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Jarujinia: A New Genus of Lygosomine Lizard from Central Thailand, with a Description of One New Species

Tanya Chan-ard*, Sunchai Makchai and Michael Cota

Natural History Museum, National Science Museum, Thailand,
Technopolis, Khlong 5, Khlong Luang, Pathum Thani 12120 Thailand

ABSTRACT: A new species of Lygosomine skink (*Jarujinia bipedalis* sp. nov.) from Suan Pung District, Ratchaburi Province in Central Thailand is described and assigned to a new monotypic genus (*Jarujinia*). This bipedal skink with only forearms possessing two clawless vestigial fingers appears morphologically to be an evolutionary link between the Lygosomine genera of *Larutia* and *Isopachys*, but clearly distinct from both.

KEY WORDS: new genus, new species, *Jarujinia*, Lygosomine.

INTRODUCTION

Since Taylor (1963) reported the number of species and published information on lizards in Thailand, including skinks, there has been great change in the generic status of the Scincidae with the discovery of new genera and species of scincid lizards by many biologists, for example: *Davewakeum* Heyer (1972): *D. miriamae* Heyer (1972); *Isopachys* : *I. borealis* Lang and Böhme (1990); *Larutia* Böhme (1981): *L. nubisilvicola* Chan-ard, Cota, Mekchai and Laoteaw (2009); *Leptoseps* Greer (1997): *L. osellai* Böhme (1981). A single specimen collected by the first author from the central region of Thailand more than 20 years ago appears to fill the gap between *Larutia* and *Isopachys*. *Larutia* is a genus of short-legged skink with reduced numbers of fingers and toes. In particular *L miodactylus* has only two fingers in each foreleg and no hind-legs. *Isopachys* has no legs. This single specimen from Ratchaburi Province has only forelimbs with two rudimentary fingers without claws on each forelimb while the hind-limbs are absent. The specimen is described as a new genus and a new species.

MATERIALS AND METHODS

***Jarujinia*.-** new genus.

Type species. *Jarujinia bipedalis*, new species.

Diagnosis. The only scincine genus in which a single species has only forelimbs with two clawless vestigial fingers and in which the hind-limbs are completely absent.

Definition. A medium size skink (SVL. 88.2 mm). The head, body and tail are depressed. The rostal is very large, bordered by supralabials, nasals and frontonasals. The nasals are separated and perforated anteriorly. There are no internasals. Frontonasal single, smaller than frontal. Prefrontal is separated. Frontoparietals meet together posteriorly. The interparietal is smaller than frontal. The parietals are longer than the interparietal, meeting medially behind the interparietal. The mental is very large, equal in width to the rostal. The postmental is narrower than the mental. The first chin shields are separated by a singular gular scale. External ear opening is absent. There are 4 supraoculars, 6 supralabials and 5 infralabials. Dorsal

*Corresponding author.
E-mail: tanya@nsm.or.th

scales are somewhat circular and smooth, larger than the ventral scales. There are 22 scale rows at mid-body. Ventral scales are smooth with 120 scales from the mental to anal plates. The anal scale is divided.

Vestigial forelimbs are present, with two vestigial fingers on each limb and no lamellae beneath the fingers. Exteriorly, there is no trace of hind limbs. X-rays show no pectoral or pelvic girdle: they are indistinguishable from the other vertebrae.

Range.- Known only from the Western mountain range in Ban Pu Nam Ron, Tambon Pong Kra Ting, Suan Pung District, Ratchaburi Province, ca. 150 km west-southwest of Bangkok, Thailand.

Etymology.- The genus is named for Dr. Jarujin Nabhitabhata (1950-2008), first Director of the Thailand Natural History Museum, to whom we owe much professional and personal gratitude.

***Jarujinia bipedalis* sp. nov.**

Holotype. - THNHM 15410 collected by Tanya Chan-ard, at Ban Pu Nam Ron, Tambon Pong Kra Ting, Suan Pung District, Ratchaburi Province, elevation nearly 600 m. asl., in November 1987.

Diagnosis. - Same as for the genus.

Description of the Holotype. - THNHM 15410 The snout-vent length is 88.2 mm and the tail length is 34.2 mm, with the tail tip missing. The head, body and tail are depressed. The head is indistinct from body.

Scalation. - Head.- Rostal scale is very large, bordered by supralabials, nasals and frontonasals. Nasals are single scales, pierced anteriorly and are separated by rostal and frontonasal. The frontonasal scale is single and smaller than the frontal. Prefrontal scales are separated. Frontoparietal scales are contacted posteriorly. The interparietal scale is smaller than the frontal scale. Parietal scales are longer than interparietal scale and meet medially behind interparietal scale. The eyelid is fixed in place and is transparent.

The mental scale is very large. The postmental scale is single and narrower than the mental. The first chin shields are separated by a gular scale.

Dorsum. Dorsal scales are somewhat circular and smooth, larger than the ventral scales. There are 22 scale rows at mid-body. Ventral scales are smooth, with 120 scales from mental to anal plates. Two irregular large anal scales cover the vent; the right scale is triangular in shape, while the left scale is larger and joins with the posterior end of the right scale. There are short forelimbs with two vestigial fingers on each limb. Claws are absent from the two vestigial fingers. No lamellae are present beneath the fingers. There is no trace of hind-limbs. X-rays do not show the pectoral and pelvic girdles; they are indistinguishable from the other vertebrae in the x-ray film.

Colour in Preservative.- Creamy yellow dorsal colouration with an irregular series of dark brown markings broken in short streaks and bars forming indistinct longitudinal stripes dorsolaterally terminating at the tail tip. There are two nuchal bands. The first nuchal band consists of a dark brown band across the back from the head proceeding down posteriorly, forming a large brown blotch where the tympanum would be, if exposed. This band continues anteriorly to the area of the edge of the chin behind the mouth angle. The second nuchal band consists of another dark brown band on the nape broken at the median, down to the side of the body then turned back to the posterior end to the broken longitudinal line on the back edge of each side. The lower half of

the body, continuing to the ventral side, is dark purple. Mental is creamy yellow. Forelimbs are dark purple

Distribution. - Known only from the type locality.

Natural History. – A single specimen was found in dry evergreen forest along a shallow narrow dry stream on a hillside. The specimen was under a stone on the bank of the stream when the stone was turned up. The absence of external ear openings, the reduced number of fingers on the forelimbs, and the absence of hind limbs indicates that this species is fossorial in habit, similar to the skinks in genera *Isopachys, Davewakeum, Leptoseps* and *Larutia*.

Etymology. – *Jarujinia bipedalis* sp. nov. is named for its character of only possessing a pair of forelimbs: two legs are present, but the hind-limbs are absent.

Comparison with other genera. – *Jarujinia* has vestigial forelimbs. The skull is much larger laterally in comparison to *Isopachys.* While *Isopachys* has shorter stronger ribs extending from the vertebrae, *Jarujinia* has longer, more fragile ribs tapering posteriorly, extending from its ca. 65 vertebrae. *Jarujinia* is completely lacking in hind-limbs in comparison to *Larutia.* The head is not distinct from the body in comparison to *Larutia*, which has a head that is slightly distinct from the body.

Jarujinia appears morphologically and skeletally to be an evolutionary link between *Larutia*, skinks with four vestigial limbs, and *Isopachys*, skinks that have lost their limbs entirely. This appears as a near anomaly in terrestrial vertebrates with the exception of some *Larutia* species, which possess only forelimbs. However, the forelimbs in *Larutia* species are much better developed than those of *Jarujinia*.

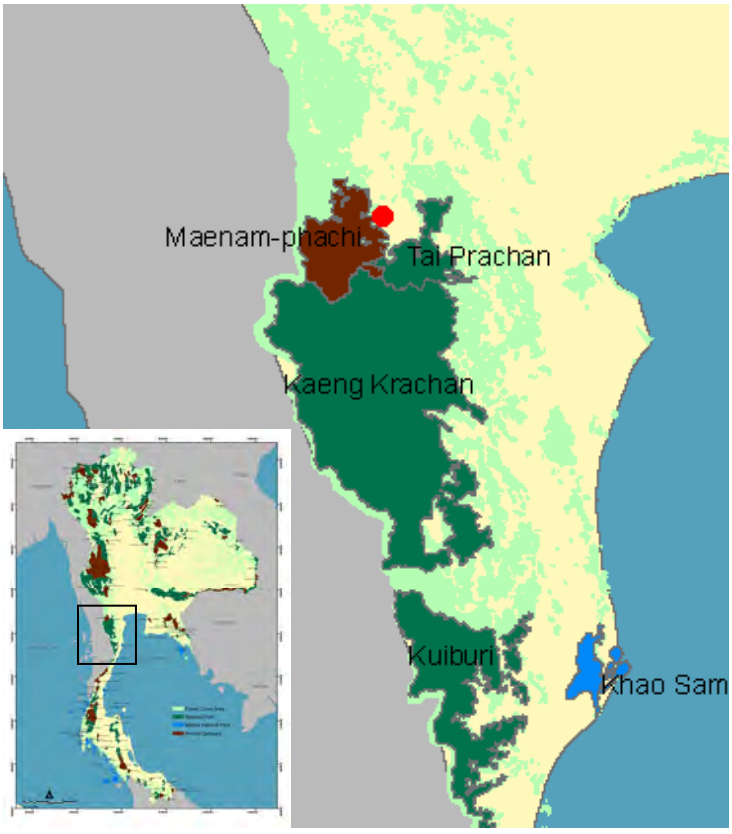

Figure 1. Map shown the type locality of *Jarujinia bipedalis* sp.nov. (red circle).

Table 1. Data for *Jarujinia* and *Larutia* spp. Values for *Larutia* spp. in the table are taken from Grismer *et al.,* 2003.

	Jar (n=1)	*nub (n=4)*	*ser* (n=3)	*lau* (n=3)	*tri* (n=3)	*mio* (n=3)	*sum* (n=5)	*pueh* (n=1)
Supraocular	4	4	4	4	4	4	3-4	4
Supralabials	6	6	5-6	6-7	6	5	5-6	5
Infralabials	5	5	5	4	5	3-4	4	5
Midbody scales	22	24	24-25	25-26	29-30	20-22	22-23	23
HL:SVL	0.09	0.09-0.11	0.11-0.13	0.08-0.12	0.09-0.11	0.09-0.11	0.08	0.08
HW:SVL	0.06	0.06-0.08	0.09-0.11	0.07-0.09	0.08-0.10	0.07-0.08	0.08-0.09	0.07
Body diameter: SVL	0.06	0.07-0.10	0.30-0.38	0.27-0.30	0.25-0.32	0.22-0.26	0.22-0.30	0.21
Maximum SVL	88.2	119	115	191	250	151	149	141
Forelimb paddle-like, joints indiscernible (+) or forelimb better developed	+	0	0	0	0	+	+	+
Hind-limbs present (+) or hind-limbs absent (0)	0	+	+	+	+	+	+	+
Fingers nearly vestigial (+) or better developed (0)	+	0	0	0	0	+	+	+
Wide, like, dorsolateral stripe present (+) or absent (0)	+	0	+	0	0	0	0	0
Several light stripes on body present (+) or absent (0)	0	+	0	0	0	0	0	+
Light lines radiating from temporal and postparietal regions (+) or not (0)	0	0	0	0	0	0	0	+
Nuchal bands present (+) or absent (-)	+	0	+	+	+	0	0	0
One (+) or three (0) nuchal bands	+	-	+	0	+	-	-	-
Third nuchal band complete (+) or broken (-)	-	-	0	-	+	-	-	-
First nuchal band contacting eye (+) or not (-)	-	-	+	0	0	-	-	-
Spots on frontoparietal present (+) or absent (0)	0	0	+	0	0	0	0	0
Light markings on rostrum present (+) or absent (0)	0	0	+	0	0	0	0	0
Snout opaque (+) or not (0)	0	+	+	+	+	0	0	0

Table 2. Data on external characteristics of Southeast Asian Lygosomine skinks of the *Larutensis* group.

	Larutia	*Leptoseps*	*Davewakeum*	*Isopachys*	*Jarujinia*
External ear opening present (+), or absent (0)	0	0	0	+/0	0
SVL (in mm)		41	48.0-114.0	3.10-180.0	88.2
No. scales mental-anus			98-109	93-201	120
No. subcaudal scales			62-101	61-116	?
No. scale rows at mid-body	18-30	18	20-22	18-28	22
Frontoparietals in contact (+), or not (0)		fused		+, 0	+
Supranasal scales present (+), or absent + 0)	0	0	0	0	0
No. supraoculars	3-4	4	3	2,3-4	4
No. supraciliaries			4(5)	2-4	5
No. presuboculars			2-3	2-4	2
No. postsupraoculars			2	2-3	2
No. primary temporal			2	1-3	
No. secondary temporal			1	1	
No. tertiary temporal			1	0-1	
No. loreal scales			2	1-2	2
No. supralabial scales		6	6	4-6	6
No. infralabial scales			5	4-6	5
No. supralabial under mid-eye		1	2	1-4	3
No pairs of chinshields			2	2-4	2
Postmental scale present (+), or absent (0)			+	0, +	+
Median pair of preanal scales enlarged (+) , or not (0)	+	+			0
A post orbital bone present (+), or absent (0)	0	0			
Forelimbs present (+), or absent (0)	+	+	0	0	+
Hind-limbs present (+), or absent (0)	+	+	0	0	0
No. of digits reduced (+), or no digits (0)	+	+	0	0	+
No. of toes reduced (+), or no toes (0)	+, 0	+	0	0	0
Colour pattern with longitudinal stripes or cross-bands present (+), or not (0)	+	+		+	+
Claws present (+) on fingers, or absent (0)	+/0	+	-	-	0

Table 3. Comparison of external characteristics of *Larutia, Isopachys* and *Jarujinia*. Table modified from Heyer (1972).

	Larutia miodact.	*Larutia nubdi.*	*Isopachys gyld.*	*Isopachys angui.*	*Jarujinia*
External ear opening present (+), or hidden (0)	0	0	0	0	0
Maximum SVL (in mm)	151	119	180.0	67.0	88.2
No. scales mental-anus			167-201	95-118	120
No. subcaudal scales			74-91	69-88	?
No. scale rows at mid-body	20-22	24	24-28	22-26	22
Prefrontal scale present (+), or not (0)			0	+	+
Frontonasal scale present (+), or not (0)			0	+	+
Frontoparietals in contact (+), or not (0)			0	+	+
Supranasal scales present (+), or absent + 0)			0	0	0
No. supraoculars	4	4	3	3-4	4
No. supraciliaries			3	4-6	5
No. presuboculars			2-3	3-4	2
No. postsupraoculars			3	2-3	2
No. primary temporal			2	2	
No. secondary temporal			1	1	
No. tertiary temporal			0	1	
No. loreal scales			2	1	2
No. supralabial scales	5	6	4(5)	5(6)	6
No. infralabial scales	3-4	5	4(5)	4-6	5
No. supralabial under mid-eye	1		2	3	3
No pairs of chinshields	2	2	2	2-3	2
Postmental scale present (+), or absent (0)	+	+	0	+	+

Figure 2. Whole body of *Jarujinia bipedalis* sp.nov.

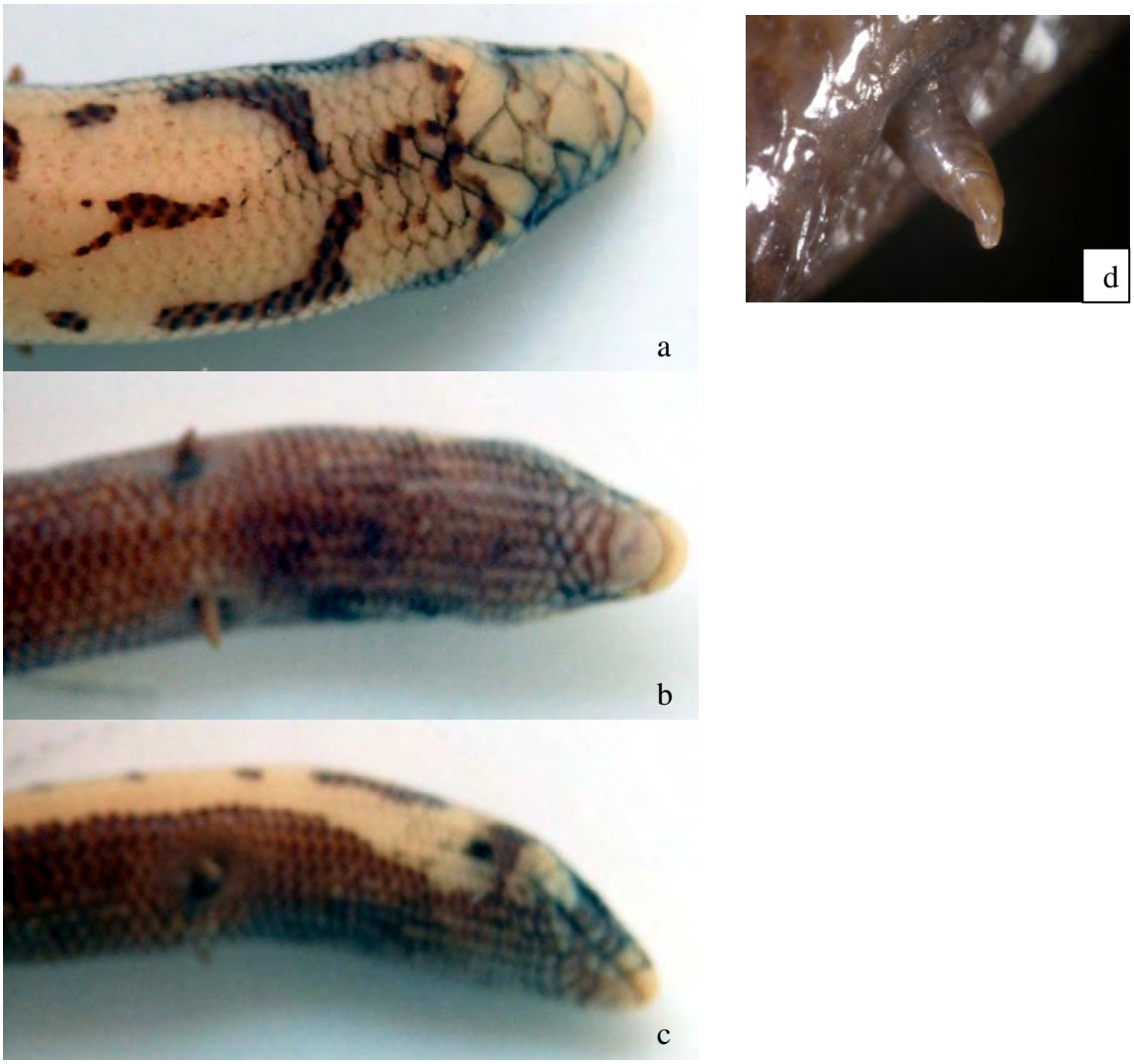

Figure 3. *Jarujinia bipedalis* sp. nov. (THNHM 15410) (a) dorsal (b) ventral and (c) lateral view of head scalation; (d) left foreleg.

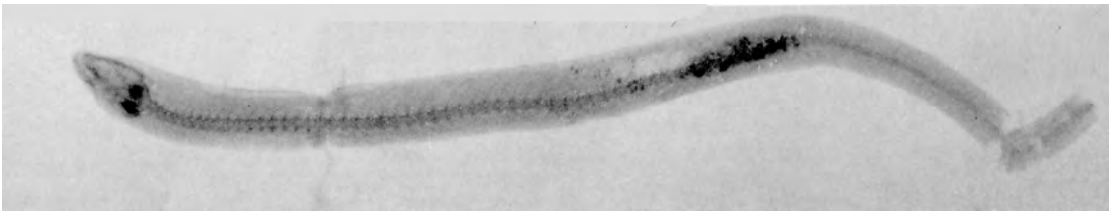

Figure 4. X-ray photo of *Jarujinia bipedalis* sp.nov. (THNHM 15410) showing skull and vertebrae.

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