HERPETOLOGICAL NATURAL HISTORY
VOL. 10 2006 NO. 1

Herpetological Natural History, 10(1), 2006, pages 1–7.


# A NEW SPECIES OF GEKKONID LIZARD OF THE GENUS *CNEMASPIS* STRAUCH 1887 FROM PULAU PEMANGGIL, JOHOR, WEST MALAYSIA

L. Lee Grismer
Department of Biology, La Sierra University, Riverside, California 92515, USA
Email: lgrismer@lasierra.edu

Indraneil Das
Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak,
94300 Kota Samarahan, Sarawak, Malaysia
Email: idas@ibec.unimas.my

**Abstract.** A new species of the gekkonid genus *Cnemaspis* is described from Pulau Pemanggil, Johor, West Malaysia on the basis of its unique combination of color pattern, scale characteristics, and snout–vent length. It resembles the insular endemic *C. baueri* from the adjacent islands of Aur and Dayang. This species is the only known reptile endemic to Pulau Pemanggil.

**Key Words.** *Cnemaspis*; New Species; Pulau Pemanggil; Seribuat Archipelago; West Malaysia; Gekkonidae.

The gekkonid genus *Cnemaspis* contains a diverse array of relatively small species that collectively range from Africa to East and Southeast Asia. All *Cnemaspis* are scansorial and for the most part diurnal. In some regions they are amongst the most conspicuous reptiles in the environment. *Cnemaspis* is particularly diverse in Southeast Asia (Manthey and Grossmann 1997) and a number of insular endemics have been described (e.g., Das and Grismer 2003). Recent work in the Seribuat Archipelago off the southeast coast of West Malaysia at the southern end of the South China Sea (Fig. 1) has resulted in the discovery of additional insular endemics from Pulau Tulai and Pulau Tioman (Das and Grismer 2003) and Pulau Dayang and Pulau Aur (Das and Grismer 2003; Wood et al. 2003*b*). During a reconnaissance survey of the herpetofauna of Pulau Pemanggil (Youmans et al. 2002), a small island lying between Pulau Tioman and Pulau Aur (Fig. 1), we discovered yet another new insular population of *Cnemaspis*. It is suffi-

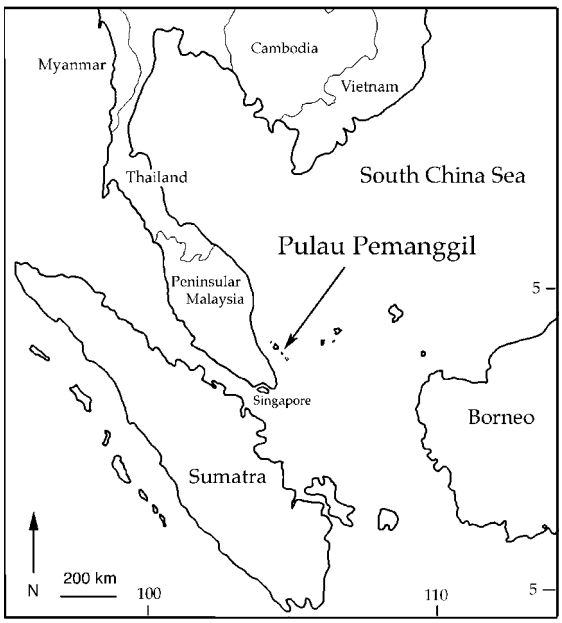


**Figure 1.** Location of Pulau Pemanggil, Johor, West Malaysia in the South China Sea.

ciently distinguishable from all other species of *Cnemaspis* on the basis of color pattern, size, and scalation that we describe it as new herein.

## MATERIALS AND METHODS

Specimens were collected by hand and with blowpipes, fixed in 10% formalin, and transferred to 70% ethanol within 30 days of collection. Color notes on the holotype were taken from Fujichrome Velvia 50 35-mm slide transparency film. The following measurements were taken with dial calipers to the nearest 0.1 mm on the left side of the body where appropriate: snout–vent length (SVL; from tip of snout to vent), tail length (TL; from vent to tip of unregenerated tail), head length (HL; distance between posterior edge of last supralabial and tip of snout), head width (HW; measured at angle of jaws), head depth (HD; maximum height of head, from occiput to throat), ear length (EL; greatest anterior–posterior distance of the ear opening); eye diameter (ED; greatest diameter of orbit); eye–snout distance (ES; distance between anteriormost point of eyes and tip of snout), and eye–ear distance (EE; distance from anterior edge of ear opening to posterior corner of eyes). Additional information on character states and their distribution in other species was obtained from Bauer and Das (1998), Cox et al. (1998), Das and Grismer (2003), De Rooij (1915), Dring (1979), Manthey and Grossmann (1997), Smith (1935), Taylor (1963), and Wermuth (1966). Locality coordinates for field collections were taken with a global positioning system. Institutional abbreviations follow Leviton et al. (1985), but we retain ZRC for USDZ following conventional usage. A list of examined specimens appears in Appendix I.

## SYSTEMATICS

*Cnemaspis pemanggilensis* n. sp. (Fig. 2)

### Holotype

An adult male (ZRC 2.6043) from the base of Batu Buau, a small rocky hill behind Kampung Buau on the west side of Pulau Pemanggil, Johor, West Malaysia, elevation 100 m. Collected by Jesse L. Grismer on 27 March 2002.

### Paratopotypes

Three adult males (ZRC 2.6044–45, 2.6051) and five adult females (ZRC 2.6046–50) with the same locality data as the holotype, collected by R.A. Escobar III, J.L. Grismer, L.L. Grismer, R. Johnson, and T.M. Youmans on 27 March 2002.

### Diagnosis

Maximum SVL 76.0 mm; 13–15 supralabials; supralabial to midorbital position at supralabials 10–13; supranasals in contact; no ridge of tubercles bordering anterior margin of ears or extending from ear to nape; 10–14 infralabials; posterior supralabials lack longitudinal keels; dorsal tubercles with

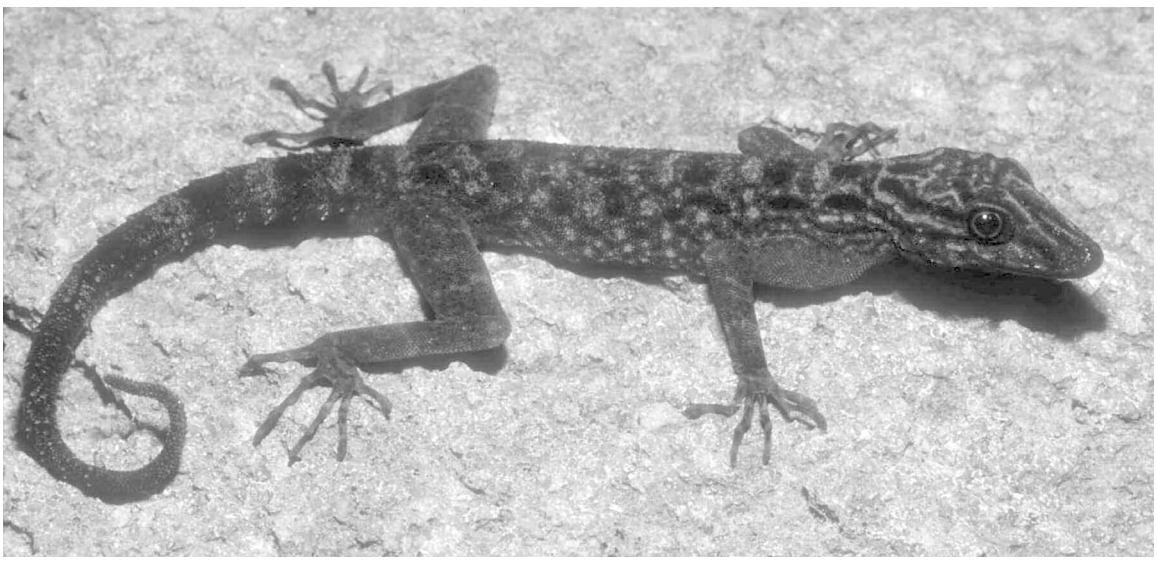

**Figure 2**. Holotype of *Cnemaspis pemanggilensis* (ZRC 2.6043).

multiple ridges; preanal and femoral pores absent in adult males; two postcloacal spurs in males; median subcaudal scales enlarged, keeled, and mucronate; white spots on flanks; greatly enlarged tubercles on tail whorls; 27–31 lamellae beneath fourth toe; dorsum and tail lacking enlarged, white-tipped tubercles; tail with dark bands.

**Description of Holotype**

An adult male of 74.5 mm SVL; head oblong, large (HL/SVL 0.19); narrow (HW/SVL 0.18); flattened (HD/HL 0.63); distinct from neck; flat, slightly raised and rounded medially; snout longer than ED; rostral scales granular to slightly raised, equal in size to those on occipital region; prominent supraorbital ridges merge anteriorly with a distinct canthal ridge; eye large (ED/HL 0.27); extra-brillar fringes present; pupil round; anterior of orbit fringed with elongate supraciliaries; oval ear opening higher than wide; EE < ED; rostral partially divided, groove does not extend to base, width 3.5 mm, height 2.1 mm, and contacted posteriorly by two large supranasals laterally; one small medial postrostral; rostral contacts first supralabial; supralabials 14 (R and L), decrease in size posteriorly; 13 (L and R) infralabials, decreasing in size posteriorly, first nearly twice the size of second; nostrils round, oriented dorsally; lower postnasal in narrow contact with first supralabial; two postnasals; midorbital position at supralabial 10; mental subtriangular, deeper than wide; bordered posterolaterally by elongate postmentals and medially by single small postmental; postmentals bordered posteriorly by five (left) and four (right) smaller rounded scales; smooth rounded sublabials grade medially into much smaller raised, pointed gular scales; tongue narrowly elongate, lacking a median cleft.

Body slender and elongate; dorsal scales equal in size throughout body; dorsal tubercles semi-randomly arranged except for two paravertebral rows; dorsal tubercles with week multiple keels or ridges; ventral scales fairly uniform in size throughout chin, gular, pectoral, and abdominal regions; pectoral and abdominal scales slightly elongate, imbricate, and bear a single keel; dorsal and ventral scales similar in size; scales on dorsum lack a spinose process; preanal and femoral pores absent; preanal groove absent; palmar and plantar scales smooth and rounded; scales on inner surface of forearm, distal aspect of upper arm, dorsal surface of thighs, tibia, upper arm and forearm tricarinate.

Forelimbs moderately long and slender; digits elongate and bearing slightly recurved claws; unnotched lamellae entire, except for two or three fragmented scales at base; lamellae enlarged at base of digits, interdigital webbing absent; fingers increase in length from one to four with five being shorter than four. Hind limbs slightly longer and thicker than forelimbs; digits elongate, jointed, and bearing slightly recurved claws; unnotched lamellae entire, except for three or four fragmented scales at base of digits; webbing absent; fingers increase in length from one to four with five being slightly shorter than four; 29 subdigital lamellae on fourth toe.

Tail longer than snout–vent length (TL/SVL 1.03), tip regenerated, distinctly swollen at base; caudal scales arranged in whorls, and segmented, five to six scales wide at base of tail; one elongate, semilunar shaped postcloacal spur on each side of tail base with one to two raised heads followed by a smaller, more conical spur; tail with a single distinct lateral furrow; single row of enlarged medial subcaudal scales with a posterior spinose process; remaining caudal scales keeled; repeating series of enlarged ridged whorled caudal tubercles present.

**Coloration in Life**

Dorsal ground color varies with the time of day ranging from nearly solid black with no pattern visible to a grey ground color overlain by a darker pattern of spots and stripes. The latter will be described. Ground color of head, body, limbs, and tail grey. Dark bifurcating medial stripe on snout; single, dark preorbital stripe; three dark postorbital stripes, dorsal-most stripe extends onto nape forming a tripartite band, middle stripe extends onto nape forming a second tripartite band posterior to and larger than the first, ventral most stripe extends onto upper portion of forelimb insertion; seven rows of dark transversely arrange spots extend from nape to base of tail; light spots on flanks; week banding present on limbs; dark banding on anterior portion of tail. Venter dull beige with darker coloration and light spots invading lateral portions of abdominal region.

**Measurements of Holotype**

L 14.0; HW 13.1; HD 8.8; ES 8.8; ED 3.8; EL 2.2; EE 5.0; TL 76.7.

**Variation and Sexual Dimorphism**

Adult snout–vent length in the type series ranges from 68.2–76.0 mm, the largest male (ZRC

2.6043) measuring 74.5 mm SVL and the largest female (ZRC 2.6046) 76.0 mm SVL. We consider sexual size dimorphism to be absent in this species. Males have a swollen postanal region and two enlarged postcloacal spurs. Variation in scalation is presented in Table 1. Color pattern showed little variation.

**Natural History**

The habitat on Pulau Pemanggil is severely degraded and has no discernable primary forest (Youmans et al. 2002). Nonetheless, the cave-like systems formed by the large granitic boulders maintain the microhabitats and refugia necessary to support a seemingly dense population of *Cnemaspis pemanggilensis*. Individuals of this species were observed in nearly every cave system visited, at all elevations (0–250 m). During the day, geckos remained inside the caves but at night would venture out to forage at cave openings and on large boulders immediately outside the caves. During the day, individuals were dark in color with almost no discernible pattern. During the evening, their dorsal ground color changed to light grey, which greatly accentuated a prominent series of dark transverse body bands and head stripes.

*Cnemaspis pemanggilensis* is syntopic with *Gekko monarchus* and egg scars of both species were found on the walls, roofs, and in cracks inside several caves. To date, this is the only species of reptile endemic to Pulau Pemanggil. Youmans et al. (2002) reported a herpetofauna consisting of one amphibian, six other species of lizards, and the vertebrae of an unidentified snake from Pulau Pemanggil.

**Etymology**

This species is named after the type locality, Pulau Pemanggil.

**Comparisons to Other *Cnemaspis* Species in the Seribuat Archipelago**

*Cnemaspis pemanggilensis* resembles *C. baueri* from nearby Pulau Aur and Pulau Dayang to the south, and *C. limi* from nearby Pulau Tioman and Pulau Tulai to the north. It differs from *C. baueri* by its larger SVL (maximum 76.0 mm vs. 64.9 mm), higher number of subdigital lamellae on the fourth toe (27–31 vs. 26–27), and by having two as opposed to one postcloacal spur. Other than having white spots on the flanks, the color pattern of *C. pemanggilensis* closely resembles that of *C. baueri* except that the color of *C. pemanggilensis* is usually more pronounced (in the light phase) and less faded. *Cnemaspis pemanggilensis* differs more significantly from *C. limi* than it does from *C. baueri* by having a smaller SVL (maximum 76.0 mm vs. 88.2 mm), fewer supralabial scales (13–15 vs. 16–18), more infralabial scales (10–14 vs. 8–10), having two as opposed to one postcloacal spur, and having an enlarged median row of keeled subcaudal scales as opposed to lacking keeled subcaudals. In coloration, *C. pemanggilensis* differs from *C. limi* primarily in lacking the prominent white-tipped dorsal and caudal tubercles and by having white spots on the flanks. It resembles *C. kendallii* of Tioman, Tulai (Grismer et al. 2001, 2004), Seribuat, Sembilang (Wood et al. 2003*a*), Tinggi (Escobar et al. 2003), Babi Besar, and Sibu islands (Wood et al. 2004*a,b*) and Peninsular Malaysia and northwestern Borneo (Manthey and Grossmann 1997) in having an enlarged midventral row of keeled subcaudal scales but differs from *C. kendallii* in lacking a dark, chevron-shaped marking in the lateral abdominal region, by having 21–31 subdigital lamellae beneath the fourth toe vs. 18–23 in *C. kendallii*, and by having a much larger SVL (maximum 76.0 mm vs. 62.0 mm). These differences are summarized in Table 1.

**ACKNOWLEDGMENTS**

We thank Mr. Sahir bin Othman, Director of the Research and Conservation Division, Jabatan Perlindungan Hidupan Liar dan Taman Negara (PERHILITAN), for permission to conduct field work in the Seribuat Archipelago; the staff at the BMNH (E.N. Arnold, C.J. McCarthy), CAS (A.E. Leviton, J. Vindum), FMNH (H.K. Voris, R.F. Inger, A. Resetar), MCZ (J.E. Cadle, the late E.E. Williams, J.P.O. Rosado), MSNG (R. Poggi, G. Doria), UF (D. Auth, F.W. King), USDZ (ZRC in Leviton et al. 1985; K.K.P. Lim, P.K.L. Ng, H.H. Tan, C.M. Yang); USNM (R.I. Crombie, W.R. Heyer, G.R. Zug), ZMA (A. Groenveld, L. van Tuijl), and ZSI (J.R.B. Alfred, S.K. Chanda, B. Dattagupta, N.C. Gayen) for permitting us to examine material under their care; and P. David (MNHN) for examining the holotype of *Cnemaspis timoriensis*. We thank A.M. Bauer for helpful comments on the manuscript.

**TABLE 1.** Diagnostic characters separating *Cnemaspis pemanggilensis* from other species of *Cnemaspis* from Southeast Asia. Character states (those exclusively in adult males indicated with an asterisk) are as follows: 1—maximum SVL (in mm); 2—femoral pores present (*); 3—preanal pores present (*); 4—number of lamellae under toe IV; 5—caudal tubercles present; 6—number of supralabials to angle of jaws; 7—scales on forearm unicarinate; 8—keels on median subcaudals; 9—postcloacal spurs present (*); 10—dark bands on tail; 11—shield-like subtibial scales present; 12—white patches or smaller spots on flanks; 13—keels on ventrals. + indicates presence; - absence.

| Species | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *affinis* | 48.0 | + | + | 17–20 | – | 9–13 | – | + | 2 | + | – | – | + |
| *argus* | 65.2 | – | – | 23–24 | + | 15 | – | + | 3–4 | + | – | – | + |
| *baueri* | 64.9 | – | – | 26–27 | + | 11–13 | – | – | 1 | – | – | – | + |
| *boulengerii* | 66.0 | – | – | 16–18 | + | 8–10 | – | – | 1 | ? | + | – | – |
| *chanthaburiensis* | 41.0 | – | + | 17–20 | + | 8 | – | – | 2 | + | – | – | – |
| *dezwaani* | 31.4 | – | + | 18–19 | + | 6–7 | + | + | 1 | + | – | – | + |
| *dringi* | 45.5 | – | + | 13 | + | 11 | – | + | – | + | – | + | – |
| *flavolineata* | 46.7 | – | + | 28 | – | 9 | – | + | ? | + | – | – | + |
| *gordongekkoi* | 73.0 | – | – | 22–23 | + | 9 | – | – | – | + | – | – | – |
| *jacobsoni* | 30.5 | + | + | 16–18 | + | 8–9 | + | + | 1 | + | – | – | + |
| *kandiana* | 35.0 | + | + | 11–12 | + | 7–8 | – | + | 2 | + | – | – | – |
| *kendallii* | 58.0 | – | – | 18–23 | + | 10–12 | – | + | 2 | + | – | – | + |
| *kumpoli* | 52.0 | – | – | 21–24 | + | 11 | – | – | 3 | + | – | – | – |
| *limi* | 88.2 | – | – | 20–30 | + | 11–14 | – | – | 2 | + | – | – | + |
| *modiglianii* | 33.7 | + | + | 14 | + | 8–9 | + | + | 1 | + | – | – | + |
| *nigridia* | 69.8 | – | + | 17–24 | + | 11 | – | – | 2 | – | – | – | + |
| *pemanggilensis* | 76.0 | – | – | 27–31 | + | 10–13 | – | + | 2 | + | – | + | + |
| *siamensis* | 39.7 | – | + | 17–22 | – | 8 | – | + | ? | + | – | – | + |
| *timoriensis* | 35.0 | – | – | 12 | + | 5 | – | + | ? | + | – | – | + |
| *whittenorum* | 31.5 | – | + | 18–19 | + | 8 | + | – | – | + | – | – | + |

## LITERATURE CITED


Bauer, A.M. and I. Das. 1998. A new *Cnemaspis* (Reptilia: Gekkonidae) from Southeastern Thailand. Copeia 1998:439–444.

Cox, M.J., P.P. van Dijk, J. Nabhitabhata and K. Thirakhupt. 1998. *A Photographic Guide to Snakes and Other Reptiles of Peninsular Malaysia, Singapore and Thailand.* New Holland Publishers (UK) Ltd., London, England.

Das, I. and L.L. Grismer. 2003. Two new species of *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from the Seribuat Archipelago, Pahang and Johor states, West Malaysia. Herpetologica 59:565–572.

De Rooij, N. 1915. *The Reptiles of the Indo-Australian Archipelago. I. Lacertilia, Chelonia, Emydosauria.* E.J. Brill, Leiden, The Netherlands.

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.

Escobar, R.A., III, J.L. Grismer, T.M. Youmans, P.L. Wood, S.D. Kendall, J. Castro, T. Magi, C. Rasmussen, T.R. Szutz, S.M. Hover, D. Morgan, C. Raynor, K. McCloskey, N. Izvernari, A. Hunter, J.M. Bernard, N. Hinojosa, T. Dyer, J. Anlauf, J. Martinez, S. Andreiko, R. Gregory, L.S. Yeen, W. Wuertz, H. Kaiser, and L.L. Grismer. 2003. First report on the herpetofauna of Pulau Tinggi, Johor, West Malaysia. Hamadryad 27:260–263.

Grismer, J.L., L.L. Grismer, I. Das, N.S. Yaakob. B.L. Lim, T.M. Leong, T.M. Youmans, and H. Kaiser. 2004. Species diversity and checklist of the herpetofauna of Pulau Tioman, Peninsular Malaysia with a preliminary overview of habitat utilization. Asiatic

Herpetological Research 10:244–276.
Grismer, L.L., N.S. Yaakob, B.L. Lim, T.M. Leong, I. Das, R.A. Sosa, J.L. Grismer, K.M. Crane, R.E. Diaz, S.V. Figueroa, L.L. Grismer, C.A. Ledbetter, S.C. Newbold, S.R. Newbold, C.P. Patel, J. Castro, R.A. Escobar, III, S. Guerrero, J.W. Pinedo, P. Jones, and H. Kaiser. 2001. Report of the herpetofauna of Pulau Tulai, West Malaysia. Hamadryad 26:341–342.
Leviton, A.E., S.C. Anderson, R.H. Gibbs, E. Heal, and C.E. Dawson. 1985. Standards in herpetology and ichthyology. Part I. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. Copeia 1985:802–832.
Manthey, U. and W. Grossmann. 1997. *Amphibien und Reptilien Südostasiens*. Natur und Tier Verlag, Münster, Germany.
Smith, M.A. 1935. *The Fauna of British India, Including Ceylon and Burma. Reptilia and Amphibia. Vol. II. Sauria.* Taylor and Francis, London, England.
Taylor, E.H. 1963. The lizards of Thailand. University of Kansas Science Bulletin 44:687–1077.
Wermuth, H. 1966. *Liste der Rezenten Amphibien und Reptilien. Gekkonidae, Pygopodidae, Xanthusiidae. Das Tierreich 80.* Walter de Gruyter and Co., Berlin, Germany.
Wood, P.L., T.R. Szutz, T.M. Youmans, and J.L. Grismer. 2003*a*. First report on the herpetofauna of Pulau Sembilan and Pulau Seribuat, Pahang, West Malaysia. Hamadryad 27:281–283.
Wood, P.L., T.M. Youmans, C. Raynor, J.M. Bernard, N. Hinojosa, T. Dyer, S. Andreiko, P.P. van Dijk, W. Wuertz, L.S. Yeen, and N.A. Elias. 2003*b*. First report on the herpetofauna of Pulau Dayang, Johor, West Malaysia. Hamadryad 27:284–285.
Wood, P.L., H. Kaiser, S. Looper, and L.L. Grismer 2004*a*. First report on the herpetofauna of Pulau Babi Besar, Johor, West Malaysia. Hamadryad 28:106–109.
Wood, P.L., T.M. Youmans, J.L. Grismer, J. Wheatly, S. Wright, C. Valdivia, A. Ponce, L. Escobar, S. Amin, P. Baker, J. Bernard, S. Looper, N. Marsh, L. Martin, N. Padilla, R. Rosser, A. Srivastava, V. Srivastava, X. Wright, L.S. Yeen, H. Kaiser, and L.L. Grismer. 2004*b*. First report on the herpetofauna of Pulau Sibu, Johor, West Malaysia. Hamadryad 28:116–119.
Youmans, T.M., R.A. Escobar, III, J.J. Grismer, L.L. Grismer, and R. Johnson. 2002. First report on the herpetofauna of Pulau Pemanggil. Hamadryad 27:148–149.

## APPENDIX

### Comparative Material of Southeast Asian *Cnemaspis* Examined

*Cnemaspis affinis* (Stoliczka 1870).—ZSI 5964 (holotype), ZRC 2.1098, "Penang" (= Pulau Pinang, West Malaysia); ZMA 11987, Pinang, West Malaysia; ZRC 2.4858, Moon Gate, Pulau Pinang, West Malaysia; Maxwell's Hill, Perak, West Malaysia (ZRC 2.1100; 1099).

*Cnemaspis baueri* Das and Grismer 1993.—ZRC 2.5291-99 Kampung Berhala Pulau Aur, Johor, West Malaysia.

*Cnemaspis boulengeri* Strauch 1887.—CAS 73745, MCZ 39014–23, Pulo Condore (= Con Dao), Vietnam.

*Cnemaspis chanthaburiensis* Bauer and Das 1998.—FMNH 215979 (holotype), "Khao Soi Daouw (Dao) Wildlife Sanctuary, Pongnomron (Pong Nam Ron), Chantaburi (Chanthaburi) Province, Thailand (approximately 13°00' N, 102°05' E)"; BMNH 1917.5.14.4 (paratype), "Chantaburi (Chanthaburi Province), Siam (Thailand)"; FMNH 191479 (paratype), "Khao Soi Dao Tai, Pong Nam Ron, Chantaburi (Chanthaburi) Province, Thailand (approximately 13°00' N, 102°05' E), elev. 850 m"; FMNH 215978 (paratype), "Khao Khiew (Khieo) Wildlife Sanctuary, Chon Buri Province, Thailand (approximately 13°14' N, 101°08' E)"; FMNH 215980 (paratype), "Amphoe Muang, Suan Kaset, Chantaburi (Chanthaburi) Province, Thailand (approximately 123°06' N, 102°09' E).

*Cnemaspis dezwaani*.—ZMA 11988.1–2, Lelewoea, Pulau Nias, Indonesia.

*Cnemaspis dringi* Das and Bauer 1998.—FMNH 148588 (holotype), "Labang Camp (03º20' N; 113º29' E), Bintulu District, Fourth Division, Sarawak, East Malaysia, Borneo"; FMNH 221478 (paratype), "Sungai Segaham (02º44' N; 113º53' E), Belaga District, Seventh Division, Sarawak, East Malaysia."

*Cnemaspis gordongekkoi* Das 1993.—ZRC 2.3380 and ZRC 2.3381 (holotype and paratype), "...vicinity of Sendanggila Falls, circa 0.5 km south of Senaru village, Lombok, Nusa Tenggara District, Republic of Indonesia (08º45' S, 116º30' E)."

*Cnemaspis jacobsoni*.—ZMA 11989–90, Laboean Badjan, Pulau Simeulue, Indonesia.

*Cnemaspis kandiana* (Kelaart 1852).—BMNH 60.3.17.1066, 80.2.2.119, 53.4.1.1 (three syntypes), "Kandian hills, Ceylon" (= hills of Kandy [or Mahanuwara], 07º15' N; 80º40' E, Central Province, Sri Lanka); MCZ 162896, 162899, "Madras" (now Chennai, 13º05' N; 80º17' E, a city in southeastern India; in the past Madras Presidency included much of southern India); MCZ 4138, 26719, "Ceylon" (= Sri Lanka); ZSI 5971 (holotype of *Gymnodactylus humei* Theobald, 1876), "Kandy" (see above); MSNG 8764 (four specimens), "Ceylon."

*Cnemaspis kendallii* (Gray 1845): BMNH XXII.92a (lectotype, designated by Dring 1979), "Borneo"; FMNH 223201, MCZ 157158-59, Bako National Park, Sarawak, East Malaysia (Borneo); FMNH 223201; MCZ 157158-59, Bidi, Sarawak, East Malaysia (Borneo); FMNH 184424, Bukit Lanjan, Selangor, West Malaysia; BMNH 1902.12.12.12, Bidi, Sarawak, East Malaysia (Borneo); Bau, Sarawak, East Malaysia (Borneo); BMNH 1911.1.20.7–9, Bau, Sarawak, East Malaysia (Borneo); BPBM 7494, Alag Sungei Ayer, Pulau Tioman, Pahang, West Malaysia; ZRC 2.1101, Jerantut, Pahang, West Malaysia; ZRC 2.1102, Gunung Rokan, Pulau Tioman, Pahang, West Malaysia; ZRC 2.1103, Sedagong, Pulau Tioman, Pahang, West Malaysia; ZRC 2.1109–10, Pulau Siantan, Anamba, Riao Archipelago, Indonesia; ZRC

2.1112–13, Sungei Ulu, Great Natuna, Riao Archipelago, Indonesia; ZRC 2.3014, Bukit Timah, Singapore; ZRC 2.3015, Gunung Ladang, Melaka, West Malaysia; USNM 26573, Pulau Bunoa, Tambelan Islands, Indonesia; USNM 26555, St. Barbe Island, Indonesia; USNM 26547–49, Bunguran, Natunas, Riao Archipelago, Indonesia; USNM 28145, Pulau Lingung, Natuna, Riao Archipelago, Indonesia; USNM 28149, Sirhassen, Natuna, Riao Archipelago, Indonesia; also UF 78463, ZSI 14767, and 19637 from "Borneo."

*Cnemaspis limi* Das and Grismer 1993.—Holotype (ZRC 2.5289), Gua Tengkuk Air, Gunung Kajang Pulau Tioman, ZRC 2.3504–06, Tekek-Juara trail (02°52' N; 104°12' E), Pulau Tioman, Pahang, West Malaysia, ZRC 2.5290 Gua Tengkuk Air, Gunung Kajang, Pulau Tioman, Pahang, West Malaysia.

*Cnemaspis modiglianii*.—MSNG 31289.8, MSNG 31289.3–7; 31289.9, Malacomni, Pulau Enggano, Indonesia; MSNG 31289.1–2, Kifaie, Pulau Enggano, Indonesia.

*Cnemaspis nigridia* (Smith 1925).—BMNH 1946.8.22.90 (formerly BMNH 1925.9.1.8; holotype), MCZ 39024 and ZRC 2.1114-115, "Mt. Gadin" (= Gunung Gading, 01º44' N; 109º50' E, Sarawak, East Malaysia; Borneo); MCZ 15250, Lundu, Sarawak, East Malaysia; BMNH 1925.9.1.9–10, Mt. Pueh, Sarawak, East Malaysia.

*Cnemaspis siamensis* (Smith 1925).—MCZ 39025, Maprit, Patiyu, peninsular Thailand; MCZ 39694, Klong Bang Lai, peninsular Thailand.

*Cnemaspis whittenorum*.—BMNH 1979.225–26, Pulau Siberut, Mentawai Archipelago, Indonesia.