A SPECTACULAR NEW CHINESE SPECIES OF THE GENUS *MALLOTA* MEIGEN (DIPTERA: SYRPHIDAE)[1]

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ABSTRACT: A new species of the flower fly [Diptera: Syrphidae] genus *Mallota* is described from Oriental China [Zhejiang] and two new synonyms are noted.

KEYWORDS: Diptera: Syrphidae, *Mallota*, new species, species key, catalog

INTRODUCTION

Flower flies of the genus *Mallota* are common components of the temperate forests, ranging across the Holarctic with extensions along the Andes in South America and on the fringes of the Oriental Region and in the Afrotropics. The larvae are rat tailed maggots that inhabit water filled tree holes. The adults are common on flowers at forest edges and openings, where males congregate and females seek nectar. Males also defend larval breeding sites. The biology of the Nearctic species, *Mallota posticata* (Fabricius, 1805), was extensively documented by Maier (1978; see also 1982). Other references to the biology of *Mallota* are: Indian species (Bhatia, 1931); Japanese species (Kasurea, 2000 and Katsura and Michimori, 2005); Russian species (Krivosheina, 2002; Kuznetzov and Kuznetzova, 1995; Sivova et al., 1999). Hence, *Mallota* are indicators of a diverse and healthy forest ecosystem. At the present time some 16 species of *Mallota* are known from China.

MATERIALS AND METHODS

Terminology follows Thompson (1999). The classification followed here is that of the *Systema Dipterorum* (Pape and Thompson, 2013).

Taxonomy

Mallota merodontoides Thompson, **new species**
Figs. 1, 2, 3

Male. Head: Black, face and frontal triangle white pollinose, yellow pilose, bare medially ventrad to antenna; gena shiny anteriorly, white pollinose and yellow pilose posteriorly; clypeus pilose; ocellar triangle black pollinose and pilose; occiput silvery white pollinose on ventral 2/3, black pollinose on dorsal 1/3, yellow pilose; antenna brownish black, black pilose; eye white pilose on ventral 2/3, brown pilose dorsally; holoptic; eye contiguity as long as ocellar triangle.

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Thorax: Black; pleuron and mesonotum on anterior 1/2 gray pollinose except for black pollinose medial and submedial vittae; rest of mesonotum black pollinose; pleuron yellow pilose; mesonotum yellow anteriorly and narrowly anterior to scutellum, black pilose on posterior 1/2; postalar callus black pilose except yellow pilose posterolaterally; scutellum black basally, yellow apically, sparsely gray pollinose, yellow pilose; haltere orange, calypter brown except white ventral fringe. Legs: Proleg brown, yellow pilose except black pilose anteriorly on coxa, trochanter, anterior edge and apicoposterior 1/3 of femur and ventrally on tibia; mesoleg brown except reddish yellow basitarsomere, yellow pilose except black pilose on coxa, trochanter, anterior 1/2 of femur and ventral 1/2 of tibia; metaleg brownish black except reddish yellow basal 3 tarsomeres; metatrochanter produced into large posterior spur (Fig. 2); metafemur greatly swollen, concave on basoventral 2/3, with a large ventral tubercle on apical 1/3; metatibia with a large posteromedial spur; metacoxa and metatrochanter yellow pilose; metafemur black pilose except yellow pilose on basoposterior 2/3; metatibia black pilose; metatarsis pale pilose. Wing: hyaline, entirely microtrichose; epaulet and basicosta black pilose.

Abdomen: Black except reddish orange apical 2/3 of 4th tergum; 1st tergum gray pollinose, yellowish white pilose; 2nd tergum black pollinose medially, shiny laterally and apically, yellowish white pilose on anterior 1/2, black pilose posteriorly; 3rd tergum black pollinose basomedially, shiny elsewhere, yellow pilose on anterior 1/3, black pilose elsewhere; 4th tergum shiny, yellow pilose; 1st sternum gray pollinose, yellow pilose; 2nd and 3rd sterna black pollinose, yellow pilose; 4th sternum black pollinose and pilose. Genitalia orange, short and sparsely pale pilose.

Female. Similiar to male, except normal sexual dimorphism and: eye bare; frons shiny medially, yellow pollinose on lateral 1/3, yellow pilose; metafemur moderately swollen; metatibia normal, without medial process; wing more extensively bare basomedially; cell C bare on basal 1/2, bare either side of vein Rs; cell R bare on basal 1/2; cell BM bare on basal 2/3; cell CuP bare on anterobasal 1/3; alula bare medially; 5th tergum orange, pollinose, yellow pilose, normal.

Holotype male, labeled "CHINA, Tien Mu Shan, 10 June 1937, E. Svenson," deposited in U.S. National Museum, Washington, D.C. Paratypes: China. Fukien, Kuatun, 2300 m, 27°40'N 117°40'E, 6 December 1938, J Klapperich (1 ZFMK), "Che Kiang," 18 June 1919 (♂♀ 1 USNM & China). The paratype will be returned to China for its national collection, when this has been determined.

Type locality: CHINA [Oriental]. Zhejiang: Tianmu Shan [Mount Tainmu, 30°20'N 119°25'E].

Differential Diagnosis. This species is unique among flower flies in the structure of its metaleg, especially the metatibia which is medially produced into a large posteriorly directed spur.

Remarks. References on the taxonomy of Chinese *Mallota* species are: Fang

and Wu (2001; 1 species) and Huang and Cheng (2012; 15 species) and Huo et al. (2007; 3 species). Surprisingly no *Mallota* species are mentioned in the Flies of China (Yang and Cheng 1998). The Japanese species were recently revised by Hirooka et al. (2015; 13 species) and those of the Russian Far East were revised by Mutin and Barkalov (1999; 11 species). The Korean species (7) were treated by Han and Choi (2001).

In reference to the Chinese *Mallota* fauna, the two new species described by Li and Liu (1996) are both junior synonyms [*Mallota bombiformis* is the same species as *bicolor* Sack 1910 and *nanjingensis* is a junior synonym of *rubripes* Matsumura 1916].

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Fig. 1. *Mallota merodontoides* Thompson, holotype, lateral view.

LITERATURE CITED

Bhatia, H. L. 1931. Studies in the life histories of three Indian Syrphidae. Indian Journal of Agricultural Science 1:503 513, pls. 56, 58.

Fang, Z. and H. Wu. 2001. A checklist of insects from Zhejiang. The Series of the Insect Resources to Zhejiang Province, China. Forestry Publishing House. 452 pp.

Han, H.-Y. and D.-S Choi. 2001. Diptera (Syrphidae). Economic Insects of Korea 15 [Insecta Koreana, Supplement 22]. 224 pp.

Hirooka, T., M. Maruyama, and F. C. Thompson. 2015. Revision of the flower fly genus *Mallota* Meigen, 1822 (Diptera: Syrphidae) from Japan. Japanese Journal of Systematic Entomology 21: 241-258.

Huang, C. and X. Cheng. 2012. Diptera, Syrphidae. Fauna Sinica, Insecta 50:xxiv + 852 pp., 8 color pl.

Huo, K., G. Ren, and Z. Zheng. 2007. Fauna of Syrphidae from Mt. Qinling Bash in China (Insecta: Diptera). Beijing Hnuzheng Printer LTD, Beijing. 512 pp. [In Chinese, with English summary]

Kasurea, K. 2000. Notes regarding the breeding of *Mallota dimorpha* (Shiraki) (Diptera: Syrphidae). Hana abu 9:78-80. [In Japanese]

Katsura, K. and M. Michimorei. 2005. Notes on the breeding of *Mallota munda* (Violovitsh, 1955) (Diptera: Syrphidae). Hana abu 20:111-113. [In Japanese]

Krivosheina, M. G. 2002. The biology of syrphid flies of the genus *Mallota* (Diptera, Syrphidae) with description of larvae of six species. Zoologischeskii Zhurnal 81:811-824. [In Russian]

Fig. 2. *Mallota merodontoides* Thompson, metaleg, lateral view.

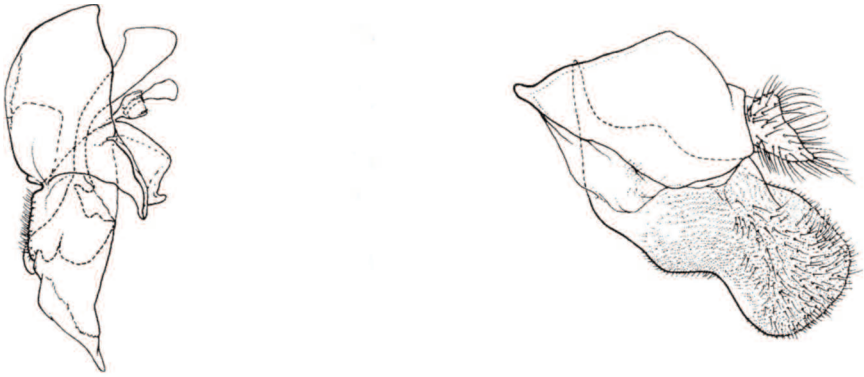

Fig. 3. *Mallota merodontoides* Thompson, male genitalia, lateral view.

Kuznetzov, S. Y. and N. V. Kuznetzova. 1995. Descriptions of the unknown larvae and puparia of some aquatic Syrphidae (Diptera) species from the genera *Conosyrphus, Mallota* and *Myathropa.* Dipterological Research 6:135-141.

Li, Q. and Y. Liu. 1996. Two new species of the genus *Mallota* Meigen from China. Entomologica Sinica 3:224-228.

Maier, C. T. 1978. The immature stages and biology of *Mallota posticata* (Fabricius) (Diptera: Syrphidae). Proceedings of the Entomological Society of Washington 80:424-440.

Maier, C. T. 1982. Larval habitats and mate seeking sites of flower flies (Diptera: Syrphidae, Eristalinae). Proceedings of the Entomological Society of Washington 84:603-609.

Mutin, V. A. and A. V. Barkalov. 1999. 62. Fam. Syrphidae [in Cyrillic]. In: Key to the Insects of Russian Far East. Vol. 6. Diptera and Siphonapera. Part 1. P. A. Lehr, Ed. Dal'nauka, Valdivostok. pp. 342-500.

Pape, T. and F. C. Thompson. 2013. Systema Dipterorum. Version 1.5. 13 June 2013, http://diptera.org. Last accessed 1 December 2016.

Sivova, A. V., V. A. Mutin, and D. I. Gritskevich. 1999. Syrphid larvae (Diptera: Syrphidae) living in *Ulmus pumila* L. in Komsomolsk on Amur. Far Eastern Entomologist, April:1-8.

Thompson, F. C. 1999. A key to the genera of the flower flies (Diptera: Syrphidae) of the Neotropical Region including descriptions of new genera and species and a glossary of taxonomic terms. Contributions on Entomology, International 3:321-378.

Yang, C. and X. Cheng. 1998. Syrphidae of China (Diptera). In: Flies of China. Vol. 1. W. Xue and C. Chao, Eds. Laoning Science and Technology Press, Shenyang. pp. 118-223. [In Chinese, with English summary]