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## Research article

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# New species and new records of the genus *Thubana* Walker (Lepidoptera: Lecithoceridae) from China, with a checklist of the genus in the country

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**Abstract.** Five species of the genus *Thubana* Walker, 1864 (Lepidoptera, Lecithoceridae, Torodorinae) from China are described as new: *Th. porcata* sp. nov., *Th. quadrilatera* sp. nov., *Th. rongjiangensis* sp. nov., *Th. similidalgona* sp. nov. and *Th. yingjingensis* sp. nov. Two species are newly recorded for China: *Thubana circularis* Park, 2006 and *Thubana fangensis* Park, 2003. The female of *Th. felinaurita* Li, 2010 is described for the first time. Images of dorsal habitus and genitalia for all the treated species are presented and a checklist of the Chinese species of *Thubana* is included in this article.

**Keywords.** Lepidoptera, Torodorinae, checklist, taxonomy.

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## Introduction

The family Lecithoceridae Le Marchand, 1947 is one of the most diverse lepidopteran families, which are widely distributed in the Oriental, Ethiopian, Australian and Palaearctic regions. Two autapomorphies of the family distinguishing it from other Gelechioid-moth families are as follows: 1) the antenna as long as or longer than the forewing; 2) the gnathos of the male genitalia with a median process always downturned, except in the subfamily Crocanthinae Park, 2015. To date, more than 1430 valid species of the family are reported worldwide (Park *et al.* 2022), and about 400 species are recorded in China based on the currently available data. Most lecithocerid adults have nocturnal activity periods and some Lecithoceridae larvae feed on detritus and non-living organisms (Gozmány 1978; Common 1990; Komai *et al.* 2011; Park & Mey 2016).

The genus *Thubana* Walker, 1864 is the second largest genus of the subfamily Torodorinae Gozmány, 1978. It usually can be easily distinguished externally by the dark-coloured forewing with a yellowish

triangular costal patch, other possible synapomorphies defining the genus include: the forewing with  $R_5$  absent and  $M_3$ ,  $CuA_1$ ,  $CuA_2$  stalked; the hindwing with  $M_2$  present; the abdominal tergites with zones of spiniform setae; the female genitalia with ductus bursae twisted. The genus *Thubana* currently include 60 valid species (excluding *Th. adelella* Walker, 1864, and details see Discussion).

Prior to the present study, 10 species had been recorded in China. Here, we describe five species of *Thubana* new to science and newly present records of *Th. circularis* Park, 2006 and *Th. fangensis* Park, 2003 for China. A checklist of the species of the genus *Thubana* occurring in China is provided.

## Material and methods

The specimens examined were collected in China using 250-W high-pressure mercury lamps. Morphological terminology in the descriptions mainly follows Gozmány (1978). Wingspan was measured from the tip of the left forewing to the tip of the right forewing. Genitalia slides were prepared following the methods introduced by Li (2002). Photographs of the adults were taken with a Leica M205A stereo microscope, and photographs of the genitalia were taken with a Leica DM750 microscope plus Leica Application Suite ver. 4.6 software. All photographs were refined with Photoshop CC software. All the holotypes of the new species are deposited in the Insect Collection of Nankai University, Tianjin, China (NKU) except that of *Th. rongjiangensis* sp. nov. which is deposited in Liaocheng University, Liaocheng, China (LCU).

## Abbreviations

TD = Type depository  
TL = Type locality

## Repositories

IZCAS = Institute of Zoology, Chinese Academy of Science, Beijing, China  
LCU = Liaocheng University, Liaocheng, China  
NHMUK = Natural History Museum, London, United Kingdom  
NKU = Insect collection of Nankai University, Tianjin, China  
NSMT = National Science Museum, Tokyo, Japan  
OPU = Osaka Prefecture University, Osaka, Japan  
SDEI = Senckenberg Deutsches Entomologisches Institut, Munchenberg, Germany  
ZFMK = Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany

## Results

### *Species description*

Class Insecta Linnaeus, 1758  
Order Lepidoptera Linnaeus, 1758  
Family Lecithoceridae Le Marchand, 1947  
Subfamily Torodorinae Gozmány, 1978  
Genus *Thubana* Walker, 1864

***Thubana circularis*** Park, 2006  
Figs 1A, 3A, 5A

*Thubana circularis* Park in Park *et al.*, 2006: 336. TL: Vietnam. TD: NSMT.

**Material examined**

CHINA • 2 ♂♂, 4 ♀♀; Hainan Prov., Tianchi, Jianfengling; 1050 m a.s.l.; 29–30 Apr. 2013; Y.H. Sun, W. Guan and T.T. Liu leg.; slide nos. YS19766♂, YS20290♀; NKU.

**Short morphological characterization**

**Adult** (Fig. 1A)

Wingspan 24.0–25.0 mm.

**Distribution**

China (new record: Hainan), Vietnam.

*Thubana fangensis* Park, 2003  
Figs 1B, 3B, 5B

*Thubana fangensis* Park, 2003: 142. TL: Thailand. TD: OPU.

**Material examined**

CHINA – **Yunnan Prov.** • 1 ♂; Xishuangbanna, Yexianggu; 762 m a.s.l.; 20 Jul. 2014; W. Guan, X.C. Wang and S.R. Liu leg.; slide no. YS19774; NKU • 3 ♀♀; Xishuangbanna; 23, 29 May 2015; Z.G. Zhang leg.; slide no. YS20299; NKU • 4 ♀♀; Xishuangbanna, Yexianggu; 762 m a.s.l.; 9–10, 13 Jul. 2015; K.J. Teng and X. Bai leg.; slide no. YS19775; NKU • 1 ♂; Xishuangbanna, Yexianggu; 895 m a.s.l.; 28 Jul. 2023; K.J. Teng leg.; slide no. LCU007; LCU.

**Short morphological characterization**

**Adult** (Fig. 1B)

Wingspan 17.0–19.0 mm.

**Distribution**

China (new record: Yunnan), Thailand.

*Thubana felinaurita* Li, 2010  
Figs 1C, 3C, 5C

*Thubana felinaurita* Li in Yang *et al.*, 2010: 33. TL: China (Guangxi). TD: NKU.

**Material examined**

**Holotype**

CHINA • ♂; Guangxi Zhuang Autonomous Region, Fangchenggang, Dongzhong Forestry Farm; 21°35' N, 108°22' E; 640 m a.s.l.; 9 Apr. 2002; S.L. Hao and H.J. Xue leg.; slide no. ZYM06312; NKU.

**Paratype**

CHINA • 1 ♂; same data as for holotype except dated 8 Apr. 2002; slide no. YLL08061; NKU.

**Additional material**

CHINA – **Hainan Prov.** • 3 ♂♂, 1 ♀; Wuzhishan; 738 m a.s.l.; 2–3 Mar. 2016; Q.Y. Wang, S.R. Li and S.N. Zhao leg.; slide nos. YS19767♂, YS20303♀; NKU • 3 ♂♂, 1 ♀; Wuzhishan; 738 m a.s.l.; 29–30 Jul. 2016; X. Bai, S.N. Zhao and W.D. Qi leg.; NKU.

### Short morphological characterization

#### Adult (Fig. 1C)

Wingspan 20.5–24.0 mm.

FEMALE GENITALIA (Fig. 5C). Eighth abdominal sternite concave on posterior margin forming two posterolateral lobes. Apophyses posteriores about  $1.5\times$  length of apophyses anteriores; apophyses anteriores with a small ramification before middle. Antrum semi-ovate, sclerotised, denticulate. Ductus bursae longer than  $2\times$  length of corpus bursae, twisted, weakly sclerotised in posterior  $1/5$ , granulose anteriorly; ductus seminalis slender, arising from about posterior  $1/7$  of ductus bursae. Corpus bursae subrounded, with a weakly sclerotised, granulose zone; signum situated at middle, large elliptical, with dense spines varied in size.

#### Distribution

China (Guangxi, Hainan).

#### Remarks

The species was described based on two males, and we herein describe the female for the first time.



**Fig. 1.** Dorsal habitus of *Thubana* spp. **A.** *Th. circularis* Park, 2006, ♀ (NKU). **B.** *Th. fangensis* Park, 2003, ♀ (slide no. YS19775, NKU). **C.** *Th. felinaurita* Li, 2010, ♀ (slide no. YS20303, NKU). **D.** *Th. porcata* sp. nov., holotype, ♂ (slide no. YS20169, NKU). Scale bars = 2.0 mm.

*Thubana porcata* sp. nov.

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Figs 1D, 3D, 6A

**Diagnosis**

The new species is similar to *Th. felinaurita* in the male genitalia. It can be distinguished by the forewing lacking a costal patch, in the male genitalia the juxta with a vertical, straight ridge, and in the female genitalia the corpus bursae with a moderately sclerotised zone smaller than signum; in *Th. felinaurita*, the forewing has a costal patch, the ridge on the juxta is V-shaped in the male genitalia, and the corpus bursae has a weakly sclerotised zone larger than the signum in the female genitalia.

**Etymology**

The specific epithet is derived from the Latin ‘*porcatus*’, referring to the vertical ridge on the juxta of the male genitalia.



**Fig. 2.** Dorsal habitus of *Thubana* spp. **A.** *Th. quadrilatera* sp. nov., holotype, ♂ (slide no. YS19773, NKU). **B.** *Th. rongjiangensis* sp. nov., holotype, ♂ (slide no. LCU009, LCU). **C.** *Th. similidalgona* sp. nov., holotype, ♂ (slide no. YS20211, NKU). **D.** *Th. yingjingensis* sp. nov., holotype, ♂ (slide no. LCU198, NKU). Scale bars = 2.0 mm.

## Type material

### Holotype

CHINA • ♂; Yunnan Prov., Pu'er, Taiyanghe; 22°37' N, 101°06' E; 1450 m a.s.l.; 12 Jun. 2017; Z.G. Zhang leg.; slide no. YS20169; NKU.

### Paratype

CHINA • 1 ♀; same data as for holotype except dated 30 Jul. 2014; slide no. YS20300; NKU.

## Description

### Adult (Fig. 1D)

Wingspan 22.0–24.0 mm. Head dark brown. Antenna orange white, tinged with brown basally, flagellum shortly ciliate ventrobasally. Labial palpus brown, third palpomere as long as second palpomere. Thorax and tegula dark brown. Forewing with costal margin nearly straight, apex bluntly rounded, termen shallowly concave; ground colour dark brown; fringe greyish black, basal line orange white. Hindwing dark brown; discocellular stigma clavate, blackish brown; fringe dark brown, with an orange white basal line and a pale brownish-yellow median band.

MALE GENITALIA (Fig. 3D). Uncus elongate, wide basally, narrowed to blunt apex. Gnathos with basal plate semi-ovate distally; median process wide at the base, narrowed to basal  $\frac{3}{5}$  where it is curved, narrowed abruptly from distal  $\frac{2}{5}$  to pointed apex. Valva broad and parallel-sided basally, narrowed toward cucullus; cucullus about half the length of valva, extending dorsad distally, expanded at basal  $\frac{2}{5}$ , thereafter narrowed toward bluntly rounded apex, arched ventrally; costa straight in basal  $\frac{1}{5}$ , semicircularly concave in distal  $\frac{4}{5}$ ; sacculus banded, straight ventrally. Vinculum narrow; saccus triangular. Juxta rectangular, longer than wide, shallowly concave on posterior margin forming two short posterolateral lobes, with a ridge along vertical midline from posterior margin to anterior  $\frac{1}{3}$ . Aedeagus longer than valva, wide at the base, narrowed toward spined apex, gently curved; cornuti consisting of clusters of spines medially, a small plate at basal  $\frac{1}{5}$ , a weakly sclerotised band about  $\frac{1}{4}$  length of aedeagus placed before middle, and a linear bar about  $\frac{1}{3}$  length of aedeagus placed distally.

FEMALE GENITALIA (Fig. 6A). Eighth abdominal sternite concave on posterior margin forming two short posterolateral lobes. Apophyses posteriores about  $1.5 \times$  length of apophyses anteriores. Lamella antevaginalis subovate, with a heavily sclerotised horizontal flap at middle. Antrum membranous. Ductus bursae about  $3 \times$  length of corpus bursae, twisted, with dispersed spines in posterior  $\frac{1}{4}$ ; ductus seminalis slender except broadened and granulose sector basally, arising from about posterior  $\frac{1}{6}$  of ductus bursae. Corpus bursae ovate, with a weakly sclerotised elliptical zone situated anteriorly; signum situated at posterior  $\frac{1}{3}$ , elliptical, densely spined, protuberant centrally forming a process.

## Distribution

China (Yunnan).

## Remarks

*Thubana porcata* sp. nov. lacks the typical yellowish costal patch in the forewing, but the male and female genitalia characters confirm the species' placement within the genus *Thubana*.

### *Thubana quadrilatera* sp. nov.

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Figs 2A, 4A, 6B

## Diagnosis

The new species is similar to *Th. dialeukos* Park, 2003 in both appearance and male genitalia. It can be distinguished by the cucullus which is about half the length of the valva, the juxta with two small fusiform

protuberances on the dorsal surface and a median process on the anterior margin; in *Th. dialeukos*, the cucullus is longer than half the length of the valva, the juxta has two large elliptical concavities but lacks a protuberance on the dorsal surface and lacks an anteromedian process (Park 2003: 140, fig. 14).

### Etymology

The specific epithet is derived from the Latin ‘*quadrilaterus*’, referring to the quadrate juxta in the male genitalia.

### Type material

#### Holotype

CHINA • ♂; Yunnan Prov., Pu'er, Taiyanghe; 22°37' N, 101°06' E; 1450 m a.s.l.; 13 Aug. 2016; K.J. Teng, G.E. Lee and T. Wang leg.; slide no. YS19773; NKU.

#### Paratypes

CHINA – **Yunnan Prov.** • 4 ♂♂, 6 ♀♀; same data as for holotype except dated 12–14 Aug. 2016; slide no. YS20295♀; NKU • 1 ♂; Mang City, Mt Banggunjian; 1758 m a.s.l.; 11 Aug. 2022; slide no. LCU006; LCU. – **Sichuan Prov.** • 1 ♂, 1 ♀; Chengdu, Anzihe; 1598 m a.s.l.; 22–23 Jun. 2016; K.J. Teng and X.F. Yang leg.; slide nos. TKJ16184♂, YS20294♀; NKU • 8 ♂♂, 4 ♀♀; Yingjing County, Longcanggou; 1405 m a.s.l.; 16–18 Jul. 2021; S. Yu *et al.* leg.; slide nos. YUS178♂, YUS179♀, YUS180♀, YUS181♂, YUS185♀, YUS186♀; NKU.

### Description

#### Adult (Fig. 2A)

Wingspan 22.0–23.5 mm. Head dark brown, tinged with purple, orange white along lateral sides. Antenna pale orange in basal  $\frac{1}{3}$ , orange white from basal  $\frac{1}{3}$  to distal  $\frac{1}{4}$ , and dark brown in distal  $\frac{1}{4}$ . Labial palpus brown, third palpomere slightly longer than the second palpomere. Thorax and tegula dark brown, tinged with purple. Forewing with costal margin slightly arched, apex rounded, termen shallowly concave; ground colour dark brown; costal patch triangular, orange white, posteriorly narrowed and exceeding the upper margin of discal cell, situated at middle; fringe greyish black, basal line orange white. Hindwing greyish brown, darker along veins; fringe greyish brown, basal line orange white.

MALE GENITALIA (Fig. 4A). Uncus elongate, wide at the base, narrowed to blunt apex. Gnathos with basal plate semi-ovate distally; median process wide at the base, narrowed to basal  $\frac{3}{5}$  where it is curved, narrowed abruptly from distal  $\frac{2}{5}$  to pointed apex. Valva wide at the base, narrowed slightly to cucullus; cucullus extending obliquely dorsad, about half as long as valva, slightly expanded ventrobasally, narrowed toward rounded apex; costa concave; sacculus widened in basal  $\frac{1}{4}$ , slender in distal  $\frac{3}{4}$ , straight ventrally. Vinculum narrow; saccus triangular. Juxta quadrate, straight on posterior margin, with two small, symmetric fusiform protuberances on the dorsal surface, with an erect median process on the anterior margin; posterolateral lobe tiny, spiniform. Aedeagus nearly as long as valva, broad basally, narrowed toward apex, with a small ovate dorsal extension; cornuti consisting of a small plate at basal  $\frac{1}{4}$ , a band about  $\frac{1}{4}$  length of aedeagus placed before middle, clusters of spines placed medially, a band about  $\frac{2}{3}$  length of aedeagus denticulate basally and apically, and a spined plate placed before apex.

FEMALE GENITALIA (Fig. 6B). Eighth abdominal sternite concave on the posterior margin forming two posterolateral lobes. Apophyses posteriores about  $1.5 \times$  length of apophyses anteriores. Antrum funnel-shaped, weakly sclerotised. Ductus bursae about  $3 \times$  length of corpus bursae, twisted, granulose anteriorly; ductus seminalis slender, arising from ductus bursae near antrum. Corpus bursae rounded, with a weakly sclerotised, elliptical zone; signum situated at middle, heavily sclerotised, large elliptical, spined, margined with denticles.

### Distribution

China (Sichuan, Yunnan).

*Thubana rongjiangensis* sp. nov.

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Figs 2B, 4B

**Diagnosis**

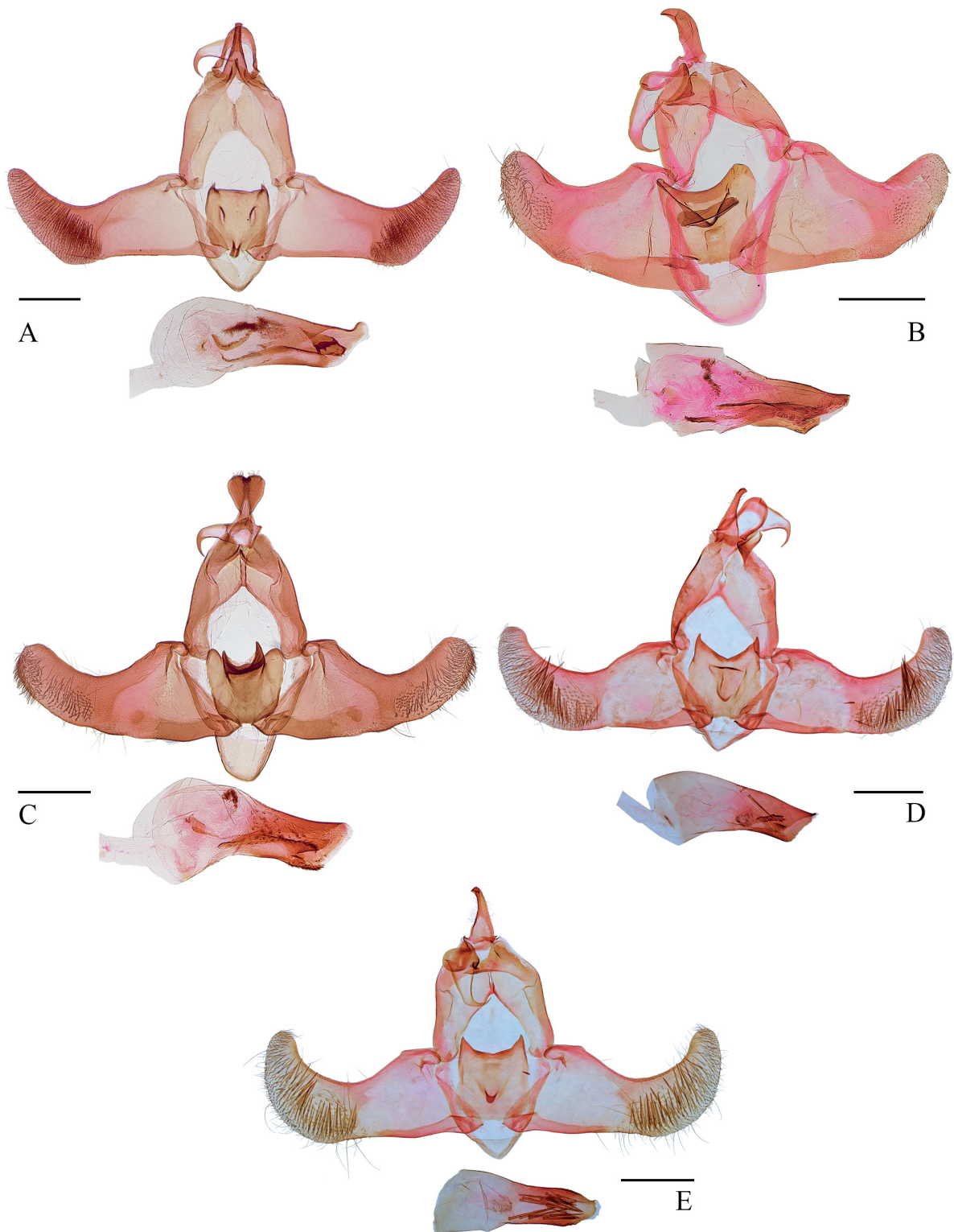
The new species is similar to *Th. albisignis* (Meyrick, 1914), but it differs by the larger size (via wingspan 15–16 mm in *Th. albisignis*). The species can also be distinguished by the costa of the valva arched inward semi-circularly, and by the juxta with a large V-shaped flap on the dorsal surface and with semi-ovate posterolateral lobes; whereas in *Th. albisignis*, the costa of the valva is arched inward and forms a broad V shape, the juxta lacks a flap on the dorsal surface and has horn-shaped posterolateral lobes (Park 2000: 234, fig. 13).

**Etymology**

The specific epithet is derived from the type locality.



**Fig. 3.** Male genitalia of *Thubana* spp. **A.** *Th. circularis* Park, 2006 (slide no. YS19766, NKU). **B.** *Th. fangensis* Park, 2003 (slide no. YS19774, NKU). **C.** *Th. felinaurita* Li, 2010 (slide no. YS19767, NKU). **D.** *Th. porcata* sp. nov., holotype (slide no. YS20169, NKU). Scale bars = 0.5 mm.



**Fig. 4.** Male genitalia of *Thubana* spp. **A.** *Th. quadrilatera* sp. nov., holotype (slide no. YS19773, NKU). **B.** *Th. rongjiangensis* sp. nov., holotype (slide no. LCU009, LCU). **C.** *Th. similidalgona* sp. nov., holotype (slide no. YS20211, NKU). **D.** *Th. yingjingensis* sp. nov., paratype (slide no. LCU195, NKU). **E.** *Th. yingjingensis* sp. nov., holotype (slide no. LCU198, NKU). Scale bars = 0.5 mm.

## Type material

### Holotype

CHINA • ♂; Guizhou Prov., Rongjiang County, Xiaodanjiang; 26°20' N, 108°21' E; 680 m a.s.l.; Jun. 2023; K.J. Teng leg.; slide no. LCU009; LCU.

## Description

### Adult male (Fig. 2B)

Wingspan 19.5 mm. Head with lateral sides orange white (worn). Antenna orange white. Labial palpus orange white, tinged with pale brown; third palpomere slightly longer than second palpomere. Thorax and tegula dark brown, tinged with purple. Forewing with costal margin slightly arched, apex blunt, termen shallowly concave; ground colour dark brown, tinged with purple; costal patch triangular, orange white, posteriorly narrowed and exceeding upper margin of discal cell, situated at middle; fringe greyish brown. Hindwing dark brown; fringe greyish brown.

MALE GENITALIA (Fig. 4B). Uncus elongate, pointed at apex. Gnathos with median process wide at the base, narrowed to basal  $\frac{3}{5}$  where it is curved, narrowed abruptly from distal  $\frac{2}{5}$  to pointed apex. Valva extremely broadened, narrowed to bluntly rounded apex; cucullus shorter than half length of valva; costa arched inward semi-circularly; sacculus banded, narrowed from base to middle, uniformly wide in distal half, almost straight ventrally. Vinculum narrow; saccus semi-ovate. Juxta subquadrate, arched inward on posterior margin forming two semi-ovate posterolateral lobes, dorsal surface with a large V-shaped flap (crumpled). Aedeagus slightly shorter than valva, narrowed from base to apex; cornuti consisting of a large plate about  $\frac{2}{3}$  the length of aedeagus, a sclerotised bar bearing dense granules, a cluster and some dispersed spines.

### Female

Unknown.

## Distribution

China (Guizhou).

### *Thubana similidalgona* sp. nov.

urn:lsid:zoobank.org:act:8A6E5966-E642-4C5E-A8D8-96CB66EB2C73

Figs 2C, 4C

## Diagnosis

The new species is similar to *Th. dalgona* Park & Heppner, 2022, in the male genitalia, but it can be distinguished by the forewing lacking a costal patch, and the cucullus uniformly wide; whereas in the latter species, the forewing possess a costal patch (Park & Heppner 2022: 31, figs 1–2), and the cucullus narrowed distally (Park & Heppner 2022: 32, fig. 4; Park *et al.* 2022: pl. 78e).

## Etymology

The specific epithet is derived from the Latin ‘*simil-*’ and ‘*dalgona*’, referring to the similarity of the new species and *Th. dalgona*.

## Type material

### Holotype

CHINA • ♂; Yunnan Prov., Xishuangbanna, Yexianggu; 22°10' N, 100°52' E; 762 m a.s.l.; 8 Jul. 2015; K.J. Teng and X. Bai leg.; slide no. YS20211; NKU.

### Paratype

CHINA • 1 ♂; Yunnan Prov., Xishuangbanna, Menglun; 1335 m a.s.l.; 12 Jun. 2017; K.J. Teng *et al.* leg.; slide no. YS20161; NKU.

## Description

### Adult male (Fig. 2C)

Wingspan 18.5–19.0 mm. Head dark brown, orange white on lateral sides. Antenna orange white except dark brown on scape and base of flagellum. Labial palpus yellowish brown except orange white at apex of second palpomere, third palpomere nearly as long as second palpomere. Thorax and tegula dark brown. Forewing with costal margin nearly straight, apex obtuse, termen shallowly concave; ground colour dark brown, no pattern; fringe greyish black, basal line orange white. Hindwing and fringe dark brown, fringe with an orange white basal line.

MALE GENITALIA (Fig. 4C). Uncus wide at the base, shrunken at basal  $\frac{1}{3}$ , broadened in a triangle distally, with an uprightly directed extension from the middle below the posterior margin. Gnathos with median process wide at the base, narrowed to basal  $\frac{2}{3}$  where it is curved, thereafter abruptly narrowed to pointed apex. Valva broadened and parallel-sided basally, narrowed to cucullus; cucullus about half length of valva, almost uniformly wide, apex rounded, slightly arched ventrally; costa straight in basal  $\frac{1}{5}$ , broadly concave in distal  $\frac{4}{5}$ ; sacculus broadly banded, slightly sinuate ventrally. Vinculum narrow; saccus well-developed, almost trapezoidal. Juxta subquadrate, slightly widened posteriorly, shallowly concave on posterior margin, blunt on anterior margin; with two heavily sclerotised, triangular processes medially below the posterior margin, narrowly connected at base; posterolateral lobe thumbed. Aedeagus slightly shorter than valva, broadened basally, narrowed to middle where it is curved, distal half uniformly wide, spiculose in ventral distal  $\frac{1}{4}$ ; cornuti consisting of a small, weakly sclerotised plate at basal  $\frac{1}{4}$ , a cluster of spinules at basal  $\frac{1}{3}$  dorsally, a denticulate plate about  $\frac{3}{5}$  length of aedeagus, and dispersed thumbtack-shaped spines running from about middle to before apex.

### Female

Unknown.

### Distribution

China (Yunnan).

### *Thubana yingjingensis* sp. nov.

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Figs 2D, 4D–E, 6C

### Diagnosis

The new species is similar to *Th. microcera* Gozmány, 1978 in appearance and male genitalia. It can be distinguished by the quadrate juxta with a pair of posterolateral lobes, the cornuti consisting of some needle-like spines and a small sclerite; whereas in *Th. microcera*, the lobes of the ovate juxta arising from near the middle of the posterior margin, the cornuti consisting of a long band and a row of irregular spines (Gozmány 1978: pl. 52 fig. 158; Park *et al.* 2022: pl. 82b).

### Etymology

The specific epithet is derived from the name of the type locality.

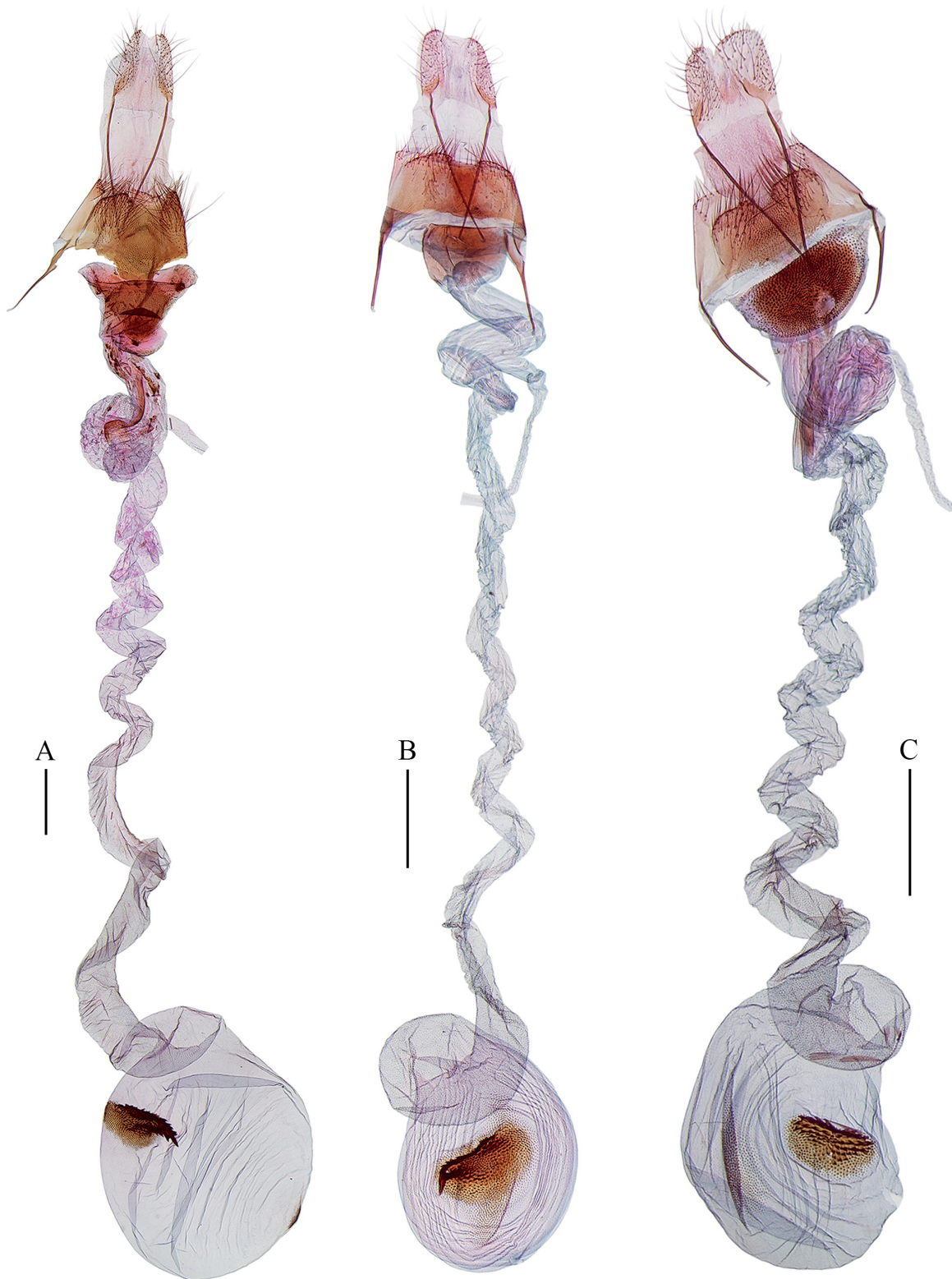
### Type material

#### Holotype

CHINA • ♂; Sichuan Prov., Yingjing County, Longcanggou; 29°16' N, 102°53' E; 1405 m a.s.l.; 18 Jul. 2021; S. Yu *et al.* leg.; slide no. LCU198; NKU.

#### Paratypes

CHINA • 2 ♂♂, 3 ♀♀; same data as for holotype except dated 16–18 Jul. 2021; slide nos. YUS172♂, YUS182♀, YUS183♀, YUS184♀, LCU195♂; NKU.



**Fig. 5.** Female genitalia of *Thubana* spp. **A.** *Th. circularis* Park, 2006 (slide no. YS20290, NKU). **B.** *Th. fangensis* Park, 2003 (slide no. YS19775, NKU). **C.** *Th. felinaurita* Li, 2010 (slide no. YS20303, NKU). Scale bars = 0.5 mm.



**Fig. 6.** Female genitalia of *Thubana* spp. **A.** *Th. porcata* sp. nov., paratype (slide no. YS20300, NKU). **B.** *Th. quadrilatera* sp. nov., paratype (slide no. YS20294, NKU). **C.** *Th. viribilis* sp. nov., paratype (slide no. YUS184, NKU). Scale bars = 0.5 mm.

## Description

### Adult (Fig. 2D)

Wingspan 20.5–21.0 mm. Head dark brown, orange white along lateral sides. Antenna pale orange. Labial palpus brown, third palpomere slightly longer than the second palpomere. Thorax and tegula dark brown. Forewing with costal margin slightly arched, apex rounded, termen shallowly concave; ground colour dark brown; costal patch triangular, orange white, posteriorly narrowed and exceeding the upper margin of discal cell, situated at middle; fringe greyish brown, basal line orange white. Hindwing greyish brown, darker along veins; fringe greyish brown, basal line orange white.

MALE GENITALIA (Fig. 4D–E). Uncus elongate triangular. Gnathos with basal plate rounded on posterior margin; median process wide at the base, narrowed to basal  $\frac{3}{5}$  where it is curved, thereafter abruptly narrowed to pointed apex. Valva wide basally, narrowed slightly toward cucullus; cucullus extending obliquely dorsad, about half length of valva, narrowed to rounded apex; costa concave in a semicircle; sacculus wide at the base, tapering to apex. Vinculum narrow; saccus triangular. Juxta quadrate, with a small process or protuberance at center; posterolateral lobe triangular. Aedeagus shorter than valva, straight, narrowed to blunt apex, bearing several denticles before apex on dorsal and ventral margins; cornuti consisting of a cluster of needle-like spines (sometimes deciduous) and a small denticulate sclerite.

FEMALE GENITALIA (Fig. 6C). Eighth abdominal sternite deeply concave in U shape forming two large posterolateral lobes. Apophyses posteriores slightly shorter than twice the length of apophyses anteriores. Antrum membranous, funnel-shaped. Ductus bursae longer than corpus bursae, twisted; ductus seminalis slightly narrower than ductus bursae, arising from ductus bursae posteriorly near antrum. Corpus bursae elliptical; signum plate-shaped, denticulate.

## Distribution

China (Sichuan).

### *Checklist of the species of Thubana Walker, 1864 including new species for China*

*Thubana albinulla* Wu, 1994: 130.

TL: China (Sichuan). TD: IZCAS.

Distribution. China (Sichuan).

*Thubana albiprata* Wu, 1994: 130.

TL: China (Sichuan). TD: IZCAS.

Distribution. China (Sichuan).

*Thubana albisignis* (Meyrick, 1914): 50 (*Lecithocera*).

TL: China (Taiwan). TD: SDEI.

Distribution. China (Taiwan).

*Thubana bathrocera* Wu, 1997: 86.

TL: China (Taiwan). TD: SDEI.

Distribution. China (Taiwan).

*Thubana circularis* Park in Park *et al.*, 2006: 336.

TL: Vietnam. TD: NSMT.

Distribution. China (new record: Hainan), Vietnam.

*Thubana deltaspis* Meyrick, 1935: 563.

TL: China (Taiwan). TD: NHMUK.

Distribution. China (Fujian, Zhejiang, Taiwan) (Wu 1997; Park *et al.* 2022).

*Thubana dialeukos* Park, 2003: 138.

TL: Thailand. TD: OPU.

Distribution. China (Yunnan) (Yang *et al.* 2010), Thailand.

*Thubana fangensis* Park, 2003: 142.

TL: Thailand. TD: OPU.

Distribution. China (new record: Yunnan), Thailand.

*Thubana felinaurita* Li in Yang *et al.*, 2010: 33.

TL: China (Guangxi). TD: NKU.

Distribution. China (Guangxi, Hainan).

*Thubana leucosphena* Meyrick, 1931: 69.

TL: China (Sichuan). TD: NHMUK.

Distribution. China (Anhui, Fujian, Jiangxi, Henan, Hunan, Hubei, Guizhou, Zhejiang) (Wu 1997; Yang *et al.* 2010).

*Thubana microcera* Gozmány, 1978: 236.

TL: China (Zhejiang). TD: ZFMK.

Distribution. China (Anhui, Fujian, Jiangxi, Zhejiang) (Wu 1997).

*Thubana porcata* sp. nov.

TL: China (Yunnan). TD: NKU.

Distribution. China (Yunnan).

*Thubana quadrilatera* sp. nov.

TL: China (Yunnan). TD: NKU.

Distribution. China (Sichuan, Yunnan).

*Thubana rongjiangensis* sp. nov.

TL: China (Yunnan). TD: LCU.

Distribution. China (Yunnan).

*Thubana similidalgona* sp. nov.

TL: China (Yunnan). TD: NKU.

Distribution. China (Yunnan).

*Thubana xanthoteles* (Meyrick, 1923): 38 (*Lecithocera*).

TL: India. TD: NHMUK.

= *Thubana melitopyga* (Meyrick, 1923): 41 (*Lecithocera*).

Distribution. China (Yunnan) (Yang *et al.* 2010), India, Sri Lanka.

*Thubana yingjingensis* sp. nov.

TL: China (Sichuan). TD: NKU.

Distribution. China (Sichuan).

## Discussion

Walker (1864) established the monotypic genus *Titana* based on the type species *Titana adelella* Walker, 1864 from Malaysia. Meyrick (1925) treated *Titana* as a synonym of *Lecithocera*. Gozmány (1978) synonymized *Titana* with *Thubana*, but without treatment of *Titana adelella*. Park *et al.* (2005) removed *Titana* from the synonymy of *Thubana*, and excluded *Titana adelella* from the genus *Thubana*.

Nevertheless, *Thubana adelella* appears as a valid name in the world catalogue of *Thubana* given by Park & Heppner (2009). Park *et al.* (2022) again listed *Titana* as a synonym of *Thubana* in their nomograph on the subfamily Torodorinae of the world, and, considered the taxonomic status of the genus *Titana* uncertain. In this monograph, *Titana adelella* was mistreated as a synonym of *Thubana bisignatella* Walker, 1864 proposed by Gozmány (1978). The taxonomic status of *Titana adelella* is still uncertain and this species is not included in the species list of the world *Thubana*.

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