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# Three new species of *Thubana* Walker, 1864 from Cambodia and Malaysian Borneo (Lepidoptera: Lecithoceridae)

K.-T. Park, Y.-S. Bae & S. Kim

## Abstract

Three new species of the genus *Thubana* Walker, 1864 are described from Cambodia and Malaysian Borneo: *Thubana seimaensis* Park, sp. n. and *T. eremophila* Park, sp. n. from Cambodia, and *T. gilvizonaris* Park, sp. n. from Malaysian Borneo.

KEY WORDS: Lepidoptera, Lecithoceridae, new species, taxonomy, *Thubana*, Oriental Region.

## Tres nuevas especies de *Thubana* Walker, 1864 de Camboya y de Borneo malasio (Lepidoptera: Lecithoceridae)

## Resumen

Se describen tres nuevas especies del género *Thubana* Walker, 1864 de Camboya y Borneo malasio: *Thubana seimaensis* Park, sp. n. y *T. eremophila* Park, sp. n. de Camboya y *T. gilvizonaris* Park, sp. n. de Borneo malasio.

PALABRAS CLAVE: Lepidoptera, Lecithoceridae, nuevas especies, taxonomía, *Thubana*, Región Oriental.

## Introduction

The genus *Thubana* Walker, 1864 belonging to the subfamily Torodorinae, is only known in the Oriental Region, from North India to the Philippines and extended to the Indonesian Archipelago in the south. The genus comprises 48 known species (PARK & HEPPNER, 2009; YANG *et al.*, 2010): eight species from India (including Sri Lanka), one species from Nepal, 13 species from Thailand, nine species from China (including two species from Taiwan), two species from Philippines, seven species from Indonesia, and eight species from Malaysian Borneo (CLARKE, 1965; GOZMÁNY, 1978; WU, 1997; WU & PARK, 1999; PARK, 2003, 2009; PARK *et al.*, 2005, 2006; PARK & HEPPNER, 2009; YANG *et al.*, 2010). In Cambodia, no species of the genus *Thubana* is known.

The genus is characterized by the following apomorphic characters: commonly having a large creamy-white or light-orange triangular costal patch, with few exceptions, and the venation with  $R_5$  usually absent,  $M_3$  and  $CuA_{1+2}$  on a common stalk in the forewing; hindwing with  $M_2$  present, straightly extended from lower margin of cell; abdomen with dense spinous zones on tergites. The male genitalia have considerably variable structures, having the juxta often with a triangular median plate or latero-caudal processes, and are closely similar to those of *Torodora* Meyrick or *Deltoplastis* Meyrick.

## Material and methods

Specimens examined for the present study are based on material collected by the second author in

Cambodia during recent years (2009-2011), and specimens in the collection of Rijksmuseum of Natuurlijke Historie (RMNH), Leiden, The Netherlands. The wingspan is measured from the apex of the left wing to the apex of the right wing, including fringe. Types of the three new species are deposited in the University of Incheon, Korea (UIK), on indefinite loan from Cambodia, and in the RMNH.

## Taxonomic Accounts

### Genus *Thubana* Walker, 1864

*Thubana* Walker, 1864. *List Lep. Het. Br. Mus.*, 29: 814.

= *Titana* Walker, 1864. *List Lep. Het. Br. Mus.*, 29: 813.

= *Tiva* Walker, 1864. *List Lep. Het. Br. Mus.*, 29: 1864.

= *Inapha* Walker, 1864. *List Lep. Het. Br. Mus.*, 30: 1000.

= *Stelechoris* Meyrick, 1925. *Gen. Ins.*: 243.

### *Thubana seimaensis* Park, sp. n. (Figs. 1, 1a, 4, 4a, 4b)

Holotype ♂, Cambodia, Prov. Monduliri, Seima Biodiversity Conservation Area, 3-8 July 2009 (Bae & Chae), gen. slide no. 6076/Park. Paratype: 1 ♂, Cambodia, Prov. Pursat (Osam), 02-V-2010 (Bae, Chae & Vi). Types are deposited in UIK, Korea.

Description: Male (Figs. 1, 1a). Wingspan, 15.5-16.0 mm. Head brownish dorsally, with orange-white scales posteriorly. Antenna with brownish basal segment; flagellum orange white throughout. Second segment of labial palpus thickened, gently arched, grayish orange on outer surface, shiny orange white on inner surface; 3<sup>rd</sup> segment slender, as long as 2<sup>nd</sup> segment, with acute apex. Collar well-developed, purple brownish gray. Tegula and thorax brownish gray. Forewing uniform pale grayish fuscous throughout, with dark-brown basal fascia; a pair of stigmata presented: smaller one at middle, often inconspicuous; larger blackish one at end of cell; costa arched near basal / length, then nearly straight, without costal patch; apex obtuse; termen slightly sinuate; fringe concolorous, with narrow orange-white basal line; venation with R<sub>1</sub> arising from before middle of cell; R<sub>2</sub> and R<sub>3+4</sub> stalked for basal 1/4; R<sub>3</sub> and R<sub>4</sub> stalked for basal 2/3; R<sub>4</sub> reaching near apex; R<sub>5</sub> absent; M<sub>1</sub> nearly parallel to R<sub>2+3+4</sub>; M<sub>3</sub> and CuA<sub>1+2</sub> on a common stalk; cell closed. Hindwing broader than forewing; venation with Rs and M<sub>1</sub> stalked for basal 1/5; M<sub>2</sub> approximate to M<sub>3</sub> at base; M<sub>3</sub> and CuA<sub>1</sub> stalked for 2/5 length; cell closed. Hind tibia clothed with brownish scales in basal half and with dark-brown scales in posterior half. Abdominal tergites with dense spinous zones (Fig. 4b). Female is unknown.

Male genitalia (Figs. 4, 4a): Uncus broader towards base, with clavate apex. Median process of gnathos large, width of base as wide as length of uncus, strongly bent beyond 3/5 length. Tegumen weakly sclerotized, emarginated in V-shaped on caudal margin, with ovate distal projections at both sides. Valva elongate, broad in basal 1/4; cucullus thumb-like, as long as basal part, densely setose in lower half, with a bundle of dense setae at lower base of cucullus; Juxta broad, with digitate caudal processes, bearing setae; caudal margin nearly flat; anterior margin concave. Aedeagus stout, broadened basally, as long as valva, with ovate preapical projection dorsally; cornuti consist of a narrow sclerite apically and followed by a row of brush-like setae toward base.

Diagnosis: The new species differs from congeners by lacking a yellowish costal patch on the forewing and the wing color pattern is similar to that of *Torodora* species, but the forewing venation is well in accordance with that of the genus *Thubana*. The species is similar to *Thubana silvatica* Park, **comb. nov.**, which was described from Thailand as a *Torodora* species (Park, 2007), but differs by the grayish fuscous ground color of the forewing with R<sub>5</sub> absent, whereas the latter has orange white head dorsally, pale brownish orange forewing with R<sub>5</sub> present. The male genitalia of the new species are very similar to those of *Thubana silvatica*, but can be distinguished by the valva

being less emarginated before middle of the ventral margin (Fig. 4-①) and the aedeagus having a small ovate process near apex on dorsal margin (Fig. 4a-②).

Distribution: Cambodia (Prov. Monduliri & Pursat).

Etymology: The species name is derived from the type locality, Seima, Cambodia.

***Thubana eremophila* Park, sp. n.** (Figs. 2, 2a, 5, 5a)

Holotype ♂, Cambodia, Prov. Pursat (Osam), 04-05-V-2010 (Bae, Chae & Vi), gen. slide no. CIS-6094/Park. Paratype. 1 ♂, same data as the holotype. Types are deposited in UIK, Korea.

Description: Male (Fig. 2, 2a). Wingspan, 16.0-17.0 mm. Head shiny yellowish orange dorsally; face shiny orange white. Basal segment of antenna slender, more or less clavate, dark-brown dorsally; flagellum orange white in basal 3/4, dark brown in apical 1/4. Second segment of labial palpus thickened, gently arched, brownish orange on lateral surfaces, dark brown dorsally; 3<sup>rd</sup> segment slender, as long as 2<sup>nd</sup> segment. Collar well-developed, dark brown. Tegula yellowish orange, with dark-brown scales along inner margin. Thorax yellowish orange. Forewing elongate; ground color purplish dark brown, with two different lengths of yellowish-orange streaks basally; large yellowish-orange costal patch well-developed, lower corner reaching CuA<sub>2</sub> vein; yellowish-orange streak extended from costal patch to apex along costa; round stigma on outer margin of patch medially; apex slightly produced; termen slightly concave, with dark-brown scales along margin; fringe dark brown near apex, yellowish orange from apex to termination of M<sub>3</sub> vein, then dark brown beyond; venation with R<sub>1</sub> arising from before middle of cell; R<sub>2</sub> and R<sub>3+4</sub> stalked for basal 1/3; R<sub>3</sub> and R<sub>4</sub> stalked for basal 2/3; R<sub>4</sub> to apex; R<sub>5</sub> absent; M<sub>1</sub> nearly parallel to M<sub>2</sub>; M<sub>3</sub> and CuA<sub>1+2</sub> on a common stalk. Hindwing dark brown, with a bundle of orange-white hairs at base; blackish C-shaped marking developed near end of cell; apex sharply produced; termen with darker scales along margin; fringe concolorous, except near termination of vein M<sub>1</sub>, pale narrow basal and median line well presented. Hind tibia clothed with rough, pale brownish-orange scales in basal half and dark-brown scales in posterior half; tarsi with blackish apical rings. Abdominal tergites with dense spinous zones (Fig. 5b). Female is unknown.

Male genitalia (Figs. 5, 5a): Uncus slender with clavate apex. Median process of gnathos well-developed, longer than uncus, strongly bent beyond 2/3 length. Tegumen weakly sclerotized, deeply concave on caudal margin, with small, triangular projections, bearing long setae latero-distally. Valva foot-shaped; costa deeply concave; apex produced; ventral margin slightly concave medially. Juxta large, with large median plate, as long as juxta, latero-caudal lobes triangular. Aedeagus slender, longer than valva, basal half broadened and narrow in distal half; cornutus needle-like, longer than half length of aedeagus.

Diagnosis: This species is superficially similar to *C. costimaculella* (Snellen), which is known from Java, Indonesia. They are, hardly distinguishable from each other, but can be separated by the different shape of the male genital structure: less elongate valva with deeply concave costa; slenderer aedeagus. The male genitalia are also similar to those of *C. helvilimbata* Park, which is known from Thailand, but they differ in the cucullus which is more produced apically, the juxta with a longer triangular median process, and the aedeagus which is slenderer.

Distribution: Cambodia (Prov. Pursat).

Etymology: The species name is derived from the Greek, *eremos* (= lonely, solitary), *philus* (= love).

***Thubana gilvizonaris* Park, sp. n.** (Figs. 3, 3a, 6, 6a, 6b)

Holotype ♂, Mantang Rd. (probably Kuching, Sarawak), 29-XI-1909, gen. slide no. CIS-6050/Park. Paratype. 1 ♂, same locality, no date, II-1910. Type is deposited in the RMNH, The Netherlands.

Description: Male (Figs. 3, 3a). Wingspan, 20.0-21.0 mm. Head orange white dorsally. Basal segment of antenna slender, dark-brown dorsally; flagellum orange white throughout. Second segment of labial palpus less thickened, gently arched, dark brown on outer surface, paler on inner surface, with orange-white apex; 3<sup>rd</sup> segment slender, longer than 2<sup>nd</sup> segment, blackish ventrally. Collar and tegula

pale brownish orange. Thorax pale brownish orange. Forewing ground color pale brownish orange; yellowish-white costal patch large, occupying 1/3 to 3/5 length of costa, with small, round discal stigma, followed by larger quadrate one in patch; apex obtuse; termen concave, sinuate; fringe concolorous, with yellowish-orange scales alternately on costa before apex and with a paler basal line and a median line; venation with  $R_1$  arising from middle of cell;  $R_2$  approximate;  $R_3$  and  $R_4$  stalked beyond middle;  $R_4$  to apex;  $R_5$  absent;  $M_1$  near to  $R_{3+4}$ ;  $M_3$  and  $CuA_{1+2}$  on a common stalk; distance between base and  $M_3$  nearly twice between  $M_3$  and  $CuA_1$ . Hindwing ground color brownish orange, with broad orange-white streak along costa to 3/5 length; apex produced; termen strongly sinuate; venation similar to that of the preceding new species. Hind tibia clothed with dark-brown scales dorsally. Spinous zones of abdomen with removable spines (Fig. 6b).

Male genitalia (Figs. 6, 6a): Uncus broader towards base in basal half, slightly expanded preapically; apex truncate. Median process of gnathos broad at basal, width of base as wide as 2/3 length of uncus, strongly bent beyond 2/3 length. Tegumen moderate, weakly sclerotized. Valva broad in basal half, with dense long hairs; costa deeply concave beyond 1/2, costal margin heavily sclerotized; ventral margin nearly straight to lower corner of cucullus; cucullus foot-shaped, slightly longer than basal part, densely setose; apex obtuse. Juxta large, broad, with digitate, heavily sclerotized latero-caudal processes, bearing setae. Aedeagus stout, broadened basally, narrower towards apex, as long as valva; cornuti consist of a heavily sclerotized, more or less cone-shaped cornutus apically, a row of conic spines and a series of longer spines irregularly scattered.

Diagnosis: This species has a similar wing pattern and maculation to *T. erycinae* Park and Heppner, 2009, which was described from Sumatra, Indonesia, but can be distinguished by the male genitalia with normally slender uncus, whereas in the latter, the uncus is specifically modified with a broad median plate.

Distribution: Malaysian Borneo (Kuching, Sarawak).

Etymology: The species name is derived from the Latin, *gilv* (= pale yellow), referring to the pale yellowish costal patch of the forewing.

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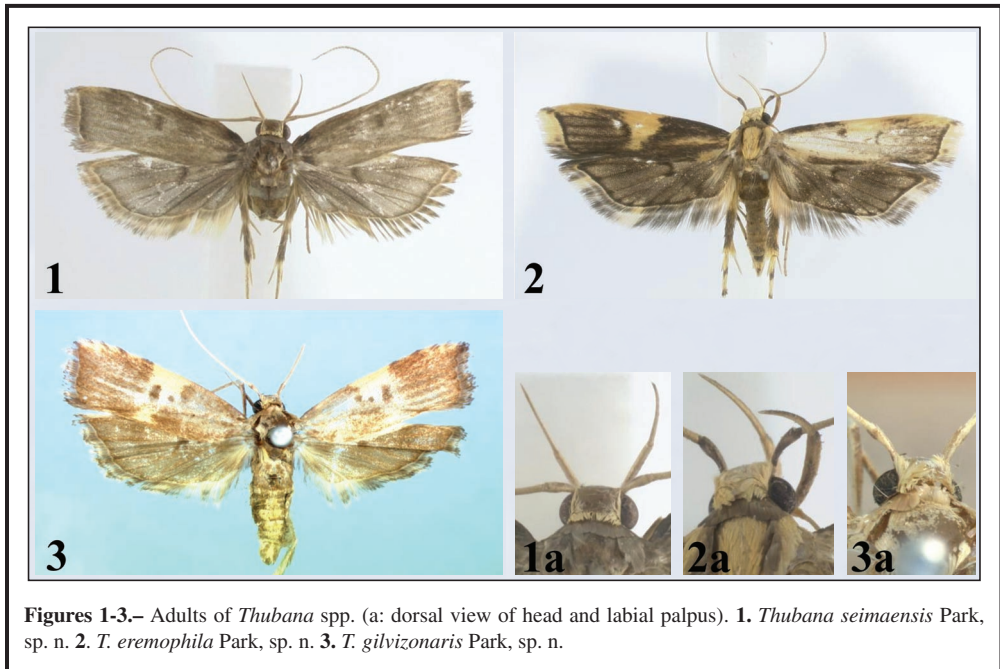
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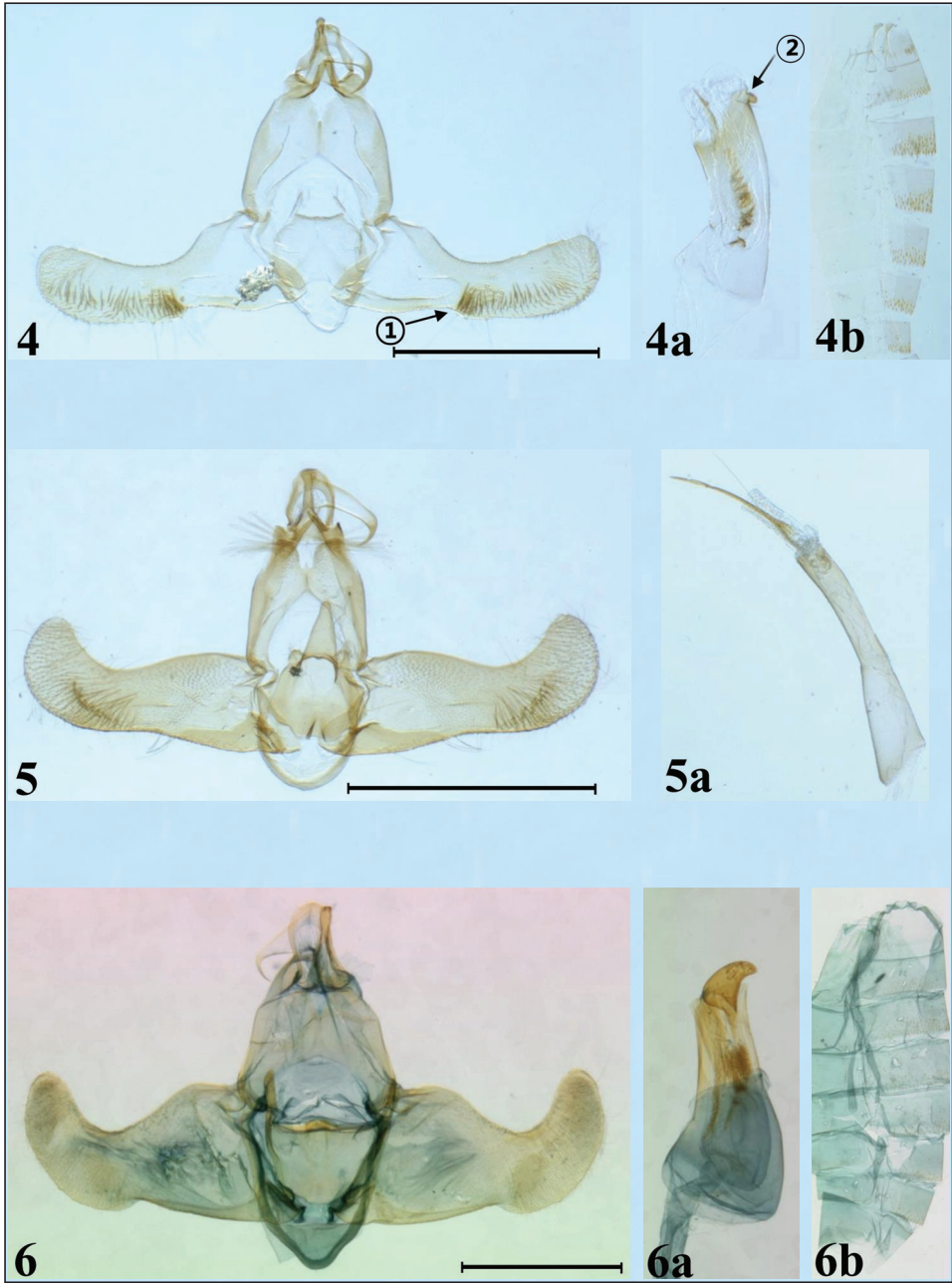
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**Figures 1-3.**– Adults of *Thubana* spp. (a: dorsal view of head and labial palpus). **1.** *Thubana seimaensis* Park, sp. n. **2.** *T. eremophila* Park, sp. n. **3.** *T. gilvizonaris* Park, sp. n.



**Figures 4-6.**– Male genitalia of *Thubana* spp. (a: aedeagus; b: abdomen). **4.** *Thubana seimaensis* Park, sp. n. **5.** *T. eremophila* Park, sp. n. **6.** *T. gilvizonaris* Park, n. sp. Scale bar: 1 mm.