



<http://dx.doi.org/10.11646/zootaxa.3745.3.6>

<http://zoobank.org/urn:lsid:zoobank.org:pub:96F666A2-1FF7-4673-8BFC-5ED4D589AC02>

Notes on *Citrogramma* Vockeroth and *Eosphaerophoria* Frey (Diptera: Syrphidae)

XIMO MENGUAL

Zoologisches Forschungsmuseum Alexander Koenig, Leibniz Institut für Biodiversität der Tiere, Adenauerallee 160 D-53113 Bonn, Germany. E-mail: x.mengual@zfmk.de

Abstract

New taxonomic and distributional data on the genera *Citrogramma* Vockeroth, 1969 and *Eosphaerophoria* Frey, 1946 are presented, including descriptions of the females of *Citrogramma asombrosum* Mengual, 2012, *Citrogramma pennardsi* Mengual, 2012 and *Eosphaerophoria dentiscutellata* (Keiser, 1958). Modifications to published identification keys to accommodate the new information are provided for both genera.

Key words: Females, distribution, description, identification key, flower flies

Introduction

Eosphaerophoria Frey, 1946 and *Citrogramma* Vockeroth, 1969 are two flower fly genera (Diptera: Syrphidae) relatively uncommon in entomological collections and poorly recorded. These genera are distributed in the Oriental, Australian and Oceanian Zoogeographic Regions (*sensu* Holt *et al.* 2013). Very little is known about their biology, and only the puparium of *Citrogramma notiale* Vockeroth, 1969 has been described (Mengual 2012).

Mengual & Ghorpadé (2010) review the genus *Eosphaerophoria* and describe eight new species. In their work, they point out the very low number of known specimens of this genus and the need of further field work to understand its diversity better. More recently, Mengual (2012) introduces 17 new species of *Citrogramma* when revising the genus.

In the present paper, new taxonomic and distributional data is presented, resulting from visits to European and North American collections. In addition, females of *Citrogramma asombrosum* Mengual, 2012, *Citrogramma pennardsi* Mengual, 2012 and *Eosphaerophoria dentiscutellata* (Keiser, 1958) are described.

Material and methods

The main results of the study are grouped by taxon in alphabetic order. In the material examined, the collections where the specimens are deposited are indicated between square brackets after each specimen. Type localities and holotype-holding institutions are specified for each species. Terminology follows Thompson (1999) and Mengual (2012). Identification and location labels are indicated with quotation marks (‘ ’), and each line on the label is separated by a forward slash (/). Handwritten information on labels is indicated in italics.

Illustrations of male and female abdomens were composed using Auto-Montage Pro 5.03 software based on images of pinned specimens taken with a QImaging MicroPublisher 5.0 RTV camera mounted on a Leica Z6 APO. All measurements are in millimetres and were taken using a graticule in a Leica M165C microscope. Body length was measured from the anterior oral margin to the posterior margin of the abdomen in lateral view. Wing length was measured from the wing tip to the basicosta.

The Evenhuis (2009) standard acronyms were used for the following entomological collections: CSCA: California State Collection of Arthropods, Sacramento, USA; INHS: Illinois Natural History Survey, Champaign,

References

- Claussen, C.J. & Weipert, J. (2003) Zur Schwebfliegenfauna Nepals (Insecta: Diptera: Syrphidae) unter besonderer Berücksichtigung Westnepals. *In*: Hartmann, M. & Baumach, H. (Eds.), *Biodiversität und Naturlausstattung im Himalaya*. Verein der Freunde und Förderer des Naturkundemuseums Erfurt e.V., Erfurt, pp. 343–380, pls IX–XVI.
- Curran, C.H. (1928) The Syrphidae of the Malay Peninsula. *Journal of the Federated Malay States Museums*, 14, 141–324.
- Curran, C.H. (1931a) Additional records and descriptions of Syrphidae from the Malay Peninsula. *Journal of the Federated Malay States Museums*, 16, 290–338.
- Curran, C.H. (1931b) Records and descriptions of Syrphidae from North Borneo including Mt Kinabalu. *Journal of the Federated Malay States Museums*, 16, 333–376.
- Evenhuis, N.L. (2009) The insect and spider collections of the world website [online]. Available from: <http://hbs.bishopmuseum.org/codens/> (accessed 28 February 2013)
- Frey, R. (1946) Übersicht der Gattungen der Syrphiden-Unterfamilie Syrphinae (Syrphinae + Bacchinae). *Notulae Entomologicae*, 25 [1945], 152–172.
- Ghorpadé, K. (1994) Diagnostic keys to new and known genera and species of Indian subcontinent Syrphini (Diptera: Syrphidae). *Colemania, Insect Biosystematics*, 3, 1–15.
- Hervé-Bazin, J. (1923) Diagnoses de Syrphides [Dipt.] nouveaux du Laos (Indo-Chine française). *Bulletin de la Société entomologique de France*, 1923, 25–28.
- Hervé-Bazin, J. (1926) Syrphides de l'Indo-Chine Française. *Encyclopédie Entomologique, Série B II*, 3, 61–110.
- Holt, B.G., Lessard, J.P., Borregaard, M.K., Fritz, S.A., Araújo, M.B., Dimitrov, D., Fabre, P.H., Graham, C.H., Graves, G.R., Jönsson, K.A., Nogués-Bravo, D., Wang, Z., Whittaker, R.J., Fjeldså, J. & Rahbek, C. (2013) An Update of Wallace's Zoogeographic Regions of the World. *Science*, 339, 74–78.
<http://dx.doi.org/10.1126/science.1228282>
- Hull, F.M. (1949) The morphology and inter-relationship of the genera of syrphid flies, recent and fossil. *Transactions of the Zoological Society of London*, 26, 257–408.
<http://dx.doi.org/10.1111/j.1096-3642.1949.tb00224.x>
- Huo, K.K. & Pan, Z.H. (2012) Note on the genus *Citrogramma* Vockeroth from China (Diptera, Syrphidae). *Acta Zootaxonomica Sinica*, 37, 623–631.
- Keiser, F. (1958) Beitrag zur Kenntnis der Syrphidenfauna von Ceylon (Dipt.). *Revue Suisse de Zoologie*, 65, 185–239.
- Knutson, L.V., Thompson, F.C. & Vockeroth, J.R. (1975) Family Syrphidae. *In*: Delfinado, M.D. & Hardy, D.E. (Eds.), *A catalog of the Diptera of the Oriental Region. Volume II, Suborder Brachycera through Division Aschiza, Suborder Cyclorrhapha*. The University Press of Hawaii, Honolulu, pp. 307–374.
- ICZN [International Commission on Zoological Nomenclature] (1999) *International Code of Zoological Nomenclature. Fourth edition adopted by the International Union of Biological Sciences*. International Trust for Zoological Nomenclature, London, 306 pp.
- Mengual, X. & Ghorpadé, K. (2010) The flower fly genus *Eosphaerophoria* Frey (Diptera, Syrphidae). *ZooKeys*, 33, 39–80.
<http://dx.doi.org/10.3897/zookeys.33.298>
- Mengual, X. (2012) The flower fly genus *Citrogramma* Vockeroth (Diptera: Syrphidae): illustrated revision with descriptions of new species. *Zoological Journal of the Linnean Society*, 164, 99–172.
<http://dx.doi.org/10.1111/j.1096-3642.2011.00750.x>
- Shiraki, T. (1930) Die Syrphiden des Japanischen Kaiserreiches mit Berücksichtigung benachbarter Gebiete. *Memoirs of the Faculty of Science and Agriculture, Taihoku Imperial University*, 1, xx + 1–446.
- Thompson, F.C. (1999) A key to the genera of the flower flies of the Neotropical Region including the descriptions of genera and species and a glossary of taxonomic terms. *Contributions on Entomology, International*, 3, 319–378.
- Tordoff, A.W., Vu, V.D., Le, V.C., Tran, Q.N. & Dang, T.L. (2000) *A rapid field survey of five sites in Bac Kan, Cao Bang and Quang Ninh provinces, Vietnam: A review of the Northern Indochina subtropical forests ecoregion*. BirdLife International Vietnam Programme (Conservation report No. 14), Hanoi, i–xvi + 1–106.
- Vockeroth, J.R. (1969) A revision of the genera of the Syrphini (Diptera: Syrphidae). *Memoirs of the Entomological Society of Canada*, 62, 1–176.
<http://dx.doi.org/10.4039/entm10162fv>
- Wyatt, N.P. (1991) Notes on *Citrogramma* Vockeroth (Diptera: Syrphidae) with descriptions of five new species. *Oriental Insects*, 25, 155–169.
<http://dx.doi.org/10.1080/00305316.1991.10432224>