



<http://dx.doi.org/10.11646/zootaxa.3746.1.6>

<http://zoobank.org/urn:lsid:zoobank.org:pub:7C5BB172-20D1-413D-B749-1A660C79E52A>

Review of the genus *Cidariplura* Butler, 1879 (Lepidoptera, Erebidae, Herminiinae) in Taiwan with descriptions of four new species

SHIPHER WU^{1,5}, MAMORU OWADA², SHIUH-FENG SHIAO³ & SHEN-HORN YEN⁴

¹ Department of Entomology, National Taiwan University, 27, Lane 113, Sec. 4, Roosevelt Rd., Taipei, Taiwan 106.

E-mail: shipher@gmail.com

² Department of Zoology, National Museum of Nature and Science, Amakubo 4-1-1, Tsukuba, 305-0005, Japan.

E-mail: owada@kahaku.go.jp

³ Department of Entomology, National Taiwan University, 27, Lane 113, Sec. 4, Roosevelt Rd., Taipei, Taiwan 106.

E-mail: sfshiao@ntu.edu.tw

⁴ Department of Biological Sciences, National Sun Yat-Sen University, 70 Lienhai Rd, Kaohsiung 80424, Taiwan

E-mail: shenhornyen@mail.nsysu.edu.tw

⁵ Corresponding author

Abstract

The genus *Cidariplura* Butler, 1879 from Taiwan is reviewed. A total of seven species are confirmed to occur in this old landbridge island, and four new species are described: *C. shanmeii* Wu & Owada **sp. nov.**, *C. maraho* Wu & Owada **sp. nov.**, *C. atayal* Wu & Owada **sp. nov.** and *C. ilana* Wu & Owada **sp. nov.** The Taiwanese *C. bilineata* (Wileman & South, 1919) is superficially similar to the Indian and Nepalese *C. brevivittalis* (Moore, 1867) but their genitalia show distinct differences. *Elyra albifascia* Hampson 1929 is regarded as a junior synonym of *C. brevivittalis* (**syn. nov.**). All diagnostic characteristics of *Cidariplura* from Taiwan and its adjacent areas are illustrated.

Key words: *Cidariplura*, Herminiinae, Noctuoidea, Oriental region, Taiwan

The genus *Cidariplura* Butler comprises 17 species ranging from southern Palaearctic to Oriental regions (Warren, 1913; Poole, 1989; Owada, 1992a; Owada, 1992b; Chen, 1999; Zhang and Han 2009). It was established by Butler (1879) with a single species, *C. gladiata* Butler, 1879, to account for the extraordinarily long male labial palpi of the species. Such characteristics of the male labial palpi can be found in *Hadennia* Moore, [1885], *Trotosema* Butler, 1879 (= *Mosopia*), and *Cidariplura*, which Owada (1978) suggested formed a clade. Owada (1994) also found a distinctive apomorphic character i.e., the male foretibia with a distal sharp spine, among the genera *Mosopia*, *Cidariplura* and *Idia* Hübner, [1813]. The definitions of *Cidariplura* and some similar genera have varied from previous studies. For example, Hampson (1895) combined several species with such long labial palpi under the New World genus *Mastigophorus* Poey, 1832, synonymizing *Mosopia* Walker, [1866] with *Mastigophorus*, and stating “the typical American section (*Mastigophorus*) has a sheath to the fore tibia containing a mass of flocculent [= fluffy] scales”. The genus *Cidariplura*, having no foretibial sheath, was synonymized with *Mastigophorus* by Leech (1900) as implicit in his combination “*Mastigophorus gladiata*”. On the other hand, Swinhoe (1900) erected the genus *Oxaenanus* (type species: *M. brontesalis* Walker, [1859]) to correspond with Section II of Hampson’s “*Mastigophorus*”. *Oxaenanus*, however, differs from *Cidaripleura* in having the first segment of the labial palpus porrect directing forward and no clear boundary between elongate second and third segments (Holloway 2008). The relationships among *Cidaripleura*, *Mastigophorus*, and *Oxaenanus* need further attention and merit molecular studies based on a denser taxon sampling.

Here we examine taxonomic problems involved in the species of *Cidariplura* from Taiwan and adjacent areas. These species have been studied or at least mentioned by Owada (1987; 1992a; 1992b; 1994), Poole (1989), Wang (1994) and Chen (1999). Our present study confirms the occurrence of seven species of

brown; discal spot short, transverse, dark brown; medial line straight, ochreous; marginal part covered with small black stigma in each cell; marginal scales brown. Abdomen brown, 8th segment unmodified. Male genitalia (Figs 55, 56)- Uncus broad, stout. Tegumen and vinculum long, same in length; saccus V-shaped. Valva trifurcate, costal process stout with lateral semi-circular expansion, distal portion of valva broad, membranous, saccular process small, short, digit-like without hair tufts on apex. Juxta long plate-like, transtilla indistinct. Aedeagus stout, straight, 0.67 X shorter than valva; vesica well scobinated, without cornutus. Female genitalia (Fig. 67)- Ovipositor lobe membranous with short hair-like setae; both pairs of apophyses slender, moderate length; ductus bursae long, with a pair of broad lateral sclerites fused at basal portion. Corpus bursae elliptic, as long as ductus bursae, basal half part wrinkled; ductus seminalis arising from lateral side of corpus bursae, slightly broadened and coiled at basal portion.

Etymology. The species is named after the collecting locality of type series, Ilan County, northern eastern Taiwan.

Distribution and bionomics. This new species, endemic in Taiwan, occurs in low to mid-elevations of northern Taiwan. The adults occur only in May based on collecting records, possibly univoltine.

Taxonomic notes. This new species is superficially similar to *C. nigristigmata* (Leech, 1900) (Figs 32, 51, 52, 65, 74, 89) in S. China in having the forewing reniform stigma dark brown and V-shaped. The genital structures of this new species actually shows its closest relationship with *C. ochreistigma* (Leech, 1900) (Figs 31, 53, 54, 66, 75, 88) in S. China rather than *C. nigristigmata*, which is close to *C. hani* Chen, 1992 and *C. subhani* Zhang & Han, 2009 in Xizhang (= Tibet), W. China, in the genital structures. *C. ilana* and *C. ochreistigma* form a separate lineage in *Cidariplura* based on three particular character states of the male genitalia: the costal process heavily sclerotized and broader with a ventral semi-circular expansion; the saccular process digit-like without hair tufts; and a pair of broad lateral sclerites of ductus bursae fused at the basal portion.

Acknowledgements

We would like to express our sincere thanks to Martin Honey (BMNH), Geoff Martin (BMNH), Alessandro Giusti (BMNH), Reinhold Gaedike (DEI), Utsugi Jinbo (NSMT), Jung-Tai Chao (TFRI), Shen-Shan Lu (TFRI), Ling-Mu Juang (TFRI), Yi-Chieh Lin (TFRI), Yun-Yin Yeh (TFRI), Ming-Lung Chen (NMNS), Mei-Lin Chan (NMNS) and Chien-Ming Fu (Taichung) who provided help at their institutions; Wei-Chun Chang (TFB), Li-Cheng Shih (ESRI), Yen-Lin Chen (ESRI), Chong-Guang Lai (Taoyuan), Shi-Fang Huang, Ling-Chun Hsieh (Taitung) provided assistance with collecting. All the staff of Guanwu Visitor Center (Miaoli), Meifeng Farm (Nantou) and Fushan Botanical Garden (Ilan) who kindly associated during our fieldwork. David Lees (Department of Zoology, University of Cambridge) read the manuscript and gave valuable comments. This study was supported by the International Cooperation Project of National Digital Contents and Technique: International Cooperation Project of Studies on Taiwanese Insect Type Specimens (NSC 101-2631-H-002-019).

References

- Butler, A.G. (1879) Descriptions of new species of Lepidoptera from Japan. *Annals and Magazine of Natural History*, Series 5, 4, 349–374, 437–457.
- Chen, Y.S. (1999) *Lepidoptera: Noctuidae: Fauna Sinica (Insecta) 16*. Science Press, Beijing, ixiii + 1596 pp., 701 figs, 67pls.
- Chu, H. & Chen, Y. (1964) Lepidoptera: Noctuidae 1. *Economic Insect Fauna of China*, 3. Beijing, xiv + 172 pp., 10 pls. [in Chinese]
- Hampson, G.F. (1895) The Fauna of British India, including Ceylon and Burma. Moths, 3. London, xxviii + 546 pp.
- Holloway, J.D. (2008) The Moths of Borneo: Family Noctuidae, subfamilies Rivulinae, Phytometrinae, Herminiinae, Hypeninae and Hypenodinae. *Malay Nature Journal*, 60 (1–4), 1–268.
- Holloway, J.D., Bradley, J.D. & Carter, D.J. (1987) Lepidoptera. In: Betts, C.R. (Ed.), *CIE Guides to Insects of Importance to Man, Vol. 1*. CAB International, Wallingford, 262 pp.
- Inoue, H. & Sugi, S. (1958) *Check List of the Lepidoptera of Japan. Part 5: Noctuidae*. Tokyo, pp. 431–619.
- Kawada, A. (1950) Noctuidae. In: Esaki, T. et al. (Eds.), *Iconographia Insectorum Japonicorum, Ed. 2, reformata*. Tokyo, pp. 736–854, figs. 2071–2425.

- Leech, J.H. (1889) On the Lepidoptera of Japan and Corea. Part II. Heterocera, Sect. II. Noctues and Deltoides. *Proceedings of the zoological Society, London*, 1889, 474–571, pls. 50–53.
<http://dx.doi.org/10.1111/j.1469-7998.1889.tb06789.x>
- Leech, J.H. (1900) Lepidoptera Heterocera from northern China, Japan, and Corea. Part IV. *Transactions of the Entomological Society of London*, 1900, 511–663.
<http://dx.doi.org/10.1111/j.1365-2311.1900.tb02716.x>
- Matsumura, S. (1905) *Catalogus Insectorum Japonicum, I*. Tokyo, 307 pp.
- Ogata, M. (1958) Noctuidae. In: Esaki, T., et al (Eds.), *Icones Heterocerorum Japonicorum in Coloribus Naturalibus*, [2]. Osaka, pp. 55–197, pls. 93–119. [in Japanese]
- Owada, M. (1978) The noctuid moth of the genus *Trotosema*, with special reference to its male scent organ. *Bulletin of the National Science Museum, Tokyo, Series A (Zoology)*, 4 (4), 281–291.
- Owada, M. (1982) The subfamily Herminiinae. In: Inoue, H. et al. (Ed.), *Moths of Japan*. Kodansha, Tokyo, 1: 913–935, 2: 405–408, pls. 224–226, 356, 381–392.
- Owada, M. (1987) *A taxonomic study on the subfamily Herminiinae of Japan (Lepidoptera, Noctuidae)*. National Science Museum, Tokyo, 208 pp, with 409 figs.
- Owada, M. (1992a) Herminiinae. In: Heppner, J.B. & Inoue, H. (Eds.), *Lepidoptera of Taiwan. Vol.1. Part 2: Checklist*. Gainesville. Assoc. Trop. Lepid., pp. 172–173.
- Owada, M. (1992b) Synonymic notes on the herminiine moths (Noctuidae) of Japan, with descriptions of three new species. *Tinea*, 13, 183–203.
- Owada, M. (1994) Notes on the herminiine moths (Lepidoptera, Noctuidae) described or recorded by Embrik Strand from Taiwan. *Bulletin of the National Science Museum, Tokyo, Series A (Zoology)*, 20 (2), 91–109.
- Owada, M. (2011) Noctuidae, Herminiinae. In: Kishida, Y. (Ed.), 2011, *The Standard of Moths in Japan 2*. Gakken Education Publishing, Tokyo, pp. 221–235.
- Poole, R.W. (1989) Noctuidae: Lepidopterorum Catalogues (New Series). Fascicle 118. E. J. Brill, Leiden, Part 1: v–xii + pp. 1–500; Part 2: pp. 501–1013; part 3: pp. 1014–1314.
- Pryer, H. (1885) Additions and corrections to a catalogue of the Lepidoptera of Japan. *Transactions of the Asiatic Society of Japan*, 13, 22–68.
- Strand, E. (1919) H. Sauter's Formosa–Ausbeute: Noctuidae I. *Archiv für Naturgeschichte*, 83A (10), 109–162.
- Strand, E. (1920) H. Sauter's Formosa–Ausbeute: Noctuidae II nebst Nachträgen zu den Familien Arctiidae, Lymenitriidae, Notodontidae, Geometridae, Thyrididae, Pyralidae, Tortricidae, Gelechiidae und Oecophoridae. *Archiv für Naturgeschichte*, 84A (12), 102–197.
- Sugi, S. (1959) Noctuidae. In: Inoue, H. et al. (Eds.), *Iconographa Insectorum Japonicorum Colore naturali Edita*, 1. Tokyo, pp. 105–159, pls. 64–106. [in Japanese]
- 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.
- Warren, W. (1909–1913) Noctuidae. In: Sietz, A. (Ed.), *The Macrolepidoptera of the World*, 3. Stuttgart, pp. 9–444, pls. 2–75.
- Wang, H.Y. (1994) *Guide book to insects in Taiwan 8. Noctuidae*. Shuqing Publish House, Taipei, 477 pp.
- Wang, H.Y. (2001) *Noctuid moths of Taiwan*. The I-Lan County Museum of Natural History, Ilan, 295 pp.
- Wileman, A.E. (1911) New and unrecorded species of Lepidoptera Heterocera from Japan. *Transactions of the entomological Society of London*, 1911, 189–407, pl. 30–31.
- Wileman, A.E. (1915) New species of Noctuidae from Formosa. *Entomologist*, 48, 159–163.
- Wileman, A.E. & South, R. (1919) New species of Pyralidae from Formosa. *Entomologist*, 52, 267–268.
- Yamamoto, Y. (1965) Noctuidae. In: Issiki, S. (Ed.), *Early stages of Japanese Moths in Color*, 1. Osaka, pp. 61–166, pls. 20–55. [in Japanese]
- Zhang, F.B. & Han, H.L. (2009) Description of one new species of the genus *Cidariphura* (Lepidoptera, Noctuidae) from China. *Tinea*, 21 (1), 26–28.