

## A New Species of *Larutia* (Squamata: Scincidae) Found in Peninsular Thailand

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**ABSTRACT:** During an expedition to study the biodiversity of the cloud forest of the Upper Khao Nan Mountain Range of Nakhon Si Thammarat in April 2007, a *Larutia* sp. was found. This proved to be morphologically distinct from any other known species of *Larutia* and is now described as *Larutia nubisilvicola* sp. nov.

**KEY WORDS:** Reptilia, Lepidosauria, Squamata, Lacertilia, Sauria, Scincomorpha, Scincidae, *Larutia*, *Larutia nubisilvicola* sp. nov., Southeast Asia, Thailand, taxonomy.

### INTRODUCTION

The genus *Larutia* was established in 1860 by Bleeker in his description of *Larutia sumatrensis*. This genus was subsequently changed to *Chelomeles* by Boulenger in 1887. Other similar skink species with elongated bodies and reduced limbs with vestigial fingers were later described or placed in the *Lygosoma* genus until Böhme (1981) designated the genus *Larutia* (type species: *Lygosoma larutense* Boulenger, 1900). (The name *Larutia* is derived from the Larut Province, Malaysia). He placed 5 species in this genus comprising *L. larutense*, *L. miodactyla*, *L. sumatrensis*, *L. trifasciata* and *L. osellai*. Then Greer (1997) moved *L. osellai* to place it in the new genus, *Leptoceps*.

During the past decade, taxonomy has undergone many changes as a result of going from the older historical Linnaean system of taxonomy to a system of taxonomy based on phylogeny or cladistics. These changes are in accordance with Zug *et al.*, 2001. Such changes in the case of this species include the Subclass Lepidosauria encompassing the Orders Rhynchocephalia and Squamata; Lacertilia replacing Sauria;

Infraorder Scincomorpha encompassing the Families Cordylia, Gerrhosauridae, Gymnophthalmidae, Teiidae, Lacertidae, Scincidae and Xantusdiidae. Harris *et al.*, 2001 shows Teiidae and Lacertidae as an independent clade, which is beyond the scope of this description.

After the description of two new species of *Larutia* skinks, *L. puehensis* and *L. seribuatensis* (Grismer, Leong & Yaakob, 2003), there were six species of this genus in the Sundaland region.

During the conduct of an expedition sponsored by BRT (Biodiversity Research and Training Programme, Thailand) to study the biodiversity of the cloud forest of San Yen, Khao Nan National Park, Noppitum District, Nakhon Si Thammarat Province Thailand, a number of specimens of the genus *Larutia* were discovered, four of which were captured and were deposited in the Thailand Museum of Natural History (THMNH). Up to this time, no *Larutia* sp. had been found in Southern Thailand. Examination of the morphological characteristics and meristics found in other previously described species showed this to be a new species.

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## MATERIALS AND METHODS

Holotype: THNHM 11799 female.  
Paratypes: THNHM 11797 female, THNHM 11798 male, THNHM 11800 female; collected by T. Chan-ard, M. Cota, S. Makchai & S. Lhaoteaw on 20 April 2007, at 08° 46' N 099° 31' E at ca. 1,300m ASL. FMNH/CNHM 177096 *Larutia larutense* from the Larut Mountains of Malaysia.

### Area of Discovery (Terra typica)

Southern Thailand at San Yen, Khao Nan National Park, Noppitum District, Nakhon Si Thammarat Province.

### Diagnosis

A small species of *Larutia*. Mid-body scale row is 24. Possesses 4 supraoculars, 6 supralabials and 5 infralabials. The first infralabial is separate from, but appears as an extension of the mental. The postmental contacts the first and second infralabials as well as the first pair of chin shields. A single gular scale is present between the second pair of chin shields.

### Description of the Holotype

THNHM 11799: A long skink for the region, but not for the *Larutia* genus, SVL 119mm. The rostral is slightly less than 1/3 wider than it is high, flat on the bottom, rounded along the top, encompassing the front of the snout and is surrounded by the frontonasal, nasals and supralabials on either side. The frontonasal is 1/3 wider than it is long. Nasal is perforated low and slightly anteriorly. Frontal is slightly longer than it is wide. There are 6 supralabials, the fourth touches the eye orbit. There are 2 loreals. Scales around the eye include 2 preoculars, 4 supraoculars, 5 supraciliars and 3 rows of irregularly shaped ciliars, 2 postsuboculars and 5 postoculars. Mental is over twice as wide as it is long and is wider than the rostral at the mouth opening. There are 5 infralabials. Underneath there are 3 anterior genials (chin shields) and 2 posterior genials followed by a second row of 5 with a small single shield, gular scale, centred. There is

no ear opening. The head is indistinct from the body. Ventral scales and dorsal scales are rounded at the edge, which points posteriorly. There are 24 rows of mid-body scales. Foreleg length is 7.65mm measured from the anterior portion where the leg joins the body to the end of the nail, with the leg pressed posteriorly along the body. The outer toe of the foreleg is 1.25 mm long. The inner toe of the foreleg is 1.00 mm. 3 lamellae are present on both toes of the forelegs. Hind leg length is 10.80mm measured anteriorly to where the leg joins the body with the leg pressed posteriorly along the tail base to the end of the nail. There are 4 Lamellae on the inner toes of the hind legs and 5 Lamellae on the outer toes of the hind legs.

### Colour in Preservative

Dark brown dorsal colouration. Each longitudinal row possesses a dark brown stripe with the dorsal median being widest and stripes becoming thinner and becoming indistinct towards the venter. This striping is an effect caused by the light colouration of the lateral edges of the scale, with those scales along the dorsolateral line being almost solid in dark colouration; as the scales progress ventrally the lighter lateral colouration of the scale becomes more prominent. The four central ventral rows have no markings and are off-white in coloration. The four ventral scale row stripes adjacent on either side become indistinct growing more indistinct towards the venter. From above it gives the appearance of a uniform dark brown colouration and the stripes are only distinguishable under a microscope. Laterally, the stripes become visible unaided.

### Colour of Live Specimens

Dorsal colouration is dark brown to almost black. Scales are iridescent when exposed to sunlight. Ventral colouration is dull orange with central rows having no pattern. Ventrolateral scales have distinctive light colouration on the lateral edges of the scales

becoming less pronounced further away from the venter. Lateral striping of live specimens consists of increased light colouration of the lateral edges of the scales, which becomes less apparent as the rows approach the dorsum.

### Distribution

*Larutia nubisilvicola* sp. nov. is known only from the cloud forest at San Yen, Khao Nan National Park, Nakhon Si Thammarat Province, Thailand. It is possible that it may be found at similarly high elevations in similar cloud forests in the surrounding areas of Khao Nan and Khao Luang National Parks.

### Natural History

Although this species appears to be well suited to a fossorial life, it forages and basks on the forest floor close to the trunks of the larger trees. When disturbed, this species quickly retreats using a serpentine motion to burrow at the base of the tree trunks.

### Etymology

*Larutia nubisilvicola* is named as an inhabitant of the cloud forest, where it is found.

### Comparison with Other *Larutia* Species

*Larutia nubisilvicola* sp. nov. differs from *L. seribuatensis* in the number of subdigital lamellae, 5 underneath the second toe of *L. nubisilvicola* sp. nov. and 4 underneath the second toe of *L. seribuatensis*, and the absence of a light dorsolateral stripe. *L. nubisilvicola* sp. nov. possesses indistinct lateral striping from the effect of the lighter lateral edges of the scales, which becomes more prominent towards the ventral region, which is not something that is recorded in *L. seribuatensis*. Although the *L. nubisilvicola* sp. nov. holotype and two of the paratypes have no nuchal bands and includes one paratype that possesses one anterior nuchal band with two indistinct posterior nuchal bands, *L. seribuatensis* possesses one nuchal band only. *L. nubisilvicola* sp. nov. possesses no markings on the head, whereas

*L. seribuatensis* has spots on the frontoparietal, supraoculars and rostrum.

Meristics of *Larutia nubisilvicola* sp. nov. are similar to that of *Larutia larutensis* with the exception of the subdigital lamellae beneath the second toe; *Larutia nubisilvicola* sp. nov. possesses 5 subdigital lamellae beneath the second toe, while *Larutia larutensis* possesses only 4 subdigital lamellae and there is only one gular scale separating the second pair of gular scales in *L. nubisilvicola* sp. nov., but in *L. larutensis* there are two. Other differences in *L. nubisilvicola* sp. nov. are those of the absence of nuchal bands, absence of dorsolateral stripe, faint presence of lateral striping, absence of markings on rostrum, frontoparietal and supraoculars. *Larutia nubisilvicola* sp. nov. also possesses 6 supralabials, whereas *Larutia larutensis* shows a variation of 5 to 6 supralabials.

Differences between *Larutia nubisilvicola* sp. nov. and *L. trifasciata* include different counts of the mid-body scale rows, which is 24 in *L. nubisilvicola* sp. nov. and 29 to 30 in *L. trifasciata*; there are 5 subdigital lamellae underneath the second toe in *L. nubisilvicola* sp. nov. and only 4 underneath the second toe of *L. trifasciata*; one nuchal band present in *L. trifasciata* with none in the holotype and two paratypes of *L. nubisilvicola* sp. nov., but one of the paratypes, THNHM 11797, does share the one nuchal band and third indistinct nuchal band characteristic.

*Larutia nubisilvicola* sp. nov. differs from *L. miodactyla* in the number of infralabials, 5 in *L. nubisilvicola* sp. nov. and 3 to 4 in *L. miodactyla*; number of supralabials, 6 in *L. nubisilvicola* sp. nov. and 5 in *L. miodactyla*; number scales of the mid-body rows, 24 in *L. nubisilvicola* sp. nov. and 20 to 22 in *L. miodactyla*; forelimb paddle-like joints are indiscernible in *L. miodactyla*, but forelimbs are better developed in *L. nubisilvicola* sp. nov.; hind limb paddle-like joints are indiscernible in

*L. miodactyla*, but well developed in *L. nubisilvicola* sp. nov.; the one finger is nearly vestigial in *L. miodactyla*, but *L. nubisilvicola* sp. nov. possesses two more developed fingers; *L. nubisilvicola* sp. nov. possesses subdigital lamellae and *L. miodactyla* does not; and the snout on *L. nubisilvicola* sp. nov. is opaque, where in *L. miodactyla* the snout is not opaque.

*Larutia sumatrensis* differs significantly from *L. nubisilvicola* sp. nov.; these differences include: 5 infralabials in *L. nubisilvicola* sp. nov. with 5 supralabials in *L. sumatrensis*; 2 to 3 supraoculars in *L. sumatrensis* with 4 supraoculars in *L. nubisilvicola* sp. nov.; 24 mid-body row scales in *L. nubisilvicola* sp. nov. with 22 to 23 mid-body row scales in *L. sumatrensis*; forelimb paddle-like joints indiscernible in *L. sumatrensis*, but well developed in *L. nubisilvicola* sp. nov.; hind limb paddle-like joints are indiscernible in *L. sumatrensis*, but well developed in *L. nubisilvicola* sp. nov.; one nearly vestigial finger in *L. sumatrensis*, while in *L. nubisilvicola* sp. nov. there are two better developed fingers; subdigital lamellae are present in *L. nubisilvicola* sp. nov., but absent in *L. sumatrensis*; and the snout of *L. nubisilvicola* sp. nov. is opaque, but is not opaque in *L. sumatrensis*.

*Larutia puehensis* also differs significantly from *L. nubisilvicola* sp. nov. in the following characteristics: *L. nubisilvicola* sp. nov. possesses 6 supralabials and *L. puehensis* has 5 supralabials; *L. nubisilvicola* sp. nov. has 24 mid-body row scales and *L. puehensis* has 23 mid-body row scales; the forelimb and hind limb paddle-like joints of *L. puehensis* are indiscernible and in *L. nubisilvicola* sp. nov. they are better developed; *L. nubisilvicola* sp. nov. possesses two better developed fingers with subdigital lamellae, but *L. puehensis* has only one nearly

vestigial finger without subdigital lamellae; *L. puehensis* possesses light lines radiating from the temporal and frontoparietal regions and in *L. nubisilvicola* sp. nov. these markings are absent; *L. nubisilvicola* sp. nov. has an opaque snout, but the snout in *L. puehensis* is not opaque.

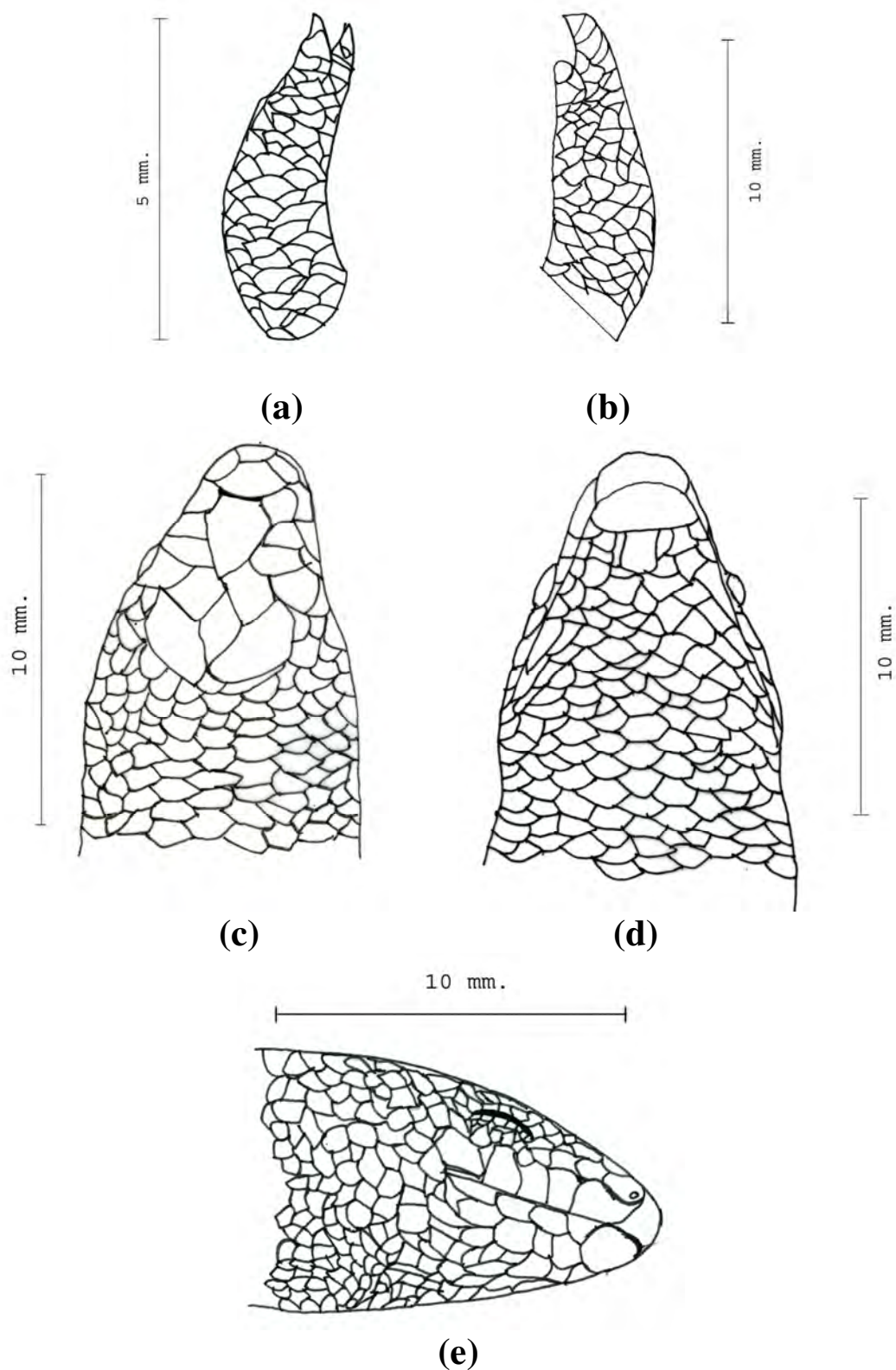
### Variation

Specimen THNHM 11797 (paratype) possesses three nuchal bands, with only the anterior most nuchal band being distinct and the other two being broken up. It also possesses light blotch colouration, with a dark marking inside at the tympanic region. This is not present in the other specimens and can be discounted as a characteristic of sexual dimorphism, since two other specimens, THNHM 11799 (holotype) and THNHM 11800 (paratype) are female, nor can it be seen as indicative of juvenile colouration, since there is another female that is only slightly larger as well as a smaller male that do not show any of these traits.

FMNH/CMNH 177096, *Larutia larutensis*, a specimen which should be considered *terra typica* having originated from the locality of its namesake, showed variation that was not in accordance with Grismer, Leong & Yaakob, 2003. This specimen lacked nuchal bands, which are recorded as present in this species; it possessed lateral striping, a characteristic not seen in *L. larutensis*, but this is an effect caused by the lightened colouration of the lateral edges of the individual scales and could be considered not to be striping. There is subcaudal mottling present, a characteristic which distinguishes *Larutia seribuatensis*. All other characteristics of this specimen of *L. larutensis*, morphologically and in meristics, were consistent with what is known about this species.

**Table 1.** Data for other *Larutia* spp. table taken and adapted from Grismer, Leong & Yaakob 2003. *nub* = *L. nubisilvicola*, *ser* = *L. seribuatensis*, *lau* = *L. larutensis*, *tri* = *L. trifasciata*, *mio* = *L. miodactyla*, *sum* = *L. sumatrensis*, *pueh* = *L. puehensis*, FMNH 177096 = FMNH/CMNH 177096 *L. larutensis*. The (-) symbol shows that the characteristic is not applicable to the species. \* See following notes on variation.

	<i>nub</i> (n=4)	<i>ser</i> (n=3)	<i>lau</i> * (n=3)	<i>tri</i> (n=3)	<i>mio</i> (n=3)	<i>sum</i> (n=5)	<i>pueh</i> (n=1)	FMNH 177096
Supraoculars	4	4	4	4	4	2-3	4	4
Supralabials	6	5-6	6-7	6	5	5-6	5	6
Infralabials	5	5	4	5	3-4	4	5	4
Midbody Scales	24	24-25	25-26	29-30	20-22	22-23	23	25
HL:SVL	0.09- 0.11	0.11- 0.13	0.08- 0.12	0.09- 0.11	0.08- 0.11	0.09- 0.11	0.08	0.08
HW:SVL	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	0.07
Body Diameter/SVL	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	119	115	191	250	151	149	141	85
Forelimb paddle-like, joints indiscernible (+) or forelimb better developed	0	0	0	0	+	+	+	0
Hind Limb paddle-like, joints indiscernible (+) or hind limb better developed	0	0	0	0	+	+	+	+
Fingers nearly vestigial (+) or better developed	0	0	0	0	+	+	+	0
Two (+) or one (0) toe	+	+	+	+	0	+	+	+
Subdigital lamellae present (+) or absent (0)	+	+	+	+	0	0	0	+
Subdigital lamellae beneath second toe	5	4	5	4	0	0	0	5
Wide, light, dorsolateral stripe present (+) or absent (0)	0	+	0	0	0	0	0	0
Several light stripes on body present (+) or absent (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	0	0
One (+) or three (0) nuchal bands	-	+	0	+	-	-	-	-
Third nuchal band complete (+) or broken (0)	-	0	-	+	-	-	-	-
First nuchal band contacting eye (+) or not (-)	-	+	0	0	-	-	-	-
Spots on frontoparietal present (+) or absent (0)	0	+	0	0	0	0	0	0
Spots on supraoculars present (+) or absent (0)	0	+	0	0	0	0	0	0
Light markings on rostum present (+) or absent (0)	0	+	0	0	0	0	0	0
Snout opaque (+) or not (0)	+	+	+	+	0	0	0	+



**Figure 1.** fore limb, left (a); hind limb, right (b); dorsal (c); ventral (d); and lateral (e) views of head scales of *Larutia nubisilvicola* sp. nov. (Holotype, THNHM 11799) (Drawing by Sunchai Makchai).



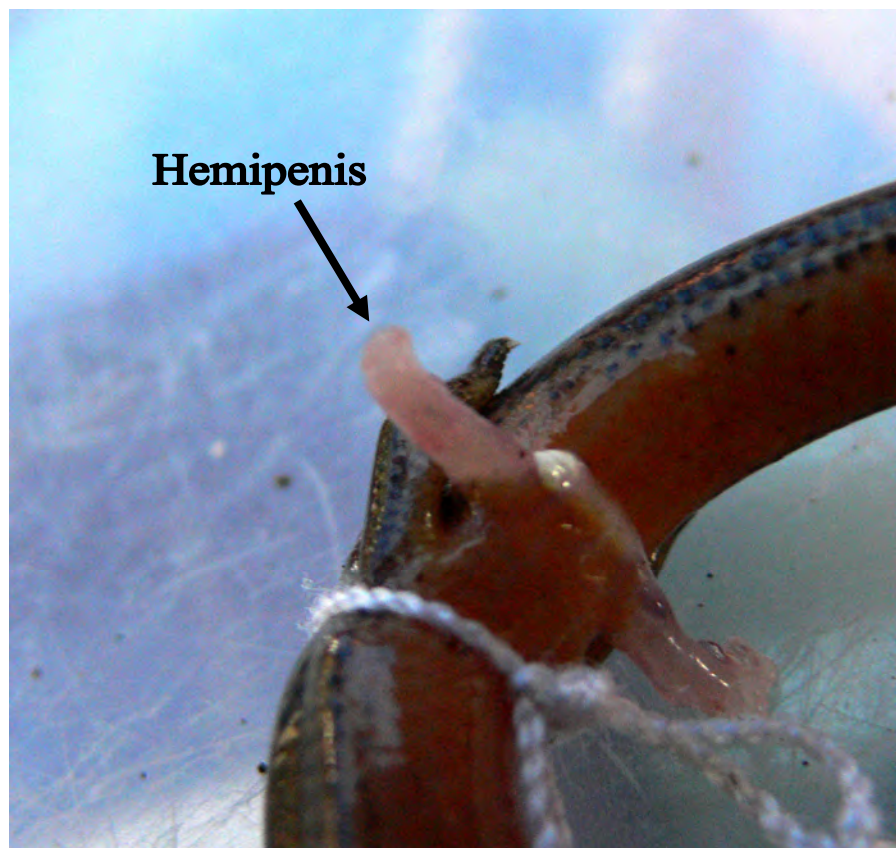
**Figure 2.** Female *Larutia nubisilvicola* sp. nov. THNHM 11800 in life. This specimen has a regenerated tail. Photograph by Michael Cota.



**Figure 3.** Female *Larutia nubisilvicola* sp. nov. THNHM 11797 in life. This specimen is the only one that possessed nuchal bands. Photograph by Michael Cota.



**Figure 4.** Male *Larutia nubisilvicola* sp. nov. THNHM 11798 in life. Photograph by Michael Cota.



**Figure 5.** Hemipenes of *Larutia nubisilvicola* sp. nov. THNHM 11798. Photograph by Michael Cota.



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