

**NEW RECORD OF BENT-TOED GECKO (*CYRTODACTYLUS BOBROVI*
NGUYEN, LE, PHAM, NGO, HOANG, PHAM & ZIEGLER, 2015)
FROM CUC PHUONG NATIONAL PARK**

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SUMMARY

The existence of *Cyrtodactylus bobrovi* is reported for the first time from Thanh Hoa Province, in northern Vietnam, based on morphological characters of one adult female specimen collected in 30th September 2017 on the karst cliff, in the limestone karst forest of Cuc Phuong National Park. Morphological characters of the specimen mostly matched with the original description of Nguyen et al. (2013), such as supralabials 11 - 10; infralabials 11 - 10; 41 longitudinal rows at midbody. Noticeably, the specimen from Cuc Phuong National Park is differentiated from the original description by the presence of precloacal pores in the female (*versus* absent in females of the paratypes). Besides *C. cucphuongensis* described in 2011, this discovery increases the total number of species in the genus *Cyrtodactylus* in Cuc Phuong National Park to two species at present. While the limestone karst forest has been proven to be an ideal habitat for the *Cyrtodactylus* species, the number of *Cyrtodactylus* species in Cuc Phuong - with total area of 22,200 ha, is still likely to be underestimated. Therefore, further research on diversity of reptiles, ecology and threats should be carried out to gain full understanding on the reptilian fauna of the national park and provide effective conservation measures.

Keywords: Cuc Phuong National Park, *Cyrtodactylus bobrovi*, distribution.

I. INTRODUCTION

Cuc Phuong National Park (NP) was established in 1962 and also the first national park in Vietnam with a total area of 22,200 ha. It is located in the areas of three provinces: Ninh Binh, Thanh Hoa and Hoa Binh. Cuc Phuong NP is placed in the monsoon tropical climate region at the height from 140 m to 648 m above the sea level. Forested limestone karst mountain is typical terrain in Cuc Phuong (Vo et al., 1996). It is considered as one of the most important places for biodiversity in Vietnam with a high number of endemic species like *Cyrtodactylus cucphuongensis* (Ngo & Onn, 2011).

Our recent herpetological field work conducted in the limestone karst forest of Cuc Phuong NP has revealed the existence of *Cyrtodactylus bobrovi* which was first described in 2015 by Nguyen et al. (2015) from the limestone karst forest in Ngoc Son - Ngo Luong Nature Reserve (NR) in Hoa Binh Province, Vietnam. Based on morphological characters of one collected adult female specimen, we herein describe it as a new record of *Cyrtodactylus bobrovi* from Cuc Phuong NP belonging to the area of Thanh Hoa Province.

II. RESEARCH METHODOLOGY

2.1. Sampling

Field surveys were conducted in 12th sub-area situated within Cuc Phuong NP belonging to the area of Thanh Hoa Province in September 2017. The specimen was 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. The specimen was subsequently deposited in the collection of the Cuc Phuong NP, Ninh Binh Province, Vietnam.

2.2. Morphological characters

Measurements and scale counts 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; tail length (TaL), from posterior margin of cloaca to tip of tail; 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 using a stereo microscope (Leica S6E), bilateral scale counts were given as left/right: supralabials (SL); infralabials (IL); nasal scales surrounding nare, from rostral to labial (except counting rostral and labial), i.e. natorostrals, supranasals, postnasals (N); 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

Taxonomic treatment

New record of *Cyrtodactylus bobrovi* Nguyen, Le, Pham, Ngo, Hoang, Pham & Ziegler, 2015 from Cuc Phuong NP

Specimen examined ($n = 1$). One adult female, CPNP R.2017.122 (field number NHQ 17.122), was collected on 30th September 2017 by Quang N. Huy & Ngoan V. Ha in the limestone karst forest (20°21.957'N; 105°30.064'E) in Cuc Phuong NP belonging to the area of Thanh Hoa Province.

Morphological characters. Adult female SVL 86.5 mm; regenerated tail length (TaL) 64.7 mm; head elongated, depressed (HW/HL

0.69), distinct from neck; loreal region concave; snout long (SE/HL 0.46), longer than diameter of orbit (OD/SE 0.51); snout scales small, granular; eye large (OD/HL 0.23), pupils vertical; ear oval shaped, small (ED/HL 0.06; rostral wider than high, rostral bordered by nostril, and supranasal and first supralabial 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 - 10; infralabials 11 - 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 41 longitudinal rows at midbody; lateral skin folds indistinct without tubercles; gular region with homogeneous smooth scales; 198 ventral scales between mental and cloacal slit; precloacal groove absent; enlarged femoral scales present; precloacal pores 7, in an inverted V-shaped arrangement; pore-bearing enlarged; femoral pores absent; postcloacal tubercles 2/2; dorsal surface of fore and hind limbs with few lightly developed tubercles; fingers and toes without distinct webbing; lamellae under fourth finger 21, under fourth toe 24.



Figure 1. (A) Dorsal and (B) ventral view of the adult female *Cyrtodactylus bobrovi* (CPNP R.2017.122) in life from Thanh Hoa province

Photos: Quang H. Nguyen

Coloration in life. Ground color brownish-grey, dorsal surface of head with dark dots; two narrow brown stripes present in snout region; a dark stripe leading from posterior corner of eye backwards to above tympanum and two large dark area on necks; forming an interrupted nuchal loop posteriorly; neck with some large dark blotches, edged in yellowish white, body bands between limb insertions five, irregular, blackish; 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 blackish without bands (determination after Nguyen et al., 2015).

Remarks. The specimen from Cuc Phuong NP differs from original description of Nguyen et al. (2015) by the presence of preloacal pores in the female (*versus* absent in females of the paratypes).

Distribution. *Cyrtodactylus bobrovi* has been reported from Ngoc Son to Ngo Luong NR in Hoa Binh province (Nguyen et al., 2015). This is a new record of the species from Thanh Hoa Province and it is also added to the herpetofauna list of Cuc Phuong NP. The type locality of *C. bobrovi* in Hoa Binh province (20°27.838'N, 105°18.423'E) is only approximately 23 km distant from the new locality of the species in Cuc Phuong NP (20°21.957'N; 105°30.064'E) (Fig. 2).

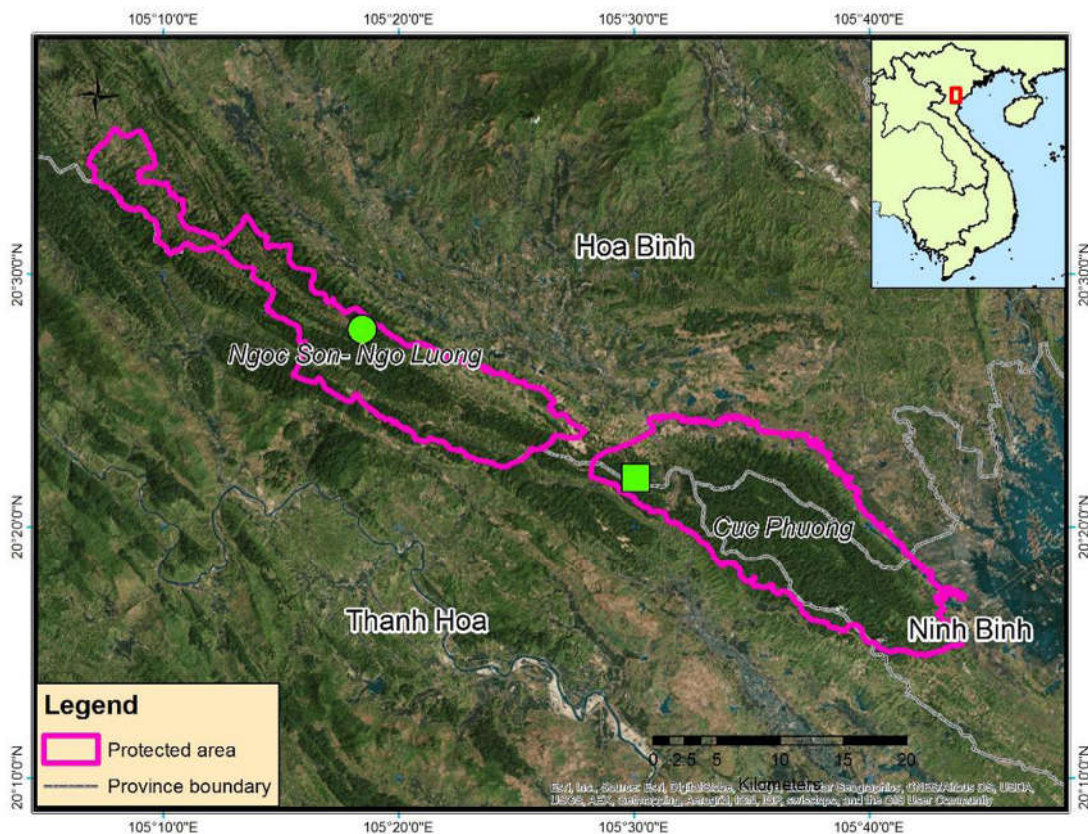


Figure 2. Distribution map of *Cyrtodactylus bobrovi*: new record from Thanh Hoa Province (green square) and the type locality from Hoa Binh Province (green circle)

Natural history. Specimen was collected at night (6:16 pm) on the karst cliff, approximately 1 m above the ground, at elevation 205 m a.s.l. The surrounding habitat

was limestone karst forest. The air temperature was about 28.7°C and relative humidity was nearly 92% (Fig. 3).



Figure 3. Habitat of *Cyrtodactylus bobrovi* in the limestone karst forest of Cuc Phuong NP

Photo: Quang H. Nguyen

IV. DISCUSSION

In recent reptilian studies, many reptiles in the bent-toed geckos group (*Cyrtodactylus*), like *Cyrtodactylus bichnganae* Tri & Grismer, 2010; *Cyrtodactylus chauquangensis* Hoang; Orlov, Ananjeva, Johns, Hoang, & Dau, 2007; *Cyrtodactylus cucphuongensis*, *Cyrtodactylus huongsonensis* Luu, Nguyen, Do & Ziegler, 2011; *Cyrtodactylus martini* Ngo, 2011; *Cyrtodactylus otai* Nguyen, Le, Pham, Ngo, Hoang, Pham & Ziegler, 2015 and *Cyrtodactylus soni* Le, Nguyen, Le & Ziegler, 2016 was found in similar habitat which is the limestone karst forest. This again confirms that the limestone karst forest plays an important role in the speciation of *Cyrtodactylus* group. It is, therefore, essential to continue conducting taxonomic study in the genus because it probably contains a high level of potentially undescribed diversity, especially in the limestone karst formations.

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REFERENCES

1. Hoang, Q.X., Orlov, N.L., Ananjeva, N.B., Johns, A.G., Hoang, T.N. & Dau, V.Q. (2007). Description of a new species of the genus *Cyrtodactylus* Gray, 1827 (Squamata: Sauria: Gekkonidae) from the karst of North Central Vietnam. *Russian Journal of Herpetology*, 14: 98-106.
2. Luu, V.Q., Nguyen, T.Q., Do, H.Q., Ziegler, T. (2011). A new *Cyrtodactylus* (Squamata: Gekkonidae) from Huong Son limestone forest, Hanoi, northern Vietnam. *Zootaxa*, 3129: 39-50.
3. Luu, V.Q., Tran, D.V., Nguyen, T.Q., Le, M.D. & Ziegler, T. (2017). A new species of the *Cyrtodactylus irregularis* (Squamata: Gekkonidae) from Gia Lai Province, Central Highlands Vietnam. *Zootaxa*, 4362(3): 385-404.

4. Ngo, T.V. (2011). *Cyrtodactylus martini*, another new karst-dwelling *Cyrtodactylus* Gray, 1827 (Squamata: Gekkonidae) from Northwestern Vietnam. *Zootaxa*, 2834: 33-46.
5. Ngo, T.V. (2013). *Cyrtodactylus dati*, a new forest dwelling Bent-toed Gecko (Squamata: Gekkonidae) from southern Vietnam. *Zootaxa*, 3616(2): 151-164.
6. Ngo, T.V. & Chan, K.O. (2011). A new karstic cave-dwelling *Cyrtodactylus* Gray (Squamata: Gekkonidae) from Northern Vietnam. *Zootaxa*, 3125: 51-63.
7. Nguyen, T.Q., Le, M.D., Pham, A.V., Ngo, H.N., Hoang, C.V., Pham, C.T. & Ziegler, T. (2015). Two new species of *Cyrtodactylus* (Squamata: Gekkonidae) from the karst forest of Hoa Binh province, Vietnam. *Zootaxa*, 3985(3): 375-390.
8. Simmons, J.E. (2002). Herpetological collecting and collections management. Revised edition. Society for the Study of Amphibians and Reptiles. *Herpetological Circular*, 31: 1-153.
9. Vo, Q., Nguyen, T.B., Ha, D.D & Le, T.V. (1996). *Cúc Phương National Park*. Hanoi: Agricultural Publishing House. In English and Vietnamese.

**GHI NHẬN MỚI CỦA LOÀI THẦN LẦN CHÂN NGÓN BÔ-B-RÔP
(*CYRTODACTYLUS BOBROVI* NGUYEN, LE, PHAM, NGO, HOANG, PHAM
& ZIEGLER, 2015) TẠI VƯỜN QUỐC GIA CÚC PHƯƠNG**

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TÓM TẮT

Sự xuất hiện của loài Thần lằn chân ngón bò-b-rôp (*Cyrtodactylus bobrovi*) được ghi nhận và mô tả lần đầu tiên ở tỉnh Thanh Hóa, miền Bắc Việt Nam, dựa trên đặc điểm hình thái học của một mẫu cái trưởng thành được thu vào ngày 30 tháng 9 năm 2017 trên một vách đá, ở khu vực rừng trên núi đá vôi thuộc địa phận tiểu khu 12, tỉnh Thanh Hóa, Việt Nam. Mẫu thu được trùng khớp với mô tả gốc của Nguyễn Quang Trường và cộng sự năm 2013 như là số vảy môi trên 11-10; số vảy môi dưới 11-10; số vảy bụng 41. Đáng chú ý là mẫu cái trưởng thành thu được khác với mẫu mô tả gốc ở sự xuất hiện của lỗ trước huyệt. Nghiên cứu này nâng tổng số loài trong nhóm *Cyrtodactylus* ở Vườn Quốc gia Cúc Phương lên 2 loài, bên cạnh loài Thần lằn chân ngón Cúc Phương (*Cyrtodactylus cucphuongensis*) được mô tả vào năm 2011. Trong khi rừng trên núi đá vôi đã được chứng minh là môi trường sống lý tưởng của các loài Thần lằn chân ngón, số lượng loài của nhóm này ở vườn Quốc gia Cúc Phương – với tổng diện tích 22,200 ha có thể vẫn chưa được đánh giá đúng mức. Do đó, để có được hiểu biết đầy đủ về thành phần loài bò sát tại Vườn Quốc gia Cúc Phương và đưa ra các biện pháp bảo tồn hiệu quả, việc tiến hành thêm các nghiên cứu là rất cần thiết.

Từ khóa: Phân bố, Thần lằn chân ngón bò-b-rôp, Vườn Quốc gia Cúc Phương.

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