

NEW RECORDS OF SKINKS (SQUAMATA: SCINCIDAE) FROM NAM DONG VALUABLE GYMNOSPERM CONSERVATION AREA, THANH HOA PROVINCE

Luong Khanh Linh¹, Luu Quang Vinh¹, Nguyen Quang Truong²

¹Vietnam National University of Forestry

²Vietnam Academy of Science and Technology

SUMMARY

The Nam Dong Valuable Gymnosperm Conservation Area was recently established in 2014 with 646.95 ha of the core zone and 3,315.53 ha of the buffer zone. The Nam Dong is located in the territory of Quan Son and Quan Hoa districts, Thanh Hoa province. The ecosystem in the protected area is rich and diverse, with the steep and rugged terrain, dense network of rivers and streams. Evergreen limestone karst forests on the karst mountain are the typical habitat in the Conservation Area. The height ranges at elevations from 100 to 900 m above sea level (a.s.l.). However, the family Scincidae has not been studied much, only two species of this family have been recorded so far. Based on a result of our recent field surveys, we collected 11 skink specimens of the family Scincidae. As a result, we recorded six species belonging to four genera of the family Scincidae. Five of them are recorded for the first time from Nam Dong Valuable Gymnosperm Conservation Area, namely: the Bronze Mabuya (*Eutropis macularius*), Reevesi's Smooth Skink (*Scincella reevesii*), Depressed-eared Forest Skink (*Sphenomorphus cryptotis*), Indian Forest Skink (*S. indicus*), and Hainan Water Skink (*Tropidophorus hainanus*). Additional data about natural history data of aforementioned species and an update list of the family Scincidae are provided. The new recorded species in the family Scincidae are found almost in the lowland with the elevation ranges <500 m a.s.l. and 500 - 600 m a.s.l. The presence of *T. baviensis* needs to be verified by further studies due to morphological similarity between *T. hainanus* and *T. baviensis*.

Keywords: Distribution, morphology, Nam Dong Valuable Gymnosperm Conservation Area, new records, skinks.

1. INTRODUCTION

In the recent checklist of the Vietnam herpetofauna, Nguyen et al. (2009) provided a list of 46 skink species of the family Scincidae. Since then 12 new species have been described from Vietnam, increased the total number of species in this family to 58 (Uetz et al., 2019) viz. *Scincella apraefrontalis* Nguyen, Nguyen, Böhme & Ziegler, 2010 (Nguyen et al., 2010a), *S. darevskii* Nguyen, Ananjeva, Orlov, Rybaltovsky & Böhme, 2010 (Nguyen et al., 2010b), *Tropidophorus boehmei* Nguyen, Nguyen, Schmitz, Orlov & Ziegler, 2010 (Nguyen et al., 2010c), *Sphenomorphus tonkinensis* Nguyen, Schmitz, Nguyen, Orlov, Böhme & Ziegler, 2011 (Nguyen et al., 2011), *S. sheai* Nguyen, Nguyen, Van Devender, Bonkowski & Ziegler, 2013 (Nguyen et al., 2013), *S. yersini* Nguyen, Nguyen, Nguyen, Orlov & Murphy, 2018 (Nguyen et al., 2018) and three species newly recorded for the country, namely *Scincella monticola* (Schmidt, 1925), *Sphenomorphus mimicus* Taylor, 1962,

and *S. incognitus* (Thompson, 1912) (Nguyen et al., 2010d, 2011, 2012).

The Nam Dong Valuable Gymnosperm Conservation Area (VGCA) was established in 2014 by the People's Committee of Thanh Hoa province. It is located in Quan Son and Quan Hoa districts (coordinates: 20°18'07"–20°19'38"N and 104°52'08"–104°53'26"E), Thanh Hoa province with a core zone of 646.95 ha and a buffer zone of 3,315.53 ha. The VGCA is situated at elevations between 100 and 900 m a.s.l. with the mountain slopes of 10 - 45%, and inclining from the Northwest to the Southeast. The typical habitat of the Nam Dong VGCA is characterized by the limestone karst forest. (VNFOREST, 2014) (Fig. 1). In terms of faunal diversity, only one survey was conducted in this area by Dong et al. (2017). This study documented 26 species of reptiles and only two species of skinks were recorded from Nam Dong VGCA, *Eutropis multifasciata* and *Tropidophorus baviensis*. During our recent field work in May, June

2017 and in April, May 2018, we collected 11 specimens of skinks. Morphological examination yielded to five new records of

Scincidae for Nam Dong VGCA that are provided herein.

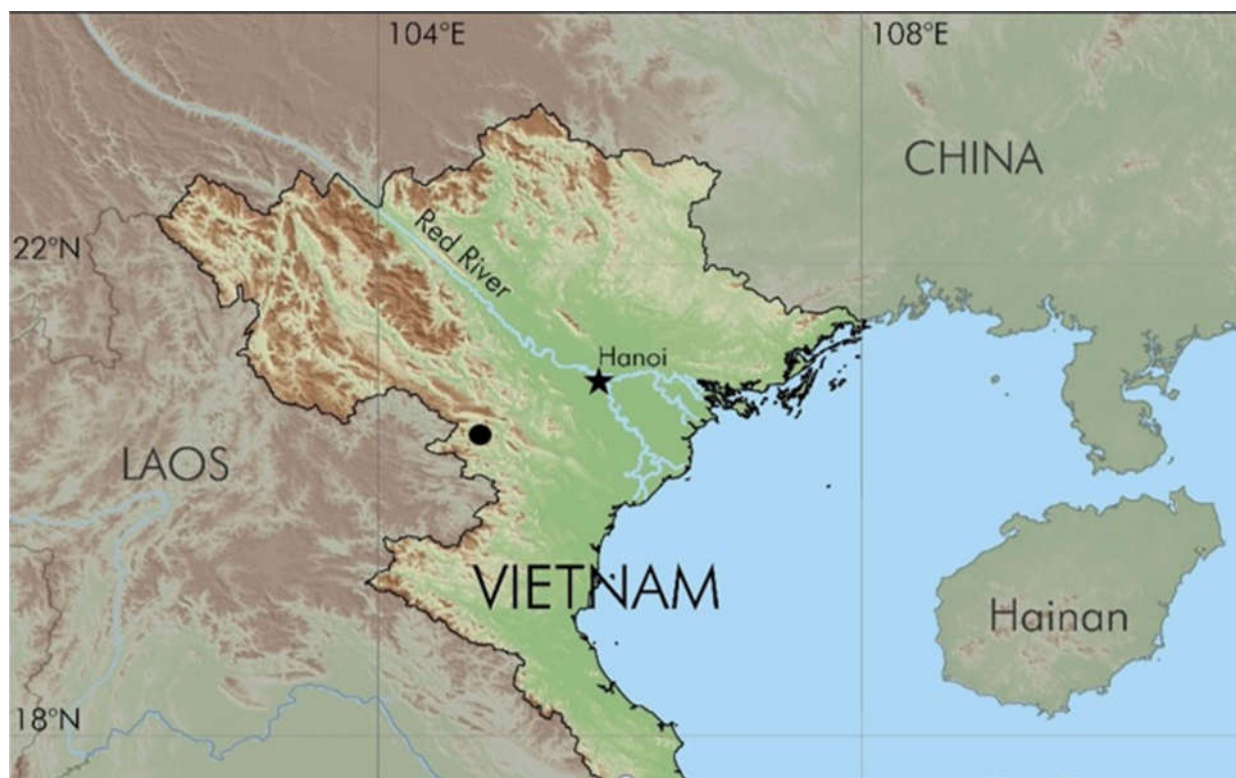


Figure 1. Map showing the location (black circle) of Nam Dong VGCA in Thanh Hoa province, Northern Vietnam

2. RESEARCH METHODOLOGY

Field surveys were carried out in Nam Dong VGCA by V.Q. Luu, O.V. Lo, N.V. Ha, T.V. Pham (hereafter V.Q. Luu et al.) in May, June 2017 and in April, May 2018. Ten survey transects were established with a length of 3.5 - 4 km each in the forest areas near Lo and Bau villages (Nam Dong commune), Na Ho village (Son Dien commune), Phe and Kham villages (Tam Thanh commune), Bin village (Son Lu commune), and Bang village (Trung Thuong commune). We applied opportunistic searching along temporary streams and ponds, open areas (trail, fields), caves, and forest wherever possible. Specimens were caught by hand between 9:00 - 23:00h. Specimens were euthanized in a closed vessel with a piece of cotton wool containing ethyl acetate (Simmons, 2002), fixed in 80% ethanol for four to six hours, then transferred to 70% ethanol for permanent storage. The specimens were subsequently deposited in the collection of the Vietnam National University of Forestry

(VNUF), Hanoi, Vietnam.

Morphological character

Taxonomic identifications followed Gray (1838), Smith (1923, 1935), Taylor (1963), Darevsky et al. (2004), Nguyen et al. (2010e), Nguyen et al. (2011). Abbreviations are as follows: a.s.l.: above sea level. Measurements were taken with a digital caliper to the nearest 0.1 mm. The following abbreviations are used: SVL: Snout-vent length, TaL: Tail length, AG: Axilla-groin distance (from posterior junction of forelimb and body wall to anterior junction of hind limb and body wall with the limbs held at right angles to the body), HL: Head length (from tip of snout to posterior margin of parietal), HW: Head width (at the widest point of temporal region), SL: Snout length (from anterior corner of eye to tip of snout), SFIL: Snout-forelimb length (from tip of snout to anterior junction of forelimb and body wall, with the limb held at right angles to the body), FIL: Forelimb length (from anterior junction of forelimb and body wall to the tip of fourth

finger, with the limb held at right angles to the body), HIL: Hind limb length (anterior junction of hindlimb and body wall to the tip of fourth toe, with the limb held at right angles to the body). Scallation: Paravertebral scales (number of scales in a line from posterior edge of parietals to dorsal point opposite posterior margin of the medial precloacals); ventral scale rows (number of scales from first gular to anterior margin of precloacals).

3. RESULTS

Eutropis macularius (Blyth, 1853)

Common name. Bronze Mabuya/ Thần lằn bóng đốm (Fig. 2a)

Specimen examined (n = 1). VNUF R.2017.28 (Field number: ND.17.28), adult female collected in Bau Village, Nam Dong commune (20°20.581'N, 104°52.064' E, elevation: 169 m a.s.l.) on May 26, 2018 by V. Q. Luu et al.

Description. Morphological characters of the specimen from Nam Dong VGCA agreed with descriptions of Smith (1935), Taylor (1963), and Das (2008). SVL 57.1 mm, TaL 141.7 mm; head longer than wide; rostral wider than high; supranasals present, separated from each other; prefrontals separated by frontal; parietals separated by interparietal; enlarged nuchal scales in one pair; loreals 2; supraciliaries 5; supraoculars 4, second widest and longest; primary temporals 3, secondary temporals 3, keeled; supralabials 7, the fifth below the eye; external ear openings with small projecting lobules anteriorly, tympanum deeply sunk; mental wider than long; infralabials 7; postmental undivided; midbody scales in 30 rows; dorsal scales with 5 obtuse keels, slightly larger than lateral scales; paravertebral scales 37; ventrals in 43 transverse rows, smooth; precloacals 2, enlarged; medial subcaudals not widened; limbs strong, pentadactyl; fingers and toes meeting when adpressed; subdigital lamellae smooth, 11 under fourth finger and 14 under fourth toe.

Coloration in life. Dorsal surface of head and body brown, with small black spots; white stripe present on upper lip, extending backwards to shoulder; a dorsolateral light line

extending from eye to midway on body; flank dark brown from behind the eye to hind limb, with white spots; neck and throat reddish in males and cream in females; venter and underside of tail cream.

Ecological notes. The specimen was found at 20:05 on a cliff, 1.8 m above the ground. The air temperature was 26.1°C and the relative humidity was 68%.

Distribution. In Vietnam, this is a widespread species, was previously known from Lang Son province in the North Southwards to Kien Giang province (Nguyen et al., 2019). This is the first time record of this species for Nam Dong VGCA as well as for Thanh Hoa province. Elsewhere: Pakistan, India, Bhutan, Sri Lanka, Bangladesh, Myanmar, Laos, Thailand, Cambodia, and Malaysia (Nguyen et al., 2009, Uetz et al., 2019).

Scincella reevesii (Gray, 1838)

Common name. Reeves's Smooth Skink/ Thần lằn cô ri vơ (Fig. 2b)

Specimens examined (n = 2). Two adult females, VNUF R.2017.66 (Field number: ND.17.66), tail lost, found in Lo Village (20°19.394' N, 105°55.013' E, elevation: 694 m a.s.l.) on May 28, 2017, and VNUF R.2017.128 (Field number: ND.17.128) found in Lo Village, (20°18.718' N, 104°54.421' E, elevation: 495 m a.s.l.), on June 02, 2017, both collected by V.Q. Luu et al.

Description. Morphological characters of the specimens in Nam Dong VGCA agreed with description of Gray (1838). Small-sized *Scincella*: SVL 44.4 - 49.9 mm, Tal 63.7 - 105.4 mm; head longer than wide; rostral wider than high; supranasals absent; prefrontals in contact medially; interparietals lozenge-shaped; parietals in contact posteriorly; nuchal scales absent; loreals 2; supraciliaries 7 - 9; supraoculars 4; primary temporals 2; secondary temporals 2, upper very large and overlapped by lower one; lower eyelid with transparent window, separated from supralabials by one row of small scales; supralabials 7, the fifth and sixth below the eye; external ear opening, ½ the size of eye length; tympanum deeply sunk; mental wider

than long; infralabials 5 - 6; postmental undivided; midbody in 30 - 32 rows; dorsal scales smooth; paravertebral scales 66; ventral scales smooth, in 66 or 67 rows; precloacals 4, center two enlarged, right one overlapped by left one; tail thick at base, medial subcaudals slightly widened; subdigital lamellae smooth, 9 - 10 under fourth finger and 15 - 16 under fourth toe.

Coloration in life. Dorsum and tail base bronze brown with irregular small black dots; upper lateral zone with dark stripe and interrupted by small white spots, from behind eye to tail base, paler on distal tail, black dots present indistinctly on lower lateral zone; chin, throat, venter and under tail cream, immaculate.

Ecological notes. The specimens were found at 21:05 on leaf and on ground near a stream. Surrounding habitat was karst forest. The air temperature was 25.1°C and the relative humidity was 67%.

Distribution. In Vietnam, the species was reported from Ha Giang, Cao Bang, Quang Ninh, Hai Phong, Hai Duong, Son La, Thanh Hoa, and Ha Tinh provinces (Nguyen et al. 2009). This is the first record of the species in Nam Dong VGCA. Elsewhere: India, China, Korea, Indochina, Thailand, Malaysia (Nguyen et al., 2009).

Sphenomorphus cryptotis Darevsky, Orlov & Ho, 2004

Common name. Depressed-eared Forest Skink/ Thần lằn phê-nô tai lõm (Fig. 2c)

Specimens examined (n = 3). One adult male VNUF R.2018.82 (Field number: ND.18.82) found in the Nam Dong (20°20.243' N, 10°53.316' E, elevation: 195 m a.s.l.) on May 09 2018; two adult females, VNUF R.2017.33 (Field number: ND.17.33), found in the Nam Dong (20°17.152' N, 104°53.506' E, elevation: 961 m a.s.l.), on May 26, 2017, and VNUF R.2018.37 (Field number: ND.18.37), collected in the Nam Dong (20°18.152' N, 104°54.506' E, elevation 551 m a.s.l) on April 21, 2018; all collected by V.Q.Luu et al.

Description. Morphological characters of the specimens in Nam Dong VGCA agreed

with the description of Darevsky et al. (2004). Moderate-sized *Sphenomorphus*, male: SVL 65.8 mm, TaL 165.7 mm (n = 1); females: SVL 50.9 - 68.4 mm, TaL 147.7 - 166 mm (n = 2); head longer than wide; rostral wider than high; supranasals absent; prefrontals in contact with each other; parietals in contact posteriorly; loreals 2; supraoculars 3, anterior one divided; primary temporals 1 or 2; secondary temporals 2, upper very large and overlapped by lower one; lower eyelid scaly; supralabials 7, the fifth and sixth below the eye, separated from the eye by one row of small scales; external ear openings superficial, without lobules; mental wider than long; infralabials 7; postmental undivided; midbody scales in 32 or 34 rows; paravertebral scales 73 - 80; ventrals in 72 - 78 transverse rows, smooth; precloacals 2, enlarged; medial subcaudals widened; limbs short, pentadactyl; fingers and toes meeting when adpressed; subdigital lamellae smooth, numbering 12 - 13 under fourth finger and 18 - 19 under fourth toe.

Coloration in life. Dorsum and tail base yellowish brown with a vertebral row of large black spots; numerous indistinct white spots on the labials; lateral zone with a distinct dark stripe from behind the eye to tail base, with white spots; neck and throat white, with black dots; venter and underside anterior part of tail white, posterior part of tail yellowish brown

Ecological notes. These specimens were found at night (from 19:00 to 20:15) on a tree near a stream, 0.6 - 1.5 m from the ground. The temperature and humidity ranged from 23.6 - 28.8°C and 57 - 76%.

Distribution. This species is distributed in the following provinces in Vietnam: Lao Cai, Quang Ninh, Bac Giang, and Thanh Hoa (Nguyen et al. 2011). The species is recorded for the first time from Nam Dong VGCA.

Remark. The specimens from Nam Dong VGCA differ from the description of Darevsky et al. (2004) in having 8 supraciliaries (*versus* 9 - 11).

Sphenomorphus indicus (Gray, 1853)

Common name. Indian Forest Skink/ Thần lằn Phê-nô ấn độ (Fig. 2d)

Specimens examined (n = 3). Adult male

VNUF R.2018.32 (Field number: ND.18.32), collected in the Nam Dong (20°18.268' N, 10°54.856' E, elevation: 513 m a.s.l.) on April 21, 2018; two adult females, VNUF R.2018.55 (Field number: ND.18.55), found in the Nam Dong (20°17.878' N, 10°52.807' E, elevation: 799 m a.s.l.) on April 23, 2018, and VNUF R.2017.90 (Field number: ND. 17.90), found in the Nam Dong (20°19.760' N, 104°55.013' E, elevation: 790 m a.s.l.) was found on May 31, 2017, all collected by V.Q.Luu et al.

Description. Morphological characters of the specimens in Nam Dong agreed with the description of Smith (1963), Taylor (1963) and Nguyen et al. (2001). Large-sized *Sphenomorphus*, male: SVL 72.5 mm, Tail 111.5 mm; females: SVL 55.4 - 69.01 mm, Tail 80.31 (tail tip lost) - 133.3 mm; head longer than wide, snout obtuse, round anteriorly; rostral wider than long, distinctly visible from above; supranasals absent; frontonasal wider than long, in contact with rostral, nasal, anterior loreals, prefrontal; interparietals lozenge-shaped with a small transparent spot in posterior angle; loreals 2; supraoculars 4, second longest and first widest; primary temporal 2 - 3; secondary temporals 2, upper very large and overlapped by lower one; lower eyelid scaly; supralabials 7, fourth to sixth below the eye, separated from the eye by one row of small scales; external ear opening oval or nearly round; tympanum deeply sunk; mental wider than long; infralabials 7; postmental undivided; midbody scales in 34 rows; dorsal scales smooth; paravertebrals 67 - 76; ventral scales smooth, in 69 - 84 rows; precloacals 4, center two enlarged, right one overlapped by left one; tail thick at base, medial subcaudals slightly widened; limbs short, pentadactyl; fingers and toes meeting when adpressed; subdigital lamellae smooth, numbering 11 under fourth finger for all specimens and 16 - 19 under fourth toe.

Coloration in life. Dorsum and tail base bronze brown with irregular small black dots; upper lateral zone with a dark stripe in 3 scales, from behind eye to tail base, paler on distal tail, light bars present distinctly on lower lateral zone in the female; labial sutures with

dark bars; chin, throat, venter and under tail cream, immaculate.

Ecological notes. The specimens were found during the day and at night (from 11:30 to 22:47) in crop field in a valley of limestone karst. The air temperature and humidity ranged from 24.9 - 30°C and 46 - 79%.

Distribution. This species has a wide range from Northern to Southern provinces of Vietnam (Nguyen et al. 2009). This is the first record of the species in Nam Dong VGCA. Elsewhere: *S.indicus* has been reported from India, Bhutan, China, Taiwan, Myanmar, Laos, Thailand, Cambodia, Malaysia and Indonesia (Nguyen et al., 2009).

Remarks. The specimen differs from the descriptions of Smith (1935), Taylor (1963), Nguyen et al. (2011) by having the first supraocular is widest (*versus* the second widest). The specimen VNUF R.2017.90 has the prefrontal separated from each other while they are in contact in VNUF R.2018.32 and VNUF R.2018.55.

Tropidophorus hainanus Smith, 1923

Common name. Hainan Water Skink/Thằn lằn tai hải nam (Fig. 2e)

Specimen examined (n = 1). A female VNUF R.2017.91 (Field name: ND.17.91) collected in the Nam Dong (20°19.760' N, 104°55.013' E, elevation: 665 m a.s.l) on May 30, 2017 by V.Q.Luu et al.

Description. Morphological characters of the specimen from Nam Dong VGCA matched the descriptions of Smith (1923) and Nguyen et al. (2010e): Moderated-sized *Tropidophorus*, adult female: SVL 57.0 mm, Tail 93.7 mm; head longer than wide, upper head scales strongly striated; snout obtuse; supranasals absent; frontonasal undivided; fontoparietals in contact with each other medially; interparietal with a small transparent spot; loreals 2; supraoculars 4, second longest and first widest; primary temporals 3; secondary temporals 4; supralabials 6, separated from lower eyelid by a row of granular scales, fourth to sixth below the eye; tympanum superficial, oval; infralabials 5; postmental undivided; midbody scales in 31 rows; dorsal scales smooth; paravertebrals 46

scales; lateral scales keeled, straight backward; dorsal and lateral scales on tail distinctly keeled; ventral scales smooth, in 44 transverse rows; 2 enlarged precloacals, right one overlap by left one; scales on forelimbs distinctly keeled; those on hind limbs keeled dorsally, smooth ventrally; subdigital lamellae 16 under fourth toe and 11 under fourth finger.

Coloration in life. Dorsal head brown, supralabials and loreal dark brown with irregular small white spots; dorsum brown with indistinct light crossbars, the first two in V-shaped form; flanks with white small spots from behind tympanum to groin; dorsal tail base with V-shaped form of light crossbars; venter white cream; belly with dark longitude streaks; infralabials and throats with some dark

marblings. This is the first record of the species for Nam Dong VGCA as well as for Thanh Hoa province.

Ecological notes. *T. hainanus* was found under a stone in the crop field in the buffer zone of the VGCA.

Distribution. In Vietnam, *T. hainanus* was recorded from Ha Giang southwards to Dak Lak and Dak Nong provinces (Nguyen et al. 2009). This is the first record of the species in Nam Dong VGCA as well as in Thanh Hoa province. Elsewhere: China (Zhao & Adler 1993).

Remarks. The specimen from Thanh Hoa differs from that in the descriptions of Smith (1923) by having 2 undivided loreals (*versus* 2 pairs of loreals).



Figure 1. a. *Eutropis macularius*; b. *Scincella reevesii*; c. *Sphenomorphus cryptotis*; d. *Sphenomorphus indicus*; e. *Tropidophorus hainanus*.

4. DISCUSSION

Our new findings of five skink species from Nam Dong VGCA increases the total species number of the family Scincidae to seven in this conservation area (after Dong et al., 2017), comprising two species of *Eutropis*, one species of *Scincella*, two species of *Sphenomorphus*, and two species of *Tropidophorus* (Table 1). Among them, *Tropidophorus hainanus* and *T. baviensis* are

uncommon in Nam Dong VGCA and only one specimen of each species has been known from this area so far. However, during the field surveys we could not confirm the presence of *T. baviensis*. Therefore, the record of *T. baviensis* from Nam Dong VGCA by Dong et al. (2017) needs to be verified by further studies due to morphological similarity between these species.

Table 1. Updated list of Scincidae recorded from Nam Dong Conservation Area

No	Scientific name	Common name	Dong et al., 2017	This study
1	<i>Eutropis macularius</i> (Blyth, 1853)	Bronze Mabuya		x
2	<i>E. multifasciatus</i> (Kuhl, 1820)	Common Sun Skink	x	x
3	<i>Scincella reevesii</i> (Gray, 1838)	Reeves's Smooth Skink		x
4	<i>Sphenomorphus cryptotis</i> Darevsky, Orlov & Ho, 2004	Depressed-eared Forest Skink		x
5	<i>S. indicus</i> (Gray, 1853)	Indian Forest Skink		x
7	<i>Tropidophorus baviensis</i> Bourret, 1939	Bavi water skink, Bavay's Keeled Skink	x	
6	<i>T. hainanus</i> Smith, 1923	Hainan Water Skink		x

5. CONCLUSION

Our five new records, comprising *Eutropis macularius*, *Scincella reevesii*, *Sphenomorphus cryptotis*, *S. indicus* and *Tropidophorus hainanus*, bring the total species number of the family Scincidae to six species in Nam Dong Valuable Gymnosperm Conservation Area.

The new recorded species in the family Scincidae are found almost in the lowland.

Acknowledgements

We are grateful to the directorate of the Nam Dong Valuable Gymnosperm Conservation Area for supporting our fieldwork and issuing relevant permits. We thank N.V. Ha, T.V. Pham for their assistance in the field. We thank E. Sterling (New York) and K. Koy (Berkeley) for providing the map. This research is supported by the National Foundation for Science and Technology Development (NAFOSTED, Grant No. 106.06–2017.18) to V.Q. Luu.

REFERENCES

1. Blyth, E. (1853). Notices and descriptions of various reptiles, new or little-known. Journal of the Asiatic Society of Bengal 22 (1853): 639–655.
2. Darevsky, I. S., Orlov, N.L., Ho, C.T. (2004). Two new lygosomine skinks of the genus *Sphenomorphus* Fitzinger, 1843 (Sauria, Scincidae) from Northern Vietnam. Russian Journal of Herpetology. 11 (2): 111–120.
3. Das, I., Palden, J. 2000. A herpetological collection from Bhutan, with new country records. Herpetological Review 31 (4): 256–258.
4. Dong, H.T., Tran, T.N., Mai, C.V., Thao, T.A. (2017). Characteristics of reptiles and amphibians in the Nam Dong endangered gymnosperm conservation Thanh Hoa Province. Vietnam Journal of agriculture and rural development: 99–106 (in Vietnamese).
5. Zhao E., Adler, K. (1993). Herpetology of China. 1–522.
6. Gray, J.E. (1838). Catalogue of the slender-tongued saurians, with descriptions of many new genera and species. Part 2. Annals and magazine of natural history 1 (1): 287–293.

7. Gray, J.E. (1853). Descriptions of some undescribed species of reptiles collected by Dr. Joseph Hooker in the Khassia Mountains, East Bengal, and Sikkim Himalaya. Annals and magazine of natural history 2 (12): 386–392.

8. Kuhl, H. (1820). Beiträge zur Zoologie und vergleichenden Anatomie. Hermannsche Buchhandlung, Frankfurt, 152 pp.

9. Nguyen, S.L., Nguyen, L.T., Nguyen, V.D.H., ORLOV, N.L., Murphy, R.W. (2018). A new skink of the genus *Sphenomorphus* Fitzinger, 1843 (Squamata: Scincidae) from Hon Ba Nature Reserve, southern Vietnam. Zootaxa 4438 (2): 313–326.

10. Nguyen, S.V., Ho, C.T., Nguyen, T.Q. (2009). Herpetofauna of Vietnam. Edition Chimaira, Frankfurt am Main 2009: 768pp.

11. Nguyen, T.Q., Ananjeva, N.B., Orlov, N.L., Rybaltovsky, E., Böhme, W. (2010b). A New Species of the Genus *Scincella* Mittlemann, 1950 (Squamata: Scincidae) from Vietnam. Russian Journal of Herpetology 17 (4): 269–274.

12. Nguyen, T.Q., Nguyen, K.V., Van Devender, R.W., Bonkowski, M., Ziegler, T. (2013). A new species of *Sphenomorphus* Fitzinger, 1843 (Squamata: Sauria: Scincidae) from Vietnam. Zootaxa 3734 (1): 056–062.

13. Nguyen, T.Q., Nguyen, S.V., Orlov, N., Hoang, T.N., Böhme, W., Ziegler, T. (2010e). A review of the genus *Tropidophorus* (Squamata: Scincidae) from Vietnam with new species records and additional data on natural history. Zoosystematics and Evolution 86 (1): 5–19.

14. Nguyen, T.Q., Nguyen T.T., Orlov, N.L. (2010d). New record of the Mountain ground skink *Scincella monticola* (Schmidt, 1925) (Squamata: Scincidae) from Cao Bang Province, Vietnam. Herpetology Notes 3: 201–203.

15. Nguyen, T.Q., Nguyen, T.T., Schmitz, A., Orlov, N.L., Ziegler, T. (2010c). A new species of the genus *Tropidophorus* Duméril & Bibron, 1839 (Squamata: Sauria: Scincidae) from Vietnam. Zootaxa 2439: 53–68.

16. Nguyen, T.Q.; Nguyen, V.S.; Böhme, W., Ziegler, T. (2010a). A new species of *Scincella* (Squamata: Scincidae) from Vietnam. Folia Zool. 59 (2): 115–121.

17. Nguyen, T.Q., Pham, A.V., Hoang, V.T., Nguyen, V.T., Ziegler, T. (2018). New records and an updated list of lizards from Son La Province, Vietnam. *Herpetology Notes* 11: 209–216.
18. Nguyen, T.Q., Schmitz, A., Nguyen, T.T., Orlov, N.L., Böhme, W., Ziegler, T. (2011). A review of the genus *Sphenomorphus* Fitzinger, 1843 (Squamata: Sauria: Scincidae) in Vietnam, with description of a new species from northern Vietnam and Hainan Island, southern China and the first record of *S. mimicus* Taylor, 1962 from Vietnam. *Journal of Herpetology*, 45 (2), 145–154.
19. Nguyen, T.Q., Tran, T.T., Nguyen, T.T., Böhme, W., Ziegler, T. (2012). First Record of *Sphenomorphus incognitus* (Thompson, 1912) (Squamata: Scincidae) from Vietnam with Some Notes on Natural History. *Asian Herpetological Research* 3 (2): 147–150.
20. Pham, V.A., Le, T.D., Nguyen, L.H.S., Ziegler, T., Nguyen, Q.T. (2015). New provincial records of skinks (Squamata: Scincidae) from northwestern Vietnam. *Biodiversity Data Journal*, 3: e4284, 1–21.
21. Simmons, J.E. (2002). *Herpetological collecting and collections management*. Revised edition. Society for the Study of Amphibians and Reptiles. *Herpetological Circular*, 31: 1–153.
22. Smith, M.A. (1923). A review of the lizards of the genus *Tropidophorus* on the Asiatic mainland. *Proceedings of the Zoological Society London* 1923: 775–781.
23. Smith, M.A. (1935). The fauna of British India, including Ceylon and Burma. Reptiles and Amphibia, Vol. II. Sauria. Taylor and Francis, London, 440 pp.
24. Taylor, E.H. (1962). New oriental reptiles. *The University of Kansas Science Bulletin* . 43: 209–263.
25. Taylor, E.H. (1963). The lizard of Thailand. *The University of Kansas Science Bulletin* 44: 687–1077.
26. The People's Committee of Thanh Hoa Province (2014). Decision on establish of Nam Dong Endangered Gymnosperm Conservation, Quan Hoa district, Thanh Hoa Province. No.:87/QD-UB.
27. Thompson, J.C. (1912). *Herpetological notices*, No. 3. On reptiles new to the island arcs of Asia. Privately published, San Francisco, pp. 1–4.
28. Uetz, P., Freed, P. & Hošek, J. (eds.) (2019). *The Reptile Database*, <http://www.reptile-database.org>, accessed (2 August 2019).

GHI NHẬN MỚI CÁC LOÀI THẦN LẦN BÓNG (SCINCIDAE) TẠI KHU BẢO TỒN CÁC LOÀI HẠT TRẦN QUÝ, HIẾM NAM ĐỘNG, TỈNH THANH HÓA

Lương Khánh Linh¹, Lưu Quang Vinh¹, Nguyễn Quảng Trường²

¹*Trường Đại học Lâm nghiệp*

²*Viện Hàn lâm Khoa học và Công nghệ Việt Nam*

TÓM TẮT

Khu bảo tồn hạt trần quý, hiếm Nam Động được thành lập vào năm 2014 với diện tích vùng lõi là 646,95 ha và vùng đệm là 3.315,53 ha. Nằm trên địa phận của hai huyện Quan Sơn và Quan Hóa, tỉnh Thanh Hóa, hệ sinh thái của khu bảo tồn rất đa dạng và phong phú, với địa hình gồ ghề và hệ thống mạng lưới sông ngòi dày đặc. Dạng địa hình đặc trưng là địa hình núi đá vôi với độ cao dao động từ 100 đến 900 m so với mực nước biển. Tuy nhiên, những nghiên cứu về loài thần lần bóng tại khu vực này còn hạn chế, mới chỉ có hai loài được phát hiện tại đây. Nghiên cứu mới nhất của chúng tôi đã thu được 11 mẫu vật thuộc sáu loài của họ Thần lần bóng. Nghiên cứu này đã mô tả 5 loài là ghi nhận mới cho Khu bảo tồn hạt trần quý hiếm Nam Động: Thần lần bóng đốm (*Eutropis macularius*), Thần lần cổ ri vơ (*Scincella reevesii*), Thần lần phê-nô tai lõm (*Sphenomorphus cryptotis*), Thần lần phê-nô ấn độ (*Sphenomorphus indicus*), Thần lần tai hải nam (*Tropidophorus hainanus*). Hơn nữa, thông tin về sinh thái và cập nhật danh sách các loài thần lần được ghi nhận tại khu vực nghiên cứu cũng được cung cấp. Các loài ghi nhận mới được phát hiện chủ yếu tại các khu vực có độ cao khá thấp (dưới 500 m và từ 500 - 600 m so với mực nước biển). Các nghiên cứu tiếp theo là cần thiết để xác nhận sự có mặt của loài *T. baviensis* do sự tương đồng về hình thái giữa loài *T. hainanus* và *T. baviensis*.

Từ khóa: Ghi nhận mới, hình thái, thần lần bóng, Khu Bảo tồn các loài hạt trần quý hiếm Nam Động, phân bố.

Received : 12/8/2019

Revised : 24/9/2019

Accepted : 01/10/2019