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Research article

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Two new skinks of the genus *Scincella* Mittleman, 1950 (Squamata: Scincidae) from southern Vietnam

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[3]urn:lsid:zoobank.org:author:6B632A2A-C070-42DB-9489-A308122C7397
[4]urn:lsid:zoobank.org:author:F3A0BAC6-BDCF-453A-AC7B-2C6F359928B4
[5]urn:lsid:zoobank.org:author:EFCB0DE8-E729-467B-88AF-F5D6824C3C8F
[6]urn:lsid:zoobank.org:author:0D3A3FCE-705A-4FB2-91D3-977B0888B305
[7]urn:lsid:zoobank.org:author:1AA0F6F4-823A-462E-8370-A040A9DE78D5
[8]urn:lsid:zoobank.org:author:63490DB9-C196-4A0D-8574-BE838DA01DA2

Abstract. Two new skinks of the genus *Scincella* Mittleman, 1950, from Khanh Hoa and Binh Thuan provinces, southern Vietnam, are described based on differences in morphology and nucleotide sequences. *Scincella honbaensis* sp. nov. is diagnosed by the following morphological characters: 28

smooth midbody scale rows; dorsal scales enlarged, six rows on back; 64 paravertebrals; 74 ventral scale rows; prefrontals in broad contact with one another; one anterior and two posterior enlarged temporals; three pairs of nuchals; 21 smooth lamellae beneath toe IV; dorsum with two longitudinal rows of black dots. *Scincella auranticaudata* sp. nov. is diagnosed by the following morphological characters: 34–36 smooth midbody scale rows; dorsal scales not enlarged, ½+8+½ rows on back; 67–74 paravertebrals; 65–69 ventral scale rows; prefrontals separated from or just in contact with one another; two anterior and two posterior enlarged temporals; one pairs of nuchals; 17–20 smooth lamellae beneath toe IV; hemipenis smooth, forked near the base with two long symmetrical lobes; dorsum with a vertebral line formed by large black spots. *Scincella honbaensis* and *Scincella auranticaudata* differ from their congeners by an uncorrected *p*-distance in *COI* sequences of at least 16.7% and 9.4%, respectively.

Keywords. Hon Ba Mountain, ground skink, mitochondrial DNA, Ta Kou Mountain, *Scincella honbaensis*, *Scincella auranticaudata*.

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Introduction

Scincella Mittleman, 1950 is a large genus of the family Scincidae with 40 species ranging widely in Asia and in North and Middle America (Uetz *et al.* 2024; Pham *et al.* 2024). The genus includes small skinks with attenuate habitus, terrestrial lifestyle, postorbital bone present, a transparent disc present in a movable lower eyelid, and the lower secondary temporal overlapping the upper one (Greer 1974; Greer & Shea 2003). More than one third of the species occur in Vietnam. Smith (1935) reported two species of *Scincella* from Vietnam, including *S. reevesii* (Gray, 1838) on the Langbian Plateau and *S. rupicola* (M.A. Smith, 1916) on the foothills of the Langbian Plateau. In 1943, Bourret (2009) recorded three species from Vietnam, including the two above species, *S. doriae* (Boulenger, 1887) from Sa Pa in Lao Cai Province, and another species, *S. ochracea* (Bourret, 1937), from either 'Indochine française' or Yunnan, southern China. Dao (1979) listed three species from Vietnam, including *S. ochracea*, *S. reevesii* (under the name *Leiolopisma eunice*), and *S. rupicola*, without specific localities. Darevsky & Nguyen (1983) described an additional species from Gia Lai Province, *Scincella rufocaudata* (Darevsky & Nguyen, 1983) (under name *Sphenomorphus rufocaudatus*), increasing the number of known species from Vietnam to five. Greer & Shea (2003) placed *Paralipinia rara* (Darevsky & Orlov, 1997), which was described from Gia Lai Province (Darevsky & Orlov 1997), in the genus *Scincella* based on its lower secondary temporal scale overlapping the upper one. However, Nguyen *et al.* (2009) listed only four species of *Scincella* in the checklist of amphibians and reptiles of Vietnam, including *S. doriae*, *S. melanosticta* Boulenger, 1887, *S. reevesii*, and *S. rufocaudata* (under the name *Sphenomorphus rufocaudatus*); *S. ochracea* and *S. rara* were not included in the checklist and *S. rupicola* was considered as a synonym of *S. melanosticta* Boulenger, 1887. Subsequently, Nguyen *et al.* (2010c) recorded *S. monticola* (K.P. Schmidt, 1925) from Cao Bang and Lang Son provinces. Nguyen *et al.* (2010b) described an additional species, *S. apraefrontalis* Nguyen, Nguyen, Böhme & Ziegler, 2010, from Lang Son Province and listed the following seven species of *Scincella* to the fauna of Vietnam: *S. apraefrontalis*, *S. doriae*, *S. monticola*, *S. ochracea*, *S. reevesii*, *S. rufocaudata*, and *S. rupicola*. Nguyen *et al.* (2010a) described another species, *S. darevskii* Nguyen, Ananjeva, Orlov, Rybaltovsky & Böhme, 2010, from Dien Bien Province. Nguyen *et al.* (2011) transferred *Sphenomorphus devorator* Darevsky, Orlov & Cuc, 2004, which was described from Quang Ninh Province (Darevsky *et al.* 2004), to genus *Scincella*. Nguyen *et al.* (2019, 2020) described two species, *S. badenensis* Nguyen, Nguyen, Nguyen & Murphy, 2019 and *S. baraensis* Nguyen, Nguyen, Nguyen & Murphy, 2020, from Tay Ninh and Binh Phuoc provinces, respectively. Nguyen & Nguyen (2019) recorded *S. nigrofasciata* Neang,

Chan & Poyarkov, 2018, from Ba Ria – Vung Tau Province. Recently, Okabe *et al.* (2024) and Pham *et al.* (2024, 2025) described *S. fansipanensis* Okabe, Motokawa, Koizumi, Nguyen, Nguyen & Bui, 2024, *S. ouboteri* Pham, Pham, Le, Ngoc, Ziegler & Nguyen, 2024, and *S. truongi* Pham, Ziegler, Pham, Hoang, Ngo & Le, 2025 from Lao cai, Hoa Binh, and Son La provinces. Currently, 17 species of *Scincella* are recorded from Vietnam, including *S. apraefrontalis*, *S. badenensis*, *S. baraensis*, *S. darevskii*, *S. devorator*, *S. doriae*, *S. fansipanensis*, *S. melanosticta*, *S. monticola*, *S. nigrofasciata*, *S. ochracea*, *S. ouboteri*, *S. rara*, *S. reevesii*, *S. rufocaudata*, *S. rupicola*, and *S. truongi* (Nguyen & Nguyen 2019; Okabe *et al.* 2024; Pham *et al.* 2024, 2025; Uetz *et al.* 2024), with eight species described from the country (Fig. 1). Herein, we describe two more species of *Scincella* from Khanh Hoa and Binh Thuan provinces, southern Vietnam, based on differentiations in morphological and molecular data.

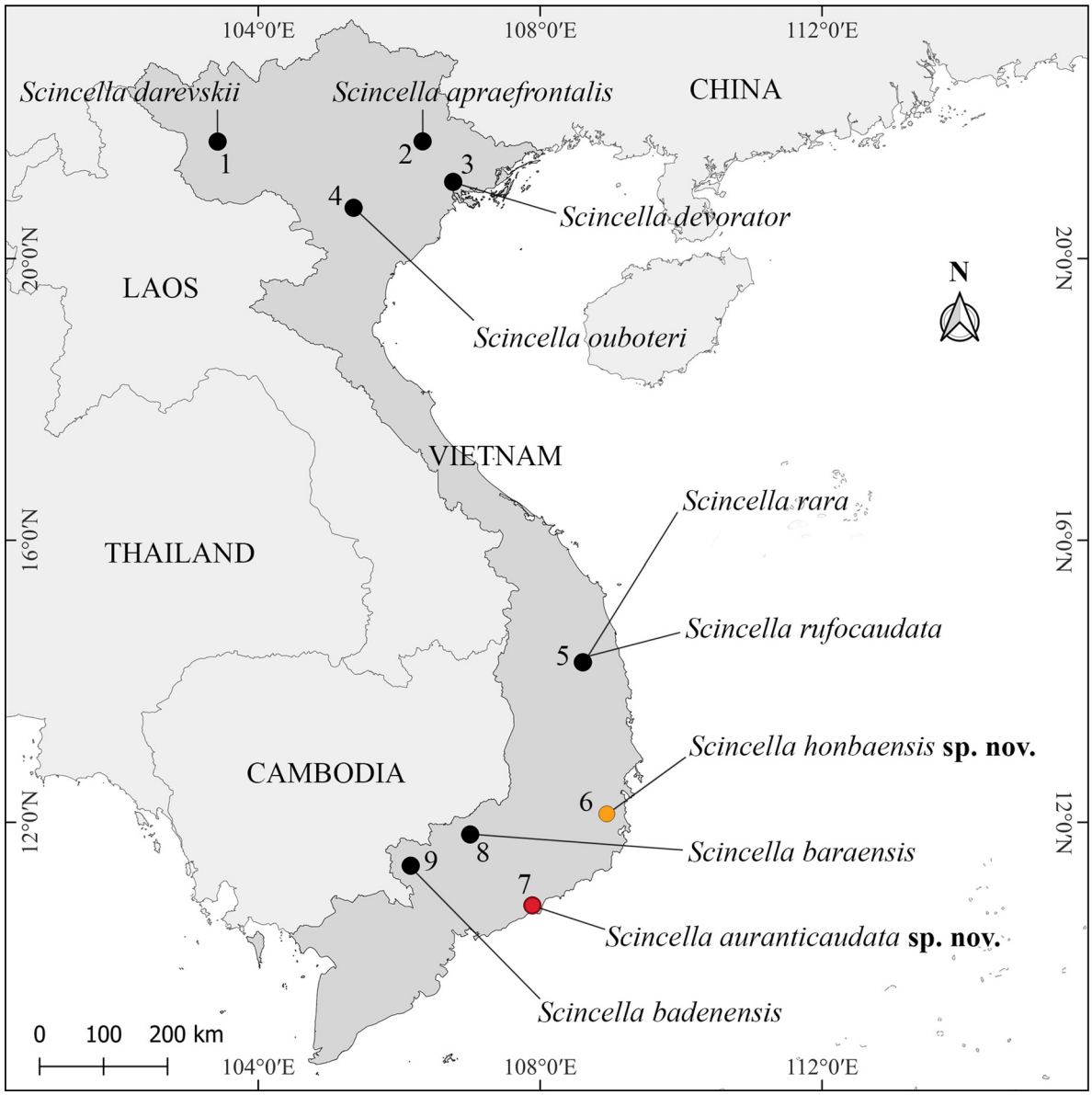

Fig. 1. Map showing type localities of the species of *Scincella* Mittleman, 1950 described from Vietnam. 1 = Tuan Giao, Dien Bien Prov.; 2 = Huu Lung, Lang Son Prov.; 3 = Uong Bi, Quang Ninh Prov.; 4 = Ngoc Son-Ngo Luong, Hoa Binh Prov.; 5 = Kbang, Gia Lai Prov.; 6 = Hon Ba, Khanh Hoa Prov.; 7 = Ta Kou, Binh Thuan Prov.; 8 = Ba Ra, Binh Phuoc Prov.; 9 = Ba Den, Tay Ninh Prov., Vietnam.

Material and methods

Institutional abbreviations

CBC = Centre for Biodiversity Conservation, Phnom Penh, Cambodia
CIB = Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, Sichuan, China
DL = Private catalogue of Li Ding, China
IEBR = Institute of Ecology and Biological Resources, Ha Noi, Vietnam
ITBCZ = Institute of Tropical Biology Collection of Zoology, Ho Chi Minh City, Vietnam
TBU = Tay Bac University, Son La, Vietnam
USNM = National Museum of Natural History, Smithsonian Institution, Washington, USA
ZMMU = Zoological Museum of Moscow, Moscow, Russia

Morphological abbreviations

AxGnL = axilla–groin length
HL = head length
HW = head width
SnL = snout length
SnForeL = snout to forelimb length
SVL = snout–vent length
TaL = tail length
TD = tympanum diameter

Analysis and procedures for preparation of material

All specimens were collected by hand at night. The skinks were photographed, fixed in 90% ethanol, and subsequently transferred to 70% ethanol for storage in the Institute of Tropical Biology Collection of Zoology (ITBCZ), Ho Chi Minh City, Vietnam. GPS coordinates (WGS 84 datum), elevation, and habitat at the collecting sites were recorded.

Morphological analysis

Scales were observed, measured, and counted under a zoom stereo microscope at 7X–45X (Akeiyo, Hong Kong). Measurements were also taken on the right side with a digital caliper (Exploit 150 mm, China) to the nearest 0.1 mm. The following morphological characters modified from Smith (1935), Taylor (1963), Grismer & Quah (2015), and Nguyen *et al.* (2020) were recorded: snout–vent length (SVL) measured from the tip of snout to the vent; tail length (TaL) measured from the vent to the tip of tail; axilla–groin length (AxGnL) measured from the posterior margin of the forelimb insertion to the anterior margin of the hind limb insertion; head length (HL) measured from the anterior margin of the ear opening to the tip of the snout; head width (HW) measured at the widest portion of the temporal region; snout length (SnL) measured from the anterior margin of the eye to the tip of the snout; snout to forelimb length (SnForeL) measured from the anterior margin of the forelimb insertion to the tip of the snout; tympanum diameter (TD) as the maximum diameter of ear-opening; number of supralabials; number of infralabials; number of loreals; number of supraoculars; number of supraciliaries; number of enlarged temporals; number of enlarged nuchal scales (pair); midbody scale rows counted as the number of longitudinal scale rows encircling the body at a point midway between the limb insertions; dorsal scale rows counted as the number of longitudinal scale rows on dorsum between dorsolateral stripes; paravertebral scale rows counted as the number of scales in a line from parietal to a point on the dorsum above the vent; ventral scale rows counted as a row of scales between the postmentals and the cloacal plate; presence of enlarged dorsal scales (distinctly larger than lateral scales), presence of enlarged cloacal plates (L/R – the left plate overlapping the right one, R/L – the right plate overlapping the left one); subcaudal scales counted as a row of subcaudals between the vent and the tip of an original

tail; and lamellae beneath the fourth finger and fourth toe counted from the first scale whose posterior margin extends into the body of the foot. Nomenclature for head shields followed Smith (1935), Ouboter (1986), and Grismer *et al.* (2019).

For comparison, morphological characters of known Asian *Scincella* were obtained from the literature (Boulenger 1887; Günther 1896; Smith 1916, 1935; Stejneger 1925; Barbour 1927; Schmidt 1927; Taylor 1963; Zhao & Huang 1982; Ouboter 1986; Wang & Zhao 1986; Darevsky & Nguyen 1983; Inger *et al.* 1990; Darevsky & Orlov 1997; Chen *et al.* 2001; Darevsky *et al.* 2004; Bourret 2009; Nguyen *et al.* 2010, 2010a, 2010b, 2011, 2019, 2020; Pham *et al.* 2015, 2024; Neang *et al.* 2018; Jia *et al.* 2023) and specimens examined in the Institute of Tropical Biology Collection of Zoology (ITBCZ) (Appendix 1).

DNA analysis

Tissue samples from the liver of five individuals of two taxa were taken, preserved in absolute ethanol, and kept at -20°C. A fragment of the mitochondrial gene encoding cytochrome *c* oxidase subunit I (*COI*) was sequenced in both directions. DNA extraction, PCR, and sequencing strictly followed Nguyen *et al.* (2019). Primers used for PCR and sequencing were LCO (5'-GGT CAA CAA ATC ATA AAG ATA TTG G-3') and HCO (5'-TAA ACT TCA GGG TGA CCA AAA AAT CA-3') (Formal *et al.* 1994). Initial nucleotide sequences were manually verified using SeqMan (DNASTAR Lasergene 7, Madison, WI) and then combined with published sequences of species of *Scincella* in Indochina and China selected from the literature (Neang *et al.* 2018; Nguyen *et al.* 2019, 2020; Jie *et al.* 2023; Pham *et al.* 2024). The sequences were then aligned using ClustalW (Thompson *et al.* 1994) integrated in MEGA5 (Tamura *et al.* 2011) with default parameters. Uncorrected inter- and intraspecific *p*-distances were calculated using MEGA5. The data set used for molecular analyses consisted of 36 ingroup samples (Table 1) and *Spenomorphus maculatus* (Blyth, 1853) was used as outgroup taxon (Nguyen *et al.* 2020).

Phylogenetic trees from *COI* sequences were constructed by using Bayesian inference (BI) and maximum likelihood (ML). The best-fit evolutionary model used for BI and ML analyses was GTR+I+G as selected by MrModeltest ver. 2.3 (Nylander 2004) under the Akaike information criterion. BI analysis was performed in MrBayes ver. 3.1.2 (Ronquist & Huelsenbeck 2003). Bayesian posterior probabilities (BPP) were estimated using a Markov chain Monte Carlo sampling approach with 1 500 000 generations, saving one tree every 100 generations. The runs were stopped when the average standard deviations reached 0.0091. The initial 25% of the samples were discarded as burn-in. The remaining trees were combined, and a 50% majority consensus tree was generated. ML analysis was implemented in the IQ-TREE webserver (Nguyen *et al.* 2015; Trifinopoulos *et al.* 2016) using the substitution model selected above. One-thousand bootstrap pseudoreplicates via the ultrafast bootstrap (UFB; Hoang *et al.* 2018) approximation algorithm was employed. We considered nodes having BPP of ≥95% and UFB of ≥95 as being strongly supported (Hillis & Bull 1993; Minh *et al.* 2013). The resulting trees were visualized in FigTree ver. 1.4.3 (http://tree.bio.ed.ac.uk/software/figtree) and rooted based on the above outgroup.

Results

Sequence variation and genetic distance

The successfully sequenced *COI* fragment of our four specimens from Ta Kou, Binh Thuan Province and one specimen from Hon Ba, Khanh Hoa Province had 648 bp, which were deposited in GenBank with accession numbers PV022547–51 (Table 1). The final matrix of *COI* consisted of 37 sequences of 16 taxa with 249 potentially parsimony-informative characters. Internal gaps, missing data, and stop codons were absent in the data set. Detailed information for each individual is given in Table 1.

The uncorrected intraspecific *p*-distances in *COI* between species of *Scincella* ranged from 8.8% (between *S. ouboteri* Pham, Pham, Le, Ngoc, Ziegler & Nguyen, 2024 and *S. ochracea*) to 21.1% (between

Table 1 (continued on next page)**.** List of samples used for molecular analyses in this study. Average uncorrected *p*-distance (%) in *COI* between and within species of *Scincella* Mittleman, 1950 used in this study. Mean uncorrected interspecific *p*-distances are given on the diagonal.

Taxon	Location	Voucher	GenBank acc. no.	Ref.
Scincella honbaensis sp. nov.	Hon Ba, Khanh Hoa, Vietnam	ITBCZ 4679	PV022547	This study
Scincella auranticaudata sp. nov.	Ta Kou, Binh Thuan, Vietnam	ITBCZ 6527	PV022548	This study
Scincella auranticaudata sp. nov.	Ta Kou, Binh Thuan, Vietnam	ITBCZ 7620	PV022549	This study
Scincella auranticaudata sp. nov.	Ta Kou, Binh Thuan, Vietnam	ITBCZ 7623	PV022550	This study
Scincella auranticaudata sp. nov.	Ta Kou, Binh Thuan, Vietnam	ITBCZ 7700	PV022551	This study
S. badenensis Nguyen, Nguyen, Nguyen & Murphy, 2019	Ba Den Mountain, Tay Ninh Prov. Vietnam	ITBCZ 5966	MK990602	Nguyen *et al.* (2019)
S. badenensis	Ba Den Mountain, Tay Ninh Prov. Vietnam	ITBCZ 5993	MK990603	Nguyen *et al.* (2019)
S. badenensis	Ba Den Mountain, Tay Ninh Prov. Vietnam	ITBCZ 6262	MK990604	Nguyen *et al.* (2019)
S. baraensis Nguyen, Nguyen, Nguyen & Murphy, 2020	Ba Ra Mountain, Binh Phuoc Prov., Vietnam	ITBCZ 6534	MT742256	Nguyen *et al.* (2020)
S. baraensis	Ba Ra Mountain, Binh Phuoc Prov., Vietnam	ITBCZ 6535	MT742257	Nguyen *et al.* (2020)
S. baraensis	Ba Ra Mountain, Binh Phuoc Prov., Vietnam	ITBCZ 6536	MT742258	Nguyen *et al.* (2020)
S. doriae (Boulenger, 1887)	Bidoup – Nui Ba, Lam Dong, Vietnam	ZMMU R-13268-00412	MH119616	Neang *et al.* (2018)
S. doriae	Bidoup – Nui Ba, Lam Dong, Vietnam	ZMMU R-13268-00505	MH119615	Neang *et al.* (2018)
S. doriae	Bidoup – Nui Ba, Lam Dong, Vietnam	ZMMU R-13268-01062	MH119617	Neang *et al.* (2018)
S. melanosticta (Boulenger, 1887)	Veal Veng, Pursat, Cambodia	CBC01808	MH119619	Neang *et al.* (2018)
S. melanosticta	Kon Chu Rang, Gia Lai, Vietnam	ZMMU NAP-05519	MH119621	Neang *et al.* (2018)
S. melanosticta	Kon Chu Rang, Gia Lai, Vietnam	ZMMU NAP-06376	MH119622	Neang *et al.* (2018)
S. modesta (Günther, 1864)	Yichang, Hubei, China	CIB 119023	OP942213	Jie *et al.* (2023)
S. modesta	Yichang, Hubei, China	CIB 119024	OP942214	Jie *et al.* (2023)
S. nigrofasciata Neang, Chan & Poyarkov, 2018	Keo Seima, Mondulkiri Prov., Cambodia	CBC02545	MH119613	Neang *et al.* (2018)
S. nigrofasciata	Keo Seima, Mondulkiri, Cambodia	CBC02546	MH119614	Neang *et al.* (2018)
S. nigrofasciata	Dinh Mountain, Ba Ria - Vung Tau, Vietnam	ITBCZ 6344	MK990605	Nguyen *et al.* (2020)
S. ouboteri Pham, Pham, Le, Ngoc, Ziegler & Nguyen, 2024	Lac Son, Hoa Binh, Vietnam	IEBR R.5042	OP927026	Pham *et al.* (2024)
S. ouboteri	Lac Son, Hoa Binh, Vietnam	IEBR R.5043	OP927027	Pham *et al.* (2024)
S. ochracea (Bourret, 1937)	Son La, Vietnam	TBUPAT.254	PO927028	Pham *et al.* (2024)
S. potanini (Günther, 1896)	Kangding, Sichuan, China	DL-KD202109071	OP942210	Jie *et al.* (2023)
S. potanini	Kangding, Sichuan, China	DL-KD202109072	OP942209	Jie *et al.* (2023)
S. reevesii (Gray, 1838)	Zhaoqing, Guangdong, China	–	NC054206	Jie *et al.* (2023)
S. reevesii	Zhaoqing, Guangdong, China	–	MN832615	Jie *et al.* (2023)
S. cf. *rupicola* (M.A. Smith, 1916)	Kuleaen, Preah Vihear, Cambodia	Unvoucher	MH119625	Neang *et al.* (2018)

Table 1 (continued).

Taxon	Location	Voucher	GenBank acc. no.	Ref.
S. cf. *rupicola*	Kuleaen, Preah Vihear, Cambodia	Unvoucher	MH119626	Neang *et al.* (2018)
S. cf. *rupicola*	Phnom Kulen, Krong Siem Reap, Cambodia	Unvoucher	MH119627	Neang *et al.* (2018)
S. cf. *rupicola*	Phnom Kulen, Krong Siem Reap, Cambodia	Unvoucher	MH119628	Neang *et al.* (2018)
S. rufocaudata (Darevsky & Nguyen, 1983)	Kon Ka Kinh, Gia Lai, Vietnam	ZMMU NAP-06163	MH119611	Neang *et al.* (2018)
S. rufocaudata	Kon Ka Kinh, Gia Lai, Vietnam	ZMMU NAP-06164	MH119612	Neang *et al.* (2018)
S. wangyuezhaoi Jie, Gao, Huang, Ren, Jiang, Li & Li, 2023	Wenchuan, Sichuan, China	CIB 87246	OQ402205	Jie *et al.* (2023)
Sphenomorphus maculatus (Blyth, 1853)	Tanintharyi, Myanmar	USNM: 587038	MG935701	Nguyen *et al.* (2020)

S. nigrofasciata and *S. ochracea*), averaging 19.0±3.0%. The uncorrected *p*-distances between our skink in Hon Ba and its congeners varied from 16.7% (vs *S. doriae*) to 20.9% (vs *S. reevesii*), averaging 19.2±1.2%. Our skinks in Ta Kou differed from their congeners by an average uncorrected *p*-distance of 17.4±3.7%, ranging from 9.4% (vs *S. badenensis*) to 20.8% (vs *S. reevesii*). In contrast, sequences of four samples from Ta Kou were nearly identical (*p*-distance 0.3%). Interspecific *p*-distances ranged from 0.0% (in *S. badenensis* and *S. reevesii*) to 3.2% (in *S. rufocaudata*). The uncorrected inter- and intraspecific *p*-distances in *Scincella* were shown in Table 2.

Phylogenetic trees

The BI and ML trees reconstructed from *COI* sequences were similar to each other in topology and differed only in their lack of resolution of poorly supported nodes, leaving much of the backbone of the tree with no support. Only the 50% majority rule consensus tree from the BI analysis was shown in Fig. 2, but with branch support values from both BI and ML. The trees strongly resolved all examined species as monophyletic. Overall, two main clades were recovered. The first clade included species from northern Vietnam and China (*S. ochracea*, *S. ouboteri*, and *S. reevesii*), with high supports from both BI and ML analyses (BPP = 1; UFB = 99). The second clade, supported by BI analysis (BPP = 0.96) but no ML support, consisted of the remaining species from Indochina and China. The sample from Hon Ba formed an independent branch in the second clade as the sister species of the remainder of the clade. Similarly, samples from Ta Kou clustered as monophyletic (BPP = 0.99; UFB = 95) in the same subclade with *S. badenensis*, *S. nigrofasciata*, *S. rufocaaudata*, and *S.* cf. *rupicola* (BPP = 0.99). Because each taxon from Hon Ba and Ta Kou formed an independent evolutionary lineage on the phylogenetic tree (Fig. 2) and differed morphologically and genetically from other congeners, we describe them as new species. That said, we recognize that our tree is a matrilineal genealogy that has overall poor nodal support and it may conflict with phylogenies based on genomic data.

Table 2. Average uncorrected p-distance (%) in COI between and within species of *Scincella* Mittleman, 1950 used in this study. Mean uncorrected interspecific p-distances are given on the diagonal.

Species	1	2	3	4	5	6	7	8	9	10	11	12	13
1. *Scincella honbaensis* sp. nov.	–												
2. *Scincella auranticaudata* sp. nov.	19.6	**0.3**											
3. *S. badenensis*	19.0	9.4	**0.0**										
4. *S. baraensis*	19.4	19.1	18.8	**0.1**									
5. *S. doriae*	16.7	18.5	19.0	16.6	**0.7**								
6. *S. melanosticta*	19.4	18.5	19.2	18.9	18.9	**0.6**							
7. *S. modesta*	18.6	19.5	19.5	21.6	17.2	21.5	**0.2**						
8. *S. nigrofasciata*	17.8	12.4	10.7	19.0	17.6	20.0	18.2	**2.3**					
9. *S. ochracea*	20.9	20.4	20.7	21.0	23.1	21.4	22.4	20.5	–				
10. *S. ouboteri*	19.0	19.2	20.0	20.2	21.6	21.9	22.1	19.9	8.8	**0.3**			
11. *S. potanini*	18.4	19.1	18.8	19.0	17.0	19.0	16.3	17.5	21.4	20.7	**0.3**		
12.. *S. reevesii*	20.9	20.8	21.0	20.5	22.6	22.5	21.6	21.2	09.6	10.4	20.0	**0.0**	
13. *S.* cf. *rupicola*	20.8	18.0	17.6	21.0	20.3	22.1	22.1	17.1	22.1	21.5	18.8	20.7	**2.9**
14. *S. rufocaudata*	19.0	10.8	12.4	20.4	19.6	19.7	19.4	14.0	20.8	20.0	17.1	21.3	19.3
15. *S. wangyuezhaoi*	19.4	18.0	18.0	20.6	19.2	20.4	17.6	17.3	22.0	21.8	16.6	22.4	18.4

Taxonomy

Class Reptilia Laurenti, 1768
Order Squamata Oppel, 1811
Suboder Sauria Macartney, 1803
Family Scincidae Gray, 1825
Genus *Scincella* Mittleman, 1950

Scincella honbaensis sp. nov.
urn:lsid:zoobank.org:act:F5B84AC9-6161-4300-9136-64C13A3FC0CC
Figs 1–3; Table 1–3

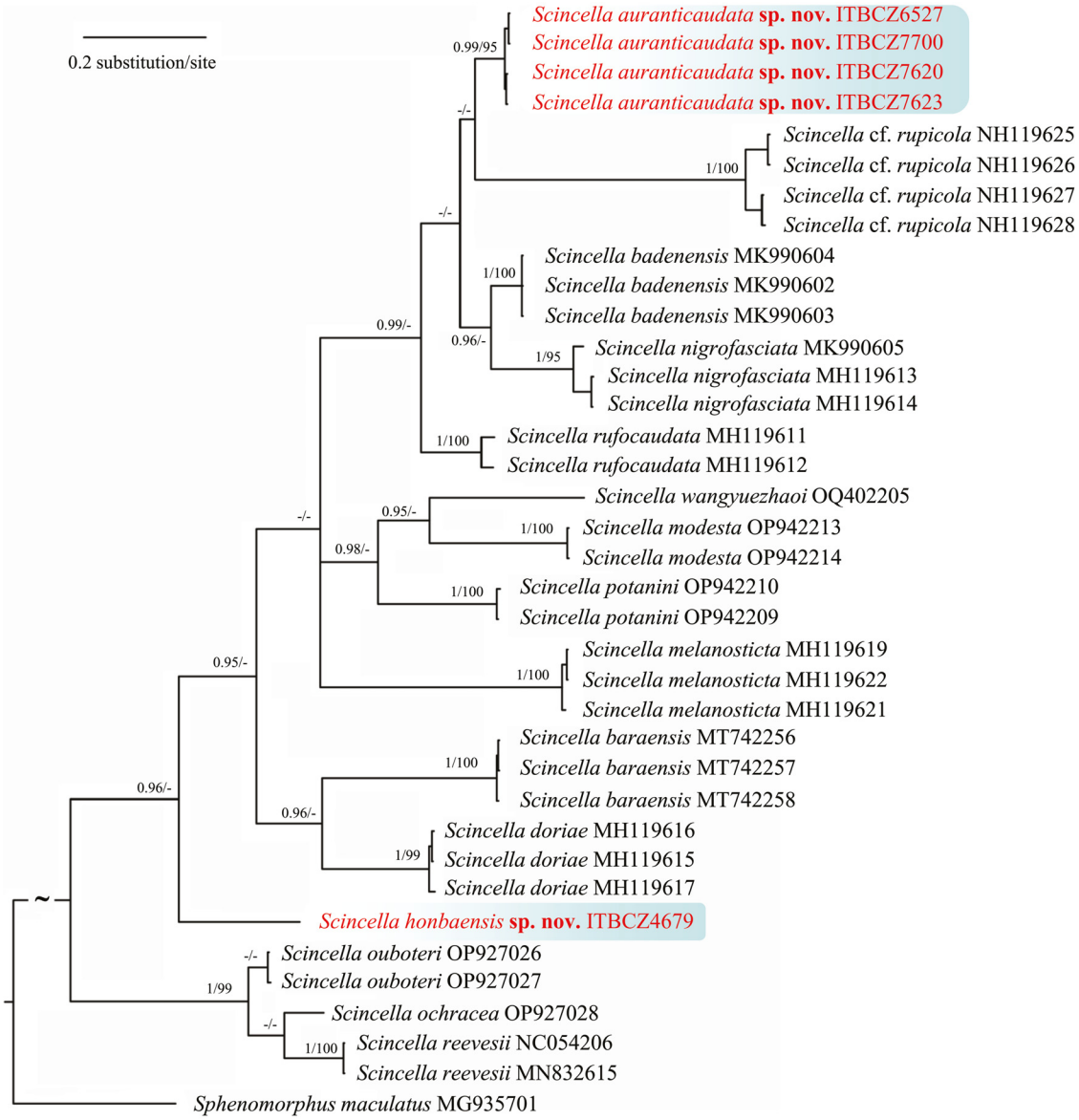

Fig. 2. The Bayesian inference (BI) tree for the species of *Scincella* Mittleman, 1950 used in this study with branch support values from BI and maximum likelihood analyses, respectively.

Diagnosis

Scincella honbaensis sp. nov. is distinguished from all of its congeners by a combination of the following morphological characters: relatively small size in adults (SVL 47.4 mm); 28 smooth midbody scale rows; dorsal scales enlarged, 6 rows on back; 64 paravertebrals; 74 ventral scale rows; 4 supraoculars; prefrontals in broad contact with one another; 2 loreals; 7 supralabials, fifth and sixth below the eye; 1 anterior and 2 posterior enlarged temporals; 3 pairs of nuchals; tympanum deeply sunk and oval; 15 or 16 smooth lamellae beneath finger IV and 21 beneath toe IV; 2 enlarged precloacals; dorsum with 2 rows of longitudinal black dots.

Etymology

The specific epithet '*honbaensis*' is a toponym derived from the Hon Ba Mountain where the new species was discovered. We recommend 'Hon Ba Ground Skink', 'Thằn lằn cổ hòn bà', and 'Rắn mối hòn bà' as the common English, Vietnamese, and local names of the new species, respectively.

Type material

Holotype

VIETNAM • ♂, adult; Khanh Hoa Province, Hon Ba Mountain; 12°06′59.7″ N, 108°56′44.0″ E; 1510 m a.s.l.; 23 Jun. 2017; Luan T. Nguyen and Manh V. Le leg.; GenBank: PV022547; ITBCZ 4679; ITBCZ.

Description (holotype, ♂, adult)

Measurements. SVL 47.4 mm; snout relatively long and pointed (SnL = 4.1 mm; SnL/HW = 0.66; SnL/HL = 0.34); lower eyelid with an undivided transparent disc; body rather compressed and slender; tail longer than snout–vent length, regenerated on tip part; limbs pentadactyl, toes reach to wrist when limbs adpressed (Fig. 3).

Head scales smooth; rostral convex, distinctly visible from above, in broad contact with frontonasal; no supranasals; prefrontals in broad contact with one another; four supraoculars; frontal narrowing posteriorly, longer than wide (3.0 mm vs 1.6 mm), longer than its distance from snout (2.5 mm), bordered laterally by first two supraoculars, anteriorly by prefrontals, and posteriorly by frontoparietals; pair of frontoparietals, shorter than frontal, in contact with supraoculars 2–4; parietals in contact posteriorly, behind interparietal; 3 pairs of nuchals, twice the size of dorsal scale; 7 supralabials on both sides, fifth and sixth below eye, sixth largest; 2 loreals, equal in size; 2 preoculars, lower one much larger than upper one; nostril in center of nasal, which in contact with first supralabial, rostral, anterior loreal, and frontonasal; 8 supraciliaries, first largest; 1 enlarged anterior temporal, in contact with sixth and seventh supralabials; 2 posterior temporals, lower one much smaller and overlapping upper one; 7 infralabials, first two in contact with postmental, second and third in contact with fist chin shield; 3 pairs of enlarged chin shields, first pair medially in contact with each other, second pair separated by small scale; tympanum deeply sunk, oval, and oblique.

Dorsal scales smooth, larger than lateral and ventral scales, 6 rows on back between dorsolateral bands; 28 midbody scale rows; 64 paravertebral scales; ventral scales smooth, in 73 rows; subcaudal scales on original part of tail slightly enlarged; 15 or 16 smooth lamellae beneath finger IV and 21 beneath toe IV; 2 enlarged precloacal scales, right scale overlapping left one.

In life, overall dorsal coloration olive with two longitudinal black dots on dorsum; dorsolateral band dark brown and continuous; a black band on side of snout, continuous behind eye and joining dorsolateral band; lower half of flank light brown with sparse black dots; lower part of head and neck somewhat bluish white; lower part of neck, body, limbs, and tail yellowish to yellow; free margin of upper and

lower eyelids orange to yellow; eye immaculate black. In preservation, color fades but pattern remained with two longitudinal black dots on dorsum and sparse black dots on lower part of side; overall dorsal and lateral coloration light brown; venter cream. Morphological characters of the holotype were summarized in Table 3.

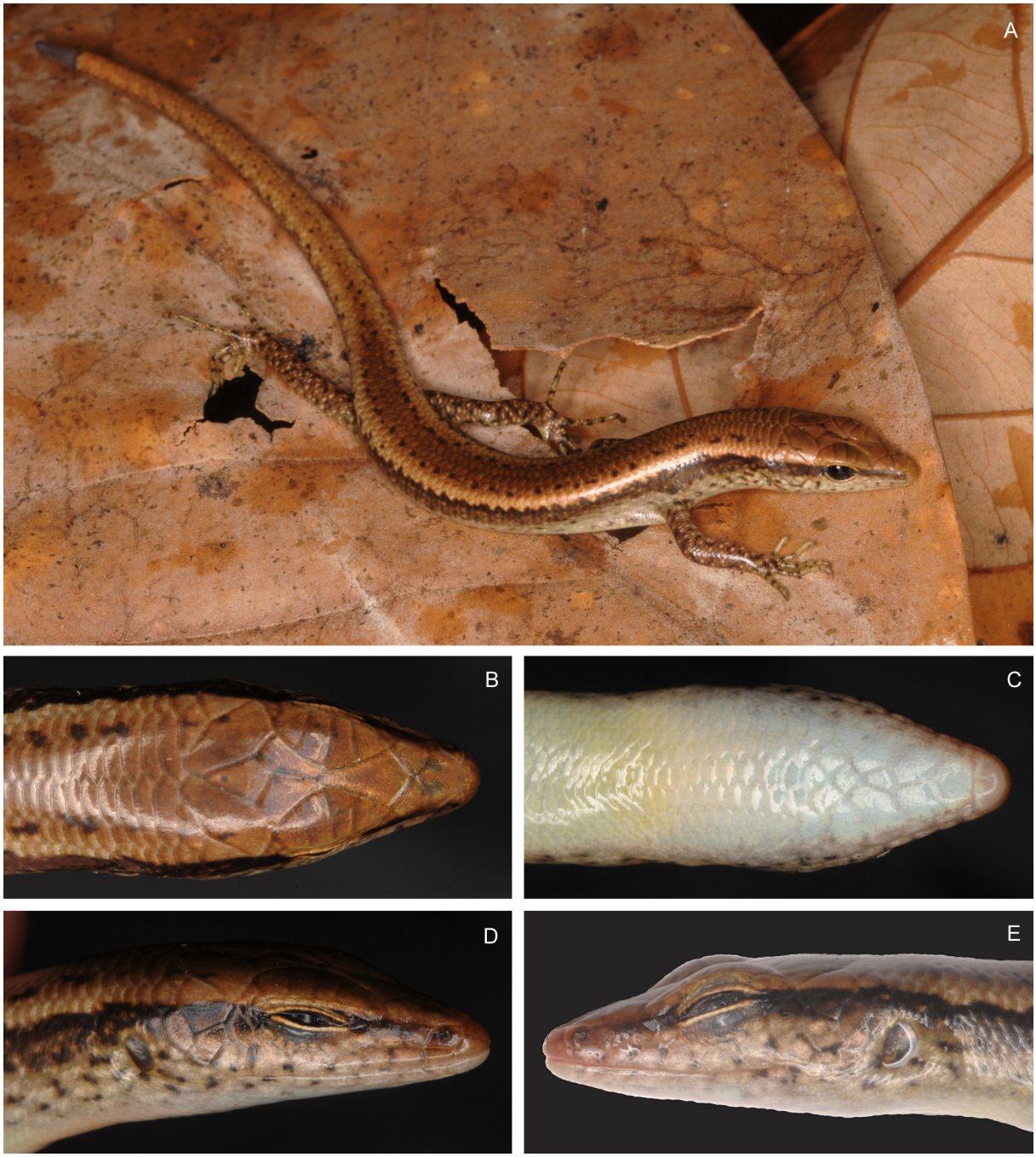

Fig. 3. *Scincella honbaaensis* sp. nov., holotype, ♂ (ITBCZ 4679). **A**. General view in life. **B–E**. Dorsal, ventral, and lateral views of the head, respectively. Photos: Luan T. Nguyen.

Field notes

The specimen was collected at night, on the ground near the Forest Station on top of Hon Ba Mountain. It was seen when removing tile debris. Surrounding habitat consisted of montane primary evergreen forest with scattered rocks and thick layer of leaf litter.

Distribution

The new species is currently known only from Hon Ba Mountain, Khanh Hoa Province, Vietnam (Fig. 1).

Comparisons

Scincella honbaensis sp. nov. differs morphologically from its congeners in Indochina and China as follows: *from S. apraefrontalis* by having more midbody scale rows (28 vs 18), more lamellae beneath toe IV (21 vs 8–9), more paravertebral scale rows (64 vs 52), first supralabial and nasal separated (vs fused), and presence (vs absence) of prefrontal (Nguyen *et al.* 2010b); from *S. badenensis* by having fewer midbody scale rows (28 vs 32–36), more nuchal pairs (3 vs 0–1), one (vs two) first enlarged temporal, and fewer longitudinal dorsal scale rows on back (6 vs 8) (Nguyen *et al.* 2019); from *S. baraensis* by having fewer midbody scale rows (28 vs 30), more ventrals (74 vs 64–66), absence (vs presence) of weak auricular lobules, and fewer longitudinal dorsal scale rows on back (6 vs 8) (Nguyen *et al.* 2020); from *S. barbouri* (Stejneger, 1925) by having more lamellae beneath toe IV (21 vs 15–17), more lamellae beneath finger IV (15 or 16 vs 9–10), fewer nuchal pairs (3 vs 4 or 5), fewer paravertebral scale rows (64 vs 70–79), (Stejneger 1925; Ouboter 1986); from *S. darevskii* by having more lamellae beneath toe IV (21 vs 17), more lamellae beneath finger IV (15 or 16 vs 12), more ventrals (74 vs 65), prefrontals in contact (vs separated), fewer supraoculars (4 vs 5), and absence (vs presence) of weak auricular lobules (Nguyen *et al.* 2010c); from *S. devorator* by having more lamellae beneath toe IV (21 vs 17 or 19), prefrontals in contact (vs separated), limbs in touch (vs separated) when adpressed, and absence (vs presence) of a black broad vertebral band (Darevsky *et al.* 2004; Nguyen *et al.* 2011); from *S. doriae* by having more lamellae beneath toe IV (21 vs 15–18), head relatively longer and pointed (HW/HL = 0.52 vs 0.64), frontal longer (vs as long as) its distance from snout, dorsum with two longitudinal rows of black spots (vs scattered black spots) (Boulenger 1887; Smith 1935; Taylor 1963; Bourret 2009); from *S. fansipanensis* by having more midbody scale rows (28 vs 22), more lamellae beneath toe IV (21 vs 10–12), more lamellae beneath finger IV (15 or 16 vs 7–9), and limbs in touch (vs separated) when adpressed (Okabe *et al.* 2004); from *S. huanrenensis* Zhao & Huang, 1982 by having lamellae beneath toe IV (21 vs 13–16), more lamellae beneath finger IV (15 or 16 vs 9), fewer paravertebral scale rows (61 [not included nuchals] vs 66–84), and limbs in touch (vs separated) when adpressed (Zhao & Huang 1982; Chen *et al.* 2001); from *S. melanosticta* by having more nuchal scales (3 pairs vs 0), fewer midbody scale rows (28 vs 34–38), dorsal scale enlarged (vs same size as lateral scales), and fewer longitudinal dorsal scale rows on back (6 vs 10) (Smith 1935; Taylor 1963; Bourret 2009; Neang *et al.* 2018); from *S. modesta* Günther, 1864 by having more lamellae beneath toe IV (21 vs 10–17), more lamellae beneath finger IV (15 or 16 vs 8–12), and dorsum with two longitudinal rows of black spots (vs scattered black spots) (Smith 1935; Chen *et al.* 2001); from *S. monticola* by having more midbody scale rows (28 vs 22–26), more lamellae beneath toe IV (21 vs 10–13), more paravertebrals (64 vs 52–59), more ventrals (74 vs 52–58), and prefrontals in contact (vs separated) (Schmidt 1927; Neang *et al.* 2018); from *S. nigrofasciata* by having fewer midbody scale rows (28 vs 32–33), more nuchal scales (3 pairs vs 0 or 1), more lamellae beneath toe IV (21 vs 15–17), fewer paravertebral scale rows (64 vs 69–74), fewer longitudinal dorsal scale rows on back (6 vs 8), and fewer enlarged anterior temporal (1 vs 2) (Neang *et al.* 2018); from *S. ochracea* by having fewer midbody scale rows (28 vs 30–32), more lamellae beneath toe IV (21 vs 16–18), more ventrals (74 vs 66–71), fewer enlarged anterior temporal (1 vs 2), absence (vs presence) of weak auricular lobules, and absence (vs presence) of dark vertebral stripe (Bourret 2009; Pham *et al.* 2015; Neang *et al.* 2018); from *S. ouboteri* by having fewer midbody scale rows (28 vs 30–32), more ventrals (74 vs 65–71), fewer enlarged anterior temporals (1 vs 2), more

Table 3. Measurements (in mm) and scalation of the type series of *Scincella honbaensis* sp. nov. and *Scincella auranticaudata* sp. nov. L/R = the left cloacal scale overlapping the right one and conversely, R/L = the right one overlapping.

Morphological character	***S. honbaensis* sp. nov.**	***S. auranticaudata* sp. nov.**				
	ITBCZ 4679	**ITBCZ 7700**	**ITBCZ 6527**	**ITBCZ 7620**	**ITBCZ 7623**	**min.–max.**
sex	male	male	female	male	female	
SVL	47.4	62.1	48.9	60.0	51.6	48.9–62.1
TaL	49.6+	85.3	67.7	61.0+	63.4	63.4–85.3
AxGnL	22.0	31.4	24.4	29.4	25.9	24.4–31.4
SnForeL	18.1	23.2	19.6	20.9	18.4	18.4–23.2
HL	12.0	13.2	12.1	13.1	11.1	11.1–13.2
HW	6.2	8.9	7.2	8.1	7.2	7.2–8.9
TD	1.1	1.8	1.5	1.8	1.2	1.2–1.8
supralabials	7/7	7/7	7/7	7/7	7/7	7
infralabials	7/7	6/7	7/6	6/7	6/7	6–7
loreals	2/2	2/2	2/2	2/2	2/2	2
supraoculars	4/4	4/4	4/4	4/4	4/4	4
supraciliars	8/8	9/9	8/8	9/9	8/8	8–9
enlarged temporal	1+2/1+2	2+2/2+2	2+2/2+2	2+2/2+2	2+2/2+2	2+2
nuchal (pair)	3	1	1	1	1	1
midbody scale rows	28	36	34	34	34	34–36
paravertebral scale rows	64	74	67	71	70	67–74
dorsal scale rows	6	½+8+½	½+8+½	½+8+½	½+8+½	½+8+½
ventral scale rows	73	68	68	69	65	65–69
subcaudal scales	47+	86	86	-	82	82–86
enlarged cloacal scales	2, R/L	2, L/R	2, R/L	2, L/R	2, R/L	2
lamellae beneath 4th finger	15/16	13/9+	12/12	11/12	11/10	10–13
lamellae beneath 4th toe	21/21	19/20	19/19	19/18	17/18	17–20
vertebral line	absent	present	present	present	present	
weak auricular lobules	absent	absent	absent	absent	absent	
prefrontals in contact	yes	no	no	yes	no	
toes reach to fingers	yes	yes	yes	yes	yes	

lamellae beneath finger IV (15 or 16 vs 10–12), and absence (vs presence) of weak auricular lobules (Pham *et al.* 2024); from *S. potanini* Günther, 1896 by having more lamellae beneath finger IV (15–16 vs 9.9 ± 0.7), more lamellae beneath toe IV (21 vs 14.3 ± 1.5–17), and limbs in touch (vs separated) when adpressed (Günther 1896; Ouboter 1986); from *S. przewalskii* (Bedriaga, 1912) by having fewer midbody scale rows (28 vs 32–34), more lamellae beneath toe IV (21 vs 17), more supralabials (7 vs 6), and more infralabials (7 vs 6) (Wang & Zhao 1986); from *S. punctatolineata* Boulenger, 1893 by having more midbody scale rows (28 vs 24–26), more lamellae beneath toe IV (21 vs 12–14), prefrontals in contact (vs separated), presence (vs absence) of nuchals, and limbs in touch (vs separated) when adpressed (Smith 1935); from *S. rara* by having more midbody scale rows (28 vs 24), more paravertebrals (64 vs 53), and a single (vs double) row of lamellae beneath toes and fingers II–IV (Darevsky & Orlov 1997); from *S. reevesii* by having more nuchals (3 pairs vs 0 or 1), dorsal scale enlarged (vs same size as lateral scales), fewer enlarged anterior temporal (1 vs 2), and fewer longitudinal dorsal scale rows on back (6 vs 8) (Smith 1935; Bourret 2009; Neang *et al.* 2018); from *S. rufocaudata* by having fewer midbody scale rows (28 vs 32–34), more lamellae beneath toe IV (21 vs 15–17), fewer paravertebrals (64 vs 68), fewer longitudinal dorsal scale rows on back (6 vs 10), and one (vs two) anterior temporal (Darevsky & Nguyen 1983; Neang *et al.* 2018); from *S. rupicola* by having fewer midbody scale rows (28 vs 34–36), more nuchals (3 pairs vs 0 or 1), fewer paravertebrals (64 vs 68–73), fewer longitudinal dorsal scale

rows on back (6 vs 8), and one (vs two) anterior temporal (Smith 1935; Taylor 1963; Neang *et al.* 2018); from *S. schmidti* Barbour, 1927 by having more midbody scale rows (28 vs 26), more lamellae beneath toe IV (21 vs 11), and limbs in touch (vs separated) when adpressed (Barbour 1927); from *S. truongi* by having more ventrals (74 vs 60–70), more lamellae beneath toe IV (21 vs 13–15), and more lamellae beneath finger IV (15 or 16 vs 10) (Pham *et al.* 2025); from *S. tsinlingensis* Hu & Zhao, 1966 by having more lamellae beneath toe IV (21 vs 11–16) and fewer paravertebrals (64 vs 78–85), (Ouboter 1986; Inger *et al.* 1990); from *S. victoriana* Shreve, 1940 by having more midbody scale rows (28 vs 26), more lamellae beneath toe IV (21 vs 15 or 16), more paravertebrals (64 vs 50–57), more ventrals (74 vs 53–56), and smooth (vs keeled) scales on dorsum and tail (Ouboter 1986; Neang *et al.* 2018); and from *S. wangyuezhaoi* Jie, Gao, Huang, Ren, Jiang, Li & Li, 2023 by having more lamellae beneath toe IV (21 vs 13–16), more lamellae beneath finger IV (15 or 16 vs 9–11), and more supraciliaries (8 vs 5–7) (Jia *et al.* 2023).

Scincella auranticaudata sp. nov.
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Figs 1–2, 4–5; Table 1–3

Diagnosis

Scincella auranticaudata sp. nov. is distinguished from all of its congeners by a combination of the following morphological characters: medium size in adults (SVL up to 62.1 mm); 34–36 smooth midbody scale rows; dorsal scales not enlarged, ½+8+½ rows on back; 67–74 paravertebrals; 65–69 ventral scale rows; 4 supraoculars; prefrontals separated from or just in contact with one another; 2 loreals; 7 supralabials, fifth below center of eye; 2 anterior and 2 posterior enlarged temporals; 1 pairs of nuchals; tympanum deeply sunk and oval; 10–13 smooth lamellae beneath finger IV and 17–20 beneath toe IV; 2 enlarged precloacals; hemipenis smooth, forked near the base with two long symmetrical lobes; dorsum with a vertebral line formed by large black spots.

Etymology

The specific epithet '*auranticaudata*' is a Latin compound word derived from '*aurantiacus*' (meaning 'orange-colored') and '*caudatus*' (meaning 'tail'), referring to the orange coloration on the tail of the new species. We recommend 'Orange-tailed Ground Skink', 'Thằn lằn cổ đuôi cam', and 'Rắn mối đuôi cam' as the common English, Vietnamese, and local names of the new species, respectively.

Type material

Holotype

VIETNAM • ♂, adult; Binh Thuan Province, Ta Kou Mountain; 10°49′30″ N, 107°53′46″ E; 286 m a.s.l.; 3 Jun. 2020; Sang N. Nguyen and Vu D.H. Nguyen leg.; GenBank: PV022551; ITBCZ 7700; ITBCZ.

Paratypes

VIETNAM • 1 ♀, gravid; Binh Thuan Province, Ta Kou Mountain; 10°48′53″ N, 107°53′43″ E; 520 m a.s.l.; 2 Jun. 2020; Sang N. Nguyen leg.; GenBank: PV022548; ITBCZ 6527; ITBCZ • 1 ♂, adult; Binh Thuan Province, Ta Kou Mountain; 10°48′52″ N, 107°53′42″ E; 504 m a.s.l; 30 May 2020; Sang N. Nguyen and Vu D.H. Nguyen leg.; GenBank: PV022549; ITBCZ 7620; ITBCZ • 1 ♀, gravid; Binh Thuan Province, Ta Kou Mountain; 10°48′52″ N, 107°53′42″ E; 504 m a.s.l; 30 May 2020; Sang N. Nguyen and Vu D.H. Nguyen leg.; GenBank: PV022550; ITBCZ 7623; ITBCZ.

Description (holotype, ♂, adult)

Measurements. SVL 62.1 mm; snout short and obtuse; lower eyelid with an undivided transparent disc; body rather robust; tail longer than snout–vent length (TaL = 85.3 mm; TaL/SVL = 1.37); limbs pentadactyl, toes reach to fingers when limbs adpressed.

Head scales smooth; rostral convex, distinctly visible from above, in broad contact with frontonasal; no supranasals; prefrontals well separated from one another; four supraoculars; frontal narrowing posteriorly, longer than wide (3.8 mm vs 2.2 mm), longer than its distance from snout (2.5 mm),

Fig. 4. *Scincella auranticaudata* sp. nov. **A–D**. Holotype, ♂ (ITBCZ 7700). **A**. General view in life. **B**. Dorsal view of the head. **C**. Lateral view of the head. **D**. Everted hemipenes. **E**. Paratype, ♀ (ITBCZ 6527), in life. **F**. Paratype, ♀ (ITBCZ 7623), in life. **G–I**. Paratype, ♂ (ITBCZ 7620). **G**. General view in life. **H–I**. Everted hemipenis. Photos: Sang N. Nguyen.

bordered laterally by first two supraoculars, anteriorly by prefrontals and frontonasal, and posteriorly by frontoparietals; pair of frontoparietals, in contact with supraoculars 2–4; parietals in contact posteriorly, behind the interparietal; 1 pair of nuchals, twice as size of dorsal scale; 7 supralabials on both sides, fifth below center of eye, sixth largest; 2 loreals, anterior one smaller than posterior one; 2 preoculars, lower one much larger than upper one; nostril in center of nasal, which in contact with rostral, two first supralabials, anterior loreal, and frontonasal; 9 supraciliaries, first largest; 2 enlarged anterior temporals, lower one larger than and overlapping upper one, in contact with sixth and seventh supralabials; 2 posterior temporals, lower one smaller than and overlapping upper one; 7 infralabials on right side and 6 on left side, first two in contact with postmental; 3 pairs of chin shields, first pair medially in contact with each other, second pair separated by a small scale; tympanum deeply sunk and oval.

Dorsal scales smooth, not larger than lateral and ventral scales, ½+8+½ rows on the back between dorsolateral bands; 36 midbody scale rows; 74 paravertebral scales; ventral scales smooth, in 68 rows; 86 subcaudal scales; 13 smooth lamellae beneath finger IV and 19 beneath toe IV; 2 enlarged precloacal scales, left scale overlapping right one.

Fully everted hemipenis smooth, forked near base, forming two long lobes with regular transversal shallow grooves on body of each lobe; clear sulcus spermaticus starting from base and divided into two lobes prior to forked position (Fig. 4).

In life, anterior part of dorsum and upper head red to bright brown, posterior part of dorsum dark brown, with vertebral enlarged black spots extending from back to tail base; interrupted dorsolateral band with black spots, starting from shoulder to tail base; lateral side of neck and chest red; tail orange; lower part of head, body, and limbs pink; lower part of tail pink to yellowish; eyes with black round pupil and visible yellowish iris. In preservation, color fades but pattern remained with black vertebral and dorsolateral interrupted bands; red, orange, and yellow faded to cream or white; overall dorsal and lateral coloration bright brown; venter cream.

Variation

Paratype ITBCZ 7620 has prefrontals just in contact with each other and nuchals three times the size of dorsal scale. Other slight variations in size and scalation of the type series were summarized in Table 3.

Sexual dimorphism

Males are bigger than females (SVL 60.0–62.1 vs 48.9–51.6 mm). Lower side of tail base in males is more or less swollen whereas this area in females is flat.

Field notes

All specimens were collected at night, on the ground among rotting leaves in evergreen forest on a mountain slope. Paratype ITBCZ 6527 was collected during a light rain. The orange tail of the new species was also observed in nature in March 2018, July 2019, and January 2020. Other skink recorded sympatrically with the new species was *Sphenomorphus* cf. *yersini* Nguyen, Nguyen, Nguyen, Orlov & Murphy, 2018.

Distribution

The new species is currently known only from Ta Kou Mountain, Binh Thuan Province, southern Vietnam (Fig. 1).

Comparisons

Scincella auranticaudata sp. nov. differs morphologically from its congeners in regions of Indochina and China as follows: *from S. apraefrontalis* by having more midbody scale rows (34–36 vs 18), dorsal scales not enlarged (vs enlarged), more lamellae beneath toe IV (17–20 vs 8–9), more paravertebrals and ventrals (67–74 and 65–69 vs 52 and 50, respectively), and presence (vs absence) of prefrontal (Nguyen *et al.* 2010b); from *S. badenensis* (Fig. 5A) by having hemipenis forked near the base, forming two long smooth lobes (vs forked near the tip with two short lobes and small papilla at the end of each lobe), tail orange (vs dark brown), and males with vertebral black spots on dorsum (vs pure dorsum in males) (Nguyen *et al.* 2019); from *S. baraensis* by having more midbody scale rows (34–36 vs 30), fewer nuchal scales (1 vs 3 or 3.5 pairs), more enlarged anterior temporal (2 vs 1), absence (vs presence) of weak auricular lobules, and hemipenis with two long lobes (vs a short lobe) (Nguyen *et al.* 2020); from *S. barbouri* by having more midbody scale rows (34–36 vs 26–28), fewer nuchal scales (1 vs 4 or 5 pairs), and absence (vs presence) of distinctly enlarged dorsal scales (Stejneger 1925; Ouboter 1986); from *S. darevskii* by having more midbody scale rows (34–36 vs 28), more paravertebral scale rows (67–74 vs 62), fewer supraoculars (4 vs 5), more enlarged anterior temporal (2 vs 1), absence (vs presence) of weak auricular lobules, and more longitudinal dorsal scale rows on back (½+8+½ vs 6) (Nguyen *et al.* 2010c); from *S. devorator* by having more midbody scale rows (34–36 vs 28–30), fewer nuchal scales (1 vs 3 pairs), absence (vs presence) of distinctly enlarged dorsal scales (Darevsky *et al.* 2004; Nguyen *et al.* 2011); from *S. doriae* by having more midbody scale rows (34–36 vs 26–32), fewer nuchal scales (1 vs 3 or 4 pairs), absence (vs presence) of distinctly enlarged dorsal scales, and more longitudinal dorsal scale rows on back (½+8+½ vs 6) (Boulenger 1887; Smith 1935; Taylor 1963; Bourret 2009); from *S. fansipanensis* by having more midbody scale rows (34–36 vs 22, rarely 24), more lamellae beneath toe IV (17–20 vs 10–12), fewer nuchal scales (1 vs 3 pairs), more supraciliaries (8 or 9 vs 5, rare 6), and limbs in touch (vs separated) when adpressed (Okabe *et al.* 2024); from *Scincella honbaensis* sp. nov. by having more midbody scale rows (34–36 vs 28), fewer ventral scale rows (65–69

Fig. 5. Closely related species of *Scincella auranticaudata* sp. nov. in southern Vietnam. **A**. *Scincella badenensis* Nguyen, Nguyen, Nguyen & Murphy, 2019 from Tay Ninh Province. **B**. *Scincella rufocaudata* (Darevsky & Nguyen, 1983) from Gia Lai Province. **C**. *Scincella nigrofasciata* Neang, Chan, & Poyarkov, 2018 from Binh Phuoc Province. **D**. *Scincella* cf. *rupicola* from Ninh Thuan Province. Photos: Sang N. Nguyen.

vs 74), fewer nuchal scales (1 vs 3 pairs), and more longitudinal dorsal scale rows on back (½+8+½ vs 6); from *S. huanrenensis* by having more midbody scale rows (34–36 vs 26–28), more lamellae beneath toe IV (17–20 vs 13–16), fewer ventral scale rows (65–69 vs 75–89), and more longitudinal dorsal scale rows on back (½+8+½ vs 6) (Zhao & Huang 1982; Chen *et al.* 2001); from *S. melanosticta* by having a shorter relative tail (TaL/SVL = 1.23–1.38 vs 1.50–1.75), more nuchal scales (1 pair vs 0), more enlarged anterior temporal (2 vs 1), fewer longitudinal dorsal scale rows on back (½+8+½ vs 10), and dorsum with large vertebral black spots (vs numerous black dots on both sides of midline) (Boulenger 1887; Smith 1935; Taylor 1963; Bourret 2009); from *S. modesta* by having small (vs enlarged) dorsal scales, more midbody scale rows (34–36 vs 26–30), and more longitudinal dorsal scale rows on back (½+8+½ vs 6 or 7) (Smith 1935; Chen *et al.* 2001); from *S. monticola* by having more midbody scale rows (34–36 vs 22–26), more lamellae beneath toe IV (17–20 vs 10–13), fewer nuchal scales (1 vs 3 or 4 pairs); more paravertebrals and ventrals (67–74 and 65–69 vs 52–59 and 52–58, respectively), and more enlarged anterior temporal (2 vs 1) (Schmidt 1927; Neang *et al.* 2018); from *S. nigrofasciata* Neang, Chan & Poyarkov, 2018 (Fig. 5C) by having a shorter relative tail (TaL/SVL = 1.23–1.38 vs 1.56–1.94 [in the original description of *S. nigrofasciata*, TaL/SVL ratio of subadult CBC02841 shown in table 1 is 1.56, not 1.27; female CBC02840 shown in figure 4a probably has a regenerated tail and is excluded herein]), interrupted (vs continuous) dorsolateral band, and dorsum with a vertebral black spots (vs 5–7 dark stripes) (Neang *et al.* 2018); from *S. ochracea* by having more midbody scale rows (34–36 vs 30–32), fewer nuchal scales (1 vs 3 pairs), more longitudinal dorsal scale rows on back (½+8+½ vs 6), and absence (vs presence) of weak auricular lobules (Bourret 2009; Pham *et al.* 2015; Neang *et al.* 2018); from *S. ouboteri* by having more midbody scale rows (34–36 vs 30–32), fewer nuchal scales (1 vs 2–4 pairs), more longitudinal dorsal scale rows on back (½+8+½ vs 6), and absence (vs presence) of weak auricular lobules (Pham *et al.* 2024); from *S. potanini* by having more midbody scale rows (34–36 vs 27), fewer nuchal scales (1 vs 3 pairs), and limbs in touch (vs separated) when adpressed (Günther 1896; Ouboter 1986); from *S. przewalskii* by having small (vs enlarged) dorsal scales, fewer nuchal scales (1 vs 4 pairs), more supralabials (7 vs 6), and more longitudinal dorsal scale rows on back (½+8+½ vs 6) (Bedriaga 1912; Wang & Zhao 1986); from *S. punctatolineata* by having more midbody scale rows (34–36 vs 24–26), more lamellae beneath toe IV (17–20 vs 12–14), more longitudinal dorsal scale rows on back (½+8+½ vs 6), and limbs in touch (vs separated) when adpressed (Smith 1935); from *S. rara* by having more midbody scale rows (34–36 vs 24), fewer nuchal scales (1 vs 3 pairs), more paravertebrals (67–74 vs 53), and a single (vs double) row of lamellae beneath toes and figures II–IV (Darevsky & Orlov 1997); from *S. reevesii* by having more midbody scale rows (34–36 vs 28–32), more longitudinal dorsal scale rows on back (½+8+½ vs 8), a shorter relative tail (TaL/SVL = 1.23–1.38 vs 1.5–2.0), and dorsum with large vertebral black spots (vs small black spots) (Smith 1935; Bourret 2009); from *S. rufocaudata* (Fig. 5B) by having fewer longitudinal dorsal scale rows on back (½+8+½ vs 10), presence (vs absence) of nuchal scales, dorsum with large vertebral black spots (vs small black spots), dorsolateral band on flank interrupted (vs continuous), and absence (vs presence) of a distinct black stripe extending from loreal to temporal area (Darevsky & Nguyen 1983; Neang *et al.* 2018); from *S. rupicola* (Fig. 5D) by having a shorter relative tail (TaL/SVL = 1.23–1.38 vs 1.70–1.71), fewer subcaudals (82–88 vs 119), absence (vs presence) of paired black spots on dorsal side of neck, and absence (vs presence) of a black band behind the eye (Smith 1916, 1935; Taylor 1963); from *S. schmidti* by having a shorter relative tail (TaL/SVL = 1.23–1.38 vs 1.90), limbs in touch (vs separated) when adpressed, more midbody scale rows (34–36 vs 26), and more lamellae beneath toe IV (17–20 vs 11) (Barbour 1927); from *S. truongi* by having more midbody scale rows (34–36 vs 28), more lamellae beneath toe IV (17–20 vs 13–15), fewer nuchal scales (1 vs 3 pairs), and more longitudinal dorsal scale rows on back (½+8+½ vs 6) (Pham *et al.* 2025); from *S. tsinlingensis* by having more midbody scale rows (34–36 vs 26–30), fewer nuchal scales (1 vs 2–5 pairs), and more longitudinal dorsal scale rows on back (½+8+½ vs ½+4+½) (Ouboter 1986; Inger *et al.* 1990); from *S. victoriana* by having more midbody scale rows (34–36 vs 26), fewer nuchal scales (1 vs 3 pairs), and smooth (vs keeled) scales on dorsum and tail (Ouboter 1986); and from *S. wangyuezhaoi* by having more midbody scale rows (34–36 vs 27–30), absence (vs presence) of

enlarged dorsal scales, fewer nuchal scales (1 vs 2–4 pairs), and more longitudinal dorsal scale rows on back (½+8+½ vs 6) (Jia *et al.* 2023).

Discussion

Our descriptions of two new species bring the number of *Scincella* in Vietnam to 17, which amounts to more than 40% of species in this genus. The discovery of five species from Vietnam in the last five years (Nguyen *et al.* 2019, 2020; Pham *et al.* 2024; this study) indicates that the diversity of *Scincella* requires further investigation. The lower number of known species in surrounding countries (China: 11 species, Laos: 1, Cambodia: 4, Thailand: 4 [Uetz *et al.* 2024]) may show that this group also requires much effort to collect and/or its center of origin and diversity is in Vietnam. In Vietnam, *Scincella* can be found in both lowland and highland regions, mountains and hills, primary and secondary forests as well as plantations, and mainland and insular areas (Smith 1935; Darevsky 1999; Nguyen *et al.* 2019, 2020; this study).

Hon Ba Mountain is on the eastern slope of the Langbian Plateau. Its habitat connects with forests in Lam Dong and Dak Lak provinces. *Scincella honbaensis* sp. nov. occurs on the top of this mountain and therefore it is expected that this skink may be allopatrically distributed in other nearby montane areas on the Langbian Plateau. Ta Kou is an isolated mountain in the coastal area. This mountain is home to three endemic lizards, including *Gekko takouensis* Ngo & Gamble, 201, *Cyrtodactylus takouensis* Ngo & Bauer, 2008, and *Cyrtodactylus chungi* Ostrowski, Le, Ngo, Pham, Phung, Nguyen & Ziegler, 2021 (Uetz *et al.* 2024). Further surveys in surrounding areas are needed to confirm if *Scincella auranticaudata* sp. nov. is also an endemic lizard of Ta Kou Mountain.

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Appendix 1

Specimens examined

Scincella badenensis, 7 specimens, ITBCZ 5878, 5879, 5962, 5965–7, 5993, Ba Den, Tay Ninh, Vietnam.
Scincella baraensis, 3 specimens, ITBCZ 6534–6, Ba Ra, Binh Phuoc, Vietnam.
Sincella nigrofasciata, 1 specimen, ITBCZ 6344, Dinh Mountain, Ba Ria - Vung Tau, Vietnam.
Scincella rufocaudata, 3 specimens, ITBCZ 6039, 6041, 6042, Tram Lap, Gia Lai, Vietnam.
Scincella devorator, 1 specimen, ITBCZ 4511, Nho Quan, Ninh Binh, Vietnam.
Scincella monticola, 2 specimens, ITBCZ 8552, 8553, Vi Xuyen, Cao Bang, Vietnam.