PROVINCE

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ABSTRACT

Based on a new reptile collection from Huu Lien Nature Reserve, Lang Son province we report six new records of snakes found in the nature reserve, namely *Ahaetulla prasina*, *Boiga kraepelini*, *Chrysopelea ornata*, *Lycodon futsingensis*, *Oligodon chinensis*, and *Sinomicrurus maccllellandi*. Our findings increased the species number of snakes to 21 in Huu Lien Nature Reserve and 49 in Lang Son province.

Keywords: Distribution, morphology, first records, snakes, Huu Lien Nature Reserve.

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INTRODUCTION

Established in 1986 for the purpose of conserving limestone ecosystems biodiversity with an area of 10,640 hectares, Huu Lien Nature Reserve (NR) is representative to the ecology of lime stone mountains in the Northeast of Vietnam. Forests in this area are of the type of closed forests covered with large green leaves of humid tropical trees. For this reason, the primitive natural resources of animals and plants in Huu Lien are greatly diversified and varied with many unique features. Many reptile species are newly discovered here, such as *Goniurosaurus huulienensis* Orlov, Ryabov, Nguyen, Nguyen & Ho (2008); *Gekko canhi* Rösler, Nguyen, Doan, Ho, Nguyen & Ziegler (2010); *Scincella apraefrontalis* Nguyen, Nguyen, Böhme & Ziegler (2010); *Oligodon nagao* David, Nguyen, Nguyen, Jiang, Chen, Teynié & Ziegler (2012).

In terms of the snake faunal diversity, Huu Lien NR is one of the most poorly studied area in Vietnam. Nguyen Van Sang (2000) reported a total of 28 species of reptiles with a list of 16 species of snakes from Huu Lien NR (Nguyen

et al., 2000). Nguyen et al. (2009) documented four species of snakes from the reserve area. We herein report six additional species for the snake fauna of Huu Lien Nature Reserve based on newly collected specimens, comprising five species of the family Colubridae and one species of the family Elapidae.

MATERIALS AND METHODS

Field surveys were conducted in the Huu Lien NR, Lang Son province by Nguyen Thien Tao (NTT) in March 2009 and June 2016, and Le Trung Dung (hereafter LTD), Nguyen Thi Thuyen (hereafter NTT) in April 2017 (Fig. 1). Specimens were collected by hand or using snake hooks between 9:00 and 23:00. Specimens were euthanized in a closed vessel with a piece of cotton wool containing ethyl acetate (Simmons, 2002), fixed in 85% ethanol for 10 hours, then later transferred to 70% ethanol for permanent storage. Preserved specimens were then deposited in the collection of the Museum of Biology, Hanoi National University of Education (HNUE) and the Vietnam National Museum of Nature (VNMN), Ha Noi, Vietnam.

Abbreviation are as follows: SVL (snout-vent length): from tip of snout to anterior margin of cloacal; TaL (Tail length): from posterior

margin of cloaca to tip of tail; a.s.l.: above sea level. Bilateral scale counts were given as left/right.



Figure 1. Map showing the geographical location of Huu Lien nature reserve (black circle) in Lang Son province, Vietnam

RESULTS AND DISCUSSION

Family Colubridae Oppel, 1811

Ahaetulla prasina (Reinhardt, 1827)

Oriental whip snake/Ran roi thuong (Fig. 2a).

Specimen examined ($n = 1$). One adult female VNMN.03192 (SVL 760 mm, TaL 447.5 mm), collected by NTT in 2009, from Huu Lien NR ($N21^{\circ}41'042''E106^{\circ}22'131''$, elevation 230 m a.s.l.).

Morphological characters. Body elongated; head distinct from neck; internasals two, shorter than prefrontal; frontal longer than parietal; snout acuminate, without dermal appendage, mental groove present; horizontal pupil; loreal 2/2; preocular 1/1; postoculars 3/3; anterior temporals 2/1; posterior temporals 2/2; supralabials 9/9, fourth to sixth entering orbit, seven largest; infralabials 9/9, first to fourth bordering chin shields; dorsal scale rows 15–15–13, smooth; ventrals 200; cloacal divided; sub-

caudals 172, divided. *Coloration in preservative:* Dorsal surface of head, body and tail brownish blue; venter yellow with a line along the outer margin of the ventrals (determination after Smith, 1943; Nguyen, 2007; Das, 2010; Nguyen et al., 2011).

Ecological notes. The specimen was found at 16:00 on the tree of scrub vegetation, about 1.5–2.0 m above the ground. Surrounding habitat of the specimen was the secondary forests.

Distribution. In Vietnam, this species was previously known from Lai Chau and Lao Cai provinces in the North southwards to Ca Mau and Kien Giang provinces (Nguyen et al., 2009). Elsewhere, it is known from India, Bangladesh, Bhutan, China, Myanmar, Laos, Thailand, Cambodia Malaysia, Singapore, Brunei Darussalam, Indonesia, Philippines (Nguyen et al., 2009).

Remark. The specimen from Huu Lien NR differs from the description of Smith (1943) and Nguyen et al. (2011) in anterior temporals (2/1

versus 2/2 (Smith, 1943) and 1/1 (Nguyen et al., 2011)). According to Das (2010), the specimen from Huu Lien could be assigned to the subspecies *A. p. prasina*.

***Boiga kraepelini* (Stejneger, 1902)**

Kraepelin's cat snake/Ran rao k-ra-pe-lin (Fig. 2b)

Specimen examined ($n = 1$). One adult female HNUE HL.2017.70 (SVL 728,8 mm, TaL 262 mm), collected by LTD in 2017, from Lan Ty sector in Huu Lien NR (N21°39.452'E106°22.575', elevation 185 m a.s.l.).

Morphological characters. Body elongated; head distinct from neck; internasals two, shorter than prefrontal; frontal shorter than parietal; snout round; pupil oval; loreal 1/1; preocular 1/1; postoculars 3/3; temporals not enlarged, anterior temporals 4/4; posterior temporals 5/5; supralabials 9/9, third to fifth entering orbit, six largest; infralabials 12/12, first to fourth bordering chin shields; dorsal scale rows 23–21–18, dorsal scales somewhat keeled; ventrals 245; cloacal entire; subcaudals 153, divided. *Coloration in live:* Dorsal surface of head, body and tail light brown with a vertebral series of dark brown, large spots with the light-edge, this spots round, oval or zigzagging; a oval brown spot on the nape; two other series of light brown bands on the flanks; venter marbled (determination after Smith, 1943; Ziegler et al., 2010).

Ecological notes. The specimen was collected at 20:30 on a rock, about 0.5 m above the forest floor. The surrounding habitat was mixed primary forest of small wood and shrub.

Distribution. In Vietnam, this species was previously known from Bac Giang, Hoa Binh, Cao Bang, Lang Son, Vinh Phuc, Nghe An, Ha Tinh and Thua Thien-Hue provinces (Nguyen et al., 2009 and Ziegler et al., 2010). Elsewhere, it is known from China, Taiwan and Laos (Nguyen et al., 2009).

Remark. The specimen from Huu Lien NR differs from the description of Smith (1943) and Ziegler et al. (2010) in cloacal (entire versus divided).

***Chrysopelea ornata* (Shaw, 1802)**

Golden tree snake/Ran cuom (Fig. 2c)

Specimens examined ($n = 2$). One adult

male VNMN.03193 (SVL 608 mm, TaL 234.5 mm) and one adult female VNMN.06 (SVL 950.5 mm, TaL 279 mm), collected by NTT in 2016 from Lan Ty sector, Huu Lien NR (N21°40'487'E106°22'374', elevation 330 m a.s.l.).

Morphological characters. Body elongated; head distinct from neck; internasals two, shorter than prefrontal; frontal shorter than parietal; pupil round; loreal 1/0 in the male and 1/1 in the female; preocular 1/1; postoculars 2/2; anterior temporals 2/2; posterior temporals 2/2; supralabials 9/9 in the male and 8/8 in the female, fifth and sixth in the male, fourth and fifth in the female entering orbit, the eighth scale in the male and the seventh scale in the female largest; infralabials 10/10, first to fifth bordering chin shields; dorsal scale rows 17–17–13, smooth; ventrals 218–219; cloacal divided; subcaudals 96 in the male and 116 in the female, divided. *Coloration in preservative:* Dorsal surface body and tail greenish yellow; head black with yellow cross-bars and spots, sides of head yellow; venter greenish (determination after Smith, 1943; Nguyen, 2007).

Ecological notes. The specimens were found at night from 20:40 to 22:00 on the tree branches, about 1.5 m above the ground. Surrounding habitat of the specimens were the plantations forests. Associated species observed were *Duttaphrynus melanostictus* (Schneider, 1799) and *Fejervarya limnocharis* (Gravenhorst, 1829).

Distribution. In Vietnam, this species was previously known from Yen Bai and Son La provinces in the North southwards to Ca Mau and Kien Giang provinces (Nguyen et al., 2009). Elsewhere, it is known from India, Sri Lanka, southern China, Myanmar, Laos, Thailand, Cambodia, Malaysia, Indonesia, Philippines (Nguyen et al., 2009).

***Lycodon futsingensis* (Anderson, 1879)**

Banded wolf snake/Ran khuyet dom (Fig. 2d).

Specimen examined ($n = 1$). One adult male HNUE HL.2017.47 (SVL 452,4 mm, TaL 158,4 mm), collected by LTD in 2017, from Ban Leng sector in Huu Lien NR (N21°40.688'E106°23.087', elevation 318 m a.s.l.).

Morphological characters. Body elongated; head flattened, rectangular, moderately distinct from neck; internasals two, shorter than prefrontal; frontal shorter than parietal; snout projecting anteriorly beyond lower jaw; eye small, pupil oval; loreal 1/1, elongated, entering orbit; preocular 1/1; postoculars 2/2; anterior temporals 2/2, longer than posterior; posterior temporals 3/3; supralabials 8/8, third to fifth entering orbit, six largest; infralabials 10/10, first to fifth bordering chin shields; dorsal scale rows 17–17–15, smooth, vertebrals not enlarged; ventrals 208; cloacal entire; subcaudals 101, divided. *Coloration in live:* Dorsal surface of head, body and tail brownish to dark brown, 21 brown bands on body and 17 bands on tail with the white-edge, first band starting at ventral 16; venter cream with brown spots (determination after Bourret, 1936; Vogel et al., 2009; Le et al., 2014).

Ecological notes. The specimen was collected at 21:30 on the forest floor. The surrounding habitat was small hardwoods and shrubs.

Distribution. In Vietnam, this species was previously known from Lao Cai province in the North southwards to Da Nang Province (Nguyen et al., 2009). Elsewhere, it is known from China, Taiwan, Myanmar, Laos and Japan (Nguyen et al., 2009).

Remark. The specimen from Huu Lien NR differs from the description of Hecht et al. (2013) in having more ventral scales (208 versus 198–200) and subcaudal scales (101 versus 76–81).

***Oligodon chinensis* (Günther, 1888)**

Chinese kukri snake / Ran khiem trung quoc (Fig. 2e).

Specimens examined (n = 2). One adult male VNMN.927 (SVL 350 mm, TaL 95.5 mm) and one adult female VNMN.05, (SVL 452.5 mm, TaL 93.5 mm) collected by NTT in 2016, near Ban Leng, Huu Lien NR (N21°38'217'E106°22'014', elevation 230 m a.s.l.).

Morphological characters. Body cylindrical; head indistinct from neck; internasals two, equal prefrontal; frontal shorter than parietal; pupil round; loreal 1/1; preocular 1/1 in the male VNMN.927 and preocular 2/2 in the

female VNMN.05; postoculars 2/2; anterior temporals 2/2; posterior temporals 2/2; supralabials 8/8, fourth and fifth (only fifth in left of the female VNMN.05) entering orbit, six largest; infralabials 8/8 in the male and 9/9 in the female, first to fourth (first to fifth in left of the female VNMN.05) bordering chin shields; dorsal scale rows 17–17–15 in the male and 19–17–15 in the female, smooth; ventrals 179 in the male and 184 in the female; cloacal single; subcaudals 63 in the male and 53 in the female, divided. *Coloration in preservative:* Dorsal surface of head, body and tail yellowish brown with dark brown blotches; sides of head cream; dorsal head with two dark brown marking in Λ -shape, one between the eyes and another one on the nape; venter cream with black square spots (determination after Smith, 1943; David et al., 2008; Pham et al., 2014).

Ecological notes. All specimens were collected at night (20:00) near the limestone cliff surrounded by secondary forest made of short hardwood and shrubs.

Distribution. In Vietnam, this is a widespread species known from Lao Cai and Lang Son provinces in the North southwards to Quang Binh and Gia Lai provinces (Nguyen et al., 2009). This species is also known from China (Nguyen et al., 2009).

Family Elapidae Boie, 1827

***Sinomicrurus maccllellandi* (Reinhardt, 1844)**

MacClelland's coral snake/ Ran la kho thuong (Fig. 2f)

Specimen examined (n = 1). One adult female VNMN.04 (SVL 381.5 mm, TaL 44.5 mm), collected by NTT in 2016 from Lan Thung, Huu Lien NR (N 21°41'119'E 106°22'794', elevation 130 m a.s.l.).

Morphological characters. Body elongated; head indistinct from neck; internasals two, shorter than prefrontal; frontal shorter than parietal; pupil round; loreal 0/0; preocular 1/1; postoculars 2/2; anterior temporals 1/1; posterior temporals 1/1; supralabials 7/7, third and fourth entering orbit, seven largest; infralabials 6/6, first to third bordering chin shields; dorsal scale rows 13–13–13, smooth; ventrals 234; cloacal divided; subcaudals 33, divided. *Coloration in preservative:* Dorsal surface of head,

body and tail reddish brown, with narrow, black transverse bars and a series of small black spots; dorsal head with a broad white band and a black nuchal band; venter cream with black bands and black squarish marks (determination after Smith, 1943; Ziegler et al., 2014).

Ecological notes. The specimen was collected at night (21:00) on the soft layer of the

fallen leaves in karst forests.

Distribution. In Vietnam, this species was previously known from Lao Cai and Cao Bang provinces in the North southwards to Lam Dong and Dong Nai provinces (Nguyen et al., 2009). Elsewhere, it is known from India, Nepal, southern China, Taiwan, Myanmar, Laos, Thailand, Japan (Nguyen et al., 2009).

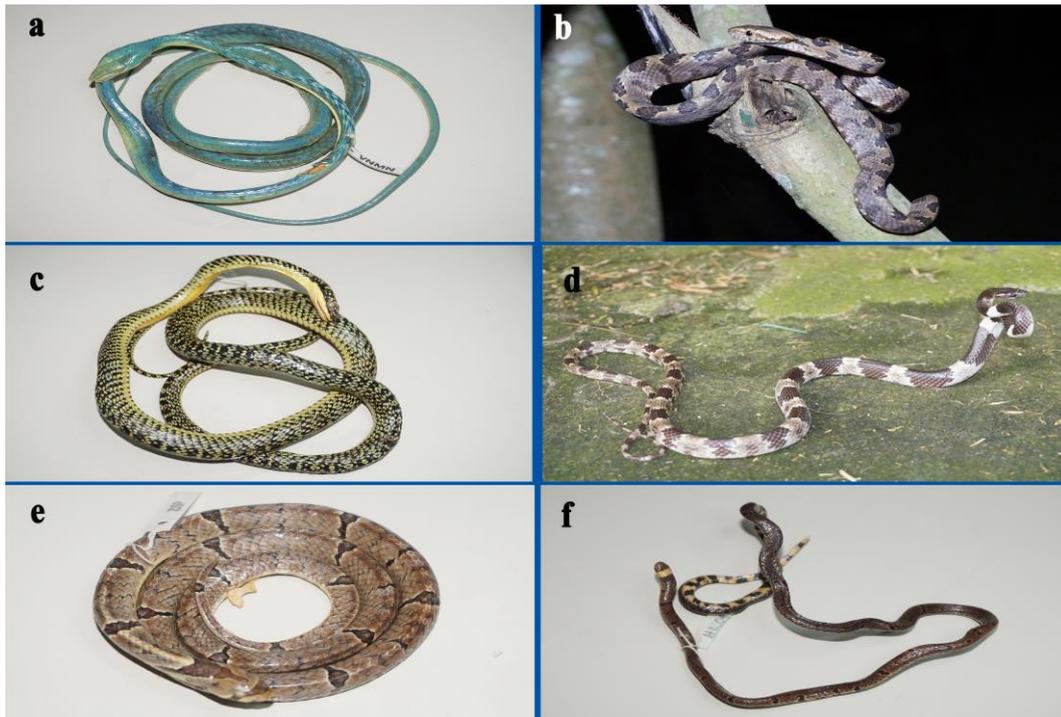


Figure 2. a) *Ahaetulla prasina* (VNMN.03192, adult female), b) *Boiga kraepelini* (HNUE HL.2017.70, adult female), c) *Chrysopelea ornata* (VNMN.06, adult female), d) *Lycodon futsingensis* (HNUE HL.2017.47, adult male), e) *Oligodon chinensis* (VNMN.927, adult male), f) *Sinomicrurus macclellandi* (VNMN.04, adult female)

DISCUSSION

The Huu Lien NR is located in Lang Son province, northeastern Vietnam with the karst massif at altitudes up to 600 m a.s.l. which are high species diversity, however, it may be underestimated as a result of the difficulty of sampling inaccessible areas (Clements et al., 2006). Our findings increase the species number of snakes to 21 in Huu Lien NR and 49 in Lang Son province and it is expected that further new records of reptiles will be made from this province in further studies.

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