

## **DISCOVERY OF A NEW POPULATION OF *CYRTODACTYLUS SONI* LE, NGUYEN, LE & ZIEGLER, 2016 FROM HA NAM PROVINCE**

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### **SUMMARY**

A new population of the Son's Bent-toed Gecko (*Cyrtodactylus soni*) is reported for the first time from Ha Nam province, in the North of Vietnam, based on six specimens collected in May 2017 on the karst cliffs in the secondary karst forest of Thanh Son commune, Kim Bang district. Morphological characters of these specimens are mostly matched with the original description of Le et al. (2016), such as supralabials 11 - 12; infralabials 9 - 10; 41 longitudinal rows at midbody. In addition, specimens from Ha Nam province is different from the original description by having fewer femoral pore counts in females (0 - 6 pitted scales *versus* 6 - 8 pitted scales in the type series). Two female specimens VNUF RHN.2017.06 and VNUF RHN.2017.07 are different in color pattern from the original description (ground color yellowish-white *versus* brownish-grey, distinct darker transverse bands), and dorsal head of two specimens also with less dark markings. The population of this species in Ha Nam is threatened by habitat loss through quarrying of limestone and its locality is close to the But Son cement factory. Therefore, assessment of distribution and threats to the population in the study area is crucially needed to provide scientific data for conservation measures.

**Keywords:** *Cyrtodactylus soni*, distribution, Ha Nam province, new record.

### **I. INTRODUCTION**

*Cyrtodactylus* is known as the most species-rich genus of Gekkonidae, with a total of 234 recognized species to date (Uetz et al., 2018). Its distribution extends throughout tropical South Asia, Indochina, the Philippines, the Indo-Australian Archipelago, and the Solomon Islands in the East (Bauer & Henle, 1994). Vietnam is considered as one of the countries that has the highest diversity and endemism for the genus with 40 recorded species, accounting for 17.1% of the *Cyrtodactylus* species recorded so far (e.g., Nguyen et al., 2015; Le et al., 2016; Luu et al., 2017; Uetz et al., 2018).

Our recently field work in limestone forest of Thanh Son commune, Kim Bang district, Ha Nam province yielded the discovery of a new population of the Son's Bent-toed Gecko (*Cyrtodactylus soni*), a species was originally described from Van Long Nature Reserve, Ninh Binh province by Le et al. (2016). Based on morphological characters of six collected specimens, we herein record *Cyrtodactylus soni* for the first time from Ha Nam province.

### **II. RESEARCH METHODOLOGY**

#### **2.1. Sampling**

Field work was conducted in May 2017 in the limestone forest of Thanh Son commune, Kim Bang district, Ha Nam province. Specimens were euthanized in a closed vessel with a piece of cotton wool containing ethyl acetate (Simmons, 2002) and fixed in approximately 85% ethanol, then later transferred to 70% ethanol for permanent storage. Specimens were subsequently deposited in the collections of the Vietnam National University of Forestry (VNUF), Hanoi, Vietnam.

#### **2.2. Morphological characters**

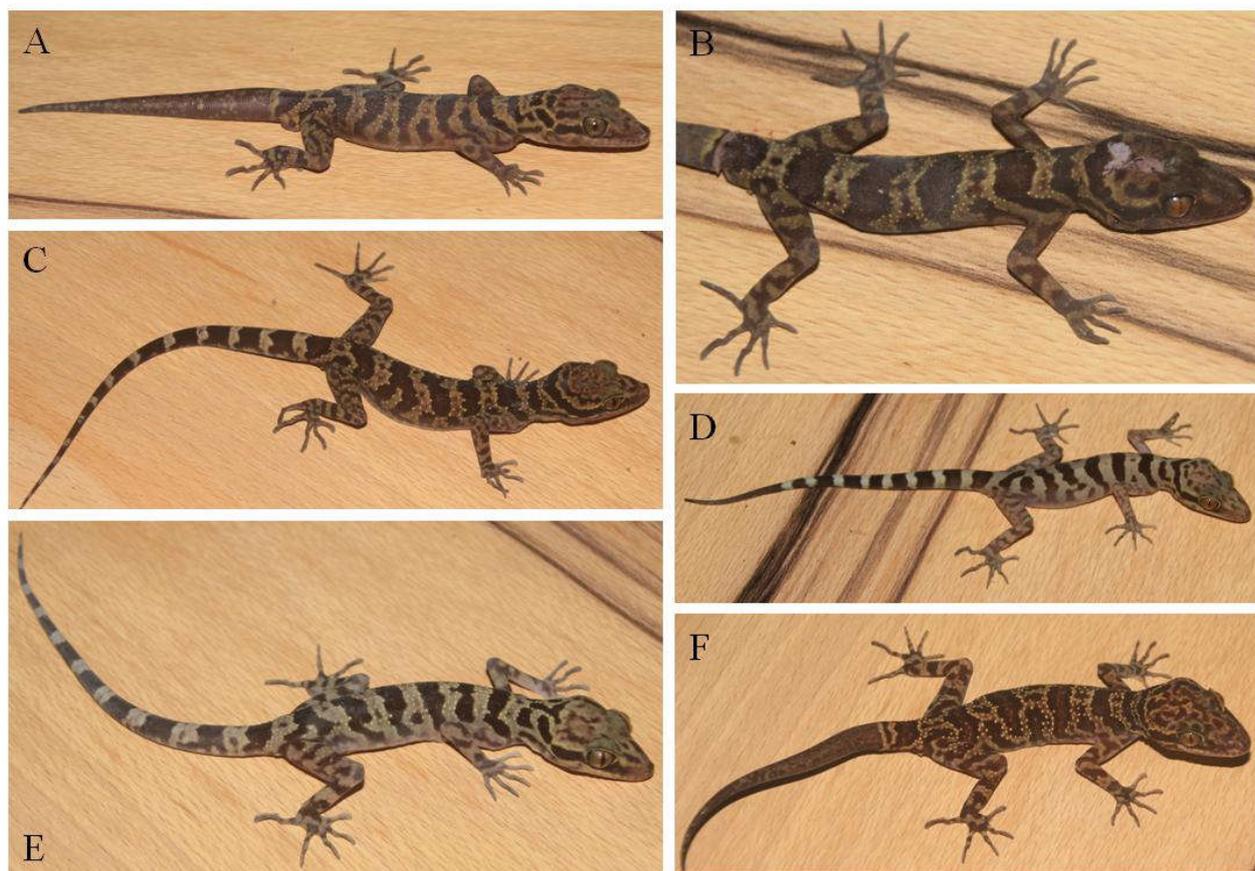
Measurements were taken with a digital calliper to the nearest 0.1 mm. Abbreviations are as follows: snout-vent length (SVL), from tip of snout to anterior margin of cloaca;  $m \pm SD$ : SVL mean  $\pm$  standard deviation; tail length (TaL), from posterior margin of cloaca to tip of tail; from posterior edge of forelimb insertion to anterior edge of hindlimb insertion; maximum head height (HH), from occiput to underside of jaws; head length (HL), from tip of snout to the posterior margin of the retroarticular; maximum head width (HW); greatest diameter of orbit (OD); snout to eye

distance (SE), from tip of snout to anterior corner of eye; Scale counts were taken as follows: supralabials (SL); infralabials (IL); granular scales surrounding dorsal tubercles (GST); ventral scales in longitudinal rows at midbody (V); number of scales along the midbody from mental to anterior edge of cloaca (SLB); precloacal pores (PP);

postcloacal tubercles (PAT); subdigital lamellae on fourth finger (LD4); subdigital lamellae on fourth toe (LT4). Bilateral scale counts were given as left/right.

### III. RESULTS AND DISCUSSION

New record of *Cyrtodactylus soni* Le, Nguyen, Le & Ziegler, 2016 from Ha Nam province, Vietnam (Figure 1).



**Figure 1. Dorsal view of the *Cyrtodactylus soni* in life from Ha Nam province: (A) Adult male (VNUF RHN.2017.01); (B) Adult male (VNUF RHN.2017.02); (C) Adult female (VNUF RHN.2017.05); (D) Adult female (VNUF RHN.2017.06); (E) Adult female (VNUF RHN.2017.07); and (F) Adult female (VNUF RHN.2017.08)**

*(Photos: Luu Quang Vinh)*

*Specimens examined* ( $n = 6$ ). Two adult males, VNUF RHN.2017.01 (field number HN17.01), VNUF RHN.2017.02 (field number HN17.02) and four adult females, VNUF RHN.2017.05 (field number HN17.05), VNUF RHN.2017.06 (field number HN17.06), VNUF RHN.2017.07 (field number HN17.07), VNUF RHN.2017.08 (field number HN17.08) all

were collected on 15 May 2017 by Tung T. Nguyen & Ngoan V. Ha in the karst forest (20°31.498'N, 105°51.160'E, elevations 176-179 a.s.l.) in Ha Nam province, Vietnam.

*Morphological characters.* SVL males 80.2 - 82.7 mm (mean  $\pm$  SD: 81.5  $\pm$  1.8 mm,  $n = 2$ ), females 67.8 - 92.1 mm (mean  $\pm$  SD: 82.2  $\pm$  10.7 mm,  $n = 4$ ); tail length (TaL) 75.1 mm in

males, 91.3 mm in females; head elongated, depressed (HW/HL 0.28 in males, 0.68 in females), distinct from neck; loreal region concave; snout long (SE/HL 0.46 in males, 0.42 in females), longer than diameter of orbit (OD/SE 0.46 in males, 0.42 in females); snout scales small, granular; eye large (OD/HL 0.22 in males, 0.22 in females), pupils vertical; ear oval shaped, small; rostral wider than high, rostral bordered by nostril, and first supranasal on each side; nares round, surrounded by supranasal, rostral, first supralabial, and three postnasals; mental triangular; postmentals two, enlarged, in broad contact posteriorly, bordered by mental anteriorly, first infralabial laterally, and an enlarged chin scale posteriorly; supralabials 11 - 12; infralabials 9 - 10. Dorsal scales granular; dorsal tubercles round, conical, present on occiput and back, each surrounded by 9 - 10 granular scales; ventral scales smooth, medial scales 2 or 3 times larger than dorsal scales, round, in 36 - 41 longitudinal rows at midbody; lateral skin folds distinct without tubercles; gular region with homogeneous smooth scales; 182 - 207 ventral scales between mental and cloacal slit; precloacal groove absent; enlarged femoral scales present; precloacal pores 6, in a continuous row; femoral pores 6 on each side in males, precloacal 0 - 6 on each side in females; postcloacal tubercles 3; subcaudals enlarged; dorsal surface of fore and hind limbs with tubercles; fingers and toes without distinct webbing; lamellae under fourth finger 19 - 20, under fourth toe 21 - 22.

*Coloration in life.* Dorsal surface brownish-grey, dorsal head with dark marbles, edged in yellowish whitish yellow; neck with a dark transverse band, interrupted in the adult male (VNUF RHN.2017.01) and in the female (VNUF RHN.2017.07); body bands between

limb insertions five to six, irregular, dark brown; dorsal surface of fore and hindlimbs with dark bars, upper surface of regenerated tail with totally indistinct transverse bands, chin, throat and belly cream, regenerated tail ventrally dark grey.

*Sexual dimorphism.* The females differ from the males in the absence of hemipenial swellings at the tail base. The femoral pores in males are much more distinct than that in females.

*Remarks.* Specimens from Ha Nam province differ from the original description of Le et al. (2016) by having fewer femoral pore counts in females (0 - 6 pitted scales versus 6 - 8 pitted scales). Two female specimens VNUF RHN.2017.06 and VNUF RHN.2017.07 are different in color pattern from the original description (ground color yellowish-white *versus* brownish-grey, distinct darker transverse bands), and dorsal head of two specimens also with less dark markings.

*Distribution.* *Cyrtodactylus soni* was known from the type locality in Van Long Nature Reserve, Ninh Binh province (Le et al., 2016). This is the first record of the species from Ha Nam province. The type locality of *C. soni* in Ninh Binh province (20°25.067'N, 105°51.467'E) is only approximately 12 km distant from the new population in Ha Nam province (20°31.498'N, 105°51.160'E) (Fig. 2).

*Natural history.* Specimens were collected between 18:30 and 22:00 on karst cliffs, approximately 0.5 - 2 m above the ground, at elevations between 176 - 179 m a.s.l. The surrounding habitat was secondary karst forest, mixed by hardwoods, shrubs and bamboos. The air temperature at the time of collection ranged from 23 to 26.2°C and relative humidity was between 80 and 90% (Figure 3).

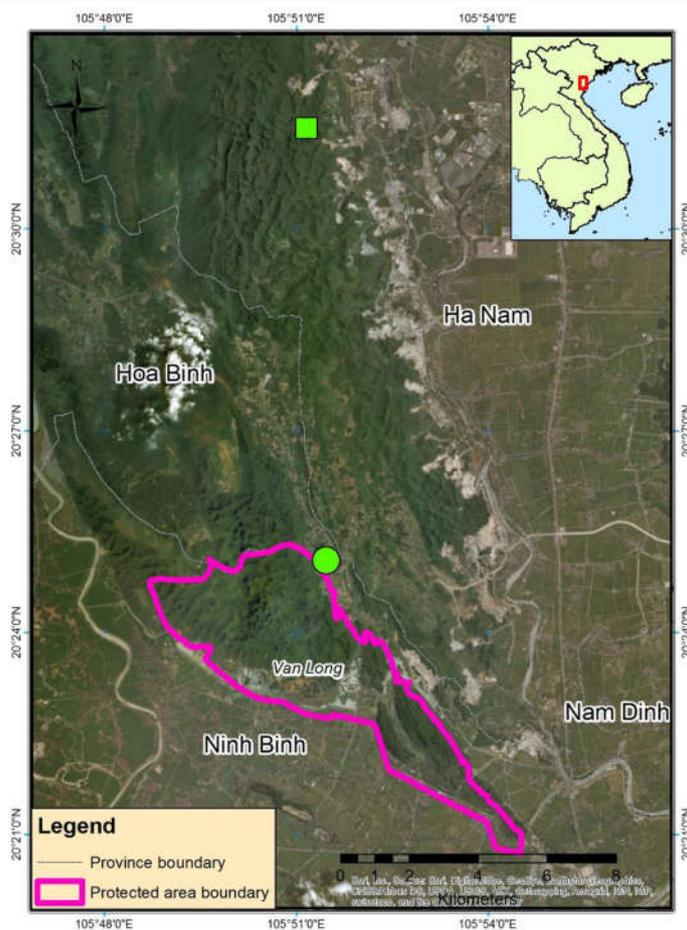


Figure 2. Distribution map of *Cyrtodactylus soni*: new record from Ha Nam province (green square) and the type locality from Ninh Binh province (green circle)

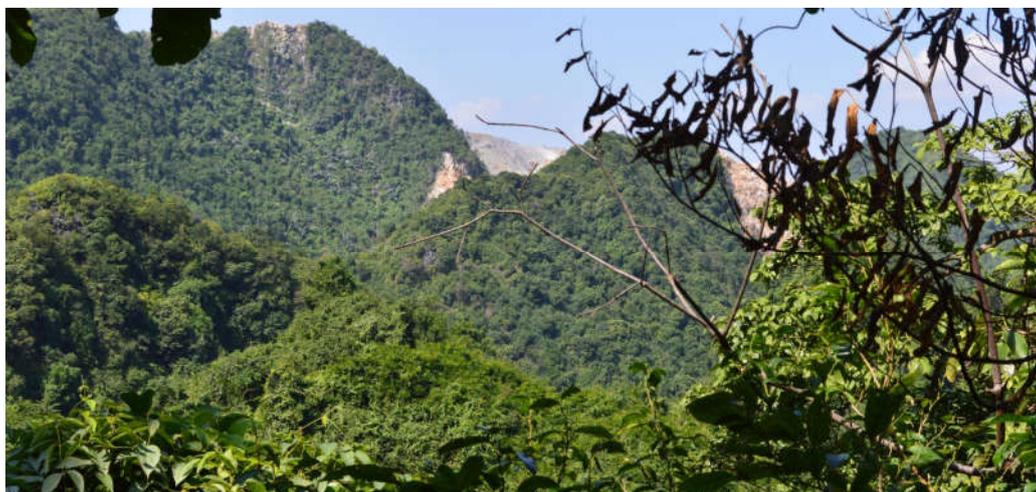


Figure 3. Habitat of *Cyrtodactylus soni* in limestone forest of Thanh Son commune, Kim Bang district, Ha Nam province  
(Photo: Can V. Vu)

#### IV. DISCUSSION

In terms of threat to the population of this species, we found that quarrying is a major causes of habitat degradation. The place where we collected specimens is nearby the But Son

cement factory and seriously affected by the noise and dust from quarrying activities. Besides, it is also noticed that the forest of Kim Bang district, Ha Nam province is home to the Delarcour's Langur (*Trachypithecus*

*delacouri*) - one of the world's most endangered primate species. Therefore, it is important to promote more study on the fauna in order to protect the endangered and rare species in this site of Ha Nam province.

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## **GHI NHẬN QUẦN THỂ MỚI CỦA LOÀI *CYRTODACTYLUS SONI* LE, NGUYEN, LE & ZIEGLER, 2016 TẠI TỈNH HÀ NAM**

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#### **TÓM TẮT**

Một quần thể mới của loài Thằn lằn chân ngón sơn (*Cyrtodactylus soni*) được phát hiện và mô tả lần đầu tiên tại tỉnh Hà Nam, miền Bắc Việt Nam, dựa trên sáu mẫu vật được thu vào tháng 5 năm 2017 trên các mỏm đá tại khu vực rừng trên núi đá vôi của xã Thanh Sơn, huyện Kim Bảng. Các mẫu thu được trùng hợp với mô tả gốc của Lê Trung Dũng và cộng sự năm 2016 như là số vảy môi trên 11-12; số vảy môi dưới 8-10; số vảy bụng. Bên cạnh đó, mẫu vật thu được ở Hà Nam khác với mô tả gốc ở số lượng lỗ dưới đuôi ít hơn (0-6 so với 6-8). Hai mẫu vật VNUF RHN.2017.06 và VNUF RHN.2017.07 có màu nền trắng vàng so với màu nâu xám, các dải ngang rộng giữa thân cũng có màu ngả tối khác biệt, và các chấm ở mặt trên của đầu cũng ít hơn so với các mẫu vật ở bản mô tả gốc. Hiện tại, loài này đang bị đe dọa bởi mất sinh cảnh do hoạt động khai thác đá vôi và khu vực phân bố của nó gần nhà máy xi măng Bút Sơn. Do vậy, nghiên cứu về phân bố và các mối đe dọa tiềm năng đối với quần thể tại khu vực là thực sự cấp thiết để cung cấp các dữ liệu khoa học cho các giải pháp bảo tồn.

**Từ khóa:** Ghi nhận mới, phân bố, Thằn lằn chân ngón sơn, tỉnh Hà Nam.

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