



A new species of the genus *Lygosoma* Hardwicke & Gray, 1827 (Squamata: Scincidae) from northeastern Cambodia, with an updated identification key to the genus *Lygosoma* in mainland Southeast Asia

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Abstract

We describe a new species of the genus *Lygosoma* from northeastern Cambodia based on a single voucher specimen collected from Veun Sai Proposed Protected Forest, Veun Sai District, Ratanakiri Province. *Lygosoma veunsaiensis* **sp. nov.** is differentiated from all congeners occurring in mainland Southeast Asia by the combination of the following characters: outer ear opening absent; supranasals distinct and separated from each other by frontonasal; supranasals not fused with nasals; midbody scales in 22 rows; fontoparietals paired; five supralabials; a light stripe present on outer edge of the dorsum; and a dark dorsolateral stripe present, from behind the eye to the tail. A key to the Southeast Asian mainland species of *Lygoma* is provided.

Key words: taxonomy, *L. veunsaiensis* **sp. nov.**, Veun Sai Proposed Protected Forest, Ratanakiri Province, Indochina

Introduction

The genus *Lygosoma* Hardwicke & Gray, 1827 currently includes 40 species and is distributed from Cook Island of Australia through Indonesia, Philippines and mainland Southeast Asia and the Indian Subcontinent to Central Africa, though the assignment, especially of the African taxa stays questionable (Greer 1977; Wagner *et al.* 2009; Geissler *et al.* 2011). Members of this genus occur in fossorial or subfossorial habitats and they are usually found on terrestrial leaf litter in the forest areas up to 800 m a.s.l. (Das 2010). Morphologically, *Lygosoma* species are characterized by the following features: oblong head with scaly or transparent movable lower eyelid, elongated snout with fusion or presence of supranasals, single or paired frontoparietals, elongated body with snout to vent length from 41 to 170 mm, short reduced limbs, relatively long tail, smooth or keeled subcycloid scales, and outer precloacals overlapping the inner precloacals (Taylor 1963; Greer 1977; Lim 1998; Das 2010). Sixteen species are currently recorded from Southeast Asia (Shreve 1940; Nguyen *et al.* 2009; Das 2010; Geissler *et al.* 2011) of which three are known from Cambodia: *L. bowringii* (Günther, 1864), *L. isodactylum* (Günther, 1864), and *L. quadrupes* (Linnaeus, 1766) (Stuart *et al.* 2006; Stuart & Emmett 2006; Grismer *et al.* 2007a; Bezuijen *et al.* 2009, Das 2010;), although an additional species from the country is currently being described (Grismer in prep.).

The herpetofauna of Cambodia is poorly known due to three decades of conflict which effectively prevented herpetological investigations until the late 1990s. Recent field studies have mainly focused on the Cardamom Mountains in the southwest (Daltry & Wüster 2002; Stuart & Emmett, 2006; Grismer *et al.* 2007a,b; 2008a,b; 2010; Wood *et al.* 2010; Neang *et al.* 2010, 2011), with fewer studies undertaken in the lowlands and hills of central Cambodia (Bezuijen *et al.* 2009; Hartmann *et al.* 2009; 2010) and uplands in the country's east and northeast (Stuart *et al.* 2006, 2010; Rowley *et al.* 2010). The latter region is bordered to the east and north by Vietnam and Laos, respectively, and includes the Veun Sai Proposed Protected Forest, a 55,000 ha area located in the Veun Sai

District of Ratanakiri Province and Siem Pang District of Stung Treng Province (Fig. 1). Habitats at the site comprise lowland evergreen and semi-evergreen forest at elevations between 100 and 400 m a.s.l., more northerly areas are mountainous and southern parts are characterized by grasslands associated with dry deciduous dipterocarp forest. During herpetological studies at the site in February and March 2010, 45 herpetofaunal species were recorded (Neang 2010, unpublished report). Of these, a single specimen of *Lygosoma* was collected. As later examinations revealed morphological differences which distinguish the specimen from all other species currently recognized in the genus, we consequently describe it here as a new species of *Lygosoma* and provide an updated identification key for *Lygosoma* spp. in mainland Southeast Asia.

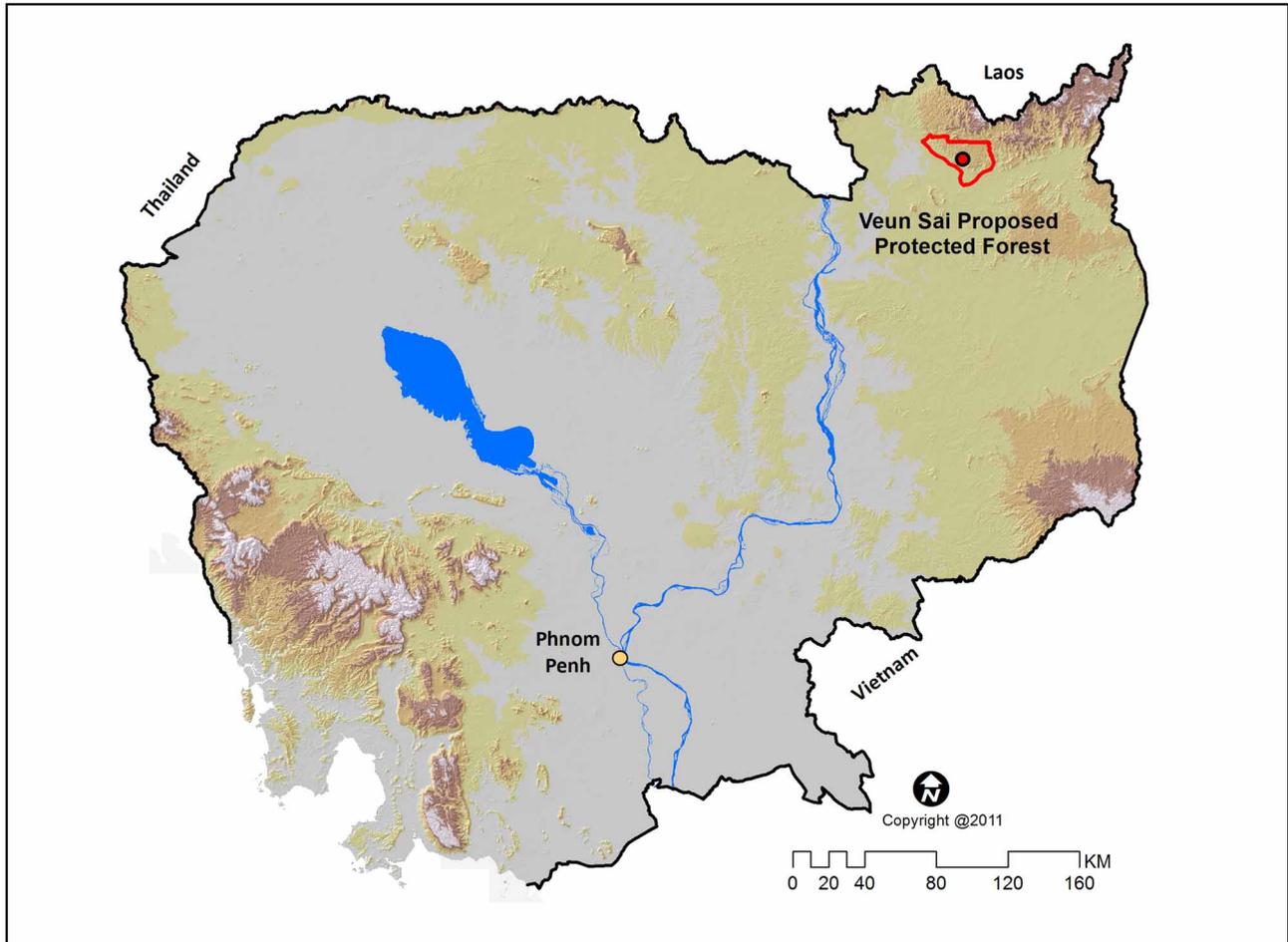


FIGURE 1. Map of the Kingdom of Cambodia, showing the type locality of *Lygosoma veunsaiensis* sp. nov., the Veun Sai Proposed Protected Forest, Veun Sai District, Ratanakiri Province.

Material and methods

Sampling was undertaken by Neang Thy, Hun Seiha and Gabor Csorba (Hungarian Natural History Museum, Budapest) during the day and at night along streams, forest trails, logging roads and within leaf litter in forest areas during February and March 2010. The captured animal was photographed prior to euthanasia, after which liver tissue was taken and stored in 97% ethanol. The Voucher specimen was preserved in 10% formalin for at least 48 hours and then soaked in water for 12 hours prior to storage in 70% ethanol. The specimen was deposited in the zoological collections of the Centre for Biodiversity Conservation (CBC) at the Royal University of Phnom Penh.

For comparisons, we examined specimens (see Appendix) deposited in the collections of the Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam; Zoological Museum of Moscow State University (ZMMU), Russia; Zoological Institute St. Petersburg (ZISP), Russia; Hungarian Natural History Museum (HNHM), Budapest, Hungary; Thai Natural History Museum (THNHM), Pathum Thani, Thailand; Museum Nationale d'Histoire Naturelle (MNHN), Paris, France; and Zoologisches Forschungsmuseum Alexander Koenig

(ZFMK), Bonn, Germany. Morphometric characters were taken with a digital caliper to the nearest 0.1 mm under a Nikon SMZ 645 dissecting microscope. The following abbreviations are used: SVL: snout-vent length, measured from the tip of the snout to the vent; TaL: tail length, from the vent to the tip of the tail; TrunkL: trunk length, from the axilla to the groin; HL: head length, from the snout tip to the posterior margin of mandibles; HH: maximum head height, from the upper surface of the head to lower surface of the throat at the posterior edge of the eye; HW: maximum head width, measured at widest point at the posterior ends of the mandibles; SFIL: distance from the tip of the snout to anterior margin of the forelimb insertion; SL: snout length, from the tip of the snout to the anterior edge of the eye; FIL: forelimb length, from axilla to palm; HIL: hindlimb length, from groin to palm. Scallation: number of paravertebral scales (PVS), counted from posterior margin of parietals to a point above the vent; number of ventrals counted from chin shields to the vent; MBS: number of scales around midbody; FP: frontoparietal(s); SupraL: supralabials; IL: infralabials; CS: number of pairs of chin shields; LF4: subdigital lamellae on fourth finger; LT4: subdigital lamellae on fourth finger. Scallation features were counted bilaterally and are given in left / right order, when different.

Systematics

Lygosoma veunsaiensis sp. nov.

Figures 2–5.

Holotype. CBC 00808, adult male, collected by Gabor Csorba on 24 February 2010 at O'Kasieb campsite at 14°01'00.2"N, 106°45'09.0"E, 114 m in disturbed semi-deciduous forest in Seun Sai District, Ratanakiri Province, Cambodia.

Diagnosis. *Lygosoma veunsaiensis* sp. nov. is differentiated from all other congeners by the following combination of characters: (1) body elongated, SVL approximately 5.4 times of HIL; (2) supranasals distinct, separated from each other by frontonasal; (3) frontoparietals paired; (4) supraciliaries nine; (5) supralabials five; (6) lower eyelid scaly; (7) infralabials five; (8) external ear openings absent; (9) midbody scale rows 22; (10) paravertebral scales 51; (11) ventrals in 49 transverse rows; (12) subdigital lamellae on fourth finger five; (13) subdigital lamellae on fourth toe nine; (14) a light stripe present on outer edge of the dorsum; and a dark dorsolateral stripe present, from behind the eye to the tail.

Etymology. We name this new species after the type locality to underscore the importance of Veun Sai Proposed Protected Forest for the conservation of Cambodia's threatened biodiversity.

Description of holotype. Male specimen; SVL 33.6 mm, tail tip lost, for further measurements see Table 1. Head distinct from neck; snout rounded; rostral almost three times wider than long, forming a transverse narrow suture with frontonasal, separated from supranasals; frontonasal 1.3 times as wide as long; prefrontals small, widely separated from each other by frontal, touching loreal as well as anterior preoculars laterally; frontal large, elongate, diamond shaped, widened anteriorly and sharpened posteriorly, longer than its distance to the tip of the snout, in contact with frontonasal, prefrontals, first supraciliary, first and second supraoculars; frontoparietals paired, in broad contact medially at anterior half and widely separated posteriorly, bordered by frontal anteriorly, second, third and fourth supraoculars laterally, interparietal, and parietals posteriorly; interparietal diamond shaped, widened anteriorly and sharpened posteriorly, bearing an eye spot; parietals subrectangular, in contact posteriorly, bordered by seven dorsal scales posteriorly and two small temporals laterally, enlarged nuchals absent; three temporals, anterior one smaller. Nostril within nasal; nasal in contact with rostral, supranasal, frontonasal, first supralabial and anterior loreal; two small loreals on the right side, similar in size, vertically elongated, bordered by first and second supralabials, nasal, frontonasal, prefrontals, and anterior preoculars; one large loreal on the left side, subtriangular in shape; two small subrectangular preoculars bordered by smaller presuboculars, forming a transition to the lower eyelid; four supraoculars; nine supraciliaries; lower eyelid scaly; two enlarged postoculars, the lower one bordering the fifth supralabial; five supralabials, the fifth largest; external ear openings absent, covered by scales at small depressed cavity behind mandible. Mental wider than long, in contact with the postmental and first infralabials; postmental single, bordering mental, first infralabials and first pair of chin shields; first pair of chin shields in broad contact medially; second pair of chin shields separated from each other by a small gular scale, in contact with first pair of chin shields anteriorly, second, third and fourth infralabials laterally and three gular scales posteriorly; five infralabials (Figs. 2,3); body elongated, the distance between axilla and groin

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almost five times the length of the forelimb; 22 midbody scale rows; 51 paravertebral scales; dorsal and ventral scales smooth, enlarged, similar in size; ventrals in 49 transverse rows; scales on flanks and throat smaller than those on body and venter; three enlarged precloacals, the medial largest, the outer scales overlap the inner; 63 undivided subcaudal scales, anterior four paired, followed by 59 undivided scales (incomplete as the tail tip is missing); forelimb and hind limb short, pentadactyl; fingers and toes widely separated when adpressed; the first finger and toe less than one-half the second; five smooth subdigital lamellae on fourth finger; nine smooth lamellae on fourth toe. Selected scalation traits across all Southeast Asian taxa are given in Table 1.

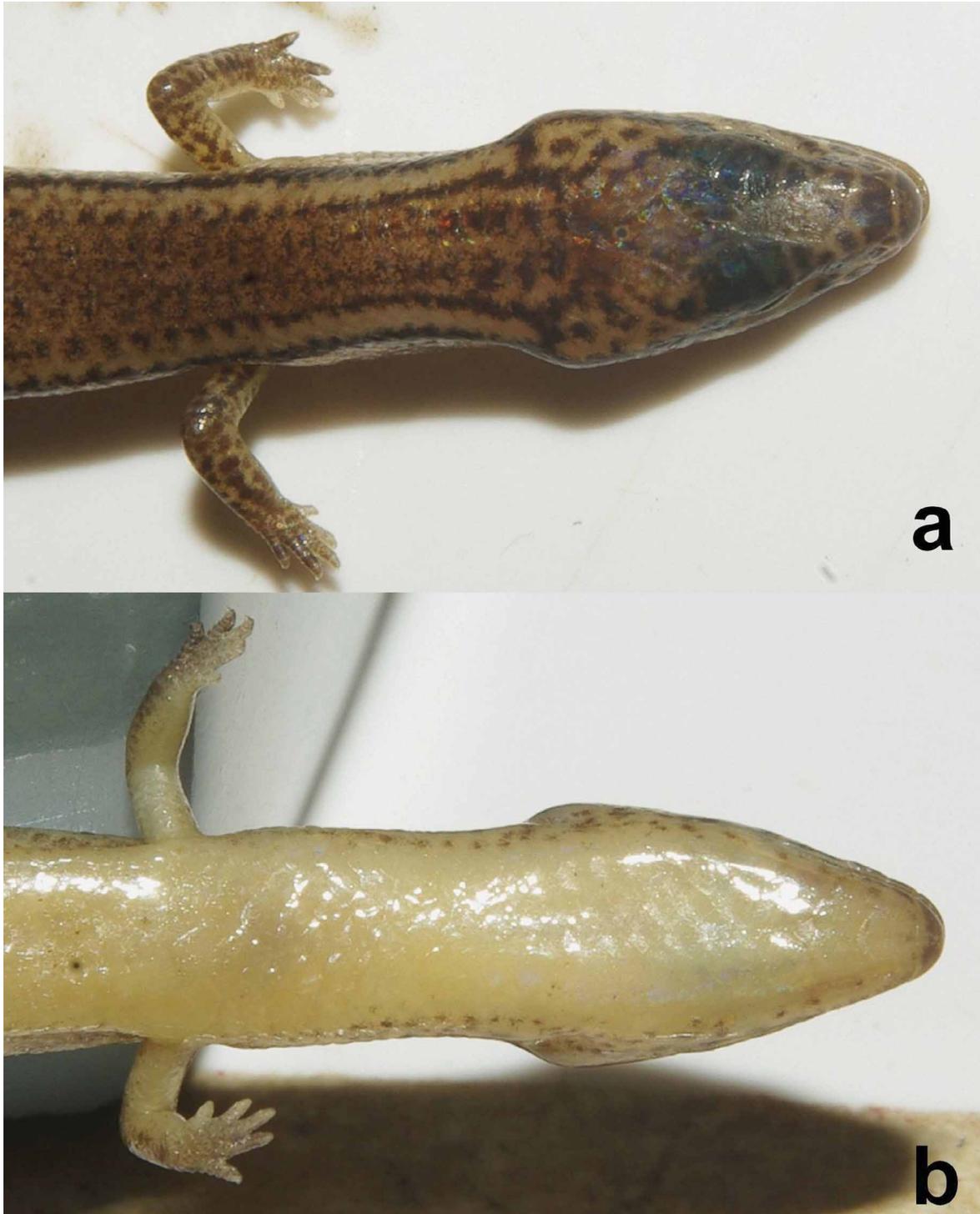


FIGURE 2. Head and anterior part of body of the holotype of *Lygosoma veunsaiensis* **sp. nov.** (CBC00808): a) dorsal view and b) ventral view. Photo: Peter Geissler.



FIGURE 3. Lateral view of head and anterior part of body of the holotype of *Lygosoma veunsaiensis* sp. nov. (CBC00808). Photo: Peter Geissler.



FIGURE 4. Holotype of *Lygosoma veunsaiensis* sp. nov. (CBC00808): a) dorsolateral view and b) ventral view. Photo: Peter Geissler.

Coloration in preservative. Upper surface of head and body brownish with dark brown mottling, darker brown and lighter irregular spotted pattern on tail; flanks lighter; supraocular darker; small dark eye spot present on posterior interparietal; two dorsolateral light beige stripes, bordered dorsally by a thin dark line, starting on neck and running down each side of the back, becoming less distinct behind the shoulder (Fig. 2b). Neck and back between these two stripes stained with dark brown. Lateral stripe (dark brown), bordering the light beige dorsolateral stripes ventrally, starting at the hind margin of nasal, running down on head and flanks reaching the tail (Figs. 3, 4). Beige coloration below the lateral stripe, with a pale series of brown spots forming a lateral line on the flank. Lateral side of tail beige, stained with tiny dark grey spots. Ventral surface whitish beige, immaculate.

Coloration in life. Reddish brown ground color on head and body, becoming greyish on the upper tail surface (Fig. 5). Color pattern the same as in preservative.

TABLE 1. Selected measurements and scale counts of *Lygosoma* species from mainland Southeast Asia (* = incomplete or regenerated, sc. = scaly); data obtained from personal examination and literature (Boulenger 1887, Shreve 1940; Smith 1935, Taylor 1962, 1963, Das 2010; Geissler *et al.* 2011).

	<i>L. albopunctatum</i>	<i>L. angeli</i>	<i>L. anguinum</i>	<i>L. bampfyldei</i>	<i>L. boehmei</i>	<i>L. bowringii</i>	<i>L. corpulentum</i>	<i>L. veunscatensis</i>
SVL	65	77.5-112.3	51	142.1	86.0	41.6 - 53.3	97.8-168	33.6
TaL	68	55.4-86.3	43		91.0	43.8	97.6-159.8	40.1 *
TrunkL		55.8-85.4			47.0	23.1 - 30.1	55.9-102.8	20.3
HL	11	9.4-12.1	8		12.3	7.7-10.8	16.9-30.3	6
HW	7.5	4.8-6.2	5		10.5	4.4-6.1	12.0-21.8	3.7
SFIL		15.9-21.4			29.4	13.2-16.3	30.4-46.5	11.1
SL		3.2-3.7			6.1	5.3-7.6	6.8-11.0	1.7
FIL	10	4.3-5.5	5.5		14.7	8.2-9.3	16.4-19.2	4.3
HIL	14	6.4-8.4	8		19.0	11.4-13.2	21.3-22.2	6.2
SVL/FIL	6.5	19.9	9.3		5.9	5.5	6.9	7.8
SVL/HIL	4.6	13.1	6.4		4.5	4.0	5.2	5.4
Trunk/SFIL		3.4-4.2			1.6	1.6-1.8	1.7-2.2	1.8
FP	2	1	2		2	2	2	2
Parietals in contact posteriorly	yes	yes	yes	yes	yes	yes	yes	yes
Nuchals	0	0	2	0	0	1-2	0-1	0
Supranasals in contact	yes	yes	yes	yes	yes	yes	yes	no
Supranasals fused with nasals	no	no	no	no	no	no	no	no
SupraL		7	7	6	7	7	7	5
Lower eyelid	sc.	sc.	disc	sc.	sc.	sc.	sc.	sc.
IL		6-7		6	7	6	6-7	5
CS		2			1	2	2	3
MBS	26-28	30	22	38-40	32	28	36-40	22
PVS	63-72	107-115			66	55-59	78-86	51
LF4		5			8-10	10-11	6-11	5
L14	12-15	6-7	6-9	14	14	12-13	11-15	9

continued next page

TABLE 1 continued.

	<i>L. frontoparietale</i>	<i>L. haroldyoungi</i>	<i>L. herberti</i>	<i>L. isodactylum</i>	<i>L. koratense</i>	<i>L. lineolatatum</i>	<i>L. popae</i>	<i>L. punctata</i>	<i>L. quadrupes</i>
SVL	36.2-41	114.8-148.0	56-66	82.5-117.0	101-106	63	42-61	85	55.0-82.1
TaL	38-55		51*-71	66.0-93	93-95		26-51		44.9-82.1
TrunkL		84.2-112.0	31-36.5	58.0	61-64				45.7-67.9
HL	8.5-10.4	15.2-18.1	13-15	11.7-14.0	18-19				6.6-8.1
HW	5.4-6.5	9.5-12.0	8-9.6	7.7-9.0	13				3.4-4.0
SFIL			19.2-21	20.0	30				11.8-14.8
SL									2.0-2.5
FIL	6-8.2	10.3-11.5	11.3-13	11.5	15-16				2.4-4.9
HIL	7.5-12	12.0-17.0	17	12.4-15.5	24-25		6		4.7-6.3
SVL/FIL	5.4	12.1	5	8.6	6.7				16.9
SVL/HIL	4.0	9.1	3.6	7.1	4.2		8.6		12.2
TrunkL/SFIL		3.3	1.7	5.0	2.1		2.6-3		3.4-4.3
Frontoparietas	1	1	2	1	2		2	2	1
Parietals in contact posteriorly	yes	no	0	yes	yes		yes		yes
Nuchals	2	0	0	0	0		0-2	0-2	0-2
Supranasals in contact	yes	yes	yes	no	yes		yes	yes	no
Supranasals fused with nasals	no	no	no	anteriorly	anteriorly		no	no	yes
Supralabials	7	9	7	7	8		7	7	6-7
Lower eyelid	sc.	sc.		sc.	sc.		disc		sc.
Infralabials	6	9-10	6	6	7		disc		6-7
CS	2	2	2	3	2				3
MBS	28 - 30	38-42	26-30	30-34	32-34		24	24-28	24-28
PVS	56-60	141-145	55-57	88-98	63		92-95	62-76	109-116
LF4	10		12	5-6	9				4-6
LT4	13	6-7	15	7-10	13-14		7	11-14	4-7



FIGURE 5. Holotype of *Lygosoma veunsaiensis* **sp. nov.** (CBC0808) in life. Photo: Gabor Csorba.

Distribution. The scincid *Lygosoma veunsaiensis* **sp. nov.** is currently known only from the type locality in the Proposed Protected Forest in Veun Sai District, Ratanakiri Province, northeastern Cambodia (Fig. 1).

Natural history. The specimen was found on the ground, near a 3 m wide slow moving section of the O'Kasieb stream during the day in the dry season in disturbed semi-deciduous evergreen forest.

Comparisons. The new species is distinguishable from all other species of the genus *Lygosoma* Hardwicke & Gray, 1827 known to occur in mainland Southeast Asia (Smith 1935, Smith 1937a, Shreve 1940 Taylor 1963, Bourret 2009, Nguyen *et al.* 2009, Das 2010, Geissler *et al.* 2011) by a combination of scalation and coloration features. *Lygosoma veunsaiensis* **sp. nov.** differs: from *L. albopunctata* (Gray, 1846) by having medially separated supranasals instead of supranasals being in contact medially, having five supralabials instead of seven, lacking external ear openings instead of having oval ear openings, having 22 midbody scale rows instead of 26–28, and having 51 paravertebral scales instead of 63–72 (Boulenger 1887, Smith 1935); from *L. angeli* (Smith, 1937) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having small ear openings, having five supralabials instead of seven, having 22 midbody scale rows instead of 30, and having fewer paravertebral scales (51 vs. 107–115) (Smith 1937b, Geissler *et al.* 2011); from *L. anguinum* (Theobald, 1868) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having small rounded ear openings, having five supralabials instead of seven, having scaly lower eyelids instead of eyelids bearing transparent discs, and by the presence of dark dorsolateral stripes instead of having a uniform olive-brown back (Theobald 1868, Boulenger 1887); from *L. bampfyldei* (Bartlett, 1895) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having small ear openings with three projecting lobules, lacking a deep groove from below the eye to nostril, having five supralabials instead of six, having 22 midbody scale rows instead of 38–40, having nine subdigital lamellae on fourth toe instead of 14 (Bartlett 1895,

Grismer 2011); from *L. boehmei* Ziegler, Schmitz, Heidrich, Vu & Nguyen, 2007 it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having small ovoid ear openings, having five supralabials instead of seven, having 22 midbody scale rows instead of 32, having 51 paravertebral scales instead of 66, and having nine subdigital lamellae on fourth toe instead of 14 (Ziegler *et al.* 2007); from *L. bowringii* (Günther, 1864) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having small rounded ear openings, having five supralabials instead of seven supralabials, having 22 midbody scale rows instead of 28, having nine subdigital lamellae on fourth toe instead of 12 or 13, and lacking black and white spotted flanks (Günther 1864, Smith 1935, Taylor 1963, Geissler *et al.* 2011); from *L. corpulentum* (Smith, 1921) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having subcircular ear openings, having five supralabials instead of seven, having 22 midbody scale rows instead of 36–40, having 51 paravertebral scales instead of 78–86, and bearing dorsolateral stripes instead of having a uniformly brown back (Smith 1921, Geissler *et al.* 2011); from *L. frontoparietale* (Taylor, 1962) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having small ear openings, having five supra- and infralabials instead of seven supralabials and six infralabials, having 22 midbody scale rows instead of 28–30, and by having nine subdigital lamellae on fourth toe instead of 13 (Taylor 1962, 1963); from *L. haroldyoungi* (Taylor, 1962) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having ear openings, having five supra- and infralabials instead of nine supra- and infralabials, having 22 midbody scale rows instead of 38–42, having 51 paravertebral scales instead of 141–145, having nine subdigital lamellae on fourth toe instead of six or seven, and by bearing dorsolateral stripes instead of 22–32 transverse dark bands (Taylor 1962, 1963); from *L. herberti* (Smith, 1916) it differs by having medially separated supranasals instead of supranasals being in contact medially, by having five supra- and infralabials instead of seven supralabials and six infralabials, by having 22 midbody scale rows instead of 26–30, having smooth instead of carinated body scales, and having nine subdigital lamellae on fourth toe instead of 15 (Taylor 1963); from *L. isodactylum* (Günther, 1864) it differs by having medially separated supranasals instead of supranasals being in contact medially, nasals not being fused with supranasals instead of being fused anteriorly, having five supralabials instead of seven, having 22 midbody scale rows instead of 30–34, having 51 paravertebral scales instead of 88–98, and lacking a transverse dark band between the ears (Günther 1864, Taylor 1963); from *L. koratense* (Smith, 1917) it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having ear openings, five supralabials instead of eight, having 22 midbody scale rows instead of 32–34, having nine subdigital lamellae on fourth toe instead of 13 or 14, and the absence of a dark blotch on the base of each dorsal and lateral body scale (Smith 1935, Taylor 1963); from *L. lineolatum* (Stolicka, 1870) it differs by having medially separated supranasals instead of supranasals being in contact medially, having two frontoparietals instead of one, having five supralabials instead of seven, lacking external ear openings instead of having moderately rounded ear openings, having five subdigital lamellae on fourth finger instead of 12, and lacking light longitudinal lines along the back and flanks (Smith 1935); from *L. popae* Shreve, 1940 it differs by having medially separated supranasals instead of supranasals being in contact medially, lacking external ear openings instead of having minute subcircular ear openings, by having 22 instead of 24 scale rows around midbody, having 51 instead of 92–95 paravertebral scales, and having a scaly lower eyelid instead of an eyelid bearing a transparent disc (Shreve 1940); from *L. punctata* (Linnaeus, 1758) it differs by having medially separated supranasals instead of supranasals being in contact medially, the absence of an undivided transparent disc in the lower eyelid, lacking external ear openings instead of having small oval ear openings, having 22 midbody scale rows instead of 24–28, having nine subdigital lamellae on fourth toe instead of 11–14 (Smith 1935, Bourret 2009); and from *L. quadrupes* (Linnaeus, 1766) it differs by having distinct nasals and supranasals instead of nasals being fused with supranasals, having two frontoparietals instead of a single one, having five supra- and infralabials instead of six or seven, lacking external ear openings instead of having small punctiform ear openings, having 22 midbody scale rows instead of 24–28, having 51 paravertebral scales instead of 109–116, and having two broad dark dorsolateral stripes along flanks and tail (Linnaeus 1766, Smith 1935, Taylor 1963, Bourret 2009, Geissler *et al.* 2011).

Discussion

Though it is beyond the scope of this paper, it has to be mentioned that until there are published molecular results on the phylogeny of lygosomine skinks of Southeast Asia the assignment of species to the genus *Lygosoma* Hardwicke & Gray, 1827 or *Riopa* Gray 1839 remains unclear (Geissler *et al.* 2011). We follow Greer's concept (Greer 1977) in recognizing all Southeast Asian species formerly assigned to *Riopa* as congeneric with *Lygosoma* (Nguyen *et al.* 2009, Das 2010, Geissler *et al.* 2011).

With the description of *Lygosoma veunsaiensis* **sp. nov.**, 17 species of *Lygosoma* are currently recognized to occur in mainland Southeast Asia (Myanmar, Thailand, Laos, Vietnam, Cambodia, and Malaysia) (Mittleman 1952, Das 2010, Shreve 1940, Geissler *et al.* 2011). An updated key to these species is provided below. According to the supranasals being not in contact medially it can be assumed that *L. veunsaiensis* **sp. nov.** is closely related to *L. quadrupes* and *L. isodactylum*. But future molecular phylogenetic analyses will show if this trait is phylogenetically informative or if it is only a synplesiomorphic character.

Besides some widespread and obviously common species, which also occur around human settlements like *L. bowringii* and *L. quadrupes*, most species are poorly studied. Because of their secretive habits most species are only found occasionally during herpetofaunistic studies and some species are still only known by one or a few specimens (e.g., *L. boehmei* or *L. angeli*). Therefore, we decided to describe this species on the basis of its very distinct diagnostic characters though some of these features may show variation as soon as more specimens of *L. veunsaiensis* **sp. nov.** are found. Due to the rarity of voucher specimens in the museum collections, it can be assumed that the actual species diversity of *Lygosoma* in mainland Southeast Asia still remains hidden, and that further faunistic and taxonomic research is needed to get a better insight into the taxonomy, phylogeny, distribution and ecology of these understudied lizards.

Together, with a recently described bat species (Csorba *et al.* 2011), the discovery of *L. veunsaiensis* **sp. nov.** and its presumed endemic status, underscores the importance of Veun Sai Proposed Protected Forest, Veun Sai District, Ratanakiri Province for conservation of biodiversity in Cambodia.

Key to the species of *Lygosoma* in mainland Southeast Asia

1	Supranasals separated from each other	2
-	Supranasals in contact medially	5
2	Supranasals partly or completely fused with nasals	3
-	Supranasals not fused with nasals; midbody scales in 22 rows; fontoparietals paired; supralabials five	
		<i>L. veunsaiensis</i> sp. nov.
3	Supranasals completely fused with nasals; frontoparietal single; midbody scales in 24–28 rows; paravertebral scales 109–116	
-	Supranasals and nasals only fused anterior to nostrils	<i>L. quadrupes</i>
4	Paravertebral scales 88–98; dark transverse band present between the ears	<i>L. isodactylum</i>
-	Paravertebral scales 63; head without such transverse band	<i>L. koratense</i>
5	Deep groove from below the eye to nostril present; midbody scales in 38–40 rows	<i>L. bampfyldei</i>
-	Deep groove from below the eye to nostril absent	6
6	Lower eyelid scaly	9
-	Lower eyelid with an undivided transparent disc	7
7	Midbody scales in 22 rows; subdigital lamellae on fourth toe 6–9	<i>L. anguinum</i>
-	Midbody scales in 24–28 rows	8
8	92–95 paravertebral scales	<i>L. popae</i>
-	72–76 paravertebral scales	<i>L. punctata</i>
9	Frontoparietals paired	13
-	Frontoparietal single	10
10	Supralabials nine; body bearing 22–32 dark transverse bands	<i>L. haroldyoungi</i>
-	Supralabials seven; body without dark transverse bands	11
11	Midbody scales in more than 28 rows	12
-	Midbody scales in 22 rows; subdigital lamellae on fourth toe 8–10	<i>L. lineolatum</i>
12	Paravertebral scales 56–60; lamellae on fourth toe 13	<i>L. frontoparietale</i>
-	Paravertebral scales 107–115; lamellae on fourth toe six or seven	<i>L. angeli</i>
13	Midbody scales in 26–32 rows	14
-	Midbody scales in 36–40 rows; paravertebral scales 78–86; 11–15 lamellae on fourth toe	<i>L. corpulentum</i>
14	Paravertebral scales 55–59	16

-	Paravertebral scales 63–72	15
15	Midbody scales in 26–28 rows; each scale bearing a black spot; flanks with white spots.	<i>L. albopunctata</i>
-	Midbody scales in 32 rows; paravertebral scales 66; dorsum and flanks uniformly brown	<i>L. boehmei</i>
16	Scales carinated; lamellae on fourth toe 14.	<i>L. herberti</i>
-	Scales smooth; lamellae on fourth toe 12–13	<i>L. bowringii</i>

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APPENDIX. Material examined.

Lygosoma angeli : MNHN 1937.21 (holotype; Trang Bom, near Bien Hoa (now in Dong Nai Province, southern Vietnam)); HNHN 2011.171.1 (Laos: Nam Phak River, Dong Hua Xao NBCA (near 15°58'N 105°55'E)); MNHN 2003.3304 (Laos: Xepian NBCA, Champasak Province); IEBR A.2010.21, ZFMK 91686, ZFMK 91687 and IEBR A.2010.22 (Cat Tien National Park, Dong Nai Province, southern Vietnam); IEBR A.0913–A.0914 (Nui Dinh, Ba Ria – Vung Tau Province, southern Vietnam). *Lygosoma boehmei*: ZFMK 86359 (holotype; Cha Noi, Phong Nha – Ke Bang National Park, Quang Binh Province, central Vietnam). *L. bowringii*: ZFMK 70463 (Cua Lo, Nghe An Province, central Vietnam); IEBR A.2010.41 (Loc Lam Forest, Lam Dong Province, southern Vietnam); IEBR A.0828 (Yen Tu Mountain, Luc Nam, Bac Giang Province, northern Vietnam); ZFMK 90335, 90337, ZFMK 90334, 90336, and 90338 (Phnom Kulen National Park, Siem Riep Province, Northern-Central Cambodia); ZFMK 48600 (Malaysia: Penang: Georgetown); ZFMK 44990 (Malaysia: Pulau Tioman). *Lygosoma corpulentum*: MNHN 1897.416 (Ban Ta Cheng, Pays Du Khas, Annam (now Ban Tasseng, Attapeu Province, Laos)); ZISP 20482 (Kanak, Kon Tum (now K Bang District, Gia Lai Province, southern Vietnam)); ZMMU R-8778 (Buon Loi, Kon Tum (now K Bang District, Gia Lai Province, southern Vietnam); IEBR A.2010.39 (Ta Dung Mountain, Lam Dong Province, southern Vietnam); MNHN 2003.3322 (Ban Sépian near 15°07'60"E, 106°16'60"N, 1297 m a.s.l., Boloven Highlands, Champasak Province, Laos); ZFMK 91685 and IEBR A2010.23 (Cat Tien National Park, Dong Nai Province, southern Vietnam); MNHN 2008.0427–2008.0429 (Paksong village (near 15°10'60"N, 106°13'60"E, 1288 m a.s.l.), Boloven Highlands, southern Laos); ZMMU R- 13262 (Cat Tien National Park, Dong Nai Province, southern Vietnam). *Lygosoma isodactylum*: THNHM 07412 (Thailand: Nong Khae, Saraburi). *Lygosoma koratense*: ZFMK 71715 (Malaysia). *Lygosoma quadrupes*: IEBR 894 (Doi Can, Ba Dinh, Hanoi, northern Vietnam); IEBR 504 (Thanh Xuan, Hanoi, northern Vietnam); IEBR A.2010.40 (Phong Nha – Ke Bang National Park, Quang Binh Province); ZFMK 91826, (Lo Go – Xa Mat, Tay Ninh Province, Vietnam); ZFMK 91825 (Loc Bac forest, Lam Dong Province, Vietnam); IEBR A.2010.24 and ZFMK 88964 (Cat Tien National Park, Dong Nai Province, southern Vietnam); ZFMK 83908 (Giao Thuy, Nam Dinh Province, northern Vietnam).