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Source: Proceedings of the Entomological Society of Washington, 124(2) : 302-315

Published By: Entomological Society of Washington

URL: <https://doi.org/10.4289/0013-8797.124.2.302>

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**NEW FLOWER FLY RECORDS (DIPTERA: SYRPHIDAE: SYRPHINAE)
FROM CHINA, KOREA, AND MALAYSIA**

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Abstract.—New species records of flower flies (Diptera: Syrphidae: Syrphinae) are reported from China, South Korea, and Malaysia, as well as several new province records for Korea and China. *Baccha laphrieformis* Virolvitsh, *Episyrphus perscitus* He and Chu, *Eupeodes bucculatus* (Rondani), *Meligramma cingulata* (Egger), *Parasyrphus punctulatus* (Verrall), *Sphaerophoria indiana* Bigot, and *Sphaerophoria macrogaster* (Thomson) are recorded from South Korea. *Epistrophe aequalis* (Walker) is reported from Malaysia, and *Epistrophe sasayamana* (Matsumura), *Meliscaeva strigifrons* (de Meijere), and *Sphaerophoria reginae* Claußen and Mutin are reported from China. The first female specimens of *Epistrophe nigriritibia* Huo, Ren, and Zheng are documented from Zhejiang province, China.

Key Words: hoverflies, new record, *Melangyna*, *Paragus*, *Platycheirus*

DOI: 10.4289/0013-8797.124.2.302

Commonly known as hover or flower flies, the family Syrphidae (Insecta: Diptera) is a popular group among nature lovers and citizen scientists, comprising almost 6300 described species (Skevington et al. 2019). Reasons for its popularity may be the ubiquity of these flies, their very accurate mimicry of aculeate hymenopterans, and the abundance of available literature. Syrphid adults are often found on flowers where they feed on pollen and nectar, while larvae have a very diverse array of life histories including saprophagy, zoophagy, phytophagy, and mycophagy (Rotheray and Gilbert 1999, 2011).

Flower flies provide important ecosystems services as adults, are key

pollinators in agricultural and natural areas (Ssymank et al. 2008; Inouye et al. 2015; Rader et al. 2016, 2020), and migratory species redistribute tons of essential nutrients (Wotton et al. 2019). Moreover, zoophagous larvae act as control agents of several pests (Tenhumberg 1995, Arcaya et al. 2017, Bellefeuille et al. 2019), saprophagous larvae are significant decomposers of organic matter (Lardé 1989, 1990; Morales and Wolff 2010), and several species are important in forensic science and medicine (Magni et al. 2013, Heo et al. 2020, Pérez-Bañón et al. 2020).

The Eastern Palearctic fauna of Syrphidae is relatively well documented, with published works covering the Russian Far East (Virolvitsh 1983; Mutin and

Barkalov 1999, 2018; Mutin 2002, 2020; Mutin and Ichige 2014; Mutin et al. 2016; among others), Japan (Shiraki 1968a, 1968b; Anonymous 2002; Takeuchi 2009; Hirooka et al. 2015; and many more taxonomic notes in Hana Abu, the journal of The Dipterist's Club of Japan), South Korea (Han and Choi 2001; Jeong et al. 2017; Choi et al. 2018a, 2018b, 2018c, 2021; Jeong and Han 2019; among others), and China (Huang and Cheng 1996, 2012; Huo et al. 2007; Huo 2020; Li et al. 2020; Song et al. 2020). Nevertheless, new publications come out every year describing new taxa or taxonomic revisions of species occurring in this region. A completely different scenario exists in the neighboring countries of the Indo-Malayan realm, such as Vietnam, Laos, or Malaysia, where the flower fly fauna is clearly under-studied and there is an urgent need for a taxonomic revision of national faunas. In the case of Malaysia, monographs and taxonomic revisions of its syrphid fauna are more than 60 years old (Curran 1928, 1931a, 1931b, 1942), with single species being described more recently (Mengual and Ghorpadé 2010, Rotheray et al. 2012, van Steenis and Hippa 2012).

In the present work, new records of syrphine flower flies from China, South Korea, and Malaysia are provided, representing new distributional data for one or more of the countries and/or included provinces.

MATERIALS AND METHODS

Terminology and identification.—Morphological terminology follows Cumming and Wood (2017). Existing available identification keys and original publications were used to identify the examined specimens. They are mentioned under each taxon. Thompson and Rotheray (1998) was used to identify individuals at genus level.

Examined material.—At the end of each record, between square brackets ([]) and separated by commas, the number of specimens and sex, and the holding institution are given. Available specimens from South Korea and China for the present study were collected mostly by employees of the California Department of Food and Agriculture, USA, during field expeditions using Malaise traps and hand nets. These specimens are deposited at the California State Collection of Arthropods (CSCA). Additional specimens from China were loaned to the author from the National Museum (NMPC) in Prague, Czech Republic. Malaysian specimens were loaned from the Swedish Museum of Natural History (NRM) in Stockholm, Sweden. Specimens deposited at the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK) in Bonn, Germany, are also indicated.

Geographic coordinates.—All geographic coordinates for the sampling localities are those indicated in the original labels. The single exception is Tanah Rata (Malaysia), for which Google Earth Pro® ver. 7.3.4.8573 was used to obtain the geographic coordinates and altitude.

Photography.—Photographs of pinned specimens were taken with a Canon EOS 7D® DSLR mounted on a P-51 Cam-Lift (Dun Inc., VA, USA) and with the help of Adobe Lightroom® ver. 5.6; then, they were focus-stacked using the software Zerene Stacker® ver. 1.04 (Richland, Washington, USA).

RESULTS

Baccha laphrieformis Virolvitsh, 1976

Specimens examined.—South Korea: Gyeonggi, Odaesan near Dongdaesa, 37°44.31' N, 128°35.71' E, 800 m, four Malaise traps in old Korean fir forest, 25.VIII-1.X.2006. Leg.: Tripotin [1 ♀, CSCA].

Identification.—Mutin and Barkalov (1999).

Diagnosis.—Three *Baccha* species are known from the area covering the Russian Far East, Korea, and China, namely *B. elongata* (Fabricius, 1775), *B. maculata* Walker, 1852, and *B. laphrieformis*. The latter is the only one with the pterostigma entirely dark brown, almost black, being paler (pale brown to yellowish) in the other two taxa.

Distribution.—Reported from southern Russian Far East (Amur Oblast and Primorsky Krai), South Korea (this study), and Japan (Honshu).

Comments.—First documented specimen for South Korea. No previous published record exists for this species from Korea (Choi et al. 2018c). This species was listed for Korea by Mutin and Barkalov (1999) and by Barkalov and Mutin (2018) without providing any record. Not recorded from China (Huo 2020).

Epistrophe aequalis (Walker, 1852)
(Figs. 1, 2)

Specimens examined.—Malaysia: Pahang, Cameron Highlands, nr. Tanah Rata, 4°28.237' N, 101°22.596' E, 1460 m, 15–27. XI.1994. Leg.: Gustafsson, Heinakroon and Pape [8 ♂♂, NRM; 2 ♂♂, ZFMK].

Identification.—Brunetti (1923).

Diagnosis.—Species with bare eyes, thorax without pruinose vittae and a black facial vitta. The diagnostic characteristic to distinguish this taxon from other species of *Epistrophe* is the presence of conspicuous, dense black hairs on the hind femur and hind tibia.

Distribution.—Known from Himachal Pradesh and Uttarakhand (India) and Myanmar (Ghorpadé 2014), and Pahang State (Malaysia) (this study).

Comments.—Species described from East Indies by Walker (1852) and recorded from Burma and northern India (Himachal Pradesh and Uttarakhand).

These are the first records of *E. aequalis* for Malaysia.

Epistrophe nigritiba Huo, Ren,
and Zheng, 2007
(Figs. 3, 4)

Specimens examined.—China: Zhejiang, Tianmu Mountain (West), 30°19.45' N, 119°27.15' E, 500 m, 21.IV.2012. Leg.: S. D. Gaimari and M. Hauser [1 ♀, CSCA; 1 ♀, ZFMK].

Identification.—Huo et al. (2007) and Lan et al. (2018).

Diagnosis.—As stated in the original description, this taxon can be distinguished from other species of *Epistrophe* by the yellow face, abdominal tergites 3 and 4 with two yellow bands each, and hind tibia black. The female is similar to the male except for sexually dimorphic characters and as follows: lunule black, yellow medially; frons black, with hairs black, yellow pruinose laterally and golden pruinose on dorsal half; vertical triangle brown pruinose; hind femur yellow and yellow haired on basal half, black and black haired on apical half, with the joint femur-tibia yellow, hairs usually long, almost as long as femur width with some hairs longer; tibia black except basal 1/8 yellow, with black hairs, and long black hairs posteriorly; hind basitarsomere black, the apical four tarsomeres yellow.

Distribution.—China (Sichuan, Yunnan, and Zhejiang) (Huo 2020, this study).

Comments.—First species record for the province of Zhejiang, and first reported female specimens for this species. Huo (2020) reported this species from Sichuan and Yunnan (western China); present records are from eastern China.

Epistrophe sasayamana
(Matsumura, 1918)

Specimens examined.—China: Zhejiang, Tianmu Mountain (West), 30°22.217' N,

119°25.367' E, 850 m, 20.VI.2012. Leg.: S. D. Gaimari and M. Hauser [1 ♂, CSCA].

Identification.—Matsumura (1918), Shiraki and Edashige (1953), and Kim and Kim (1972).

Diagnosis.—Species with a broad black facial vitta; black lunule and black area above lunule; hind leg black, except coxa, trochanter and basal half of hind femur yellow; abdominal tergite 2 with two squarish, large, yellow maculae reaching anterior margin and occupying the basal 2/3 of the tergite; tergites 3 and 4 with a broad, yellow fascia slightly broader than half of the tergite's length.

Distribution.—Species known from Japan (Peck 1988) and China (this study).

Comments.—New species record for China and the first record in the continental part of Eastern Palearctic. Huo (2020) did not report this taxon from China.

Episyrphus perscitus

He and Chu, 1992

(Figs. 5, 6)

Specimens examined.—South Korea: Gangwon, Pyeongchang, Yongpyeongmyeon, Nodong-li, Nodong Valley, 37°42.08' N, 128°28.89' E, 900 m, three Malaise traps in the forest in shade, 26.VIII–1.X.2006. Leg.: Tripotin [1 ♀, CSCA].

Identification.—Huo et al. (2007).

Diagnosis.—Species of *Episyrphus* with only an apical black fascia on tergites 2 and 3, and a subapical black fascia on tergite 4.

Distribution.—Species recorded from Shaanxi and Heilongjiang (China) (Huo 2020), and South Korea (this study).

Comments.—New species record for South Korea. Choi et al. (2018c) did not report this species.

Eupeodes bucculatus (Rondani, 1857)

Specimens examined.—South Korea: South Gyeongsang, Jirisan, Hamyang, Songjeon-li, Munsu-sa, 35°24.739' N, 127°43.818' E, 400 m, Malaise trap, 5.V–4.VI.2005. Leg.: Tripotin [1 ♂, CSCA; 1 ♂, ZFMK]; same data, 4–19.VI.2005 [1 ♂, CSCA; 1 ♂, ZFMK].

Identification.—Mutin and Barkalov (1999), mentioned as *Eupeodes latilunulatus* (Collin, 1931) [junior synonym of *E. bucculatus*].

Diagnosis.—See Mazánek et al. (1998). Species with small male genitalia, narrow occiput, fore femur with long pile black and yellow, and alula entirely microtrichose. Female with tergum 5 mostly yellow laterally and scutellum generally black pilose.

Distribution.—Known from Europe, Russia (Siberia and Far East), Mongolia, Japan (Barkalov and Mutin 2018, Speight 2020), and South Korea (this study).

Comments.—First documented specimen for South Korea. This species was listed for Korea by Barkalov and Mutin (2018) without providing any record.

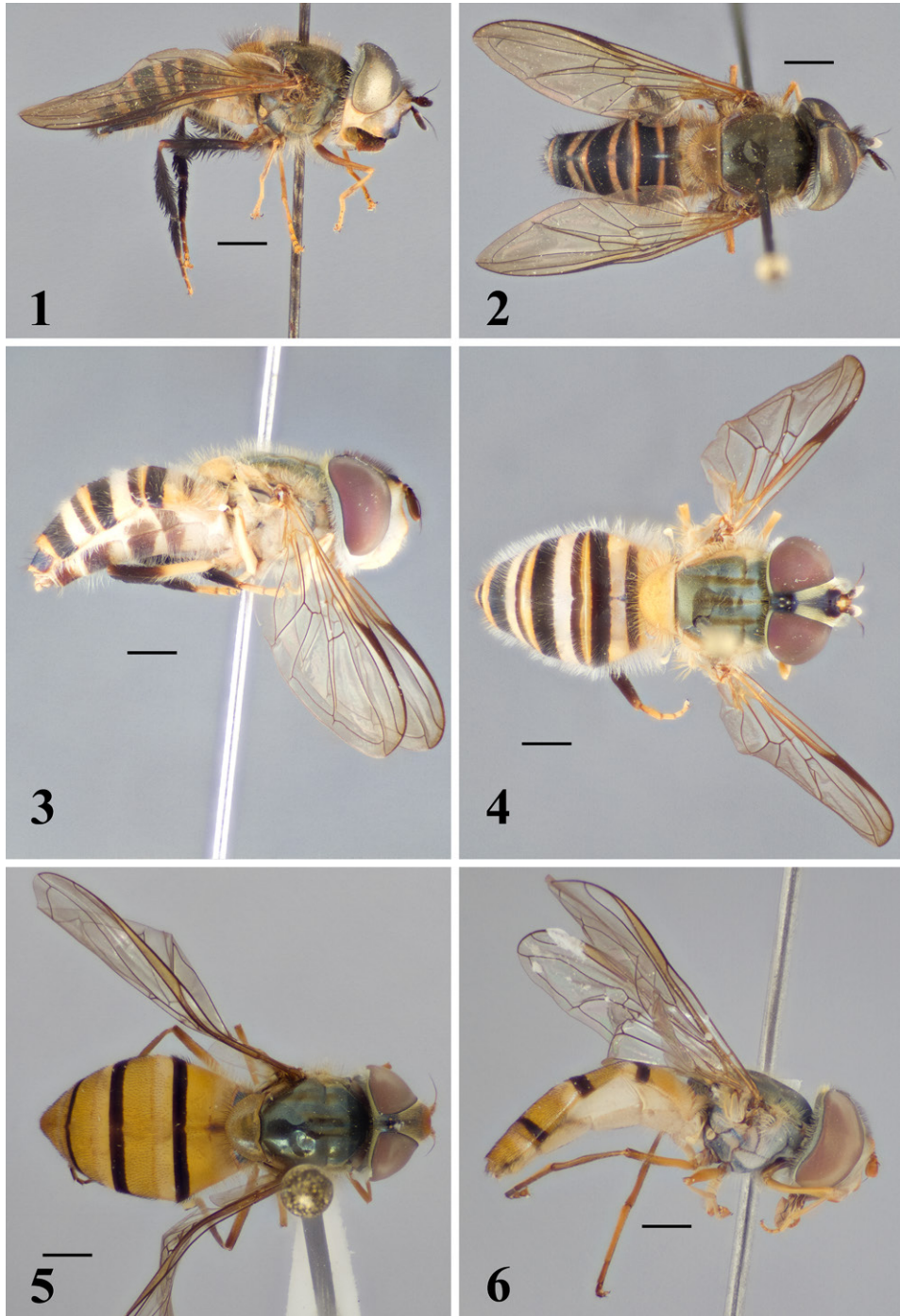
Melangyna compositarum

(Verrall, 1873)

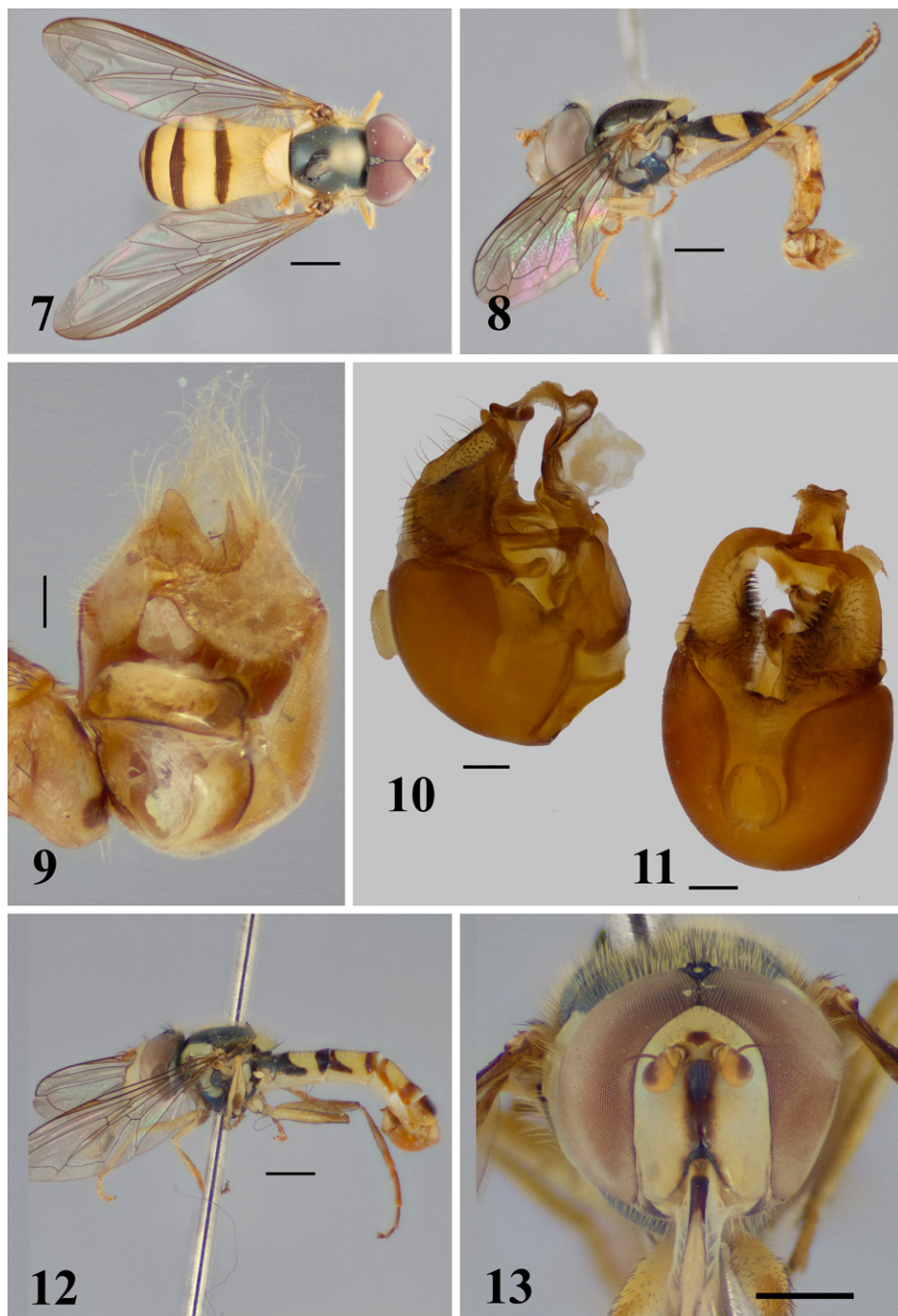
Specimens examined.—South Korea: South Chungcheong, Keumsan Nami-myeon, Seokdong Phoyeonsa, 36°03.107' N, 127°27.897' E, 27.IV–14.V.2005, malaise trap. Leg.: Tripotin [1 ♀, CSCA]; North Chungcheong, Sangchon-myeon, Dungeon-li, near Doma pass, 750 m, two malaise traps in the forest on a small stream, 2–26.V.2006. Leg.: Tripotin [1 ♀, CSCA].

Identification.—Mutin and Barkalov (1999) and Bygebjerg (2011).

Diagnosis.—Species with hairy eyes, wing cell bm entirely microtrichose, and face with medial black vitta.



Figs. 1–6. Habitus. 1, *Epistrophe aequalis*, male, lateral view. 2, *Epistrophe aequalis*, male, dorsal view. 3, *Epistrophe nigritiba*, female, lateral view. 4, *Epistrophe nigritiba*, female, dorsal view. 5, *Episyrrhus perscitus*, female, dorsal view. 6, *Episyrrhus perscitus*, female, lateral view. Scale bar = 1 mm.



Figs. 7–13. Habitus and male genitalia. 7, *Meliscaeva latifasciata*, male, dorsal view. 8, *Sphaerophoria indiana*, male, lateral view. 9, *Sphaerophoria indiana*, male genitalia, ventral view. 10, *Sphaerophoria reginae*, male genitalia, lateral view. 11, *Sphaerophoria reginae*, male genitalia, dorsal view. 12, *Sphaerophoria reginae*, male, lateral view. 13, *Sphaerophoria reginae*, male head, frontal view. Scale bar (Figs. 7–8, 12) = 1 mm. Scale bar (Figs. 9–11) = 0.2 mm. Scale bar (Fig. 13) = 0.5 mm.

Distribution.—Widely distributed in the entire Holarctic, from Europe into Siberia and Far East, Korea and Japan; from Alaska south to New Mexico on western North America (Barkalov and Mutin 2018, Speight 2020).

Comments.—New species record for South Chungcheong province (Choi et al. 2018c).

Meligramma cingulata (Egger, 1860)

Specimens examined.—South Korea: Gangwon, Odaesan near Dongdaesa, 37°44.31' N, 128°35.71' E, 800 m, four Malaise traps in old Korean fir forest, 15.V–3.VI.2006. Leg.: Tripotin [1 ♀, CSCA].

Identification.—Mutin and Barkalov (1999).

Diagnosis.—Species of *Meligramma* with black pilose scutellum and black face.

Distribution.—Species known from Europe to Siberia and Far East (Barkalov and Mutin 2018, Speight 2020), and South Korea (this study).

Comments.—New species record for South Korea. Choi et al. (2018c) did not report this species.

Meliscaeva latifasciata
Huo, Ren, and Zheng, 2007
(Fig. 7)

Specimens examined.—China: Zhejiang, Tianmu Mountain (West), 1050 m, 30°20.467' N, 119°26.417' E, 25.VI.2012. Leg.: S. D. Gaimari and M. Hauser [2 ♂♂, 1 ♀, CSCA; 2 ♂♂, 1 ♀, ZFMK]; Sichuan, Emei Shan, Jieyin Dian, 29°31.98' N, 103°19.86' E, 2500–2900 m, 03.VII.2009. Leg.: Blank, Liston, and Taeger [1 ♀, CSCA].

Identification.—Huo et al. (2007).

Diagnosis.—Species with yellow face; lunule and ventral part of frons shiny,

not pollinose, yellow laterally and black medially; scutellum black pilose; abdominal tergites 2–4 with an apical or subapical black fascia narrow, equal or less than 1/3 of tergite's length; hind tibia and tarsomeres dark, brown to black; hind femur with a submedian black ring.

Distribution.—China (Shaanxi, Xizang, Sichuan, and Zhejiang) (Huo 2020, this study).

Comments.—Species described from Shaanxi and recorded from Xizang (Huo 2020); *Meliscaeva latifasciata* is a new record for the provinces of Sichuan and Zhejiang. Studied male specimens key out to *M. latifasciata*, but the genitalia are similar to *Meliscaeva splendida* Huo, Ren, and Zheng, 2007. Huo et al. (2007) did not provide a drawing of the male genitalia for *M. latifasciata*, but said it was different from *M. splendida*. The identity of these specimens may need further confirmation.

Meliscaeva strigifrons
(de Meijere, 1914)

Specimens examined.—China: Sichuan, Gongga Shan, 29°35.82' N, 102°3.0' E, 2200 m, 29.VI.2009. Leg.: Blank, Liston, and Taeger [1 ♂, CSCA]; Sichuan, Emei Shan, Jieyin Dian, 29°32.22' N, 103°19.86' E, 2400–2500 m, 06.VII.2009. Leg.: Blank, Liston, and Taeger [1 ♂, CSCA; 1 ♂ 1 ♀, ZFMK]; same data, 04.VII.2009 [1 ♂, ZFMK]; Zhejiang, Qingliangfeng National Nature Reserve, Shunxizhen, 30°3.0' N, 118°54' E, 400–700 m, Malaise trap, V.2012 [1 ♂, CSCA].

Identification.—Curran (1928) and an unpublished draft key by F. C. Thompson.

Diagnosis.—Species with yellow face; lunule and ventral part of frons shiny, not pollinose, entirely black (semicircular-shaped macula); scutellum black pilose; hind femur black, except yellow on basal

1/4 or less; hind tibia and tarsomeres black; abdominal tergite 1 black medially, yellow laterally; tergite 2 with two lateral yellow maculae reaching anterior margin, medial black vitta not expanding laterally on the anterior part, and apical black fascia slightly emarginated medially; tergites 3–4 with an apical or subapical black fascia narrowing towards lateral margin and broadening medially; tergite 5 yellow with an apical black macula.

Distribution.—Species reported from Java (Indonesia), Malaysia, Taiwan (Knutson et al. 1975, Huo 2020), and China (Sichuan and Zhejiang) (this study).

Comments.—Species described from Java, Indonesia. Huo (2020) reported it from Taiwan. van Steenis et al. (2021) commented that this name has been applied to other *Meliscaeva* species, and the records from Taiwan may not belong to this taxon. New species record for mainland China.

Paragus sinicus Sorokina
and Cheng, 2007

Specimens examined.—China: Tianjin, Wuqing Co., Dahuangpu Wetland Natural Conservation, 39°21.067'–39°30.45' N, 117°10.55'–117°19.967' E, 15.VII.2010. Leg.: P. Kment [3 ♂♂, NMPC; 2 ♂♂, ZFMK].

Identification.—Sorokina and Cheng (2007) and Sorokina (2009).

Diagnosis.—See Sorokina and Cheng (2007) and Sorokina (2009). Confirmation of the identification was done by studying the male genitalia.

Distribution.—Species known only from China (Inner Mongolia, Beijing, Tianjin, Shandong, and Henan) (Huo 2020, this study).

Comments.—New species record for the Tianjin municipality (see Huo 2020 for other distribution data).

Parasyrphus punctulatus
(Verrall, 1873)

Specimens examined.—South Korea: South Gyeongsang, Jirisan, Hamyang, Songjeon-li, Munsu-sa, 35°24.739' N, 127°43.818' E, 400 m, Malaise trap, 5.V–4.VI.2005. Leg.: Tripotin [1 ♂, CSCA]; South Chungcheong, Keumsan Nami-myeon, Seokdong Phoyeonsa, six Malaise traps in the forest, 36°03.494' N, 127°27.225' E, 14.V–01.VI.2005. Leg.: Tripotin [1 ♀, CSCA; 1 ♀, ZFMK].

Identification.—Mutin and Barkalov (1999).

Diagnosis.—Species with bare eyes; face with a narrow medial black vitta; postpedicel partly yellow; fore and middle tarsomeres dark brown; hind tibia black, except yellow on basal 1/5; abdominal tergite 2 with two lateral yellow maculae; tergites 3 and 4 with yellow maculae joined medially.

Distribution.—Widely distributed in the Palearctic. from Europe to Russian Far East and Japan, Caucasus, and China (Shaanxi) (Barkalov and Mutin 2018, Huo 2020, Speight 2020), and South Korea (this study).

Comments.—New species record for South Korea. Choi et al. (2018c) did not mention this species.

Platycheirus urakawensis
(Matsumura in Matsumura
and Adachi, 1919)

Specimens examined.—China: Yunnan, Gongshan, 20 km WNW, Dulong, 27°47.16' N, 98°27.6' E, 3350 m, 07.VI.2009. Leg.: Blank, Liston, and Taeger [1 ♂, CSCA].

Identification.—Ôhara (1980, 1984).

Diagnosis.—See Ôhara (1980).

Distribution.—Holarctic species reported from northern Europe, Siberia, Kashmir (northern India), Bhutan, to Russian Far East, China (Hebei

(Huo 2020), Yunnan (this study)), and Japan; also known from Greenland, Alaska, Canada, and USA (Barkalov and Mutin 2018, Speight 2020).

Comments.—Huo (2020) listed this species from Hebei. These are new species records for the province of Yunnan.

Sphaerophoria indiana Bigot, 1884
(Figs. 8, 9)

Specimens examined.—South Korea: South Chungcheong, Keumsan Nami-myeon, Seokdong Pohyeonsa, five Malaise traps in a forested area, 36°03.494' N, 127°27.225' E, 14.VI–21.VII.2005. Leg.: Tripotin [1 ♂, CSCA; 1 ♂, ZFMK]; South Chungcheong, Okcheon-gun, Dongi-myeon, Soesan-li, 36°16.594' N, 127°36.742' E, 150 m, 28.VI–23.VII.2005. Leg.: Tripton [1 ♂, CSCA].

Identification.—Bańkowska (1964) and Mutin and Barkalov (1999).

Diagnosis.—Male genitalia (see Mutin and Barkalov 1999).

Distribution.—Species known from Middle and Eastern Palearctic eastwards to southern Siberia and southern Far East, Afghanistan, Pakistan, India, Nepal, Bhutan, Myanmar, China (Huo 2020), Mongolia, Korea (this study), and Japan (Peck 1988, Ghorpadé 2014, Barkalov and Mutin 2018).

Comments.—First confirmed species records for South Korea. Peck (1988) listed this species from Korea without further details. Choi et al. (2018c) stated that no Korean specimen was found so far, but they listed many specimens of *Sphaerophoria menthastri* (Linnaeus, 1758), a junior synonym of *Sphaerophoria scripta* (Linnaeus, 1758) that is commonly applied to *Sphaerophoria interrupta* (Fabricius, 1805) (Goeldlin de Tiefenau 1989). Katsuyoshi Ichige (pers. comm.) says that in Japan the name *S. menthastri* is used for specimens belonging to

S. indiana (as an example, see Tagawa et al. 2018); thus, it would not be a surprise that all or some of the specimens listed under *S. menthastri* in Choi et al. (2018c) belong to *S. indiana*.

Sphaerophoria macrogaster
(Thomson, 1869)

Specimens examined.—South Korea: South Chungcheong, Keumsan Nami-myeon, Seokdong Phoyeonsa, six Malaise traps in the forest, 36°03.494' N, 127°27.225' E, 14.V–01.VI.2005. Leg.: Tripotin [1 ♂, CSCA]; South Gyeongsang, Jirisan, Hamyang-Gun, Songjeon-li, Munsu-sa, 35°24.739' N, 127°43.818' E, 400 m, four Malaise traps in a forested area, 19.VI–9.VII.2005. Leg.: Tripotin [1 ♂, CSCA]; same data, 35°24.789' N, 127°43.818' E, 5.IX–4.X.2005. Leg.: Tripton [1 ♂, ZFMK]; North Chungcheong, Okcheon-gun, Dongi-myeon, Soesan-li, 36°16.594' N, 127°36.742' E, 150 m, malaise trap, 8–17.VI.2004. Leg.: Tripton [1 ♂, CSCA]; North Jeolla, Iksan-si, Geumma-myeon, Miluk-san, 35°01.2' N, 127°01.867' E, 29.IX–16.X.2004, two malaise traps. Leg.: C. L. Young [1 ♂, CSCA].

Identification.—Mutin and Barkalov (1999).

Diagnosis.—Male genitalia (see Mutin and Barkalov 1999).

Distribution.—Species widely reported from the Indomalayan and Australasian Realms (India, Nepal, Myanmar, Sri Lanka, southwards to Australia, New Caledonia and New Guinea), China (Huo 2020), Mongolia, Korea (this study), Japan, and Russian Far East (Knutson et al. 1975, Peck 1988, Ghorpadé 2014, Barkalov and Mutin 2018).

Comments.—Bańkowska (1964) described *Sphaerophoria koreana* Bańkowska, 1964, a junior synonym of *S. macrogaster*, from China and Korea.

In Korea, the type material was collected in Dephun ad Huejang and Dephun ad Kujang (it may very likely refer to Kujang city in North Korea). Huo (2020) listed only North Korea for this species. Choi et al. (2018c) stated that no Korean specimen was found so far. These are the first documented records of this species for South Korea.

Sphaerophoria reginae Claußen and Mutin, 2007
(Figs. 10–13)

Specimens examined.—China: Sichuan, Daocheng, 37 km WNW, 29°9.18' N, 99°55.8' E, 3400 m, 23.VI.2009. Leg.: Blank, Liston, and Taeger [1 ♂, ZFMK]; Yunnan, Shangri-La [= Zhongdian], 38 km SSE, 27°28.38' N, 99°48.66' E, 3300 m, 17.VI.2009. Leg.: Blank, Liston, and Taeger [1 ♂, CSCA].

Identification.—Claußen and Mutin (2007).

Diagnosis.—Male genitalia (see Claußen and Mutin 2007).

Distribution.—Species reported from Russian Far East, South Korea, and Japan (Claußen and Mutin 2007).

Comments.—Claußen and Mutin (2007) confirmed that the specimens identified as *S. viridaenea* Brunetti, 1915 by Bańkowska (1964) belonged to their new species and described *S. reginae* from Far East Russia, Japan, and Korea. Choi et al. (2018c) did not include this species in their work.

Claußen and Mutin (2007) affirmed that the identity of the specimens identified as *S. viridaenea* from Transbaikal, Yakutia, Altai, northern China, Mongolia, and Afghanistan need re-examination. The referred Chinese record was originally published by Skufjin (1980), who identified a male from Tatszinlu (Sichuan province) as *S. viridaenea*. Subsequent

authors (Ôhara et al. 2014, Barkalov and Mutin 2018) considered *S. reginae* as part of the Chinese fauna without re-examining this particular male specimen or without adding new additional records. The species records from Sichuan and Yunnan reported in this study are the first confirmed species records of this species for China, and they are distant from the reported localities by Claußen and Mutin (2007).

DISCUSSION

In the present study new species records are reported from South Korea (*Baccha laphrieformis*, *Episyrphus perscitus*, *Eupeodes bucculatus*, *Meligramma cingulata*, *Parasyrphus punctulatus*, *Sphaerophoria indiana*, *Sphaerophoria macrogaster*), Malaysia (*Epistrophe aequalis*), and China (*Epistrophe sasayamana*, *Meliscaeva strigifrons*, *Sphaerophoria reginae*), as well as several new province records for Korea (*Melangyna compositarum*) and China (*Epistrophe nigritiba*, *Meliscaeva latifasciata*, *Paragus sinicus*, *Platycheirus urakawensis*). The present work aimed to prompt further taxonomic studies on Syrphidae in these and adjacent countries with the help of the cited literature and given diagnosis.

ACKNOWLEDGMENTS

The author thanks Martin Hauser and Steve Gaimari (CSCA, Sacramento, U.S.A.), Michal Tkoč (NMPC, Prague, Czech Republic), and Yngve Brodin and Kjell Arne Johanson (NRM, Stockholm, Sweden) for letting me study material in their care.

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