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A new species of Rock Gecko of the genus *Cnemaspis* Strauch, 1887 (Squamata: Gekkonidae) from Belitung Island, Indonesia

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Abstract

A new species of rock gecko of the genus *Cnemaspis* Strauch is described from Belitung Island, Indonesia. The new species is differentiated from all other species in the Southern Sunda clade (*sensu* Grismer *et al.* 2014a) by having a unique combination of characters including: (1) a maximum SVL of 54.1 mm, (2) five or six postmental scales, (3) enlarged submetacarpal scales on the first finger, (4) enlarged submetatarsal scales on the first toe, (5) keeled ventral scales, (6) absence of precloacal pores, (7) absence of enlarged femoral scales, (8) absence of shield-like subtibial scales, (9) caudal tubercles encircling the tail, (10) an interrupted median row of enlarged keeled subcaudals, (11) presence of a distinct furrow on the lateral surface of the tail (12) 22–24 lamellae beneath fourth toe, and (13) two postcloacal tubercles on each side of the tail base.

Key words: *Cnemaspis*, Belitung Island, Indonesia, new species

Abstrak

Spesies baru cicak batu marga *Cnemaspis* Strauch telah dipertelakan dari pulau Belitung, Indonesia dan dapat dibedakan dari kerabatnya dalam klan Sunda Selatan (menurut Grismer dkk 2014a) berdasarkan kombinasi unik karakter yang meliputi: (1) maksimum SVL 50.8 mm, (2) lima atau enam sisik postmental, (3) terdapat sisik besar submetakarpal pada jari pertama tungkai depan, (4) sisik besar submetatarsal pada jari pertama tungkai bawah, (5) sisik perut berlunas, (6) tidak terdapat lubang prekloakal, (7) tidak terdapat sisik besar pada paha, (8) tidak terdapat sisik subtibial, (9) struktur tubercular mengelilingi ekor membentuk formasi cincin, (10) sisi samping ekor terdapat alur yang jelas, (11) barisan sisik besar tengah subkaudal tidak dalam rentengan, (12) 22–24 lamela pada jari ke-empat tungkai belakang, dan (13) dua struktur tuberkular belakang kloaka di masing-masing dinding pangkal ekor.

Kata kunci: *Cnemaspis*, Pulau Belitung, Indonesia, spesies baru

Introduction

The genus *Cnemaspis* (family Gekkonidae) is species-rich and geographically widespread, with a range extending across Africa, the Indian subcontinent, and Southeast Asia. The genus is polyphyletic, with at least three divergent unrelated clades (Gamble *et al.* 2012). In Southeast Asia, *Cnemaspis* ranges from southern Laos in the north, southward through Vietnam, Cambodia, and Thailand, and the Thai-Malay Peninsula, eastward to Borneo through the Seribuat, Anambas and Natuna archipelagoes, and southward to Sumatra and the Mentawai Archipelago (de Rooij, 1915; Das & Bauer, 1998; Grismer *et al.* 2010, 2013, 2014a; Wood *et al.* 2013; Amarasinghe *et al*. 2015; Iskandar *et al.* 2017). The genus *Cnemaspis* Strauch currently includes 135 recognized species (Uetz *et al.* 2017), five of which are present on Borneo: *C. kendallii* (Gray, 1845), *C. nigridia* (Smith, 1925), *C. dringi* Das & Bauer, 1998, *C. paripari* Grismer & Chan, 2009 and *C. leucura* Kurita, Nishikawa, Matsui & Hikida, 2017. Several new

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species have been described from Indonesia in recent years (e.g. Grismer *et al.* 2014a; Amarasinghe *et al.* 2015; Iskandar *et al.* 2017), bringing the total number of currently recognized species in the country to 18 (Uetz *et al.* 2017).

In March 2017 three specimens referred to the genus *Cnemaspis* were collected on Belitung Island, a large island (4,800 km^2) located in the Karimata Strait between Sumatra and Borneo in the Java Sea (Fig. 1). The three specimens are sufficiently distinguishable from all other species of *Cnemaspis* on the basis of color pattern, size, and scalation, that we have determined them to represent a new species which we describe herein.

Materials and methods

The junior authors (AH, IS & DG) conducted a brief herpetofaunal survey of Belitung Island from 25–26 March 2017, during which they opportunistically searched for amphibians and reptiles. The specimens were captured by hand, euthanized with 20% benzocaine diluted in ethanol, fixed with 10% buffered formalin, and stored in 70% ethanol. The following measurements followed Grismer *et al.* (2014a) and were taken with Mitutoyo dial calipers to the nearest 0.1 mm, using an AmScope dissecting microscope when necessary. Measurements and meristic counts were made on the right side of each specimen (except for MZB.Lace.14075, for which lamellae counts were obtained from the left fingers on account of damage to the right hand). To better visualize some structures, such as subdigital keels or pores, we temporarily stained specimens via emersion in the reversible stain methylene blue in 70% ethanol (Harvey *et al.* 2015).

We measured snout–vent length (SVL, from tip of snout to anterior margin of vent), tail length (TailL, from vent to tip of tail), head length (HeadL, from posterior edge of retroarticular process of lower jaw to tip of snout), head width (HeadW, measured in a straight line at angle of jaws), head depth (HeadD, the maximum height of head from the occiput to the throat), snout length (SnoutL, measured from the anterior most edge of orbit to tip of snout), eye to ear distance (EED, from posterior edge of orbit to anterior edge of ear opening), ear length (EarL, maximum length of ear opening), orbital diameter (OD, horizontal diameter of orbit), interorbit distance (IOD, measured across head between anterior edges of orbits), antebrachium length (AnteL, on the dorsal surface from the posterior margin of the elbow while flexed to the inflection of the flexed wrist), brachium length (BrachL, on the dorsal surface from the axilla to the inflection of the flexed elbow), thigh length (ThighL, from the anterior margin of the hind limb at its insertion point on the body to the knee while flexed), tibia length (TibiaL, taken on the ventral surface from the posterior surface of the knee while flexed 90º to the base of the heel), axilla–groin length (AGL, from the posterior margin of the forelimb at its insertion point on the body to the anterior margin of the hind limb at its insertion point on the body).

For the meristic data, we counted supralabial scales from the largest scale immediately posterior to the dorsal inflection of the posterior portion of the upper jaw to the rostral scales. Infralabial scales included all scales from the first bordering the mental to the last enlarged scale bordering the labial angle. The number of ventral scales (VentS) were counted at midbody. We counted paravertebral tubercles (PVT) between the postaxial margin of the arm and preaxial margin of the leg (i.e., axilla–groin). We counted subdigital lamellae both on the fingers and toes from the first proximal enlarged scale to the distal-most lamella (excluding the claw sheath) at the base of the claw; not including the adjacent enlarged submetacarpal and submetatarsal scales. The texture of the scales on the gular, pectoral, abdominal, and ventral surfaces of the brachium and antebrachium, and on the subcaudal scales also was evaluated. We also assessed the presence of tubercles along the ventrolateral edge of the body (flank) between the limb insertions, as well as the presence of a single enlarged median row of subcaudals.

Color notes were taken from digital images obtained from living specimens prior to preservation, but unfortunately, images of the ventral view were lost, resulting in an incomplete description of life coloration. Latitude, longitude, and elevation of collecting localities were recorded with the Compass program using an IPhone 4S. We compared the specimens to specimens and descriptions of all congeners (Appendix 1). Some of the information on character states and their distribution in other Southeast Asian species were obtained from Grismer *et al.* (2014a), Amarasinghe *et al.* (2015), Iskandar *et al.* (2017), and Kurita *et al.* (2017). All type specimens were deposited in the Museum Zoologicum Bogoriense (MZB), Indonesian Institute of Sciences (LIPI), Cibinong, Bogor, Indonesia.

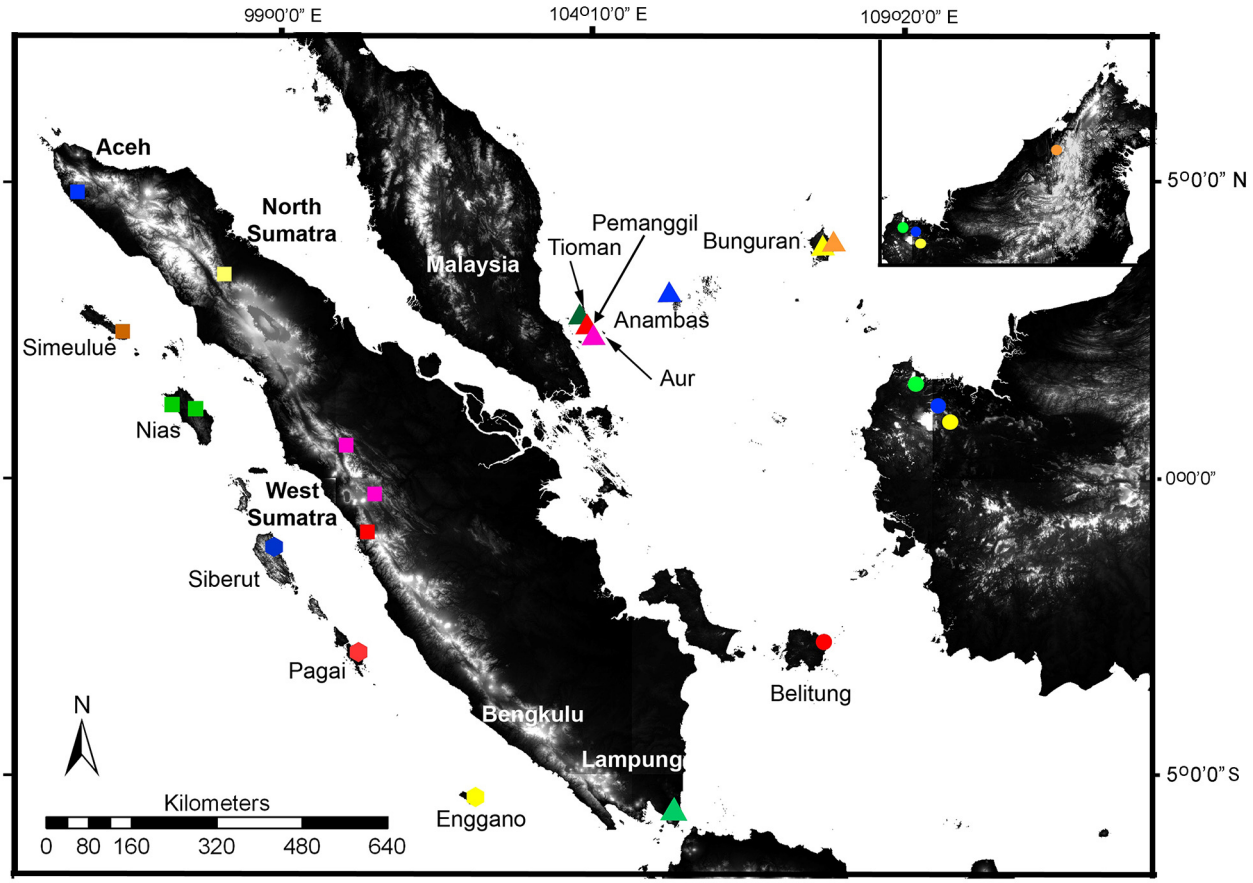

FIGURE 1. Distribution of *Cnemaspis* on Sumatra, Peninsular Malaysia and part of Borneo based on the type localities. Blue square = *C. aceh*, yellow square = *C. tapanuli*, pink squares = *C. andalas*, red square = *C. minang*, brown square = *C. jacobsoni*, green squares = *C. dezwaani*, blue hexagon = *C. whittenorum*, red hexagon = *C. pagai*, yellow hexagon = *C. modigliani*, red circle = *C. purnamai* sp. nov., green circle = *C. nigridia*, yellow circle = *C. leucura*, blue circle = *C. paripari,* brown circle = *C. dringi,* pink triangle = *C. baueri*, red triangle = C. *pemanggilensis*, dark green triangle = *C. peninsularis*, green triangle = *C. rajabasa*, blue triangle = *C. sundagekko*, yellow triangle = *C. sundainsula*, and brown triangle = *C. mumpuniae*. The distribution of *C. kendallii* on Borneo is not shown because the type description did not provide precise locality information.

Systematic

***Cnemaspis purnamai* sp.nov.**
English common name: Belitung Rock Gecko
Indonesia common name: Cicak Batu Belitung
(Figures 2–6)

Holotype (Fig. 2)**.** MZB.Lace.14076 (Field number MUN 14), an adult male from the village (desa) of Burong Mandi, Damar district (kecamatan), Belitung Timur Regency (kabupaten), Kepuluan Riau Province (propinsi), Belitung Island, Indonesia (2°46'13"S; 108°14'48" E; elevation 13 m above sea level); collected by Amir Hamidy, Irvan Sidik, Danny Gunalen, and Fify Lety Indra Purnama on March 25 or 26, 2017.

Paratype. MZB.Lace.14074 (Field number MUN 12), adult female, MZB.Lace.14075 (Field number MUN 13), adult male (Fig. 2). Same data as the holotype.

Diagnosis. The following combination of characters distinguish *Cnemaspis purnamai* **sp. nov.** from all other Southeast Asian congeners: (1) a known maximum SVL of 54.1 mm, (2) five or six postmental scales, (3) enlarged submetacarpal scales present on the first finger, (4) enlarged submetatarsal scales present on the first toe, (5)

ventral scales keeled, (6) absence of precloacal pores, (7) absence of enlarge femoral scales, (8) absence of shield-like subtibial scales, (9) caudal tubercles encircling the tail, (10) an interrupted median row of enlarged keeled subcaudal scales, (11) presence of a distinct furrow on the lateral surface of the tail, (12) 22–24 lamellae beneath fourth toe, and (13) two postcloacal tubercles on each side of the base of the tail.

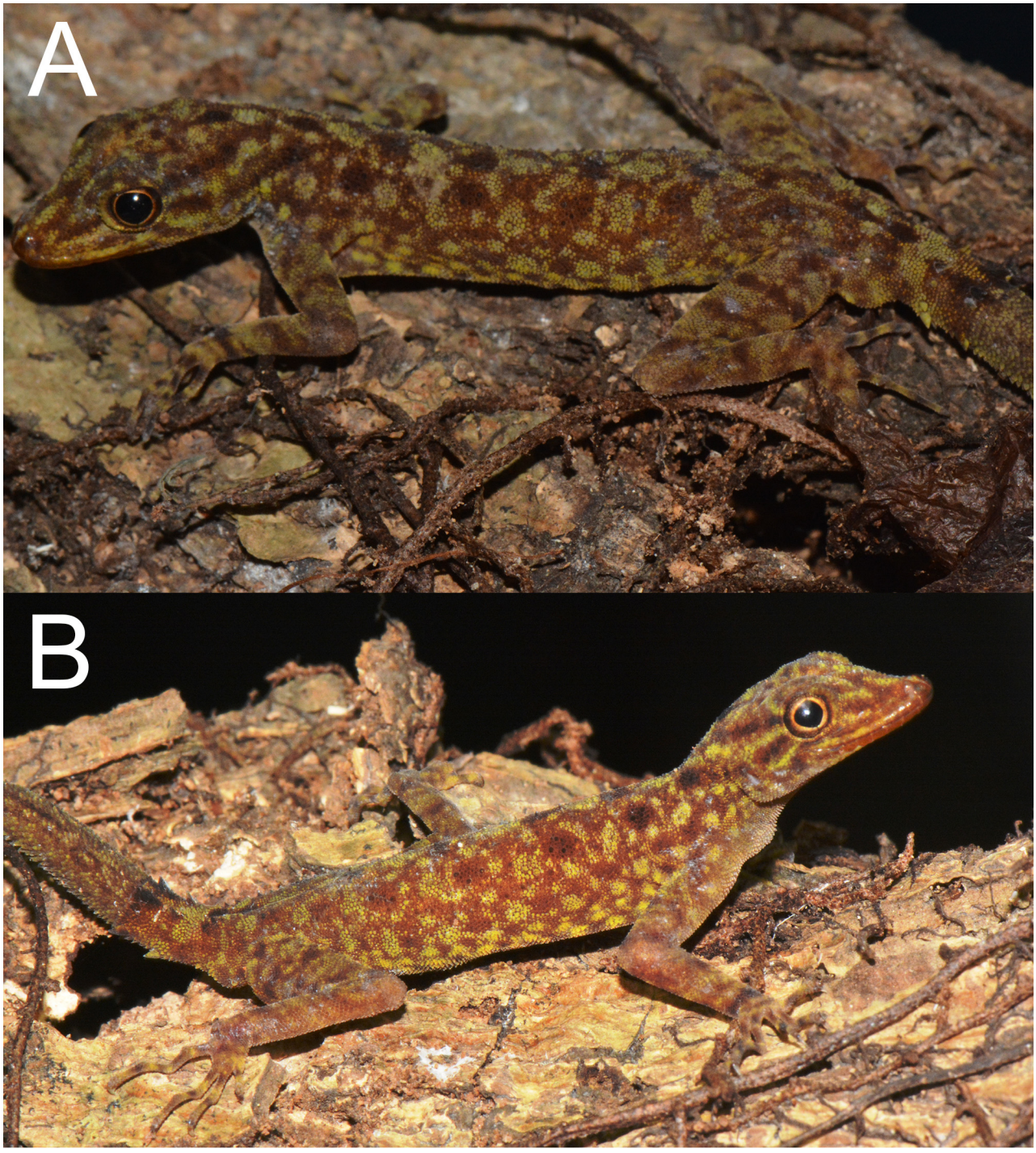

FIGURE 2. The holotype of *Cnemaspis purnamai* sp. nov. (MZB.Lace.14076). A. Lateral view from left side. B. Lateral view from right side. Photo by A. Riyanto.

Description of holotype. An adult male, 50.8 mm SVL; head moderately large, elongate, narrow, distinct from neck, its length 27.4% of SVL; head width 65.2% of head length and 17.8% of SVL; snout short, its length 44.0% of head length and much greater (178.1%) than eye diameter, concave in lateral profile; eye large, its diameter 81.5% of eye to ear distance and 24.7% of head length; interorbital region relatively broad, with interorbital

distance 14.0% of head length; pupil rounded; ear length 59.2% of eyes diameter. A profile of the head of the holotype in lateral view is provided in Fig. 4A.

Rostral divided by a median groove, postventrally in contact with first supralabials, contacted posteriorly by two nasals and postdorsally by two enlarged supranasals that are in contact with one another, no internasal scales between supranasals (Fig. 4B); nostril oval, dorsally oriented (upward); scales of snout keeled, larger than those of occipital region; scales of interorbital and superciliary regions weakly keeled, smaller than occipital scales; 11 supralabials and 9 infralabials.

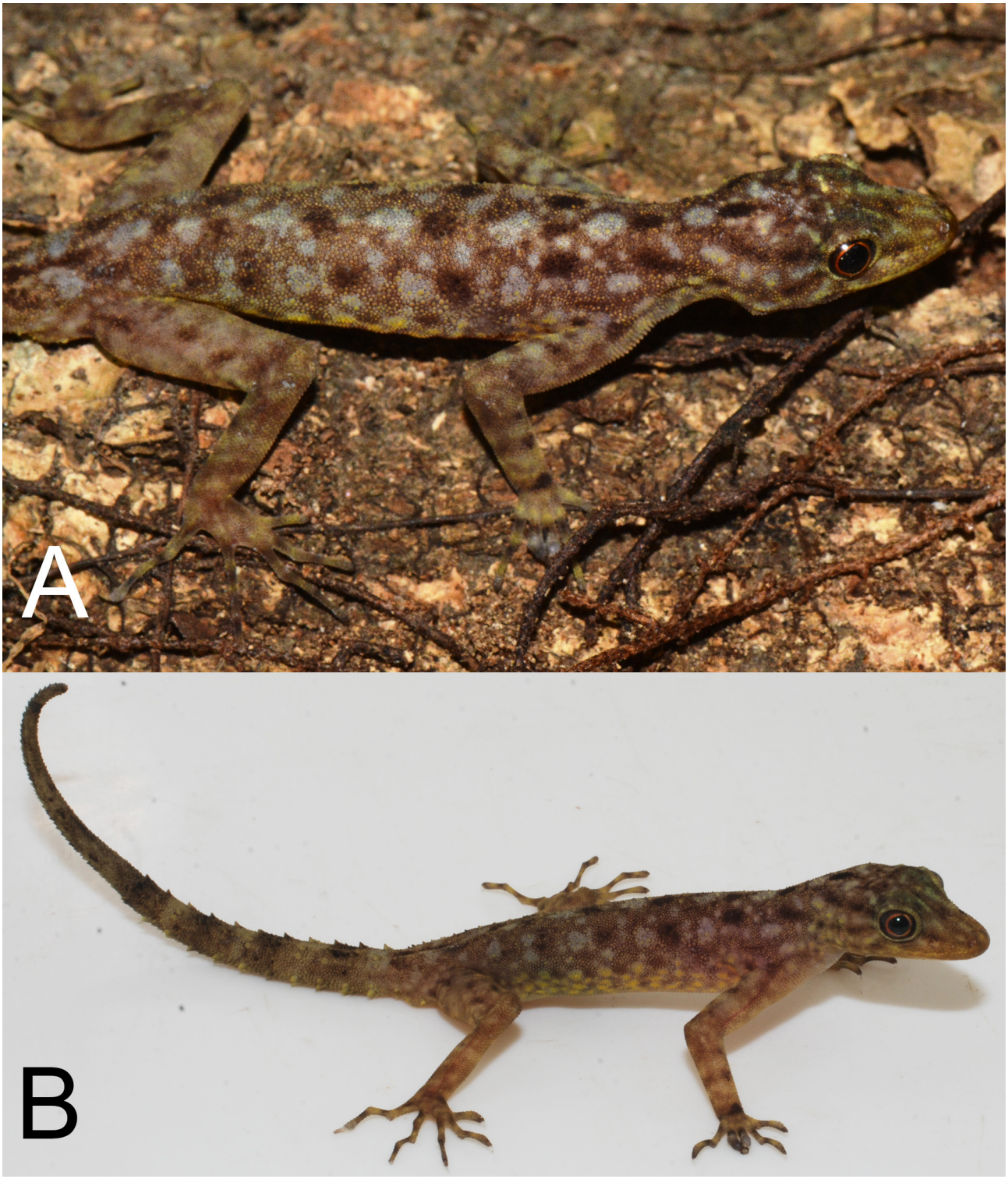

FIGURE 3. Paratype of *Cnemaspis purnamai* sp. nov. (MZB.Lace.14075). Photo by A. Riyanto, B. Photo by A. Hamidy.

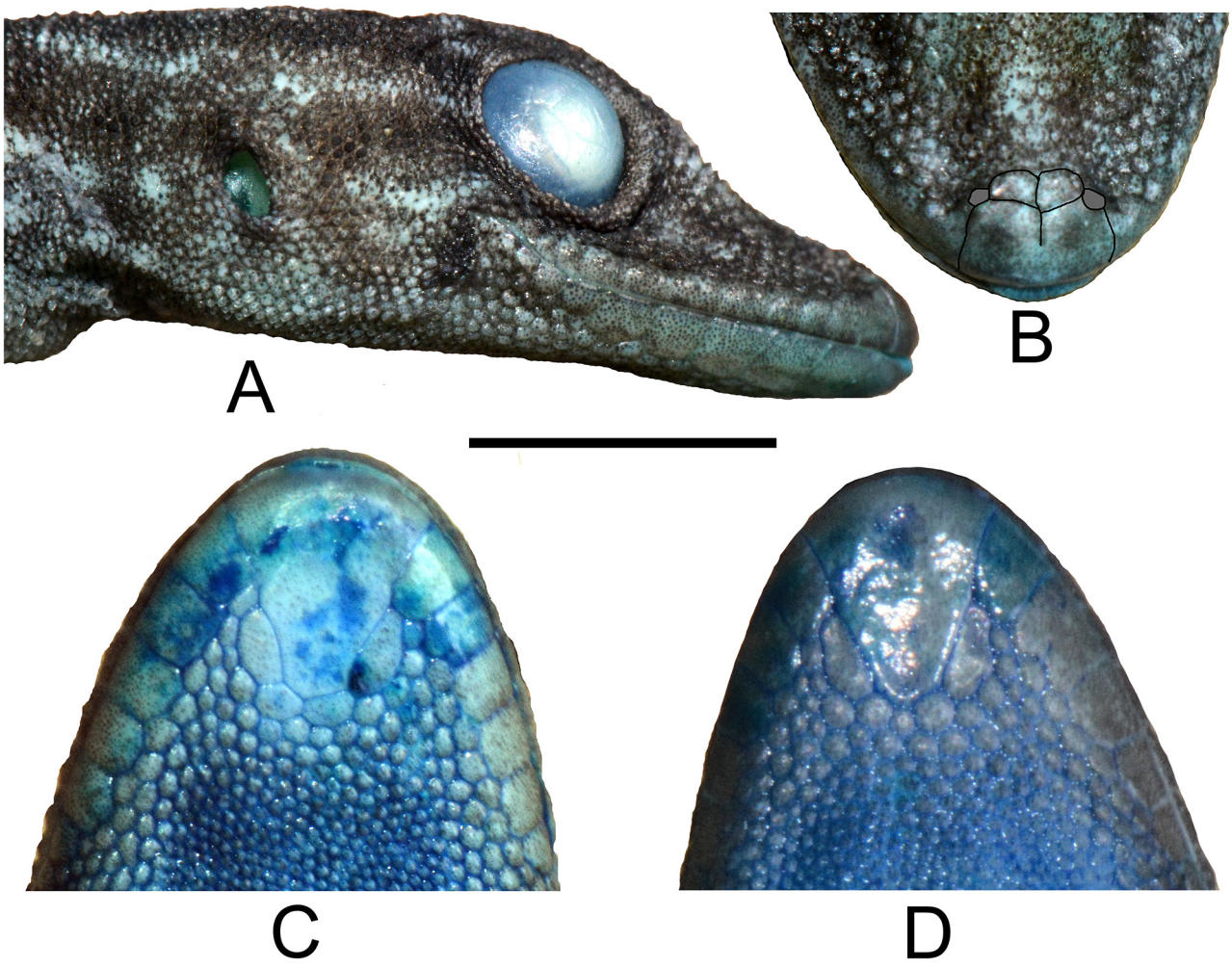

FIGURE 4. Close up views of the head of *Cnemaspis purnamai* sp. nov. A. Lateral view of holotype. B. Rostral region of holotype. C. Mental region of holotype. D. Mental region of paratype MZB.Lace.14075. Bar = 5 mm. Photos by A. Riyanto.

Mental large, subtriangular, elongate, its length 117.2% of its width and 7.7% of HeadL (Figures 4C–D), and reaches posteriorly to a point equal to the anterior part of third infralabial, laterally in contact with first infralabials, postero-laterally bordered by 5 postmental scales; the arrangement of the postmentals on the holotype not symmetrical, slightly damaged on the right side of the postmental (the postmentals are symmetrical in all paratypes); postmentals bordered posteriorly by 12 much more weakly keeled scales; scales on throat raised, also weakly keeled.

Body slender, elongate, with axilla groin distance 48.3% of SVL; middorsal granules pointed, homogeneous, weakly keeled, intermixed with slightly enlarged tubercles; dorsal tubercles moderately prominent and randomly distributed; no tubercles on flanks; dorsal scales at midbody smaller than ventrals at same level; paravertebral tubercles 15, flat, sub-pyramidal and weakly tricarinate, each about two or three times as large as granules separating them; abdominal and ventral scales subequal in size, ovoid, tricarinate, juxtaposed; ventral scales 40 across midbody; lateral scales smooth; no precloacal and femoral pores; no enlarged femoral scales.

Forelimbs short with antebrachium length 19.5% of SVL, brachium length 15.1% of SVL; dorsal scales on both antebrachium and brachium tricarinate, same size as abdominal scales; ventral scales of antebrachium slightly larger than on brachium, keeled; ventral scales of brachium weakly tricarinate; digits well developed, elongate, slender, all bearing slightly recurved claws; enlarged submetacarpal present at base of first finger (Fig. 5A); relative lengths of fingers 4>3>5>2>1; 10 $LamF_1$, 18 $LamF_2$, 20 $LamF_3$, 23 $LamF_4$, and 16 $LamF_5$.

Hindlimbs relatively long, tibia length 23.3% of SVL, thigh short, its length 24.9% of SVL; dorsal scales on both tibias and thighs weakly tricarinate, size relatively homogeneous; ventral scales on tibias and thighs keeled, slightly larger than ventral thighs; digits well developed, elongate, slender, all bearing slightly recurved claws;

enlarged submetatarsal present at the base of first toe (Fig. 5B); relative length of toes 4>3>5>2>1; 8 $LamT_1$, 17 $LamT_2$, 21 $LamT_3$, 24 $LamT_4$, and 24 $LamT_5$.

FIGURE 5. Ventral views of palmar and tarsal regions of the holotype of *Cnemaspis purnamai* sp. nov. A. Palmar view showing the enlarged submetacarpal scale on the base of the first finger. B. Tarsal view showing the enlarged submetatarsal scale on the base of the first toe. Bar = 5 mm. Photos by A. Riyanto.

The tail of the holotype is regenerated with a total length 529.9 mm. Base of tail swollen with two conical postcloacal spurs on each side. The unregenerated proximal part of the tail is 8.4 mm in length; segmented with two whorls of tubercles and encircling tail, each whorl with eight enlarged keeled tubercles and separated from each other by 6–8 small scales dorsally and by 4 subcaudals ventrally. Dorsal scales of unregenerated tail about one third in size of subcaudal scales, dorsal scales tricarinate and subcaudals unicarinate. The regenerated portion of the tail is 44.5 mm in length and covered by homogeneous small unicarinate scales without tubercles. Dorsal scales of this portion rather smaller than subcaudal scales.

The longest original tail is exhibited by one of the two paratypes (MZB.Lace.14075) and is also described here. Tail base swollen; two conical postcloacal spurs present on each side; dorsal scales on tail rounded, posteriorly pointed and keeled; tail segmented with 11 whorls of tubercles, each whorl consisting of eight enlarged keeled tubercles separated from one another by 1 to 7 small scales; each whorl separated from adjacent whorls by 5 to 6 small scales; caudal tubercles encircling tail; a distinct furrow on the lateral surface of the tail present (Fig. 6A); subcaudal scales unicarinate; interrupted median row of enlarged unicarinate subcaudals (Fig. 6B).

Color pattern in life. Dorsal ground color brick-red; a median yellowish spot on rostrum, canthus rostralis bearing yellowish line; thin, white-yellowish nuchal loop extending from posterior margin of one orbit to the other; an upper nuchal loop present in the form of a black line; paired whitish markings on occiput; small, yellowish, linearly arranged spots on side of neck and nape; large, faint, dark, linearly arranged blotches on anterior portion of body and nape; flanks bearing small, round, yellow spots that extend onto lateral margins of abdomen; five blackish bands consisting of irregular rows of three, transversely aligned blotches occur between limb insertions and extend onto original tail, interspersed by yellow blotches; no vertebral stripe. Dorsal ground color of unregenerated tail is brick-red, the blackish transverse stripe on the second whorl (adjacent to regenerated portion of tail) forming a black band. Yellowish spots present on the dorsal and subcaudal regions of the regenerated portion.

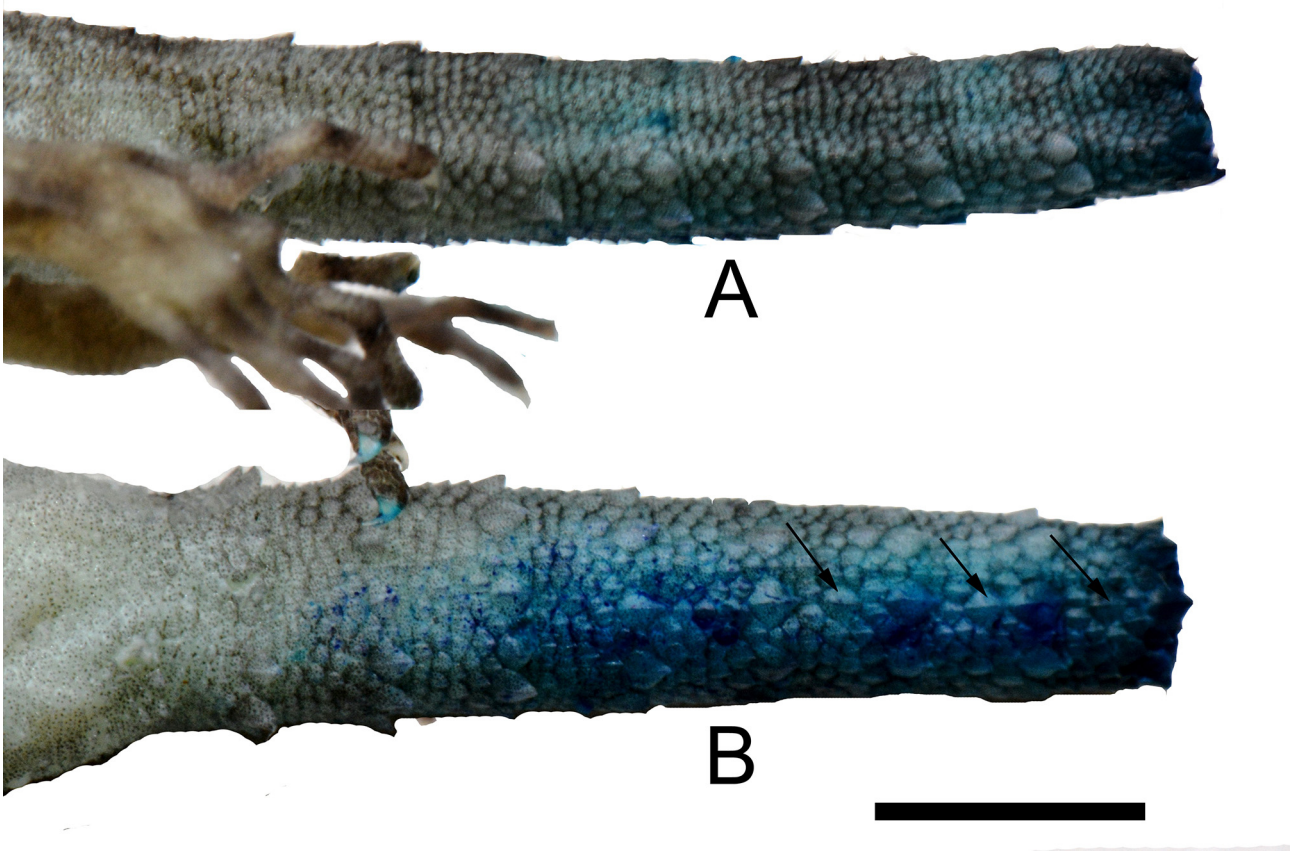

FIGURE 6. Tail of *Cnemaspis purnamai* sp. nov., paratype MZB.Lace.14075. A. Lateral view the furrow separated by paired tubercles. B. Ventral views showing the unicarinate subcaudal scales, and the interrupted median row of enlarged uncarinate subcaudals. Bar = 5 mm. Photos by A. Riyanto.

Variation. The paratypes resemble the holotype in coloration and there seems to be no sexual dimorphism in coloration, although one of female paratypes (MZB.Lace.14075) is more vividly patterned. Meristic and mensural differences are presented in Table 1.

Etymology. The species name "*purnamai*" is in dedication to the phenomenal public figure, Basuki Tjahaja Purnama, regent of Belitung Timur Regency from 3 August 2005 until 22 December 2006 and Governor of Jakarta from 19 November 2014 until 9 May 2017, who ran a strong and honest government in these administrative areas.

Distribution and natural history. At present, the new species only known from the type locality (Fig. 1). The species was diurnally active in lowland primary forest habitats. The type series was collected on a large stone at night between 20.00–23.00h when they were inactive. All three individuals were 1-1.5 meters above the forest floor.

Species Comparison. *Cnemaspis purnamai* **sp.nov.** can be readily distinguished from its congeners from Borneo, Sumatra, and Peninsular Malaysia with the exception of the superficially similar *C. kendallii, C. peninsularis* Grismer, Wood, Anuar, Riyanto, Ahmad, Muin, Sumontha, Grismer, Chan, Quah & Pauwels, 2014a, and *C. rajabasa* Amarasinghe, Harvey, Riyanto & Smith, 2015, in having the following unique combination of characters: both ventral and subcaudal scales keeled, no precloacal pores, and the caudal tubercles encircling the tail.

The new species differs from *C. kendallii* in having a smaller SVL in adults (54.1 *versus* 60.9 mm), the presence (*versus* absence) of enlarged submetatarsal scales on the first toe, and fewer lamellae under the fourth toe (22–24 *versus* 27–33); from *C. peninsularis* by a smaller SVL in adults (54.1 *versus* 60 mm), presence (*versus* absence) of enlarged submetatarsal scales on the first toe, and fewer lamellae under the fourth toe (22–24 *versus* 29–35); and from *C. rajabasa* by the presence (*versus* absence) of enlarged submetatarsal scales on the first toe, absence (*versus* presence) of a single median row of keeled subcaudals and fewer lamellae under the fourth toe (22–24 *versus* 28–34).

TABLE 1. Meristic and mensural character states of the type series of *Cnemaspis purnamai* sp. nov. f = female; and m = male. Meristic abbreviations are listed in the Materials and Methods. For TailL, the measurement for the original portion of the tail is in the parenthesis and the measurement for the regenerated portion is on the right. All measurements are in mm.

	MZB.Lace.14076 Holotype	MZB.Lace.14074 Paratype	MZB.Lace.14075 Paratype
Sex	M	F	F
SVL (mm)	50.8	54.1	50.8
Supralabials	11	12	11
Infralabials	9	9	9
Postmental scales	5	6	5
VentS	40	36	34
No. of PVT	15	14	15
Caudal tubercles in lateral furrow (1) or not (0)	N/A	N/A	0
Lateral caudal tubercle row present (1) or absent (0)	1	?	1
No. of 4th toe lamellae	24	22	22
TailL	(8.4) 44.5	N/A	(24.0) 32.0
AnteL	9.9	9.8	9.0
BrachiumL	7.7	8.9	7.5
ThighL	12.7	11.7	12.3
TibiaL	11.8	12.5	12.1
AGL	24.5	24.5	21.2
HeadL	13.9	14.3	13.0
HeadW	9.1	8.8	8.0
HeadD	6.4	5.4	6.2
SnoutL	6.1	6.1	6.0
OrbitD	3.4	2.9	3.0
EED	4.2	4.1	4.0
EarL	2.0	1.6	1.1

The new species lacks precloacal pores which distinguishes it from the following species all of which have precloacal pores: *C. baueri* Das & Grismer, 2003, *C. bidongensis* Grismer, Wood, Amirrudin, Sumarli, Vazquez, Ismail, Nance, Muhammad, Mohamad, Syed, Kuss, M., Murdoch & Cobos, 2014b, *C. biocellata* Grismer, Chan, Nurolhuda & Sumontha, 2008a, *C. chanthaburiensis* Bauer & Das, 1998, *C. hangus* Grismer, Wood, Anuar, Riyanto, Ahmad, Muin, Sumontha, Grismer, Chan, Quah & Pauwels, 2014a, *C. kumpoli* Taylor, 1963, *C. limi* Das & Grismer, 2003, *C. leucura, C. monachorum* Grismer, Norhayati, Chan, Belabut, Muin, Wood & Norhayati, 2009, *C. shahruli* Grismer, Chan, Quah, Mohd, Savage, Grismer, Norhayati, Greer & Remegio, 2010a; whereas *C. andalas* Iskandar, McGuire & Amarasinghe, 2017, *C. affinis* (Stoliczka, 1870), *C. argus* Dring. 1979, *C. bayuensis* Grismer, Grismer, Wood & Chan, 2008b, *C. flavigaster* Chan & Grismer, 2008, *C. dezwani* Das, 2005, *C. dringi, C. flavolineata* (Nicholls, 1949), *C. gismeri* Wood, Quah, Anuar & Muin, 2013, *C. harimau* Chan, Grismer, Shahrul, Quah, Muin, Savage, Grismer, Norhayati, Remegio & Greer, 2010, *C. karsticola* Grismer, Grismer, Wood & Chan, 2008b, *C. minang* Iskandar, McGuire & Amarasinghe, 2017, *C. mcguirei* Grismer, Grismer, Wood & Chan, 2008b, *C. modiglianii* Das, 2005, *C. narathiwatensis* Grismer, Sumontha, Cota, Grismer, Wood, Pauwels & Kunya, 2010b, *C. neangthyi* Grismer, Grismer & Thou, 2010c, *C. nigrida, C. pagai* Iskandar, McGuire & Amarasinghe, 2017, *C. paripari C. perhentianensis* Grismer & Chan, 2008, *C. pseudomcguirei* Grismer, Norhayati, Chan, Belabut, Muin, Wood & Norhayati, 2009, *C. selamatkanmerapoh* Grismer, Wood, Mohamed, Chan, Heinz, Sumarli, Chan & Loredo, 2013, *C. stongensis* Grismer, Wood, Anuar, Riyanto, Ahmad, Muin, Sumontha, Grismer, Chan, Quah & Pauwels, 2014a, *C. tapanuli* Iskandar, McGuire & Amarasinghe, 2017, *C. temiah* Grismer, Wood, Anuar, Riyanto, Ahmad, Muin, Sumontha, Grismer, Chan, Quah & Pauwels, 2014a and *C. whittenorum* Das, 2005.

TABLE 2. Diagnostic characters used to distinguish *Cnemaspis* species in *kendallii* group of the Southern Sunda Clade (*sensu* Grismer *et al*. 2014a) and occurring in Sumatra. The presence of a diagnostic character is coded as '1', the absence of a character is coded as '0', the character not found in literature "?" and for columns 9 and 10 the number of pores present in one sex only will be indicated by in "♂" or "♀". Numbers at the head of the table correspond to characters as follows: 1 = number of ventral scales, 2 = vertebral stripe, 3= keeled gular scales, 4= paravertebral tubercles, 5 = keeled abdominal scales, 6 = keeled subcaudal scales, 7 = enlarged median subcaudal row, 8 = caudal tubercles encircling tail, 9 = number of precloacal pores, 10 = number femoral pores, 11 = enlarged submetatarsal scales on first toe, 12 = number of lamellae under fourth toe, 13 = single median row of keeled subcaudal scales, and 14 = distribution. Reference. A—Amarasinghe *et al.* (2015); B—Das (2005); C—Das & Bauer (1998); D—Gray (1845); E—Grismer & Das (2005); F—Grismer *et al.* (2014a); G—Iskandar *et al.* (2017); and H—this study (specimen examination).

	SVL (mm)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**Ref.**
***purnamai* sp.nov**	**54.1**	**34–40**	**0**	**1**	**14–15**	**1**	**1**	**1**	**1**	**0**	**0**	**1**	**22–24**	**0**	**Belitung**	**H**
baueri	67.4	?	0		18–27	1	1	1	1	0	0	0	26–32	0	Aur	
bidongensis	58.1	?	0		21–26	1	1	1	1	0	0	0	26–30	0	Bidong	F
kendallii	58.4	40	0		18–26	1	1	0	1	0	0	0	25–33	0	Borneo	C,D,F
mumpuniae	60.9	?	0	0	18–25	1	1	1	1	0	0	0	29–35	1	Natuna	F,H
pemanggilensis	76.0	?	0	1	30–37	1	1	1	1	0	0	0	27–34	1	Pemanaggil	
peninsularis	60.0	?	0	0	17–25	1	1	0	1	0	0	0	27–33	0	Peninsula Malaysia, Tinggi, Babi besar, Tioman, Tenggol	F
sundagekko	68.0	?	0	1	20–25	1	1	1	1	0	0	0	33–38	0	Siantan, Anambas	
sundainsula	84.5	?	0	1	26–37	1	0	1	0	0	0	1	25–29	0	Bunguran	F,H
rajabasa	58.7	36–44	0	0	20–21	1	1	0	1	0	0	0	28–35	1	Sumatra	A,H
aceh	30.7	24	1	1	?	1	1	1	0	0	0	1	18	1	Sumatra	G,H
andalas	33.8	18	1	0	?	0	0	1	0	6, ♂	4 on each side, ♂	1	18–20	0	Sumatra	G,H
dezwaani[a]	31.3	24	0	1	?	1	1	1	?	8–12, ♂	3 on each side, ♂	1	16–19	?	Sumatra	B
jacobsoni	30.5	?	0	1	?	1	1	1	?	0	0	?	14	?	Simelu	B
minang[b]	31.3	20	0	1	?	0	0	1	0	4,♂	4 on each side, ♂	1	18	0	Sumatra	G,H
modiglianii	33.6	22–24	0	1	?	1	1	1	?	2,♂	4 on each side, ♂	?	16–18	0	Enggano	B
pagai[c]	31.9	20	0	1	?	1	1	1	0	2,♂	3 on each side, ♂	1	20	1	Pagai	G,H
whittenorum	32.0	20	0	1	0	1	1	1	?	4,♂	6 on each side, ♂	?	18	1	Siberut	B
tapanuli	32.1	24	0	1	?	0	0	1	0	4,♂	4 or 5 on each side, ♂	0	18	0	Sumatra	G,H

[a]*Cnemaspis dezwaani* is known from two adult male type specimens (see Das 2005). Hence, it is currently unknown whether females have pores.
[b]*Cnemaspis minang* is also known from two male type specimens (see Iskandar *et al*. 2017). Hence, it is currently unknown whether females have pores.
[c]*Cnemaspis pagai* is known from single male type specimen (see Iskandar *et al.* 2017). Hence, it is currently unknown whether females have pores.

TABLE 3. Color pattern comparison of *Cnemaspis purnamai* **sp.nov.** and selected species occurring in Borneo, Karimata Strait, Natuna Islands and Sumatra with maximum SVL ≥ 50.0 mm. ? = data unavailable.

	purnamai	*rajabasa*	*leucura*	*nigridia*	*paripari*	*dringi*	*kendallii*	*sundainsula*	*mumpuniae*
Dorsal color pattern sexually dimorphic	no	no	yes	no	yes	?	no	no	no
Ventral pattern sexually dimorphic	?	?	no	no	yes	?	no	yes	no
Head yellow	no	no	yes	no	yes	no	no	no	no
Reddish blotched on head and body	no	no	no	no	no	no	no	no	no
Dense yellow reticulum on occiput and side of neck	no	no	no	no	no	no	no	no	no
Ocelli on occiput and nape	no	no	yes	no	no	no	no	no	no
Ocelli on shoulder	no	no	yes	no	no	no	no	no	no
Thin, white, nuchal loop	yes	no	no	no	no	no	no	no	yes
Large, black round spots on nape and anterior of body	no	no	no	yes	no	no	no	no	no
Thin yellow reticulum on side of neck	no	no	no	no	no	no	no	no	no
Yellowish, prescapular crescent	no	no	no	no	no	no	no	no	no
Forelimbs yellow	no	no	yes	no	yes	no	no	no	no
Hind limbs yellow	no	no	yes	no	yes	no	no	no	no
Reddish blotches or bands on limbs	no	no	no	no	no	no	no	no	no
Forearms and forelegs orange	no	no	no	no	no	no	no	no	no
Dorsal ground color magenta	no	no	no	no	no	no	no	no	no
Dorsal ground color reddish	yes	no	no	no	no	no	no	no	yes
Uniform brown ground color	no	yes	yes	no	no	no	no	no	no
Light vertebral stripe	no	no	no	no	no	no	no	no	no
Yellow postscapular band	no	no	no	no	no	no	no	no	no
Black, squarish, paired, paravertebral dorsal markings	no	no	yes	no	no	no	no	no	no
Small, light, round spots on flanks	yes	yes	no	no	no	yes	no	yes	yes
Black flanks with distinct yellowish spots	no	no	no	no	no	no	no	no	no
Yellow or white bars on flanks	no	no	no	yes	no	no	no	no	no
Original tail yellow	no	no	no	no	no	no	no	no	no
Original tail orange	no	no	no	no	no	no	no	no	no
Regenerated tail yellow	yes	?	yes	no	yes	no	no	no	yes
Regenerated tail orange	no	?	no	no	no	no	no	no	no
White, dorsal caudal tubercles	no	yes	no	no	no	no	no	no	no
Caudal bands present	yes	yes	no	no	no	no	no	no	no
Wide black and yellow bands on tail	no	yes	no	yes	no	no	no	no	no
Thin, yellow caudal bands anteriorly	yes	no	yes	no	no	no	no	no	no
Posterior portion of original tail white	?	?	no	no	yes	no	no	no	no
Posterior portion of original tail black	?	?	yes	no	no	no	no	no	yes
Distinct black and white caudal bands at least posteriorly	?	?	no	no	no	?	yes	no	no
Gular region orange	?	?	?	no	no	?	no	no	no
Gular region yellow	?	?	?	no	no	?	no	yes	no
Lineate gular markings	no	no	no	no	no	?	no	no	no

.....continued on the next page

TABLE 3. (Continued)

	purnamai	*rajabasa*	*leucura*	*nigridia*	*paripari*	*dringi*	*kendallii*	*sundainsula*	*mumpuniae*
Throat yellow	?	?	no	no	no	?	no	yes	no
Throat orange	?	?	no	no	no	?	no	no	no
Pectoral region yellow	?	?	no	no	no	?	no	no	no
Pectoral region orange	?	?	no	no	no	?	no	no	no
Abdomen yellow	?	?	no	no	no	?	no	yes	no
Abdomen orange	?	?	no	no	no	?	no	no	no
Ventral surfaces of forelimbs yellow	?	?	no	no	no	?	yes	no	no
Ventral surfaces of forelimbs orange	?	?	no	no	no	?	yes	no	no
Ventral surfaces of hind limbs yellow	?	?	no	no	no	?	yes	no	no
Ventral surfaces of hind limbs orange	?	?	no	no	no	?	yes	no	no
Subcaudal region yellow	?	?	no	no	no	?	yes	no	no
Subcaudal region orange	?	?	no	no	no	?	no	no	no
At least posterior half of subcaudal region white	?	?	no	no	yes	no	yes	yes	no

The ventral scales in the new species are keeled, whereas the following species have smooth ventrals: *Cnemaspis andalas, C. aurantiacopes* Grismer & Ngo, 2007, *C. biocellata*, *C. boulengeri*, *C. caudanivea* Grismer & Ngo, 2007, *C. chanthaburiensis*, *C. flavigaster*, *C. huaseesom* Grismer, Sumontha, Cota, Grismer, Wood, Pauwels & Kunya, 2010b, *C. kumpoli, C. laoensis* Grismer, 2010, *C. monachorum*, *C. minang, C. neangthyi*, *C. niyomwanae* Grismer, Sumontha, Cota, Grismer, Wood, Pauwels & Kunya, 2010b, *C. nuicamensis* Grismer & Ngo, 2007, *C. psychedelica* Grismer, Ngo & Grismer, 2010d, *C. punctatonuchalis*, Grismer, Sumontha, Cota, Grismer, Wood, Pauwels & Kunya, 2010b*, C. tapanuli* and *C. tucdupensis* Grismer & Ngo, 2007.

By lacking enlarged femoral scales, the new species can be distinguished from *C. boulengerii* Strauch, 1887 and *C. psychedelica*.

The new species possesses keeled subcaudal scales, which separates it from *Cnemaspis andalas, C. aurantiacopes*, *C. biocellata*, *C. boulengeri*, *C. caudanivea*, *C. chanthaburiensis*, *C. flavigaster, C. kumpoli, C. laoensis, C. limi, C. minang, C. monachorum, C. neangthyi, C. niyomwanae*, *C. nuicamensis*, *C. psychedelica, C. sundainsula. C. tapanuli,* and *C. tucdupensis.*

The new species possesses enlarged submetatarsal scales on the first toe which distinguishes it from the following species all of which lack enlarged submetatarsals under the first toe: *C. affinis, C. argus, C. bayuensis, C. baueri, C. bidongensis, C. biocellata, C. caudanivea, C. chanardi, C. chanthaburiensis, C. flavolineata, C. grismeri* Wood, Quah, Anuar & Muin, 2013*, C. hangus, C. harimau, C. huaseesom, C. kamolnorranathi* Grismer, Sumontha, Cota, Grismer, Wood, Pauwels & Kunya, 2010b*, C. karsticola, C. kendallii,C. limi, C. mcguirei, C. mumpuniae, C. narathiwatensis, C. pemanggilensis, C. peninsularis, C. perhentianensis, C. punctatonuchalis, C. rajabasa, C. selamatkanmerapoh, C. shahruli, C. siamensis* (Smith, 1925)*, C. stongensis, C. sundagekko, C. tapanuli*, *C. temiah,* and *C. vandeventeri* Grismer, Sumontha, Cota, Grismer, Wood, Pauwels & Kunya, 2010b.

The new species possesses caudal tubercles encircling the tail which differentiates it from *Cnemaspis affinis, C. andalas, C. argus, C. bayuensis, C. boulengerii, C. biocellata, C. caudanivea, C. chanardi, C. chanthaburiensis, C, dringi, C. flavigaster, C. leucura, C. grismeri, C. hangus, C. huaseesom, C. kamolnorranathi, C. karsticola, C. kumpoli, C. laoensis, C. limi, C. minang, C. mcguirei, C. monachorum, C. narathiwatensis, C. neangthyi, C. nigridia, C. niyomwanae, C. nuicamensis, C. aurantiacopes, C. pagai, C. paripari, C. perhentianensis, C. pseudomcguirei, C. psychedelica, C. punctatonuchalis, C. roticanai, C. selamatkanmerapoh, C. sundainsula, C. shahruli, C. siamensis, C. stongensis, C. tapanuli, C. temiah, C. tucdupensis,* and *C. vandeventeri.*

The new species has an enlarged median row of subcaudals distinguishing it from *C. aceh, C. andalas, C. aurantiacopes, C. baueri, C. bidongensis, C. biocellata, C. bidongrndid. C. boulengeri, C. chanardi, C. dezwaani*

Das, 2005*, C. jacobsoni* Das, 2005*, C. kumpoli, C. limi, C. minang, C. modiglianii, C. monachorum, C. mumpuniae, C. neangthyi, C. nigridia, C. niyomwanae, C. nuicamensis, C. pagai, C. paripari, C. pemanggilensis, C. psychedelica, C. punctatonuchalis, C. siamensis, C. sundagekko, C. sundainsula, C. whittenorum, C. tapanuli*, and *C. vandeventeri*.

Cnemaspis purnamai **sp. nov.** has a distinct furrow on the lateral margin of the tail that separates it from *C. boulengerii* and C. *psychedelica.* The new species lacks a pale vertebral stripe (species with variable present of this character donated '*') which separates it from *Cnemaspis aceh, C. andalas, C. dezwaani, C. flavolineata*, C. jacobsoni, C. narathiwatensis, C. pseudomcguirei*, C. shahruli*, C. tapanuli, C. temiah** and *C. whittenorum.*

A summary of the diagnostic characters used to distinguish *Cnemaspis* species in the *kendallii* group of the Southern Sunda Clade (*sensu* Grismer *et al.* 2014a) and occurring in Sumatra presented is in Table 2. We also compared the color pattern on the new species to the species in the *kendallii* group based on data provided by Grismer *et al.* (2014a) (Table 3). Based on color pattern, the new species is superficially similar *C. mumpuniae* with differs in the presence of caudal bands and yellow caudal bands anteriorly.

Discussion

The description of *Cnemaspis purnamai* **sp. nov.** is yet another new species in a growing list of rock geckos from Indonesia. The discovery of this species reaffirms that Indonesian *Cnemaspis* diversity is likely substantially underestimated and further, yet unnamed species await formal description (A. Riyanto *et al.* unpubl. data). This situation is similar to that of Indonesian *Cyrtodactylus*, which also has experienced a recent explosion in the number of new described species.

Though not yet confirmed with molecular data analysis, the new species and *C. rajabasa* appear to be members of the *Cnemaspis kendallii* group. This assessment is based on an evaluation of morphological characters used to diagnose the *kendallii* group by Grismer *et al.* (2014a), including lack of precloacal pores, presence of keeled ventral scales, presence of caudal tubercles encircling the tail, absence of enlarged femoral scales, and black coloration of the posterior portion of non regenerated tails. Meanwhile, based on color pattern on the dorsal aspect, the new species superficially similar to *C. mumpuniae.*

At present we know little about the biology of *Cnemaspis purnamai* and encourage additional surveys as well as ecological and conservation studies of this poorly known insular endemic gecko.

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References

Amarasinghe, A.A.T., Harvey, M.B., Riyanto, A. & Smith, E.N. (2015) A new species of *Cnemaspis* (Reptilia: Gekkonidae) from Sumatra, Indonesia. *Herpetologica*, 71 (2), 160–167. https://doi.org/10.1655/HERPETOLOGICA-D-14-00034

Bauer, A.M. & Das, I. (1998) A new *Cnemaspis* (Reptilia: Gekkonidae) from Southeastern Thailand. *Copeia,* 1998, 439–444. http://dx.doi.org/10.2307/1447438.

Chan, K.O. & Grismer, L.L. (2008) A new species of *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from Selangor, Peninsular Malaysia. *Zootaxa*, 1877, 49–57.

Chan, K.O., Grismer, L.L., Anuar, S., Quah, E., Muin, M.A., Savage, A.E., Grismer, J.L., Norhayati, A., Remegio, A.C. & Greer, L.F. (2010) A new endemic rock Gecko *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from Gunung Jerai,

Kedah, northwestern Peninsular Malaysia. *Zootaxa*, 2576, 59–68.
Das, I. (2005) Revision of the genus *Cnemaspis* Strauch 1887 (Sauria: Gekkonidae) from the Mentawai and adjacent archipelagos off western Sumatra, Indonesia, with the description of four new species. *Journal of Herpetology,* 39, 233–247.
https://doi.org/10.1670/61-02A
Das, I & Bauer, A.M. (1998) Systematic and biogeography of Bornean Geckos of the genus *Cnemaspis* Strauch, 1887 (Sauria: Gekkonidae), with the description of a new species. *The Raffles Bulletin of Zoology*, 46 (1), 11–28.
Das, I. & Grismer, L.L. (2003) Two new species of *Cnemaspis* Strauch, 1887 (Squamata: Gekkonidae) from Seribuat archipelago, Pahang and Johor state, West Malaysia. *Herpetologica,* 59 (4), 544–552.
https://doi.org/10.1655/02-22
De Rooij, N. 1915. *The Reptiles of the Indo-Australian Archipelago. I. Lacertilia, Testudinata, Emydosauria*. E. J. Brill, Leiden. xiv + 384 pp.
Dring, J.C. (1979) Amphibians and reptiles from northern Trengganu, Malaysia, with descriptions of two new geckos: *Cnemaspis* and *Cyrtodactylus. Bulletin of the British Museum of Natural History* (*Zoology*), 34, 181–241.
Gamble, T., Greenbaum, E., Jackman, T.R., Russell, A.P. & Bauer, A.M. (2012) Repeated origin and loss of adhesive toepads in geckos. *PLoS ONE.* 7:e39429.
https://doi.org/ 10.1371/journal.pone.0039429.
Gray, J.E. (1845) *Catalogue of the Specimens of Lizards in the British Museum*. Trustees of the British Museum, London, 289 pp.
https://doi.org/10.5962/bhl.title.5499
Grismer, L.L. (2010) The first record of the genus *Cnemaspis* Strauch (Squamata: Gekkonidae) from Laos with the description of a new species. *Zootaxa*, 2475, 55–63.
Grismer, L.L. & Chan, K.O. (2008) A new species of *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from Pulau Perhentian Besar, Terengganu, Peninsular Malaysia. *Zootaxa*, 1771, 1–15.
Grismer, L.L. & Chan, K.O. (2009) A new species of karst dwelling *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from Sarawak, Borneo. *Zootaxa*, 2246, 21–31.
Grismer, L.L., Chan, K.O., Nurolhuda, N. & Sumontha, M. (2008a) A new species of karst dwelling gecko (genus *Cnemaspis* Strauch 1887) from the border region of Thailand and Peninsular Malaysia. *Zootaxa*, 1875, 51–68.
Grismer, L.L., Chan, K.O., Quah, E., Mohd, A.M., Savage, A.E., Grismer, J.L., Norhayati, A., Greer, L.F. & Remegio, A.C. (2010a) Another new, diminutive Rock Gecko (*Cnemaspis* Strauch) from Peninsular Malaysia and a discussion of resource partitioning in sympatric species pairs. *Zootaxa,* 2569, 55–66.
Grismer, L.L. & Das, I. (2005) A new species of gekkonid lizard of the genus *Cnemaspis* Strauch 1887 from Pulau Pemanggil, Johor, West Malaysia. *Herpetological Natural History*, 10 (1), 1–7.
Grismer, J.L., Grismer, L.L. & Thou, C. (2010c) A new species of *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from southwestern Cambodia. *Journal of Herpetology*, 44, 28–36.
https://doi.org/10.1670/08-211.1
Grismer, L.L., Grismer, J.L., Wood, Jr., P.L. & Chan, K.O. (2008b) The distribution, taxonomy, and redescription of the geckos *Cnemaspis affinis* (Stoliczka 1887) and *C. flavolineata* (Nicholls 1949) with descriptions of a new montane species and two new lowland, karst-dwelling species from Peninsular Malaysia. *Zootaxa*, 1931, 1–24.
Grismer, L.L. & Ngo, V.T. (2007) Four new species of the gekkonid genus *Cnemaspis* Strauch 1887 (Reptilia: Squamata) from southern Vietnam. *Herpetologica*, 63, 482–500.
http://dx.doi.org/10.1655/0018-0831.
Grismer, L.L., Ngo, V.T. & Grismer, J.L. (2010d) A colorful new species of insular rock gecko (*Cnemaspis* Strauch 1887) from southern Vietnam. *Zootaxa*, 2352, 46–58.
Grismer, L.L., Norhayati, A., Chan, K.O., Belabut, D., Muin, M.A., Wood, P.W. Jr. & Grismer, J.L. (2009) Two new diminutive species of *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from Peninsular Malaysia. *Zootaxa*, 2019, 40–56.
Grismer, L.L., Sumontha, M., Cota, M., Grismer, J.L., Wood, P.L. Jr., Pauwels, O.S.G. & Kunya, K. (2010b) A revision and redescription of the rock gecko *Cnemaspis siamensis* (Taylor 1925) (Squamata: Gekkonidae) from Peninsular Thailand with descriptions of seven new species. *Zootaxa,* 2576, 1–55.
Grismer, L.L., Wood, P.L. Jr., Amirrudin, B.A., Sumarli, A.S.I., Vazquez, J.J., Ismail, L.H.B., Nance, R., Muhammad, A.B.M.A., Mohamad, N.A.B.O., Syed, A.R., Kuss, M., Murdoch, M. & Cobos, A. (2014b) A new species of insular Rock gecko (Genus *Cnemaspis* Strauch), 1887) from the Bidong Archipelago, Terengganu, Peninsular Malaysia. *Zootaxa,* 3755 (5), 447–456.
http://dx.doi.org/10.11646/zootaxa.3755.5.4
Grismer, L.L., Wood, P.L.Jr., Anuar, S., Riyanto, A., Ahmad, N., Muin, M.A., Sumontha, M., Grismer, J.L., Chan, K.O., Quah, E.S.H. & Pauwels, O.S.A. (2014a) Systematics and natural history of Southeast Asian Rock Geckos (genus *Cnemaspis* Strauch 1887) with descriptions of eight new species from Malaysia, Thailand, and Indonesia. *Zootaxa,* 3880, 1–147.
https://doi.org/10.11646/zootaxa.3880.1.1
Grismer, L.L., Wood, P.L.Jr., Mohamed, Chan, K.O., Heinz, H.M., Sumarli, A.S.I., Chan, J.A. & Lored, A.I. (2013) A new species of karst-adapted *Cnemaspis* Strauch, 1887 (Squamata: Gekkonidae) from a threatened karst region in Pahang, Peninsular Malaysia. *Zootaxa,* 3746 (3), 463–472

http://doi.org/10.11646/zootaxa.3746.3.5
Harvey, M.B., O'connell, K.A., Barraza, G., Riyanto, A., Kurniawan, N. & Smith, E.N. (2015) Two new species of *Cyrtodactylus* (Squamata: Gekkonidae) from the Southern Bukit Barisan Range of Sumatra and an estimation of their phylogeny. *Zootaxa,* 4020 (3), 495–516.
http://doi.org/10.11646/zootaxa.4020.3.5
Iskandar, D.T., McGuire, J.A. & Amarasinghe, A.A.T. (2017) Description of five new day geckos of *Cnemaspis kandiana* group (Sauria: Gekkonidae) from Sumatra and Mentawai Archipelago, Indonesia. *Journal of Herpetology,* 51(1), 142–153.
https://doi.org/10.1670/15-047
Kurita, K., Nishikawa, K., Matsui, M. & Hikida, T. (2017) A new species of rock gecko genus *Cnemaspis* (Squamata: Gekkonidae) from Western Sarawak, Malaysia. *Zootaxa,* 4258 (6), 525–538.
https://doi.org/10.11646/zootaxa.4258.6.2
Nicholls, L. (1949) A new gekkonid from the Malay Peninsula. *Bulletin of the Raffles Museum*, 19, 47–49.
Smith, M.A. (1925) Contributions to the herpetology of Borneo. *The Sarawak Museum Journal*, 3, 15–34.
Stoliczka, F. (1870) Observation on some Indian and Malayan Amphibia and Reptilia. *Journal of the Asiatic Society of Bengal,* 39, 159–228.
https://doi.org/10.1080/00222937008696209
Strauch, A.A. (1887) Bemerkungen über die Geckoniden-Sammlung im zoologischen Museum der kaiserlichen Akademie der Wissenschaften zu St. Petersburg. *Mémoires des Savants Étrangers,* 7, 1–72.
Taylor, E.H. (1963) *The lizards of Thailand*. University of Kansas Science Bulletin, 44, 687–1077.
Uetz, P. Freed, P. & Hošek, J. (2017) The reptile database, http://www.reptile-databse.org. (accessed 22 May 2017)
Wood, P.L.Jr., Quah, E.S.H., Anuar, S. & Muin, M.A. (2013) A new species of lowland karst dwelling *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from northwestern Peninsular Malaysia. *Zootaxa*, 3691 (5), 538–558.
http://doi.org/10.11646/zootaxa.3691.5.2

APPENDIX. List of specimens examined

Cnemaspis aceh. MZB.Lace.12998 (holotype), Aceh, Sumatra, Indonesia.
Cnemaspis andalas. MZB.Lace.12999 (holotype), 13000 (paratype), West Sumatra, Indonesia.
Cnemaspis minang. MZB.Lace.13002 (holotype), 13002 (paratype), Padang, West Sumatra, Indonesia.
Cnemaspis mumpuniae. MZB.Lace.10167 (holotype), Bunguran (Great Natuna) island, Indonesia.
Cnemaspis pagai. MZB.Lace.13004 (holotype), West Sumatra, Indonesia.
Cnemaspis rajabasa. MZB.Lace.6595 (holotype), Lampung, Sumatra, Indonesia.
*Cnemaspis sundainsula.*MZB.Lace.9438 (holotype), Bunguran (Great Natuna) island, Indonesia.
Cnemaspis tapanuli. MZB.Lace.2240 (holotype), Tapanuli, North Sumatra, Indonesia.