



Taxonomic corrections to species of Rhyparochromidae (Hemiptera: Heteroptera) described by Carl Peter Thunberg

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Abstract

Types of Rhyparochromidae (Hemiptera: Heteroptera: Lygaeoidea) species described by Carl Peter Thunberg, deposited in the Museum of Evolution (formerly Zoologiska Institutet), Uppsala University, Uppsala, Sweden, were reexamined and the taxonomic and nomenclatural problems that existed among those species discussed and resolved as required. Lectotypes are designated for *Cimex caffer* Thunberg, 1784, *Lygaeus ater* Thunberg, 1822, *Lygaeus biguttatus* Thunberg, 1822, and *Pendulinus guttatus* Thunberg, 1825. The lectotype of *Pendulinus* (now *Metochus*) *guttatus* is designated as neotype of *Pendulinus* (now *Metochus*) *uniguttatus* Thunberg, 1822; as a result the former name becomes junior objective synonym of the latter. The following taxonomic changes are proposed: *Lethaeus ater* (Thunberg, 1822), new combination (from *Lygaeus*); *Migdilybs biguttatus* (Thunberg, 1822), new combination (from *Lygaeus*) = *Migdilybs furcifer* Hesse, 1925, new subjective synonym; *Metochus uniguttatus* (Thunberg, 1822) = *Metochus bengalensis* (Dallas, 1852), confirmed subjective synonym = *Metochus yeh* (Dohrn, 1860), confirmed subjective synonym; *Raglius alboacuminatus* (Goeze, 1778) = *Cimex caffer* Thunberg, 1874, confirmed subjective synonym. *Lethaeus barberi* Slater, 1964 does not belong to *Lethaeus* Dallas, 1852 but currently it cannot be placed with confidence in any existing genus.

Key words: Lygaeoidea, nomenclature, lectotypes, neotype, new synonymy, new combinations, Oriental Region, Afrotropical Region

Introduction

Swedish naturalist Carl Peter Thunberg (1743–1828) was primarily a botanist but his zoological contributions are significant as well. He described several species of true bugs (Hemiptera: Heteroptera), among them a few Lygaeoidea. Slater (1964) catalogued 9 species of Lygaeidae sensu lato described by Thunberg (1784, 1822a, 1822b, 1825). Type materials of all of them except *Pendulinus uniguttatus* Thunberg, 1822 are deposited in the Museum of Evolution of Uppsala University and were studied during a recent visit of the first author. Reexamination of the specimens revealed unresolved taxonomic problems. Discussion of these problems and proposals of solutions are the subjects of the present paper.

Material and methods

Specimen images were prepared by using a Leica MZ9.5 stereo microscope fitted with a Nikon digital camera head. Focus stacked images were processed by the CombineZP software.

As it was a common practice of the time, specimens of the Thunberg collection are not provided with original labels on their pins but their identity is usually easily confirmed by name labels pinned next to them. The original

reviewed by Slater (1964); Easton (1992) and Easton & Pun (1997) added Macau and Hong Kong of southern China, while Zheng & Lin (2013) added Taiwan. Further, *Metochus uniguttatus* has also been recorded from several islands of the Ryukyu Archipelago of Japan (Hidaka 1964, Takara & Azuma 1972, Miyamoto & Yasunaga 1989, Hayashi 2002, Ishikawa & Tomokuni 2012). It is very likely that these records pertain to several species of similar habitus, therefore all previous records are in need of verification.

Metochus bengalensis was described from North Bengal, India. Although it was synonymized with *M. uniguttatus* by Stål (1874) nearly all subsequent authors recognized it as a distinct species (cf. Slater 1964, Péricart 2001). It (*M. bengalensis*) was subsequently recorded from Sri Lanka, Cambodia, and southern China (Kirby 1891, Zheng & Zou 1981, Péricart 2001). Reexamination of its lectotype (Fig. 8) leaves no doubt that it is conspecific with the neotype of *M. uniguttatus* designated above, therefore the synonymy proposed by Stål (1874) is hereby confirmed.

Metochus yeh was described from Hong Kong. Distant (1903) synonymized it with *M. uniguttatus*. As the identity of the latter species was unknown Breddin (1906) tentatively recognized *M. yeh* as a distinct species and provided a redescription based on a male syntype. The type material was apparently subsequently lost (Péricart 2001); it is currently not found in the Zoological Institute of the Polish Academy of Sciences in Warsaw which currently houses most of the types of Heteroptera described by A. Dohrn (T. Huflejt, *pers. comm.*). Most specimens of G. Breddin's collection are deposited in the Senckenberg Deutsches Entomologisches Institut in Müncheberg, but none of us could find any syntype of this species there, nor in any of the collections visited so far. The detailed redescription of Breddin (1906) indicates that *D. yeh* is also conspecific with *M. uniguttatus*, therefore the synonymy proposed by Distant (1903) is confirmed.

Metochus uniguttatus can be recognized by the combination of the following diagnostic characters (Figs. 8–10): antennal segment I uniformly black, segment IV with a pale subbasal annulus which is about 1.5 times as broad as dark base of the same segment; pronotum black with a small median light spot on anterior portion of posterior lobe; anterior outline of pale subapical patch of corium not deeply emarginate; apical portion of membrane marmorate (smoky brown with several small, irregularly distributed pale patches); ventral laterotergite of abdominal segment V with a large, yellow patch occupying most of its surface except anterior and posterior margins, that of abdominal segment VI with a much smaller, rounded patch; mid and hind tibiae uniformly dark; femora with long, dense pubescence.

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References

- Bergroth, E. (1915) Hemiptera from the Bombay presidency. *Journal of the Bombay Natural History Society*, 24 (1), 170–179.
- Breddin, G. (1906) Über Dieuches uniguttatus auct. (Rhynchota). *Stettiner Entomologische Zeitung*, 67, 321–331.
- Dallas, W.S. (1852) *List of the specimens of hemipterous insects in the collection of the British Museum. Part II*. Trustees of the British Museum, London, pp. 369–592, plates xii–xv.
- Deckert, J. (1990) Lygaeoidea (Hemiptera: Heteroptera). *Cimbebasia Memoir*, 9, 147–158.
- Distant, W.L. (1903) *The fauna of British India, including Ceylon and Burma. Rhynchota 2 (Heteroptera) [Part]*. Taylor and Francis, London, pp. 1–242.
- Dohrn, A. (1860) Hemipterologische Miscellaneen. II. *Entomologische Zeitung (Stettin)*, 21, 158–162.
- Easton, E.R. (1992) 1990 additions to the annotated list of the insects of Macau. *Entomological News*, 103 (1), 30–36.
- Easton, E.R. & Pun, W.W. (1997) Observations on some Hemiptera/Heteroptera of Macau, Southeast Asia. *Proceedings of the Entomological Society of Washington*, 99 (3), 574–582.
- Geoffroy, E.L. (1762) *Histoire abrégée des insectes qui se trouvent aux environs de Paris; dans laquelle ces animaux sont*

- rangés suivant un ordre méthodique. Tome premier.* Durand, Paris, xxviii + 523 pp, x plates.
- Goeze, J.A.E. (1778) *Entomologische Beyträge zu des Ritter Linné zwölften Ausgabe des Natursystems. Zweyter Theil.* Weidmanns Erben & Reich, Leipzig, lxxii + 352 pp.
- Hayashi, M. (2002) Heteroptera. In: Azuma, S., Yafuso, M., Kinjo, M., Hayashi, M., Kohama, T., Sasaki, T., Kimura, M. & Wakamura, F. (Eds.), *Check list of the insects of the Ryukyu Islands. 2nd Edition.* The Biological Society of Okinawa, Nishihara, pp. 125–149. [in Japanese]
- Hesse, H. (1925) A list of the heteropterous and homopterous Hemiptera of Southwest Africa. *Annals of the South African Museum*, 23, 1–178.
- Hidaka, T. (1964) Lygaeidae from the Ryukyus. *Kontyû*, 32 (2), 287–298.
- ICZN (1999) *International Code of Zoological Nomenclature. Fourth edition.* International Trust for Zoological Nomenclature, London, 306 pp.
- Ishikawa, T. & Tomokuni, M. (2012) Family Rhyparochromidae Amyot et Serville, 1843. In: Ishikawa, T., Takai, M. & Yasunaga, T. (Eds.), *A field guide to Japanese bugs – Terrestrial heteropterans. Vol. 3.* Zenkoku Noson Kyoiku Kyokai Publishing Co., Tokyo, pp. 321–362, plates 69–79. [in Japanese]
- Kirby, W.F. (1891) Catalogue of the described Hemiptera Heteroptera and Homoptera of Ceylon, based on the collection formed (chiefly at Pundaloya) by Mr. E. Ernest Green. *Journal of the Linnean Society of Zoology*, 24, 72–176, plates 4–6. <http://dx.doi.org/10.1111/j.1096-3642.1891.tb02479.x>
- Miyamoto, S. & Yasunaga, T. (1989) Heteroptera. In: Hirashima, Y. (Ed.), *A check list of Japanese insects. Vol. I.* Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, pp. 151–188. [in Japanese]
- Panzer, G.W.F. (1797) *Faunae Insectorum Germanicae initia oder Deutschlands Insecten*, 42, 1–24. [Nürnberg] <http://dx.doi.org/10.5962/bhl.title.12432>
- Péricart, J. (1999) Hémiptères Lygaeidae euro-méditerranéens, 3. In: *Faune de France, France et régions limitrophes*, 84C, i–vi, 1–487. Fédération Française des Sociétés de Sciences Naturelles, Paris.
- Péricart, J. (2001) Family Lygaeidae Schilling, 1829 - Seed-bugs. In: Aukema, B. & Rieger, Chr. (Eds.), *Catalogue of the Heteroptera of the Palaearctic Region. Vol. 4. Pentatomomorpha I.* The Netherlands Entomological Society, Amsterdam, pp. 35–220.
- Reuter, O.M. (1885) Ad cognitionem Lygaeidarum Palaearcticarum. *Revue d'Entomologie*, 4, 199–233.
- Scudder, G.G.E. (1963) The world Rhyparochrominae (Hemiptera: Lygaeidae) III. New Rhyparochrominae from the Ethiopian Region. *Canadian Entomologist*, 95 (12), 1233–1253.
- Scudder, G.G.E. (1967) Rhyparochrominae types in the British Museum (Natural History) (Hemiptera: Lygaeidae). *Bulletin of the British Museum (Natural History), Entomology*, 20 (6), 253–285.
- Slater, J.A. (1964) *A catalogue of the Lygaeidae of the world. Vols. I–II.* University of Connecticut, Storrs, xviii + 1668 pp. [I: i–xviii, 1–778, II: 779–1668]
- Slater, J.A. (1972) An analysis of the genus *Migdilybs* with descriptions of three new species and comments on the distribution of the Ozophorini (Hemiptera: Lygaeidae). *Journal of the Entomological Society of Southern Africa*, 35 (1), 159–169.
- Stål, C. (1855) Om Thunbergska Hemipterarter. *Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar*, 12 (7), 345–347.
- Stål, C. (1867) *Analecta hemipterologica (Continuatio).* *Berliner Entomologische Zeitschrift*, 10, 381–394.
- Stål, C. (1874) Enumeratio Hemipterorum. Bidrag till en förteckning öfver alla hittills kända Hemiptera, jemte systematiska meddelanden. 4. *Kongliga Svenska Vetenskaps-Akademiens Handlingar (N.F.)*, 12 (1), 1–186. <http://dx.doi.org/10.5962/bhl.title.12549>
- Stichel, W. (1935) *Illustrierte Bestimmungstabellen der deutschen Wanzen*, 12, 331–362. Stichel, Berlin-Hermsdorf.
- Takara, T. & Azuma, S. (1972) Fauna of the Iriomote Island, Ryukyus. II. List of the insects (2). Order Hemiptera (Heteroptera). *Science Bulletin of the Faculty of Agriculture, University of the Ryukyus*, 19, 99–121. [in Japanese]
- Thunberg, C.P. (1784) *Dissertatio entomologica novae insectorum species*, 3, 53–68, 1 plate. Edman, Upsaliae.
- Thunberg, C.P. (1822a) *Dissertatio entomologica de hemipteris rostratis capensibus*, 3, 1–6. Upsaliae.
- Thunberg, C.P. (1822b) *Dissertatio entomologica de hemipteris rostratis capensibus*, 4, 1–6. Upsaliae.
- Thunberg, C.P. (1825) *Insectorum hemelytrorum tria genera illustrata.* Upsaliae, 10 pp.
- Ueshima, N. & Ashlock, P.D. (1980) Cytotaxonomy of the Lygaeidae (Hemiptera-Heteroptera). *University of Kansas Science Bulletin*, 51 (26), 717–801.
- Walker, F. (1872) *Catalogue of the specimens of Hemiptera Heteroptera in the collection of the British Museum. Part V.* Trustees of the British Museum, London, 202 pp.
- Wallin, L. & Wallin, H. (2001) *Catalogue of type specimens. I. C.P. Thunberg (1743-1828), Insecta.* (Revised version 6, issued 26.ii.2001.). Uppsala University, Uppsala, 65 pp. [unpublished manuscript]
- Zheng, L.Y. & Zou, H.G. (1981) Lygaeidae. In: Hsiao, T.Y., Ren, S.Z., Zheng, L.Y., Jing, H.L., Zou, H.G. & Liu, S.L. (Eds.), *A handbook for the determination of the Chinese Hemiptera-Heteroptera II.* Science Press, Beijing, pp. 1–215, plates 1–26. [in Chinese, English summary]
- Zheng, S.Z. & Lin, Y.X. (2013) *Stinkbug.* In: Xu, H.Y. (Ed.), *Taiwan Nature Identification Series*, 29, pp. 1–381. Morning Star Publishing, Taipei. [in Chinese]