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# Description of *Pyrophleps bicella* (Lepidoptera: Sesiidae), a new Chinese species of clearwing moth

Hai-Ming Xu<sup>1,2</sup>, Yutaka Arita<sup>3</sup>, Bingxu Chen<sup>1</sup> and Min Wang<sup>2,\*</sup>

## Abstract

A new species of clearwing moth, *Pyrophleps bicella* Xu & Arita **sp. nov.**, found in southern China, is described. Photos of the adult and of male genitalia are provided. A key to species of *Pyrophleps* is also provided. The type specimens are deposited in Department of Entomology, South China Agricultural University, Guangzhou, China and National Museum of Nature and Science, Tsukuba, Japan.

Key Words: clearwing moths, new species, *Pyrophleps*, South China

## Resumen

Se describe una nueva especie de polilla con alas claras, *Pyrophleps bicella* Xu & Arita **sp. nov.** del sur de China. Se proveen fotos de los adultos y la genitalia masculina. Los especímenes tipo son depositados en el Departamento de Entomología de la Universidad de Agricultura del Sur de China y en el Museo Nacional de Naturaleza y Ciencia, Tsukuba, Japón.

Palabras Clave: polillas de alas claras, Sesiidae, nueva especie, *Pyrophleps*, sur de China

*Pyrophleps* is a genus of moths in the family Sesiidae. It was established by Arita & Gorbunov (2000) based on the type species, *P. nigripennis* Arita & Gorbunov (2000). At present, the genus *Pyrophleps* comprises 6 species, all of which are restricted to the Oriental Region: *P. cruentata* (Swinhoe 1896) in Assam, *P. haematochrodes* (Le Cerf 1912) in northern Vietnam and *P. ruficrista* (Rothschild 1912) in Borneo. The remaining 3 species were described by Arita & Gorbunov (2000) in northern Vietnam. The *Pyrophleps* of the world were summarized in a catalogue by Pühringer & Kallies (2004).

During surveys of Lepidoptera in southern China, we collected specimens of a new species of the genus *Pyrophleps* by sex pheromone. It is described in the present paper.

## Materials and Methods

The specimens were collected in Nanling National Nature Reserve and Shimentai National Nature Reserve, Guangdong Province; Yinggeling, Hainan Province; Mao'ershan, Guangxi Province. Photos of adult and male genitalia were taken by a NikonCoolpix S8000 digital camera. The process for dissection of the genitalia followed Robinson (1976). Types were deposited in the Insect Collection of the Department of Entomology, South China Agricultural University, Guangzhou, China and National Museum of Nature and Science, Tsukuba, Japan. All the photos were processed with Adobe Photoshop 6.0.

## Results

### *PYROPHLEPS BICELLA* XU & ARITA **SP. NOV.** (FIGS. 1-2)

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Fig. 1. Male of *Pyrophleps bicella* Xu & Arita **sp. nov.**

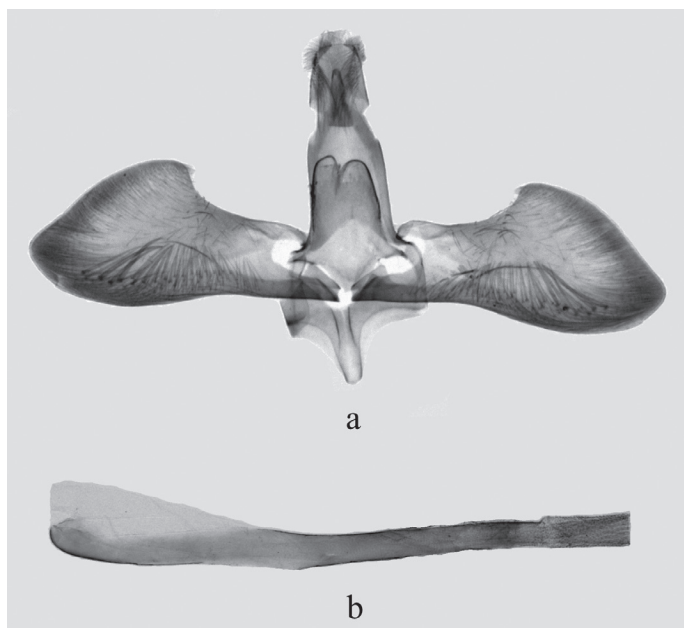


Fig. 2. Male genitalia of *Pyrophleps bicella* Xu & Arita sp. nov.: a. genitalia. b. aedeagus.

#### DIAGNOSIS

The new species is very similar to *Pyrophleps cucphuonganae* Arita & Gorbunov, 2000, which may be separated by the cells in hindwings and by male genitalia. However, *P. cucphuonganae* has 3 cells in the apical area of hindwings whereas the new species has only 2. The gnathos of *P. cucphuonganae* is distinctly protruding upward caudally and the saccus is broad, however the gnathos of the new species slightly forward caudally and the saccus is narrower than in *P. cucphuonganae*.

#### DESCRIPTION

Male (HOLOTYPE). Alar expanse 16 mm; forewing 7 mm; body length 9.5 mm; antenna 5 mm.

Head: antenna dark brown to black, clavate, with a needle-like scales distally; scapus dark brown to black; eyes dark brown, naked; frons entirely dark brown to black with bronzed sheen; labial palpus basally white, distally dark brown with mixed with brick red scales; vertex dark brown to black; occipital fringe dorsally mixed with black and brick-red scales, laterally white.

Thorax: patagia dark brown with bronzed sheen, with admixture of brick-red scales anteriorly; tegula dark brown with bronzed sheen, densely covered with brick-red scales; mesothorax dark brown to black with dark bronzed-purple sheen; metathorax dark brown to black with dark bronzed-purple sheen; thorax laterally dark brown, with a narrow white stripe at distal margin of mesomeron; posteriorly metepimeron and metameron dark brown with bronzed sheen, densely covered with gray, long, hair-like scales.

Legs: fore coxa white with golden sheen; fore femur gray brown with purple sheen; fore tibia dark brown to black with bronzed-purple sheen, with admixture of brick-red scales at posterior margin; dorsally 4 basal fore tarsomeres basally gray, distally dark brown to black with purple sheen; ventrally 4 basal tarsomere yellow-orange, distally with a few dark brown scales; apical tarsomere yellow-orange ventrally and dorsally with narrowly black purple sheen; mid coxa white; mid femur dark brown; mid tibia dark brown to black with purple sheen, ventrally with few brick-red scales; spurs dark brown to black; mid tarsomere dark brown to black with white and mixed with brick-red scales basally; hind coxa white; hind femur entirely dark brown to black; hind tibia dark

brown to black with strong electric blue-green sheen basal half, densely covered with brick-red scales distal half; spurs dark brown to black, basally with admixture of white scales; hind tarsus dorsally dark brown to black; each tarsomere brick-red laterally with blue-green sheen.

Abdomen: dorsally dark brown to black with dark bronzed sheen, each tergite densely covered with brick-red scales both laterally and proximally; tergite 1 with a broad, gray-brown, discal stripe; tergites 2-9 with a narrow, gray-brown, distal stripe with green-blue sheen; anal tuft small, dark brown, mixed with brick-orange scales.

Forewing: basally dark brown to black; costal and anal margins dark brown to black, with admixture of brick-red scales on basal half; apical area narrow, about as narrow as cilia, dark brown to black, with a few brick-red scales; interior transparent areas relatively long, narrow, covered with hyaline scales, anterior transparent area is shorter than posterior transparent area; external transparent area extremely large, divided into 9 cells, each cell densely covered with brick-red scales basally and distally; cilia dark brown to black.

Hindwing: interior transparent area was divided into 4 cells basal half; among them, cell between CuP and 1A is the smallest one, and cell between CuA<sub>2</sub> and CuP is the largest one; space between CuA<sub>1</sub> and CuA<sub>2</sub> entirely opaque, dark brown to black with admixture of brick-red scales; space between CuA<sub>2</sub> and CuP opaque in distal third, dark brown to black with admixture of brick-red scales; space between vein CuP and anal margin opaque in distal half, dark brown to black with brick-red to brick-orange scales distally; 2 transparent cells in apical area; the upper transparent cell is larger than the under transparent cell; cilia dark brown to black, anally brick-red.

Male genitalia (Fig. 2): Tegumen-uncus complex narrow laterally; uncus with a round collar plate of long hair-like setae ventro-apically; gnathos narrow, short, slightly protruding forward caudally; valva gradually broadened medially, distal half is about 2 times broader than basal half, and broadly covered with short hair-like setae at margins, with a few long setae at sacculus and with sparse setae on medial area; saccus short and narrow, about as long as vinculum; aedeagus relatively long, about 1.5 times as long as valva; vesica with numerous, minute, granular cornuti.

#### FEMALE

Unknown.

#### HABITAT AND NATURAL HISTORY

The host plant is unknown. The type specimens were collected during late May to early Jul at the edge of the secondary forest with synthetic sex attractants.

#### MATERIAL EXAMINED

HOLOTYPE: ♂, CHINA, Guangdong, Ruyuan, Nanling National Nature Reserve, 23-V-2012, collected by Haiming Xu, deposited in Department of Entomology, South China Agricultural University; PARATYPES: ♂, China, Hainan, Bawangling, 7-VII-2006, collected by Liusheng Chen; 4♂, China, Guangdong, Yingde, Shimentai National Nature Reserve, 4-♂-2008, collected by Guoyi Wu, deposited in Department of Entomology, South China Agricultural University. 2♂, Guangxi, Guilin, Mao'ershan, 730 m, 15. VIII. 2009; ♂, China, Guangdong, Ruyuan, Nanling National Nature Reserve, 20-VII-2014, collected by Yutaka Arita, deposited in National Museum of Nature and Science, Tsukuba, Japan.

#### DISTRIBUTION

South China (Guangdong, Guangxi and Hainan provinces).

#### ETYMOLOGY

The specific name is based on the 2 transparent cells in apical area of hindwings.

Key to the species of *Pyrophleps* based on external characters

1. Hindwing discal spot large and bold ..... 2
- Hindwing discal spot small ..... 4
2. Hindwing discal spot black ..... *P. cucphuonganae*
- Hindwing discal spot mostly red ..... 3
3. Hindwing terminal area vitreous ..... *P. cruentata*
- Hindwing terminal area brick-red ..... *P. bicella* **sp. nov.**
4. Forewing external transparent area small ..... *P. nigripennis*
- Forewing external transparent area large ..... 5
5. Forewing external transparent area divided by black scaled vein ..... *P. vitripennis*
- Forewing external transparent area largely divided by black scaled vein ..... 6
6. Forewing discal spot rather small ..... *P. haematochrodes*
- Forewing discal spot rather large ..... *P. ruficrista*

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