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## ***Sirindhornia* Pinkaew and Muadsub (Lepidoptera: Tortricidae), a new enarmoniine genus from Thailand**

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### **Abstract**

A new enarmoniine genus, *Sirindhornia*, **n. gen.**, is described based on the type species, *Sirindhornia pulchella*, **n. sp.**, and three additional new species: *Sirindhornia chaipattana*, **n. sp.**, *Sirindhornia curvicosta*, **n. sp.**, and *Sirindhornia bifida*, **n. sp.**, all from Thailand. A fifth species represented only by a single female is morphologically characterized but not formally described. *Sirindhornia* is most closely related to *Anthozela* Meyrick and *Irianassa* Meyrick but is easily distinguished by unique appendages of the tegumen and a conspicuous henion in the male genitalia.

**Key words:** Ang-Ed Community forest, Enarmoniini, Khao Nan National Park, new genus, new species, Olethreutinae, Trat Agroforestry Research and Training Station

### **Introduction**

Field work to document the diversity of olethreutine moths in Thailand was undertaken in different habitats in the evergreen forest of Khao Nan National Park, Nakhon Si Thammarat Province in 2008; the agroforestry area of Trat Agroforestry Research and Training Station, Trat Province in 2012; and the reforestation project of a 50-year old rubber plantation, the Ang-Ed Community forest, Chanthaburi Province in 2012. Among the collections from these three locations was material of an unusual and apparently unknown taxon. The wing pattern suggested that the new taxon is a member of Enarmoniini, and genitalia dissection confirmed this assignment and revealed that more than one species was involved. The genus proved to be new to science. As most of the specimens were collected in the Ang-Ed Community forest, belonging to the Chaipattana Foundation, this new genus was named to honor the Princess Maha Chakri Sirindhorn who generously supports this foundation.

### **Materials and methods**

This study is based on specimens in the Kasetsart Kamphaengsaen Insect Collection. A Leica MZ95 stereomicroscope was used for examination and specimen measurement, and a Leitz Dialux 20 compound microscope was used to examine genitalia preparations. Forewing length was measured from the outer edge of the tegula at wing base to the outermost edge of the fringe scales at apex. Genitalia preparation methods were adapted from Common (1990). Terminology for forewing pattern and genitalic structures follow Horak (1991, 2006). The following abbreviations are used for depositories: BMNH, The Natural History Museum, London; KKIC, Kasetsart Kamphaengsaen Insect Collection, Nakhon Pathom, Thailand.

## Results

### *Sirindhornia* Pinkaew and Muadsub, n. gen.

Type species: *Sirindhornia pulchella* Pinkaew and Muadsub, n. sp.

**Diagnosis.** *Sirindhornia* is superficially most similar to *Anthozela* Meyrick but can be distinguished by its upcurved and appressed, long, slender, white labial palpi, by a forewing with white rather than yellow ground color in its basal half, and a venation similar to that of *Irianassa* Meyrick with  $CuA_1$  from far below the angle of the cell in the forewing and  $R_s$  and  $M_1$  widely distant at base in the hindwing. The male genitalia are most like those of *Anthozela*, but those of *Sirindhornia* have large spiny socii with 2–3 huge apical thorns, long slender sclerotized gnathos arms, and a long slender henion. The large subtriangular blade-shaped signa of the female are typical of many Enarmoniini are unlike the long slender hooks of *Anthozela*.

**Description.** Head: Labial palpi long, slender, upcurved, reaching upper margin of eyes, close to frons (Fig. 1); frontal tuft small, with scales on lower frons short, appressed, white; vertex with raised black and white scales; labial palpus with short basal segment with raised scales, also laterally, white except for laterodistal black scales; second segment strongly curved, widest in middle, with long anteriorly projecting transverse scales, white except for black scales basally; third segment long, straight, pointed, cone-shaped with deeply concave anterior face, white, in some species with black scales in ventral groove. Antenna short, 1/3 length of forewing, scape and pedicel black, flagellum with dorsal scales only, black with white scales in some species, sensory setae minute. Ocellus prominent, chaetosema with long sensory setae.

Thorax: Smooth, without raised scale tufts posteriorly, black and white; legs unmodified. Forewing (Fig. 3) broadly triangular, length 3.8–5.2 mm in male ( $n = 5$ ), 4.5–5.3 mm in female ( $n = 4$ ); costa evenly curved, rarely more so before apex, male costal fold absent, termen with notch below apex, wing venation (Fig. 2) with discal cell 0.65x length of wing, M-stem well developed, extending between  $M_2$  and  $M_3$ , chorda from halfway between  $R_1$  and  $R_2$  to just beyond  $R_5$ ; all veins present and separate beyond cell,  $R_1$  from basal 0.33 of cell,  $R_2$  from apical 0.25 of cell,  $R_3$  from much closer to  $R_4$  than to  $R_2$ , bases of  $R_3$ ,  $R_4$  and  $R_5$  nearly equidistant,  $M_1$  from slightly closer to  $R_5$  than to  $M_2$ , base of  $M_2$  equidistant to  $M_1$  and  $M_3$ ,  $M_3$  from angle of cell, base of  $CuA_1$  from 0.75 of cell and equidistant to  $M_3$  and  $CuA_2$ ,  $CuA_2$  from about middle of cell, 1A and 2A separate at base and connate at 0.38 length of anal vein. Forewing pattern with basal 1/3–2/5 white, with irregular and often confluent black spots, distal part with orange to brownish orange ground color, its inner margin preceded by two dark spots and extending obliquely from basal 0.2 of costa to  $R_2$ , then angled and roughly straight to dorsum; costa with well developed strigulae as black spots alternating with white along costa, giving rise to strongly oblique lines, an angled silvery one from 1/3 costa separating white and red wing portion, an irregular, nearly straight black line from before middle to near notch on termen, and a shorter, sinuate, silvery line just beyond a black spot on costa; wing apex with two distinct white marks, a triangular one followed by a crescent-shaped one, their margins edged with black and silvery scales; notch below apex often enhanced by a small, triangular, white mark; remainder of orange wing portion with connected, sinuate silvery or blackish lines and few black spots. Fringe blackish from wing apex to  $CuA_1$ , in some species interrupted by white at notch between  $R_5$  and  $M_1$ , remainder orange brown mixed with blackish, basal line brownish orange. Fringe pale orange grey with conspicuous blackish basal line. Underside dark grey with greyish orange band along termen, in some species with one or two longitudinal, narrowly triangular greyish orange patches. Underside of forewing greyish brown, speckled paler reflecting wing pattern; costa with small white dots and two distal marks as on upper side; with white scales at notch in some species. Hindwing with frenulum comprised of one bristle in male and three bristles in female, R-stem well developed to base, base of  $M_1$  conspicuously distant from  $R_s$ ,  $M_2$  distant from and subparallel with  $M_3$ ,  $M_3$  and  $CuA_1$  connate to short-stalked,  $CuA_2$  from near apical third,  $CuP$  very weak towards margin, 1A+2A and 3A well developed. Hindwing pattern blackish, paler toward base, with orange band along termen, usually with orange patch near center.

Abdomen: Male genitalia (Fig. 4) with tegumen ovate-subtriangular, moderately sclerotized, homology of highly derived dorsal appendages unclear; with flat medial, dorsal process (presumably uncus) and large, curved raised lateral lobes (presumably socii) with dense flattened modified spines on outer surface and with 2–3 huge thorns on process projecting from outer margin, and with curved sclerotized arms along base, their tips with a

membranous medial connection (presumably gnathos); vinculum wide, weakly sclerotized band; juxta small, caulis rather short; anellus with long sclerotized spatulate dorsal process, with microtrichia on apex; phallus long, bulbous, without cornuti; valva long and narrow, sacculus from small basal thickening to forming long distally free process, costal hook prominent, pointed, usually below costa, outer surface of valva with long, persistent, modified scales in basal half. Female genitalia (Fig. 5) with papillae anales densely setose; tergum VIII with very sparse scales sockets and setae posteriorly and on lateral triangular extensions; sterigma a large patch of dense spinules, some species with a projecting pyramid-shaped lobe covered with spinules on each side; ostium a membranous to sclerotized funnel beyond posterior margin of sternum VII; without colliculum; ductus bursae long, very narrow in some species, wider near ostium or posterior half, ductus seminalis arising from transition of corpus to ductus bursae; corpus bursae ovate, granulate, with two large unequal signa, triangular blades with elongate hollow base.

**Etymology.** *Sirindhornia* is a patronym for Princess Maha Chakri Sirindhorn..

**Distribution.** Thailand.

### ***Sirindhornia pulchella* Pinkaew and Muadsub, n. sp.**

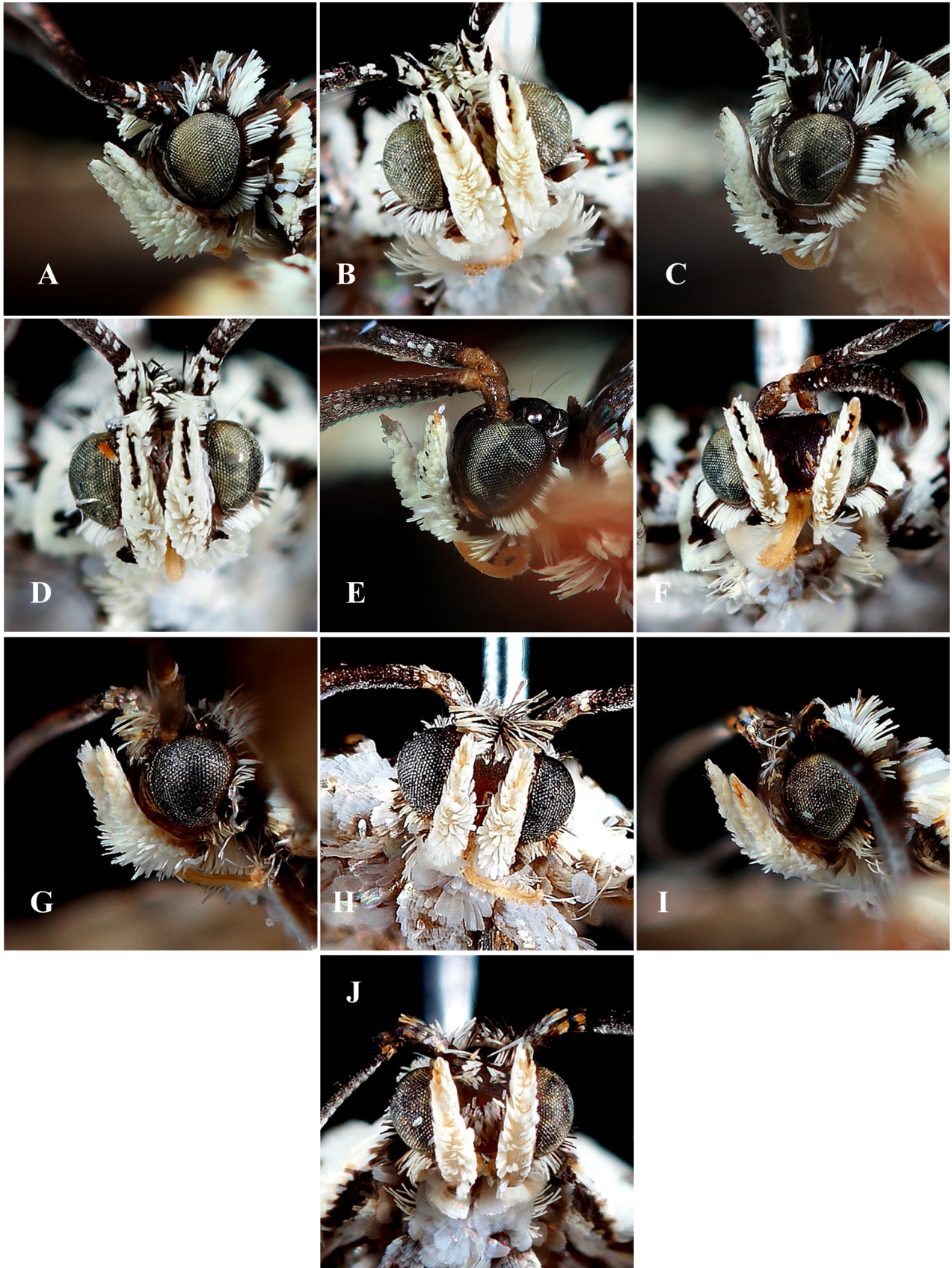
Figures 1A–B, 2, 3A–B, 4A, 5A

**Diagnosis.** Unlike the other known species of this genus, the forewing of *S. pulchella* has a regular transverse row of small dots in the distal part of the white and black basal half, and the black line from before the middle of the costa runs nearly straight to the notch. Diagnostic characters in the male genitalia are two large thorns on distal process of the socii, a wide valva with a pointed large costal hook, a long distally tapering phallus, and a narrow anellus process with a widened apex. The sterigma with two large spinulose lobes separates *S. pulchella* from the other two species in which the females are known.

**Description.** Head: As described for genus (Fig. 1A–B), except third segment of labial palpus with black scales in vertical groove on anterior face in both sexes. Antenna as described for genus, with some white scales on scape and pedicel, and a few scattered along flagellum.

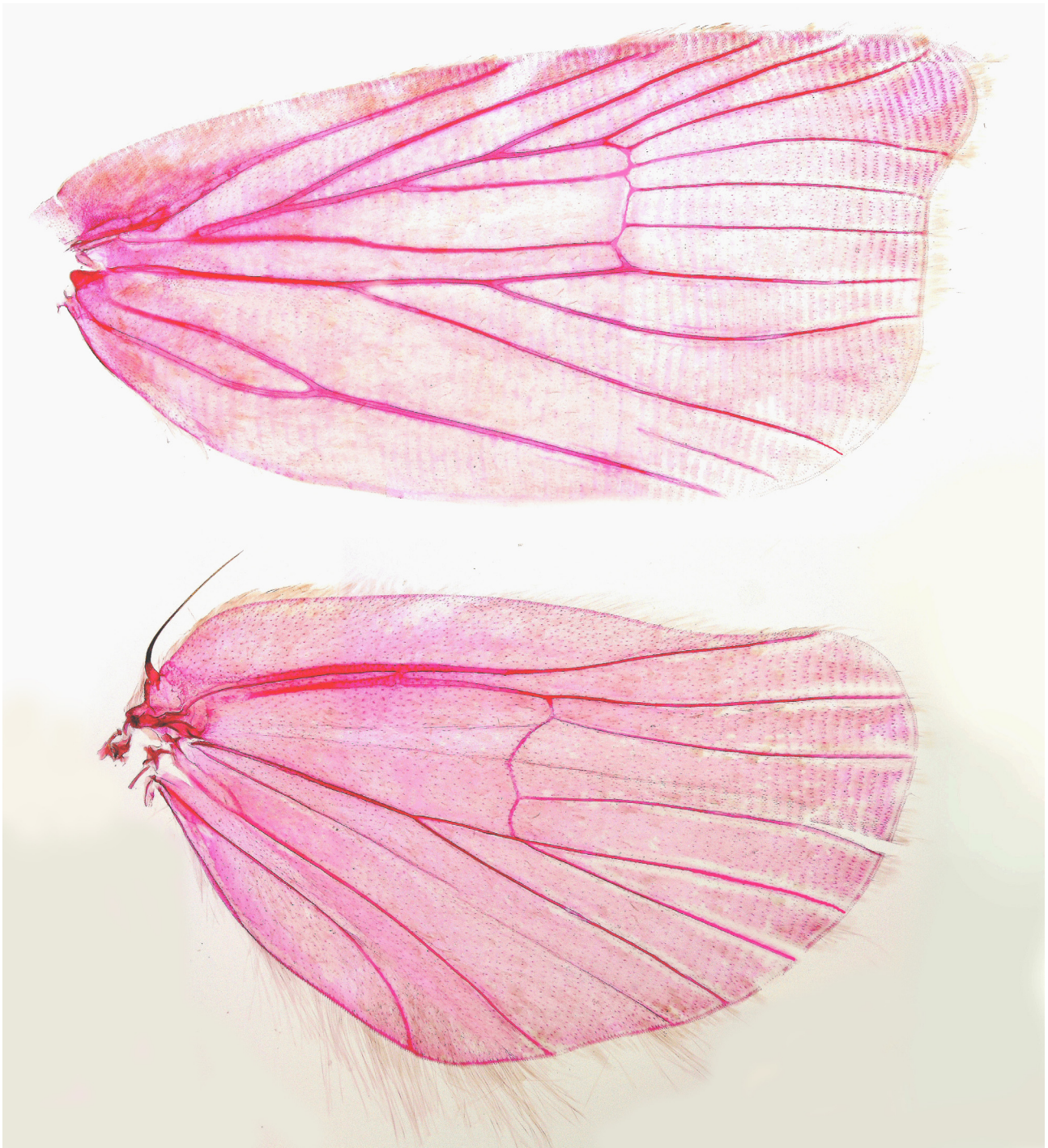
Thorax: As described for genus, except tegulae white with thin black line along inner margin then recurved to center, and short black line on outer margin near base. Forewing length 4.8–5.0 mm in male ( $n = 2$ ) (Fig. 3A), 4.5 mm in female ( $n = 1$ ) (Fig. 3B); basal 2/5 white, with numerous, slender, connected black lines concentrated towards base, larger mark at 1/3 and with isolated, minute black dots more distally; distal 3/5 with orange ground color, its inner margin near costa preceded by two black spots and followed by a parallel, angled silvery band, slightly widening from costa to dorsum; strigulae and marks along costa as for genus, but oblique black line from beyond middle of costa weak, interrupted below costa and very faint behind notch; triangular white mark at notch; remainder of orange wing portion with rather narrow, sinuate, slightly confluent silvery blackish bands and few black spots. Fringe as for genus, white at notch. Underside as for genus but with small, transverse orange band middle of termen. Hindwing as for genus, with narrow orange band along termen from apex to  $M_2$  and longitudinal orange patch in center of wing. Underside as for genus, with two longitudinal, narrow, greyish orange patches divided by darker streak along fold between  $M_1$  and  $M_2$ , with only the more posterior one reaching to termen.

Abdomen: Male genitalia (Fig. 4A) with tegumen ovate, moderately sclerotized; uncus flat, pentagonal, medially notched, with dense setae dorsally, laterally connected with large, curved and raised subtriangular socii, with dense, flattened spines on outer surface and two huge thorns on distal process, sclerotized gnathos arms at base short and evenly curved; vinculum weakly sclerotized, wide; juxta small, caulis rather short; anellus with long sclerotized dorsal process spatulate, with microtrichia at apex; phallus long, slightly curved medially, bulbous in basal half and slight tapering to apex, without cornuti; valva straight and simple, elliptical with narrowly rounded apex, with long pointed costal hook below sinuate costa; sacculus only small basal thickening, with dense setae along margin; modified scales on outer valva surface scattered. Female genitalia (Fig. 5A) with papillae anales and tergum VIII as for genus; sterigma a large patch of dense spinules, with a projecting pyramid-shaped lobe covered with spinules on each side, and with some microtrichia below ostium margin; ostium a sclerotized funnel beyond straight posterior margin of weakly sclerotized sternum VII; without colliculum; ductus bursae long, anterior half very narrow, posterior half distinctly wider, ductus seminalis arising from transition of corpus to ductus bursae; corpus bursae ovate, granulate, with two large unequal signa, long triangular blades with elongate hollow base.



**FIGURE 1.** Head of *Sirindhornia* spp. **A–B.** *S. pulchella*, n. sp. (holotype male). **C–D.** *S. chaipattana*, n. sp. (holotype male). **E–F.** *S. curvicosta*, n. sp. (holotype male). **G–H.** *S. bifida*, n. sp. (holotype male). **I–J.** *Sirindhornia* sp. (female).





**FIGURE 2.** Wing venation of *Sirindhornia pulchella*, n. sp. (paratype male, right wings).

Holotype: ♂, Thailand, Nakhon Si Thammarat Prov., Khao Nan N.P., 08°47'00"N 99°47'46"E, ca 125 m, 9 Jan 2008. N. Pinkaew. np 2439, ♂ genitalia slide NP 2005. Deposited in BMNH.

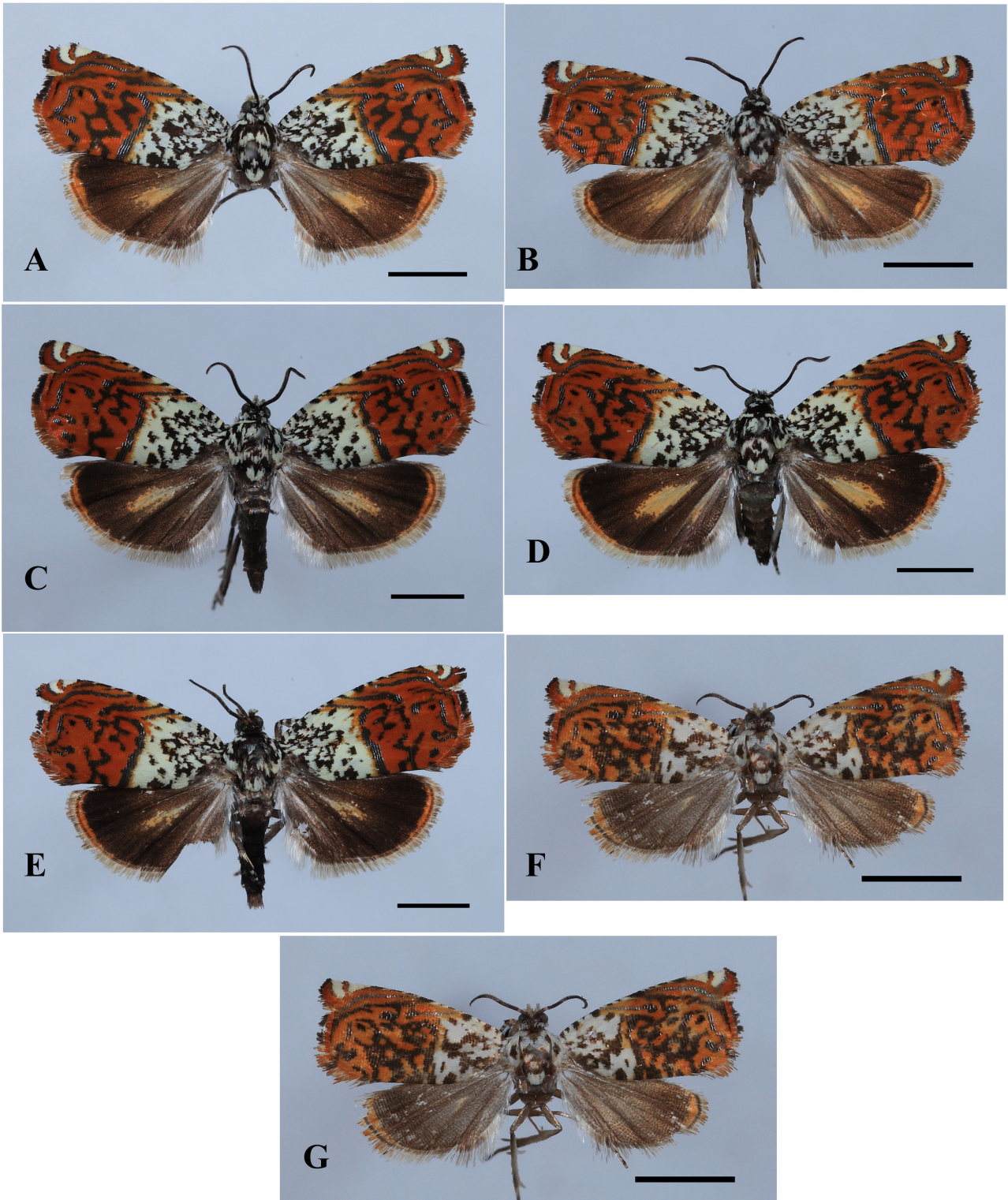
Paratypes: 1♂, 1♀, Thailand, Nakhon Si Thammarat Prov., Khao Nan N.P., 08°46'55"N 99°47'44"E, ca 123 m, 3 May 2008, N. Pinkaew. np 2696, ♂ genitalia slide NP 1187, N. Pinkaew. np 2703, ♀ genitalia slide NP 1184. Deposited in KKIC.

**Etymology.** The specific epithet *pulchella* means beautiful in Latin, referring to the wing pattern and color of this species.

**Distribution.** Thailand.

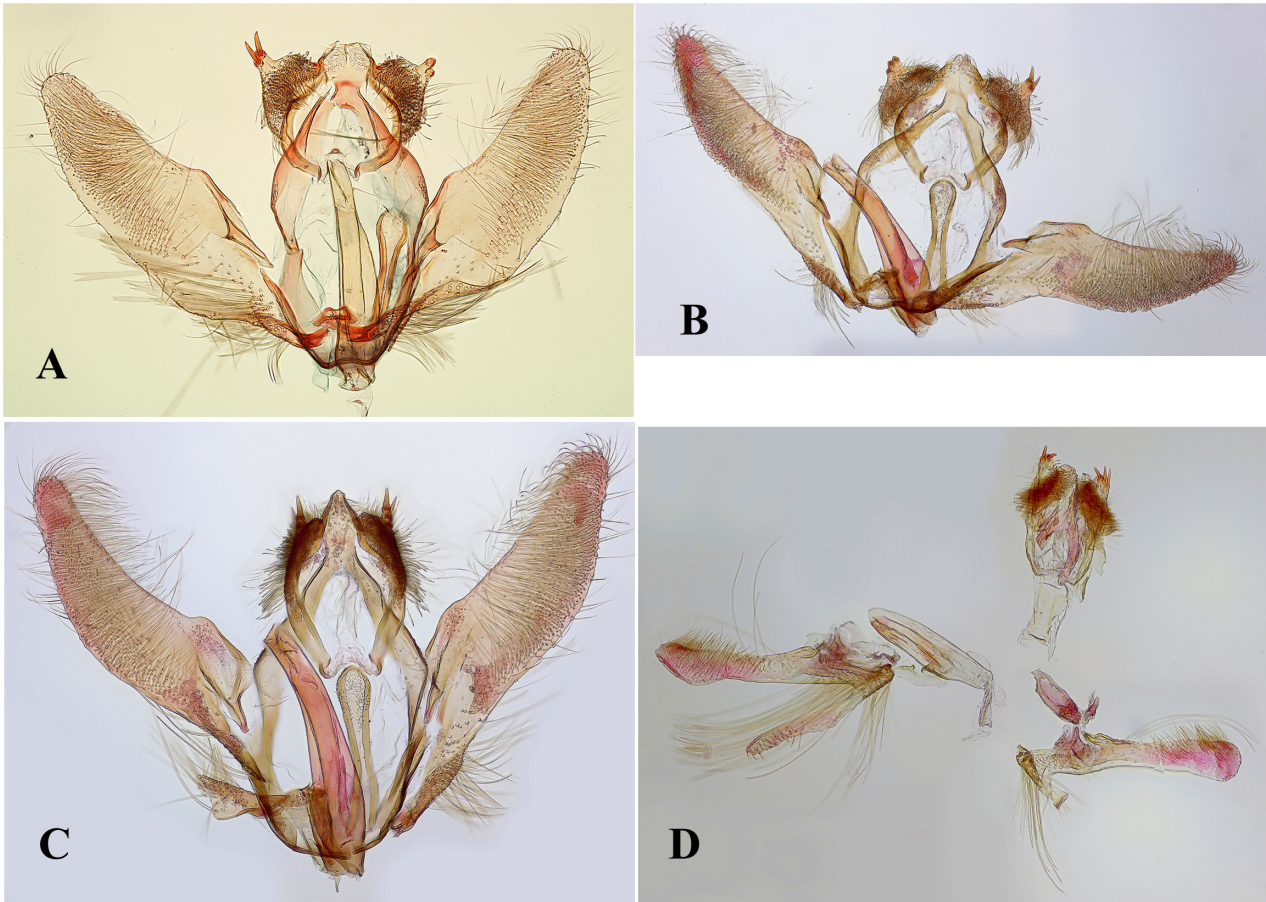
**Remarks.** Specimens were collected in evergreen forest of the Khao Nan National Park.





**FIGURE 3.** Adults of *Sirindhornia* spp. **A.** *S. pulchella*, n. sp. (holotype male). **B.** *S. pulchella*, n. sp. (paratype female). **C.** *S. chaipattana*, n. sp. (holotype male). **D.** *S. chaipattana*, n. sp. (paratype female). **E.** *S. curvicosta*, n. sp. (holotype male). **F.** *S. bifida*, n. sp. (holotype male). **G.** *Sirindhornia* sp. (female) (Scale bar = 2 mm).





**FIGURE 4.** Male genitalia of *Sirindhornia* spp. **A.** *S. pulchella*, n. sp. (holotype). **B.** *S. chaipattana*, n. sp. (holotype). **C.** *S. curvicosta*, n. sp. (holotype). **D.** *S. bifida*, n. sp. (holotype).

***Sirindhornia chaipattana* Pinkaew and Muadsub, n. sp.**

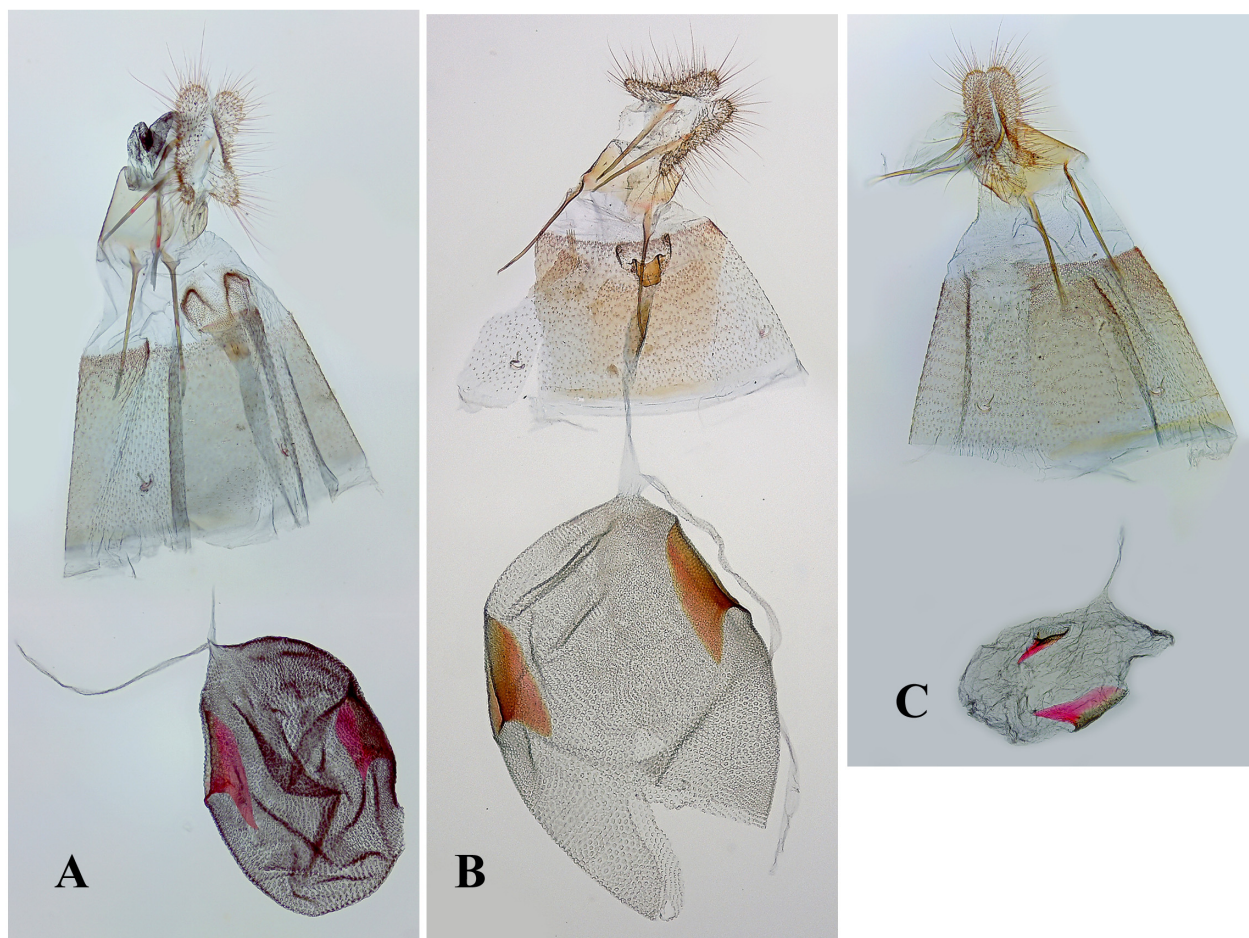
Figures 1C–D, 3C–D, 4B, 5B

**Diagnosis.** *Sirindhornia chaipattana* is most similar to *S. curvicosta*, both with a broad nearly white distal margin to the white and black basal half of the forewing and a black line from before middle of costa downcurved and running towards dorsum, but *S. chaipattana* can be recognized by an evenly curved costa resulting in a broad apex. In the male genitalia *S. chaipattana* has a more broadly triangular uncus and a medially more sharply narrowed dorsal anellus process than *S. curvicosta*. The small sclerotized cup at the end of the ductus bursae and the two narrow small spinulose lobes of *S. chaipattana* are unlike the sterigma of any other known *Sirindhornia* female.

**Description.** Head: As described for genus (Fig. 1C–D), except third segment of labial palpus with black scales in vertical groove on anterior face. Antenna with some white scales on scape and pedicel, and a few scattered on basal segments of flagellum.

Thorax: As described for genus, except tegulae white with two oblique black lines. Forewing length 5.2 mm in male (n = 1) (Fig. 3C), 4.9–5.3 mm in female (n = 2) (Fig. 3D); basal 2/5 white, with numerous, slender, connected black lines and spots concentrated towards base and a distal white band with only few irregular black dots, distal 3/5 with reddish orange ground color, its inner margin near costa preceded by small black spots and followed by a parallel, sharply angled silvery band, slightly widening from costa to dorsum; strigulae and marks along costa as for genus, with black line from before middle of costa downcurved and deeply sinuate, not to notch; triangular white mark at notch; remainder of orange wing portion with rather narrow, sinuate, slightly confluent silvery blackish bands and few black spots. Fringe with white at notch. Underside as for genus. Hindwing dark grey to blackish, with narrow orange patch along termen from apex to M<sub>2</sub>, orange patch in center and whitish to orange

streak in anal region. Underside as for genus, with two longitudinal, greyish orange patches at middle of wing, divided by darker streak along fold between  $M_1$  and  $M_2$ .



**FIGURE 5.** Female genitalia of *Sirindhornia* spp. **A.** *S. pulchella*, n. sp. (paratype). **B.** *S. chaipattana*, n. sp. (paratype). **C.** *Sirindhornia* sp.

Abdomen: Male genitalia (Fig. 4B) with tegumen moderately sclerotized; uncus flat, wide, subtriangular, dense setae dorsally, laterally connected with large, curved and raised subtriangular socii, densely setose, with two to three huge thorns on distal process and with curved and narrow sclerotized gnathos arms at base, medially connected by membrane; vinculum weakly sclerotized, wide; juxta small, caulis rather short; dorsal anellus process medially much narrower, with microtrichiae at apex; phallus long, slightly curved, bulbous in basal half and slight tapering to apex; valva narrowly elliptical, pointed with narrowly rounded apex, with rather short costal hook below sinuate costa; sacculus only small basal thickening, with dense setae along margin. Female genitalia (Fig. 5B) with papillae anales and tergum VIII as for genus; sterigma a small patch of dense spinules, laterally with two narrow, sclerotized ridges, covered with spinules on each side; ostium a small sclerotized cup beyond concave posterior margin of weakly sclerotized sternum VII; with a moderately sclerotized colliculum; ductus bursae shorter than ductus bursae length, narrow medially; ductus seminalis arising from transition of corpus to ductus bursae; corpus bursae ovate, granulate, with two large signa, subtriangular blades with elongate hollow base.

Holotype: ♂, Thailand, Chanthaburi Prov., Ang-Ed Com. for., ca 33 m, 12°36'04"N 102°19'50"E, 22–23 Dec 2011, N. Pinkaew. np 6230, ♂ genitalia slide NP 2068. Deposited in BMNH.

Paratype: 2♀, Thailand, Chanthaburi Prov., Ang-Ed Com. for., ca 33 m, 12°36'04"N 102°19'50"E, 22–23 Dec 2011, N. Pinkaew. np 6231, ♀ genitalia slide NP 2069, N. Pinkaew. np 6232, ♀ genitalia slide NP 2070. Deposited in KKIC.

**Etymology.** The specific epithet *chaipattana* refers to the Chaipattana Foundation which supports the Ang-Ed community forest.



**Distribution.** Thailand.

**Remarks.** Specimens were collected in the dry season in areas of the 50-year old rubber tree plantation which were reforested to secondary forest.

***Sirindhornia curvicosta* Pinkaew and Muadsub, n. sp.**

Figures 1E–F, 3E, 4C

**Diagnosis.** *Sirindhornia curvicosta* is most similar to *S. chaipattana*, both with a broad nearly white distal margin to the white and black basal half of the forewing and a black line from before middle of costa downcurved and running towards dorsum, but *S. curvicosta* can be recognized by the distally strongly curved costa resulting in a narrow apex. In the male genitalia *S. curvicosta* has a more narrowly triangular uncus and the dorsal anellus process medially parallel-sided rather than distinctly narrowed as in *S. chaipattana*.

**Description.** Head: Damaged, without scales; labial palpus as for genus (Fig. 1E–F), third segment of labial palpus with black scales in vertical groove on anterior face.

Thorax: As for genus, tegulae white with thin black line along inner margin then recurved to center, and short black line on outer margin near base. Forewing length 5.2 mm in male (n = 1) (fig. 3E); costa more curved at wing apex, apex narrow; basal 2/5 white, with numerous, slender, connected black lines concentrated towards base and distally white with few black dots; distal 3/5 with reddish orange ground color, its inner margin near costa preceded by black spots and followed by a parallel, angled silvery band, slightly widening from costa to dorsum; strigulae and marks along costa as for genus, with one oblique, narrow black line from middle of costa downcurved; triangular white mark at notch; remainder of reddish orange wing portion with rather narrow, sinuate, slightly confluent silvery blackish bands and few black spots. Fringe white at notch. Underside as for genus. Hindwing very dark, with narrow orange patch along termen from apex to  $M_2$  and a narrow orange streak in center. Underside with two longitudinal, greyish orange patches at middle of wing, divided by darker streak along fold between  $M_1$  and  $M_2$ .

Abdomen: Male genitalia (Fig. 4C) with tegumen moderately sclerotized; uncus flat, narrow, subtriangular, with dense setae dorsally, laterally connected with long, narrow, curved and raised subtriangular socii, densely setose, with two huge thorns on distal process, with long, only weakly curved, sclerotized gnathos arms; vinculum weakly sclerotized, wide; juxta small, caulis rather short; dorsal anellus process only slightly narrower medially, phallus long, slightly curved medially, bulbous in basal half and slight tapering to apex; valva slightly curved, elliptical with narrowly rounded apex; sacculus only small basal thickening, with dense setae along margin; modified scales on outer valva surface scattered.

Holotype: ♂, Thailand, Chanthaburi Prov., Ang-Ed Com. for., ca 33 m, 12°36'04"N 102°19'50"E, 22–23 Dec 2011, N. Pinkaew. np 6233, ♂ genitalia slide NP 2071. Deposited in KKIC.

**Etymology.** The specific epithet *curvicosta* refers to the strongly curved costa of the forewing just before the apex.

**Distribution.** Thailand.

**Remarks.** The single specimen was collected in the dry season in an area of a 50-year old rubber tree plantation which was reforested to secondary forest.

***Sirindhornia bifida* Pinkaew and Muadsub, n. sp.**

Figures 1G–H, 3F, 4D

**Diagnosis.** *Sirindhornia bifida* is the only species without a central orange mark in the hindwing, and together with *Sirindhornia* sp. (discussed below), can also be distinguished from all other known species of *Sirindhornia* by relatively large and confluent black spots in basal half of the forewing, diagonally connecting the base and the orange distal part, by the wide and strongly interconnected black lines in the distal half, and by the black line from middle of the costa straight to below the notch then downcurved parallel to termen. The entirely white labial palpi, an evenly curved costa, and much paler hindwings separate *S. bifida* from *Sirindhornia* sp. In the male genitalia the very narrow valva and a distally free, finger-like sacculus and a small narrowly ovate phallus are unique for the genus.

**Description.** Head: As described for genus (Fig. 1G–H), but third segment of labial palpus entirely white.

Thorax: As described for genus, but tegulae with central ovate black spot and black scales at base. Forewing length 3.8 mm in male (n = 1) (Fig. 3F); basal white area relatively short, 1/3 length to middle of termen, with relatively large and confluent black spots, some diagonally connecting base and orange distal wing part; distal 2/3 with orange ground color, its inner margin near costa preceded by two conspicuous black spots, medially somewhat projecting inward and from middle of wing edged by wide blackish band vertically to dorsum; strigulae and marks along costa as for genus but black line from middle of costa long, straight then ending in vertical, narrow band along middle of termen; notch with a small white mark; remainder of orange wing portion with wide, sinuate, strongly interconnected black bands and few black spots. Fringe as for genus. Underside as for genus. Hindwing with orange band along termen from apex to M<sub>3</sub>, without orange patch near center. Fringe as for genus. Underside without patch.

Abdomen: Male genitalia (Fig. 4D) [damaged] with socii bearing dense flattened modified spines on outer surface and 3 huge thorns on process projecting from outer margin, and with sclerotized gnathos arms along base; phallus small, narrowly ovate, more slender at base; valva long, narrow, spatulate, with distally free sacculus forming finger-like, slightly curved, setose process, outer valva surface with patch of long, modified scales in basal half, costal hook short with rounded tip.

Holotype: ♂, Thailand, Trat Province, Trat Agroforestry R. St., 12°23'43"N 102°40'32"E, ca 30 m, 21–23 Apr 2013, N. Pinkaew, np 5007, ♂ genitalia slide NP1786. Deposited in KKIC.

**Etymology.** The specific epithet *bifida* means ‘divided into two parts’ in Latin, referring to the sacculus which is distally separated from the valva.

**Distribution.** Thailand.

**Remarks.** This single male was collected in summer in the agroforestry ecosystem of the Trat Agroforestry Research and Training Station. Despite the highly modified genitalia, we name this species even though its genitalia are somewhat damaged.

### ***Sirindhornia* sp.**

Figures 1I–J, 3G, 5C

**Diagnosis.** *Sirindhornia* sp. shares with *S. bifida* a forewing pattern with large and confluent black spots in the basal half, diagonally connecting the base and the orange distal part, wide and strongly interconnected black lines in the distal half, and a black line from middle of costa straight to below the notch then downcurved parallel to the termen; but *Sirindhornia* sp. is distinguished by black scales anteriorly on the tip of the labial palpus, by a distally curved costa, the absence of white scales at the notch below apex, and much darker hindwings. The spinulose sterigma without projecting lobes, the small and membranous ostium, and the unequal-sized signa differ from all other known *Sirindhornia* species.

**Description.** Head: As described for genus (Fig. 1I–J), with anterior face of third segment of labial palpus with very narrow line of black scales only at tip. Antenna with some white-brown scales on scape and pedicel.

Thorax: Tegulae white with large black spot distally and small spot on outer margin near base. Forewing length 4.8 mm in female (n = 1) (Fig. 3G); basal 2/5 white, with black spots and sinuate lines connected to form irregular central circle and with few isolated small black dots along costa and dorsum; strigulae and marks along costa as for genus but black line from beyond middle of costa strong, straight then ending in vertical black band along middle of termen; notch without white mark; remainder of orange wing portion with wide, sinuate, strongly interconnected bands and few black spots. Fringe damaged, present as orange basal line along termen. Underside of forewing as for genus but with small paler spot at notch. Hindwing blackish, somewhat paler towards base, with orange band along termen from apex to CuA<sub>1</sub>, and with orange patch near center. Fringe damaged, apparently as for genus, black basal line present. Underside as for genus, with two longitudinal, triangular greyish orange patches medially, not reaching to termen.

Abdomen: Female genitalia (Fig. 5C) with papillae anales and tergum VIII as described for genus; sterigma a large flat patch of dense spinules; entrance to ostium small, membranous, beyond moderately concave posterior margin of weakly sclerotized sternum VII; without colliculum; ductus bursae long and very narrow, slightly wider near ostium; ductus seminalis not preserved; corpus bursae with two large blade-shaped unequal signa, one triangular and the other longer with a straight distal edge, narrowest in middle.



Specimens examined: 1♀, Thailand, Trat Province, Trat Agroforestry R. St., 12°23'43"N 102°40'32"E, ca 30 m, 18–19 Aug 2012, N. Pinkaew, np 5325, ♀ genitalia slide NP 1785. Deposited in KKIC.

**Distribution.** Thailand.

**Remarks.** This single female was collected in the rainy season in the agroforestry ecosystem of Trat Agroforestry Research and Training Station. It has the same forewing wing pattern as *S. bifida*, known from a single male from the same locality, but there are sufficient differences to doubt that they are the two sexes of the same species. However, we refrain from formally naming a single female.

## Discussion

*Sirindhornia* is taxonomically interesting, combining rather plesiomorphic wing venation with highly derived socii, a long dorsal process from anellus and a modified costal hook in the male genitalia. The wing pattern and male genitalia suggest a close relationship with *Anthozela* Meyrick, with the highly modified socii (with pegs in *Anthozela* and thorns in *Sirindhornia*), a band-like gnathos ventrally connected and a modified anellus. However, *Anthozela* has a more generalized wing venation. The head of *Sirindhornia* is very similar to *Irianassa* with slender, upcurved palpi and a conspicuously large ocellus, and the two genera have the same wing venation. Both genera have a plesiomorphic wing venation with all veins separate except for  $M_3$  and  $CuA_1$  in the hindwing which is stalked and with  $M_1$  at base widely distant from  $R_s$ , but they share the most unusual character of  $CuA_1$  in the forewing arising from far below angle of cell. *Sirindhornia* and *Irianassa* also have the same wing shape and wing pattern of the forewing apex.

The fact that five species of the new genus have been discovered in three well-collected localities is a reminder of how little we know about the rich and diverse fauna of Oriental microlepidoptera, a fauna that may hold the key to understanding the phylogeny of many Lepidoptera groups. It is also confirmation how important conservation organisations like the Chaipattana Foundation are.

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