Zootaxa 3811 (2): 185–206
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3811.2.2
http://zoobank.org/urn:lsid:zoobank.org:pub:3EB522C3-C8F1-41A2-A576-E1FB296E3B25

The Paranthrenini of Mainland China (Lepidoptera, Sesiidae)

AXEL KALLIES[1], YUTAKA ARITA[2], MAMORU OWADA[3], GUO-YI WU[4] & MIN WANG[4]

[1]*University of Melbourne, Department of Zoology, Parkville, 3010 Victoria, Australia. E-mail: kallies@wehi.edu.au*
[2]*Zoological Laboratories, Faculty of Agriculture, Meijo University, Tempaku-ku, Nagoya, 468-8502 Japan. E-mail: arita.yutaka@gmail.com*
[3]*National Museum of Nature and Science, Amakubo 4-1-1, Tsukuba, 303-0005 Japan*
[4]*Department of Entomology, South China Agricultural University, Guangzhou, Guangdong, 510642, P.R. China.*

Summary

We here briefly review the Paranthrenini fauna of Mainland China and provide a checklist of 21 species for this region. We describe six new species: *Paranthrene rubomacula* Kallies & Owada **sp. nov.**, *Nokona opaca* Kallies & Wang **sp. nov.**, *Nokona bractea* Kallies & Arita **sp. nov.**, *Scoliokona nanlingensis* Kallies & Arita **sp. nov.**, *Scoliokona spissa* Kallies & Arita **sp. nov.**, *Scoliokona shimentai* Kallies & Wu **sp. nov.** Furthermore, we provide numerous new combinations of species formerly associated with the genus *Paranthrene* in South East Asia, with 12 species transferred to *Nokona* Matsumura, 1931, 4 to *Scoliokona* Kallies & Arita, 1998, and one to *Cyanosesia* Gorbunov & Arita, 1995 (**comb. nov.**). The genus name *Aritasesia* Nakamura, 2009 (**syn. nov.**) is considered a junior subjective synonym of *Nokona* Matsumura, 1931.

Key words: *Aritasesia*, checklist, clearwing moths, *Cyanosesia*, new species, new combination, *Nokona*, *Scoliokona*, *Paranthrene*, Palaearctic Region, Oriental Region

Introduction

Paranthrenini constitute a tribe of clearwing moths (Sesiidae) with nearly 150 named species (Pühringer & Kallies, 2013). While in the North American literature Paranthrenini are considered a distinct subfamily (Eichlin & Duckworth 1988, Eichlin 1989), we here follow Naumann (1971) and Špatenka *et al.* (1999) and treat the group as a tribe within the subfamily Sesiinae. Species from the Americas, the Palaearctic region and Africa were reviewed relatively recently (Eichlin 1989, Špatenka *et al.* 1999, Bartsch 2008). Although it comprises the largest number of species, with more than 80 species described, the fauna of the Oriental region, however, has not been revised since Hampson (1919). Thus, the generic composition of this group in this region is insufficiently known. Type material of some species was revised in some more recent papers, and some genera were reviewed to a greater extend (Gorbunov & Arita 1995, 2001 Kallies & Arita 1998a, Kallies 2007).

The biology of Paranthrenini outside of the Palaearctic or Nearctic regions is only insufficiently known. Most species for which host plants have been recorded are xylophagous. Representatives of the species rich genus *Paranthrene* Hübner, [1819] tunnel in branches or stems of various trees and shrubs (including Fagaceae and Salicaceae), while species of *Nokona* Matsumura, 1931 feed in vines of the Rubiaceae, Vitaceae and Actinidiaceae families. Similarly, the related genera *Vitacea* Engelhardt, 1946 and *Pseudosesia* Felder, 1861 have been recorded from Vitaceae, and *Scoliokona* from Rubiaceae (in here). North American *Euhagena* Edwards, 1881 species are an exception; they are known to tunnel in the roots of plants belonging to the herbaceous family Onagraceae (Eichlin 1989, Špatenka *et al*. 1999, Kallies 2001).

The Paranthrenini species of China are poorly known. Arita & Gorbunov (2001) reviewed the fauna of Taiwan and listed six species of *Nokona* and one species of *Taikona* Arita & Gorbunov, 2001. A recent checklist of Sesiidae of China and Taiwan (Jin *et al*. 2008) listed 10 species of Paranthrenini. However, largely ignoring the modern literature the authors placed all taxa in the genus *Paranthrene* and several species known from China or Taiwan

Accepted by J. F. Landry: 18 Apr. 2014; published: 3 Jun. 2014

Variability. The specimens from Prov. Shaanxi have a somewhat narrower forewing discal spot and distal area, resulting in a slightly larger ETA. However, there were no detectable differences in the morphology of the male genitalia.

Acknowledgements

We express our gratitude to various collectors and to Udo Koschwitz (Germany) for critical reference specimens and to Marianne Horak (Australian National Insect Collection) for information regarding the type specimen of *S. uncariae*. Furthermore, we thank Karel Spatenka (Czech Republic), Daniel Bartsch (Germany) and Franz Pühringer (Austria) for images of historical type specimens, and Theo and Walter Garrevoet (Belgium) for some of the images of recent material reproduced here.

References

Arita, Y. (2011) Sesiidae. *In*: Wang, M. & Kishida, Y. (Eds.), *Moths of Guangdong Nanling National Nature Reserve*. Goecke & Evers, Keltern, pp 37–38.

Arita, Y. & Gorbunov, O. (2001) Sesiidae of Taiwan. I. The Tribes Tinthiini, Similipepsini, Paraglosseciini, Pennisetiini, Paranthrenini and Cissuvorini. *Japanese Journal of Systematic Entomology*, 7 (2), 131–188.

Bartsch, D. (2008) A review of the Paranthrenini of the Afrotropical region (Lepidoptera: Sesiidae). *Entomologische Zeitschrift*, 118 (6), 265–280.

Common, I.F.B. (1990) *Moths of Australia*. Melbourne University Press, Carlton, Victoria, 32 plates, 535 pp.

Du, J.W., Xu, S.F., Dai, X.J. & Zhang, X. (1985) Strategies for control of poplar clearwing moth *Paranthrene tabaniformis* Root by mass trapping. *Contributions from Shanghai Institute of Entomology*, 5, 19–24.

Eichlin, T.D. (1989) Western Hemisphere clearwing moths of the subfamily Paranthreninae (Lepidoptera: Sesiidae). *Entomography*, 6, 159–212.

Eichlin, T.D. & Duckworth, W.D. (1988) *The Moths of America North of Mexico. Fascicle 5.1. Sesioidea, Sesiidae*, TD Eichhlin and WD Duckworth, Washington, 176 pp.

Gorbunov, O. & Arita, Y. (1995) A revision of Frederic Moore's clearwing moth types (Lepidoptera, Sesiidae) at Humboldt University, Berlin. *Tinea*, 14 (3), 204–224.

Gorbunov, O. & Arita, Y. (2001) A revision of Felix Bryk's clearwing moth types (Lepidoptera, Sesiidae) at the Naturhistoriska Riksmuseet in Stockholm, Sweden. *Melittia*, 1, 9–51.

Hampson, G.F. (1919) A classification of the Aegeriadae of the Oriental and Ethiopian Regions. *Novitates Zoologicae*, 26 (1), 46–119.

Hu, S.H. (1986) A preliminary study on *Paranthrene regalis* Butler. *Natural Sciences Journal of Hunan Normal University*, 9 (4), 62–67

Jian, F.M. (1982) A preliminary report on *Parathrene* [sic] *regalis* Butler. *Insect Knowledge (Kunchong Zhishi)*, 19 (5), 37–38.

Jin, Q., Wang, S.X. & Li, H.H. (2008) Catalogue of the family Sesiidae in China (Lepidoptera: Sesiidae). *SHILAP Revta. lepid.*, 36 (144), 507–526

Kallies, A. (2001) New records and a revised checklist of the Australian clearwing moths (Lepidoptera: Sesiidae). *Australian Journal of Entomology*, 40, 342–348.
http://dx.doi.org/10.1046/j.1440-6055.2001.00251.x

Kallies, A. (2007) A revision of the clearwing moth species described by Zukowsky from China with additional notes on Sesiidae species from the Mell collection (Sesiidae). *Nota lepidopterologica*, 30 (2), 387–396.

Kallies, A. & Arita, Y. (1998a) Revision of *Paranthrene chrysoidea* Zukowsky, 1932 (Lepidoptera, Sesiidae) from Taiwan. *Species Diversity*, 3 (2), 211–217.

Kallies, A. & Arita, Y. (1998b) New and little known clearwing moths (Lepidoptera, Sesiidae) from the Philippine Islands. *Transactions of the Lepidopterological Society of Japan*, 49 (4), 245–270.

Liu, Y.Q., Xu, Z.G & Li, B.J. (1992) Sesiidae. *In*: Peng, J.W. & Liu, Y.Q. (Eds.), *Iconography of Forest Insects in Hunan China*, Hunan Science & Technology Publishing House, Hunan, pp 728–731.

Meyrick, E. (1930) Aegeriadae. *Exotic Microlepidoptera*, 3, 584–585.

Miao, J.C., Liu, X.L., Xu, B.R., Can, W.C. & Li, W.M. (1987) Study on the attraction effect and technical application of sex pheromone of poplar clearwing moth *Paranthrene tabaniformis*. *Journal of North-East Forestry University, China*, 15 (1), 30–39.

Miao, J.C., Li, G.Y., Xia, W.F. & Li, X.L. (1989) A study on the control of *Paranthrene tabaniformis* by stem smearing with sticky pheromone paste. *Forest Science and Technology*, 8, 28–30.

Naumann, C.M. (1971) *Untersuchungen zur Systematik und Phylogenese der holarktischen Sesiiden (Insecta, Lepidoptera)*. *Bonner Zoologische Monographien 1*. Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, 190 pp.

Pühringer, F. & Kallies, A. (2013) Checklist of the Sesiidae of the world. http://www.sesiidae.net/Checklst.htm. (accessed 26 Nov 2013)
Schneider, F. (1940) Schadinsekten und ihre Bekämpfung in ostindischen Gambirkulturen. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft (Bulletin de la Société Entomologique Suisse)*, 18 (3), 116–117.
Špatenka, K., Gorbunov, O., Laštůvka, Z., Toševski, I. & Arita, Y. (1999) Sesiidae, Clearwing Moths. *In*: Naumann, C.M. (Ed.), *Handbook of Palaearctic Macrolepidoptera*, 1. Gem Publishing Company, Wallingford, England, 569 pp.
Wang, Y. & Yang, J. (2002) Sesiidae. *Fauna of Insects in Fujian Province of China*, 5, 14–27.
Xu, Z.G., Jin, T. & Liu, X.L. (1995) Introduction of new species and new recorded clearwing moths from China. *Insect Knowledge (Kunchong Znishi)*, 32 (3), 300–304.
Xu, Z.G., Jin, T. & Liu, X.L. (1999) A new and six new recorded clearwing moths from Ningxia (Lepidoptera: Sesiidae). *Acta Agric. Boreali Sin.*, 8 (1), 7–10.
Yang, J.K. & Wang, Y. (1989) A new genus and six species of clearwings damaging forest and fruit trees. *Forest. Res.*, 2 (3), 229–238.
Zhang, L.H. (1991) Studies on *Paranthrene actinidiae* Yang et Wang in *Actinidia* trees. *Acta Agriculturae Universitatis Jiangxiensis*, 13 (3), 268–274.
Zhou, Z.L. (1995) Preliminary study on the mass sex pheromone trapping against the grape clearwing moth. *Acta Phytophylacica Sinica*, 22 (1), 17–21.
Zukowsky, B. (1929) Beiträge zur Fauna sinica (VIII). Die südchinesischen Aegeriiden der Sammlung Mell. *Internationale Entomologische Zeitschrift*, 23 (3), 33–37.