

Study of the genus *Oxaenanus* Swinhoe (Lepidoptera: Erebidae: Herminiinae) from China, with description of a new species

Zhipeng MIAO^{1,2}, Mamoru OWADA³, Min WANG¹Ⓐ

1. Department of Entomology, College of Agriculture, South China Agricultural University, Guangzhou, Guangdong 510642, China

2. Jiangxi Wuyuan Tea Vocational College, Wuyuan, Jiangxi 333200, China

3. National Museum of Nature and Science, Amakubo 4, Tsukuba 305-0005, Japan

Abstract: *Oxaenanus scopigeralis* (Moore, 1867), **sp. rev. & comb. nov.**, the type locality: India, is revalidated from a junior synonym of *O. brontesalis* (Walker, 1858), the type locality: Borneo. The holotype, and male and female genitalia of *O. scopigeralis* are illustrated, and *O. yunnana* Zhang & Han, 2016 from Yunnan, China is synonymized with *O. scopigeralis*. This species is newly recorded from Nepal. A new species, *Oxaenanus hainana* **sp. nov.**, closely related to *O. scopigeralis*, is described from Hainan, China by the weaker and fuzzier subterminal lines of both wings, shorter and slenderer cucullus, and more complicated vesica.

Key words: Noctuoidea; new synonymy; macromoths; taxonomy

中国奥胸须夜蛾属 *Oxaenanus* Swinhoe 研究并记一新种 (鳞翅目: 裳蛾科: 长须夜蛾亚科)

缪志鹏^{1,2}, Mamoru OWADA³, 王敏¹Ⓐ

1. 华南农业大学农学院昆虫学系, 广东 广州 510642; 2. 江西婺源茶业职业学院, 江西 婺源 333200;

3. National Museum of Nature and Science, Amakubo 4, Tsukuba 305-0005, Japan

摘要: 通过解剖 *Oxaenanus scopigeralis* 正模标本和同种雌雄外生殖器, 发现 *O. scopigeralis* (Moore, 1867), **sp. rev. & comb. nov.**, (模式产地: 印度) 命名有效, 其曾被认为是 *O. brontesalis* (Walker, 1858) (模式产地: 婆罗洲) 的同物异名。张, 韩二人 2019 年发表的云南奥胸须夜蛾 *O. yunnana* (模式产地: 云南) 应为 *O. scopigeralis* 的同物异名。作者在海南省采集到了奥胸须夜蛾属 *Oxaenanus* 1 新种海南奥胸须夜蛾 *Oxaenanus hainana* **sp. nov.**, 其与 *O. scopigeralis* 近似, 但海南奥胸须夜蛾的前后翅亚外缘线更加模糊, 抱器端骨化突起更短更细, 阴茎端膜也更加复杂多变。

关键词: 夜蛾科; 同物异名; 大蛾类; 分类

Introduction

In *The Fauna of British India, Moths*, Hampson (1895) recorded Bornean *Mastigophora brontesalis* Walker, 1858 under the genus *Mastigophorus* Poey, 1832, and synonymized Indian *Mastigophora scopigeralis* Moore, 1867 with it.

Accepted 14 October 2020. Published 25 March 2021. Published online 15 March 2021.

Ⓐ Corresponding author, E-mail: minwang@scau.edu.cn

Swinhoe (1900) established the genus *Oxaenanus*, designating the type species as *Mastigophora brontesalis*, and stated that it “Corresponds with Section II of Hampson’s genus, *Mastigophorus* Poey; an American genus quite distinct, with mass of flocculent scales to the fore-tibiae.”

In the same paper, he synonymized *Mastigophora sumatrensis* Walker, [1866] 1865 with *Oxaenanus brontesalis*. Hampson (1912) synonymized *Oxaenanus* with *Mastigophorus*; nevertheless Tams (1924) adopted the combination “*Oxaenanus brontesalis*” in a list of moths from Thailand.

Poole (1989) revalidated *Oxaenanus* from *Mastigophorus* and accepted the synonymies of *O. brontesalis* by Hampson (1895) and Swinhoe (1900), and listed four valid taxa, *O. brontesalis*, *O. kalialis* Swinhoe, 1900, *O. picticilia* (Hampson, 1898) and *O. prunalis* (Hampson, 1896), with two invalid taxa, *M. scopigeralis* and *M. sumatrensis*, in the genus. Holloway (2008) noted the features of the genus *Oxaenanus*, redescribed and illustrated *O. brontesalis* and *O. kalialis*, and described two new species from Borneo.

Chen (1982) recorded and illustrated “*Cidariplura*” *brontesalis* from Yunnan, and in *Fauna Sinica, Noctuidae* he illustrated again the same specimen from Yunnan (Chen 1999). Zhang & Han (2016) described *Oxaenanus yunnana* from Yunnan in comparing it with the Bornean *O. brontesalis* illustrated by Holloway (2008, figs. 161, 164, pl. 3: 1, 2), and deleted *O. prunalis* (Hampson, 1896) from a checklist of *Oxaenanus*.

In this paper, *Oxaenanus scopigeralis* (Moore, 1867) is revalidated from being a junior synonym of *O. brontesalis* with illustrations of the holotype. The male and female moths and genitalia of *O. scopigeralis* are illustrated, and *O. yunnana* is synonymized with *O. scopigeralis*. A new species, closely related to *O. scopigeralis*, is described from Hainan.

Material and methods

Specimens examined in this study are deposited in the following institutions and museums:

NHMUK — Natural History Museum, London;

NSMT — National Museum of Nature and Science, Tsukuba;

SCAU — Entomological Laboratory, South China Agricultural University, Guangzhou

OPU — Entomological Laboratory, Osaka Prefecture University, Sakai;

Specimens were examined using a stereo microscope (Olympus SZX7) and photographed using a digital microscope (Zeiss V12).

Taxonomy

1. *Oxaenanus scopigeralis* (Moore, 1867), sp. rev. & comb. nov. (Figs 1–6, 8, 9, 11)

Mastigophora ? *scopigeralis* Moore, 1867: 86.

Mastigophorus brontesalis: Hampson, 1895: 48, part, fig. 22; nec Walker [1859] 1858.

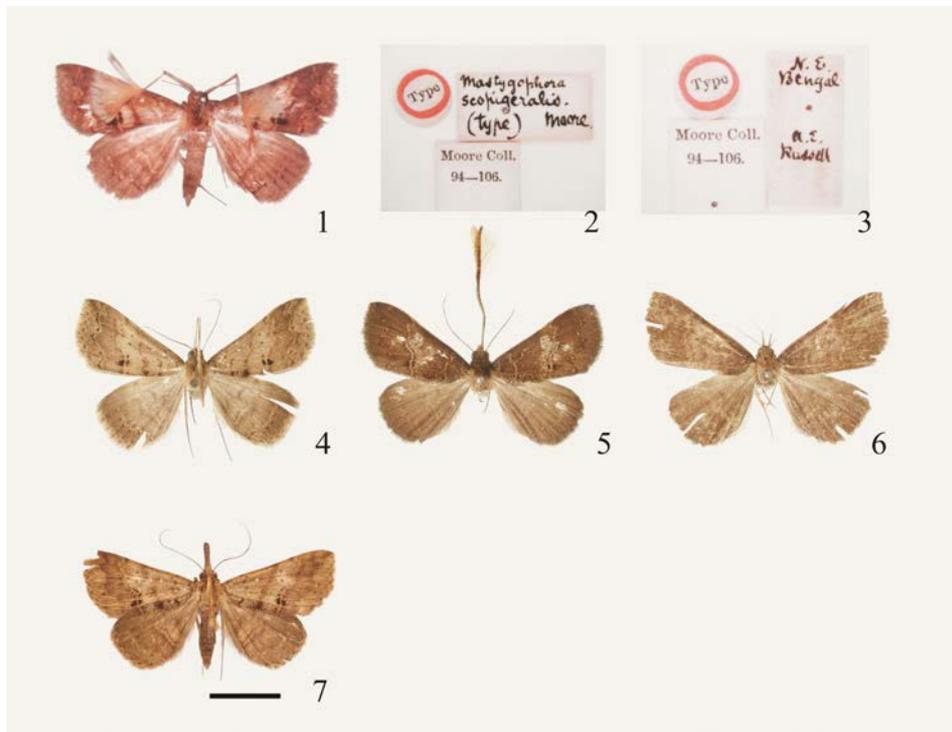
Oxaenanus brontesalis: Swinhoe, 1900: 202, part; Tams, 1924: 257; Poole, 1987: 748, part; Kononenko & Pinratana, 2005: 11, pl. 1: 19; Holloway, 2008: 69–70, part; nec Walker [1859] 1858.

Cidariplura brontesalis Chen, 1982: 380, fig. 2729; Chen, 1999: 1299–1300, pl. 67: 20; nec Walker [1859] 1858.

Oxaenanus yunnana Zhang & Han, 2016: 81–85, figs 4 (holotype), 5 (paratype), 13, 14 (male genitalia of holotype), **syn. nov.**

Oxaenanus yunnanna: Zhang & Han, 2016: 81, misspelling.

Description. Male (Figs 1, 4, 5) & female (Fig. 6). Length of forewing, 17–20 mm in male; 16–18 mm in female. Ground colour and wing maculation variable as in Figs 1, 4–6. Male genitalia (Figs 8, 9). Uncus thick, with a hooked pointed apex, with a large triangular protrusion dorsally; juxta with a longitudinal sclerotized swelling of which the surface is scobinate; valva sclerotized, with a robust costal process; vinculum Y-shaped. Aedeagus thick, nearly straight, everted vesica with several kinds of masses of ornamentation, number of largest triangular ornaments variable from three to six (Figs 8, 9). Female genitalia (Fig. 11). Papillae anales and 8th segment moderate. Ductus bursae rather short, membranous, scattered with micro-spines. Corpus bursae ovate, scattered with micro-spines except in bottom, left shoulder sclerotized.



Figures 1–7. Habitus and labels. 1. *Oxaenanus scopigeralis* (Moore, 1867), ♂, holotype, NE Bengal, India; 2, 3. Labels of the holotype of *O. scopigeralis*; 4. *O. scopigeralis*, ♂, NSMT3500, W Bengal, India; 5. *O. scopigeralis*, ♂, NSMT3523, Nakhon Nayok, Thailand; 6. *O. scopigeralis*, ♀, NSMT3535, Nakhon Nayok, Thailand; 7. *O. hainana* **sp. nov.**, ♂, holotype, Hainan, China. Scale bar = 10 mm.

Holotype of *Mastygophora scopigeralis* Moore (Figs 1–3), ♂, “N. E. Bengal, A. E. Russell / *Mastygophora scopigeralis* Moore, (type) / Moore Coll., 94–106 / Type in red circle”, in NHMUK. Other material. India, West Bengal, Darjeeling, Manjitar, 650 m, 1♂, 24-III-1986, genitalia slide no. NSMT3500♂, W. Thomas leg., in NSMT. Nepal, Kosi [Koshi], Pheksinda, 780 m, 1♂, 06–13-V-1994, NSMT3526♂, M. S. Limbu leg., ex H. Yoshimoto Coll., in NSMT. Thailand, Nakhon Nayok, Khao Yai, 800 m, 1♂, 16-IV-1983, NSMT3503♂, H. Kuroko *et al.*

leg.; same locality, 4♂5♀, 07–10-VIII-1987, NSMT3507♂, 3508♀, 3523♂, 3531♀, 3532♂, 3533♀, 3534♂, 3535♀, 3537♀; 2♂, 21-IX-1987, NSMT3536♂, 3538♂; 1♂, 11–19-XI-1985, NSMT3530♂, S. Moriuti *et al.* leg., in NSMT and OPU. Peninsular Malaysia, Pahang, Bukit Fraser, 1300 m; 1♂, 17–19-VII-1987, NSMT-SW0147, M. Owada leg., in NSMT.

Distribution. India (NE and W Bengal); Nepal (Koshi); China (Yunnan); Thailand (Nakhon Ratchasima, Nakhon Nayok); Peninsular Malaysia.

Bionomics. This species is an inhabitant of tropical rain forests (Zhang & Han 2016), and seems to fly all year round.

Diagnosis. In *Oxaenanus scopigeralis*, the uncus has dorsal triangle swelling, which is absent in *O. brontesalis*. The valva of *O. scopigeralis* is sclerotized and has a strong distal process, while in *O. brontesalis* it is weakly sclerotized and has a membranous distal process. The ornamentation of vesica in *O. scopigeralis* and *O. brontesalis* is markedly different.

The ground colour of *O. hainana* is variable from ochre (Figs 1, 4) to dark brown (Fig. 5). *O. yunnana* has weaker and fuzzier subterminal lines on both wings, shorter and slenderer cucullus, and more complicated vesica, distinguishing it from *O. scopigeralis*.

2. *Oxaenanus hainana* sp. nov. (Figs 7, 10)

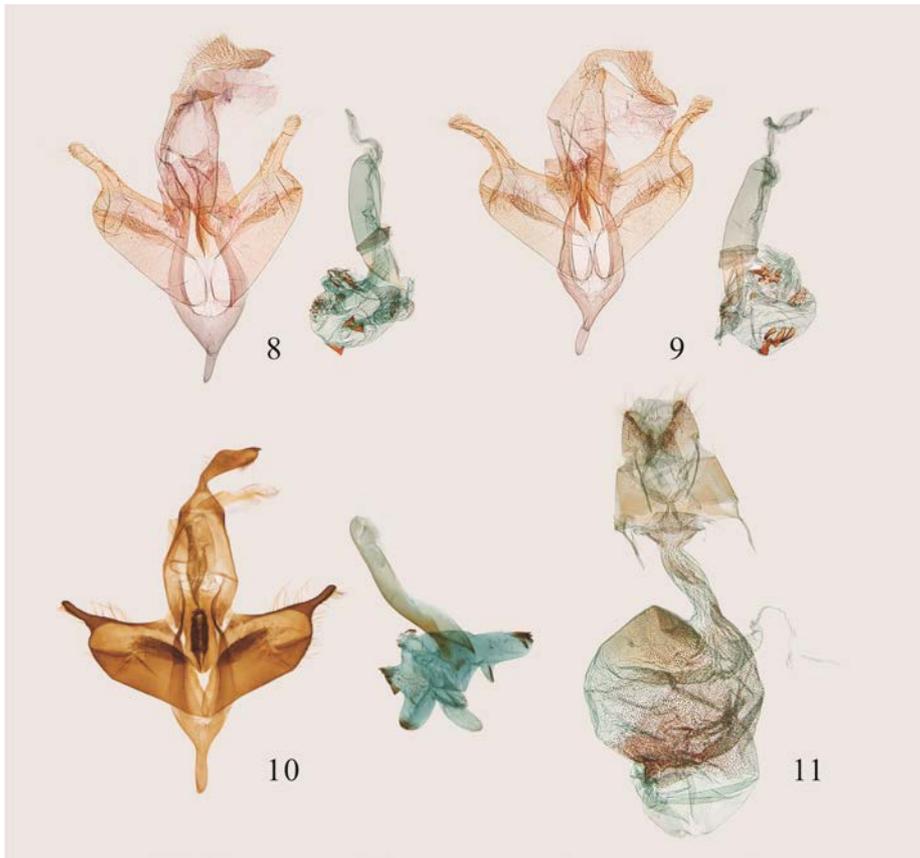
Description. Adult male wingspan, 35–38 mm (holotype 38 mm). Head light brown, eyes brown. Male antenna ciliate, each segment with a pair of bristles. Labial palpus length exceeds thorax, the first segment stretches forward; 2nd segment beyond the collar; 3rd longest, with a cluster of long hairs. Forewing broad, light brown, black scale more manifest near the inner margin; costal margin straight, slightly internally curved at the apex; antemedial line blurry wave-like, black; medial line straight, inclined, light black; postmedial line wavy, weakly black, with a pale line in the middle; subterminal line blurry, wave-like, a few black spots in the middle; terminal line slender, evenly distributed with black spots; subterminal fascia darker than other area, forming a dark band; orbicular spot small, spot-like, off-white; reniform spot off-white, with two black dots at center, a weak line connecting the two dots. Hindwing dark brown, base color shallower than forewing; medial line brunette, lower half more pronounced than upper half; postmedial line indistinct, light; terminal line light, with some black spots.

Male genitalia. Uncus finger-like, hooked, with a tuft of hairs below the terminus; tegumen broad, as long as vinculum. Valva broad, costal medial process covered with bushy bristle, sacculus and cucullus strongly sclerotized, cucullus club-shaped. Saccus cylindrical, elongated. Juxta peltate, with a mass of little spines in the center. Aedeagus cylindrical, bent at middle; carina lightly sclerotized, everted vesical with 6 large diverticula, top diverticulum biggest, with 4 or 5 cornuti at distal part, with bristle-like sclerotized grains in the middle, a small basal diverticulum with a large cornuti; two middle sized diverticula in the near center, with bristle-like sclerotized grains; three diverticula at the bottom, one on the right with a plate of sclerotized grains in the distal, one at center with triangular cornuti, the remaining part with sclerotized grains lined up; left one small, with sclerotized spots.

Female. Unknown.

Holotype. ♂, China, Hainan, Qiongzong, Yinggeling National Nature Reserve, 486 m, N19°3'50" E109°33'35", 24-X-2018, Zhipeng MIAO & Fuhong WEI leg., in SCAU. **Paratypes.** 1♂, same data as holotype; 1♂, same locality, 08-VII-2018, Zhipeng MIAO, Houshuai WANG & Shifang MO leg.; 1♂, same locality, 470 m, 30-V-2018, Zhipeng MIAO

& Fuhong WEI leg., in SCAU.



Figures 8–11. Male and female genitalia. 8. *Oxaenanus scopigeralis*, NSMT3500♂, W Bengal, India; 9. *O. scopigeralis*, NSMT3523♂, Nakhon Nayok, Thailand; 10. *O. hainana* **sp. nov.**, ♂, holotype, Hainan, China; 11. *O. scopigeralis*, NSMT3535♀, Nakhon Nayok, Thailand.

Etymology. The species is named after the type-locality in the Hainan Province of China.

Bionomics. The adults fly in May, July and October. The moths occur in low elevation forests and were collected by light trap.

Diagnosis. This new species is similar to *O. scopigeralis*. The subterminal lines of both wings are weaker and fuzzier than *O. scopigeralis*. The postmedial line is wavy, but *O. scopigeralis* is nearly straight. The uncus is slightly bulging on the dorsum, however in *O. scopigeralis* it is like a triangular plate. The club-shaped sclerite in cucullus is shorter and slenderer than that of *O. scopigeralis*. The saccus is cylindrical, but in *O. scopigeralis* it is Y-shaped, and the shape of vesica is more complicated than in *O. scopigeralis*.

Acknowledgements

Mamoru OWADA is sincerely grateful to the following researchers for their material and support: Mr. Martin HONEY, Dr. Jeremy D. HOLLOWAY and Dr. Ian J. KITCHING

(NHMUK, London), Dr. Hoisen YONG (University of Malaya, Kuala Lumpur), the late Dr. Hiroshi KUROKO and the late Dr. Sigeru MORIUTI (OPU, Sakai), Mr. Hiroshi YOSHIMOTO (Tokyo), Dr. Utsugi JINBO (NSMT, Tsukuba), and Dr. Shipher WU, (Biodiversity Research Center, Taipei).

References

- Chen YX. 1982. *Iconographia Heterocerorum Sinicorum, III*. Science Press, Beijing, 390 pp.
- Chen YX. 1999. *Lepidoptera Noctuidae. Fauna Sinica. Insecta. Vol. 16*. Science Press, Beijing, 1596 pp.
- Hampson GF. 1895. *The Fauna of British India, including Ceylon and Burma. Moths. Vol. 3*. Taylor and Francis, London, 546 pp.
- Hampson GF. 1896. *The Fauna of British India, including Ceylon and Burma. Moths. Vol. 4*. Taylor and Francis, London, 549 pp.
- Hampson GF. 1898. The moths of India. Supplementary paper to the volumes in "The Fauna of British India". Part III. *Journal of the Bombay Natural History Society*, 11: 698–724.
- Hampson GF. 1912. The moths of India. Supplementary paper to the volumes in "The Fauna of British India". Series IV. Part V. *Journal of the Bombay Natural History Society*, 21: 1222–1272.
- Holloway JD. 2008. The Moths of Borneo: Family Noctuidae, subfamilies Rivulinae, Phytometrinae, Herminiinae, Hypeninae and Hypenodinae. *Malayan Nature Journal*, 60(1-4): 1–268.
- Kononenko VS & Pinratana A. 2005. *Noctuidae. An illustrated catalogue of the Noctuidae (Insecta, Lepidoptera) in Thailand. Part 1. Subfamilies Herminiinae, Rivulinae, Hypeninae, Catocalinae, Aganainae, Eutelinae, Stictopterinae, Plusiinae, Pantheinae, Acronictinae and Agaristinae. Moths of Thailand, Vol. 3*. Brothers of Saint Gabriel in Thailand, Bangkok, 261 pp.
- Moore F. 1867. On the Lepidopterous Insects of Bengal. *Proceedings of the Zoological Society of London*, 1867: 44–98, 612–686.
- Poole RW. 1989. Noctuidae. In: Heppner JB (Ed.), *Lepidopterorum Catalogus (New Series). Fascicle 118*. E. J. Brill press, Leiden, Part 1: v–xii 1–500 pp; Part 2: 501–1013 pp; part 3: 1014–1314 pp.
- Swinhoe C. 1900. *Catalogue of Eastern and Australian Lepidoptera Heterocera in the Collection of the Oxford University Museum. Vol. 2*. Clarendon Press, Oxford, vi + 630 pp., 8 pls.
- Tams WHT. 1924. List of the moths collected in Siam by E. J. Godfrey. *The Journal of the Natural History Society of Siam*, 6(3): 229–289.
- Walker F. 1858. *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, 16*. Printed by order of the Trustees, London, 253 pp.
- Walker F. 1865. *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, 34*. Printed by order of the Trustees, London, 1533 pp.
- Zhang X & Han H. 2016. Two new species of the genera *Cidariplura* Butler, 1879 and *Oxaenanus* Swinhoe, 1900 from Yunnan, China (Lepidoptera, Erebidae, Herminiinae). *Zootaxa*, 4103: 79–86.