

## ADDITIONS AND OMISSIONS TO THE LIST OF HOVERFLY FAUNA (DIPTERA: SYRPHIDAE) OF SLOVENIA

Maarten DE GROOT<sup>1</sup>, Roman LUSTRIK<sup>2</sup>, Tim FAASEN<sup>3</sup> and Dare FEKONJA<sup>4</sup>

<sup>1</sup> National Institute of Biology, Večna pot 111, 1000, Ljubljana, Slovenia,  
Maarten.deGroot@nib.si

<sup>2</sup> Department of biology, University of Ljubljana, Večna pot 111,  
SI-1000 Ljubljana, Slovenia,  
roman.lustrik@gmail.com

<sup>3</sup> Ecologica, Rondven 22, 6026PX, Maarheeze, Nederland,  
tim.faasen@ecologica.eu

<sup>4</sup> Triglavska 21, 1113 Ljubljana, Slovenia

**Abstract** - The changes in the checklist of hoverflies of Slovenia are presented. Fifteen species are recorded as new for the fauna of Slovenia: *Brachyopa panzeri*, *Brachypalpus laphriformis*, *Callicera aenea*, *Chamaesyrrhus scaevoides*, *Chalcosyrphus valgus*, *Melangyna lasiophthalma*, *Meligramma guttata*, *Merodon aberrans*, *Parhelophilus frutetorum*, *Orthonevra intermedia*, *Platycheirus occultus*, *Rhingia borealis*, *Spazigaster ambulans*, *Sphaerophoria chongjini* and *Sphaerophoria fatarum*. From the species complex of *Merodon aeneus*, both *M. aeneus* species A/B and *M. aeneus* C were recorded. One species, *Xylota caeruliventris*, was omitted from the checklist because of misidentification. Information on habitat characteristics, range and conservation status is given for every new species.

KEY WORDS: new records, fauna, Slovenia

## **Izvilleček** - DODATKI IN IZBRIS VRST S SEZNAMA MUH TREPETAVK (DIPTERA: SYRPHIDAE) SLOVENIJE

Predstavljenе so spremembe v seznamu muh trepetavk Slovenije. Petnajst vrst je prvič zabeleženih v slovenski favni: *Brachyopa panzeri*, *Brachypalpus laphriformis*, *Callicera aenea*, *Chamaesyrrhus scaevoides*, *Chalcosyrphus valgus*, *Melangyna lasiophthalma*, *Meligramma guttata*, *Merodon aberrans*, *Parhelophilus frutetorum*, *Orthonevra intermedia*, *Platycheirus occultus*, *Rhingia borealis*, *Spazigaster ambulans*, *Sphaerophoria chongjini* in *Sphaerophoria fatarum*. Iz kompleksa vrst

*Merodon aeneus* sta bili najdeni tako *M. aeneus* vrsta A/B kot tudi *M. aeneus* C. Ena vrsta, *Xylota caeruliventris*, je umaknjena s seznama zaradi napačne določitve. Podani so podatki o značilnostih habitata, razširjenosti in varovalnem statusu vseh novih vrst.

KLJUČNE BESEDE: nove najdbe, favna, Slovenija

## Introduction

Hoverflies (Diptera, Syrphidae) are a highly diverse group of flies that occur in a large variety of habitats. 274 species have been recorded for Slovenia (De Groot & Govedič 2008).

Here we present a list of species of hoverflies found in Slovenia over the last few years. The material analyzed in this study was collected from 1978 to 2009 in different localities in Slovenia. Part of this material is deposited in the collection of the Slovenian Museum of Natural History. The observations are described and discussed for each species. In addition to this, some cryptic species are discussed that belong to the complex of *Merodon aeneus*. We note observations of two such species found in Slovenia. Finally, one species is deleted from the list.

## Species new to the hoverfly fauna of Slovenia

### *Brachyopa panzeri* Goffe, 1945

1 male, 21.5.2009, Lake Bohinj, Ribčev Laz, x: 125412, y: 414749, Leg: M. de Groot

*Brachyopa panzeri* was recently separated from *B. dorsata* (Thompson 1980), which is also found in Slovenia (Vujic 1991). The species was discovered basking on logs of *Picea abies*. The habitat was mixed *Picea-Fagetum* forest with rich undergrowth. In other parts of Europe, the species is found in deciduous forest, like humid *Fagus* forests (Speight *et al.* 2010). Its distribution in Europe is not clearly established. However it is known that its populations are decreasing (Speight *et al.* 2010).

### *Brachypalpus laphriformis* (Fallén, 1816)

1 female, 6.5.2009, Logatec, Planinsko polje, x: 81351, y: 414836, Laze, Leg: T. Faasen (Fig. 1)

Slovenia is situated at the southern border of the range of this species. The female was hovering inside a hole in a logged tree in which ants were nesting. The immediate surroundings of the log consisted of mature *Fagus* forests. This species flies in Europe from the end of May until the end of June. The species is endemic to Europe and populations are decreasing (Speight *et al.* 2010).

### *Callicera aenea* (Fabricius, 1777)

1 male, 16.3.2009, Ljubljana-Šentvid, 500 m west of Podgora, x: 105435, y: 458679, Leg: R. Luštrik. (Fig. 2)



**Fig. 1:** Female of *Brachypalpus laphriformis* (Fallén, 1816), Planinsko polje (Photo: T. Faasen).



**Fig. 2:** Male of *Callicera aenea* (Fabricius, 1777), Ljubljana-Sentvid (Photo: R. Luštrik).

*Callicera* are large, conspicuous flies, distinguishable by long antennae with terminal arista. A number of characteristics distinguish this particular species from its relative *C. aurata*. *C. aenea* has antennal segment 2 3/4 or more of the length of antennal segment 1 (although somewhat variable) (Speight 2010), scutellar hairs are 2/3 or more of the length of the scutellum, thorax dorsally entirely thinly dusted greyish, hairs on posterolateral fore- and mid-tibiae may be as long as the width of a tibia in dorsal view, and all tarsal segments are the same colour as their flanking metatarsus or tarsal segments 3-5, and are paler than the black basal part of femora (Van Veen 2004).

The specimens were observed flying and hovering near the ground in a woodland clearing. A number of individuals were curious about the observer, enabling them to be photographed in mid-air. They appeared to be interacting with each other, presumably males fending off intruders from their territory.

The range of this species requires reassessment due to confusion with *C. aurata*, but it is generally found in Northern and Central Europe, with European parts of Russia and east to Siberia and the Pacific (see map in Renema & Wakkie 2001). Habitat is primarily mature arboreal forest with senescent trees, and males are known to appear just above ground in clearings and woodland edges. Larvae are unknown but *Callicera* females deposit eggs in rot holes of hardwood (Sommaggio 1999; Van Veen 2004). The flight period is from May to September with a peak in May/June (Speight 2010).

#### ***Chamaesyrrhus scaevoides* (Fallen, 1817)**

1 female, 26.7.2009, Zg. Jezersko, Mt. Skuta, x: 136695, y: 465973; 1 male, 26.7.2009, near the glacier on Mt. Skuta, x: 136322, y: 465949, Leg: R. Lustrik

*Chamaesyrrhus* species are small inconspicuous flies often flying in the undergrowth. The male and female were found on different places. One was found in the low grassy vegetation in the vicinity of *Pinus mugo* on the edge of the glacier under Skuta and the second one at a lower altitude resting on a branch in nearby bushes of *P. mugo*. The species has its southern border in Slovenia and is found from Great Britain to the east into European Russia. It is considered as not threatened but is decreasing locally.

#### ***Chalcosyrphus valgus* (Gmelin, 1790)**

1 female, 2.5.2009, Ljubljansko barje, Iski morost, x: 93369, y: 459958, Leg: T. Faasen (Fig. 3)

Together with *C. pannonicus* (Oldenberg, 1916), *C. femoratus* (Linnaeus, 1758) and *C. rufipes* Loew 1873, *C. valgus* is member of large black *Chalcosyrphus* species with red legs occurring in Europe. The species was found feeding on *Caltha palustris*. Other species on which it feeds are *Campanula*, *Chaerophyllum*, *Hypericum*, *Rubus idaeus* and *Sorbus aucuparia* (Speight 2010). The preferred habitats are coniferous forest and mature *Fagus/Picea* forest. However, the specimen we found was caught in a fen surrounded by *Salix* and *Betula* bushes with the nearest coniferous forest approximately 1.5 km away. This could mean that the species can disperse over such a distance from its preferred habitat. *C. valgus* occurs over the entire Palaearctic, but is threatened throughout Europe (Speight et al. 2010).



**Fig. 3:** Female of *Chalcosyrphus valgus* (Gmelin, 1790), Ljubljansko barje (Photo: T. Faasen).

***Melangyna lasiophthalma*** (Zetterstedt, 1843)

1 male, Ljubljana-Šentvid, Podgora, 16.3.2009, x: 105231, y: 459247, Leg: R. Luštrik;

1 female, 26.3.2009, Ljubljana, Večna pot (near the Biotechnical faculty), x: 10102, y: 459466, Leg: M. de Groot; 1 female, 2.5.2009, Pokljuka, x: 136538, y: 425282, Leg: T. Faasen.

This is a relatively large *Melangyna* species with white-yellow to orange pairs of more or less rectangular spots on the abdomen. We found the specimens only in the period from the second half of March until the beginning of May, although it is known that the flight period is until June and, at higher altitudes, until July (Speight 2010). Individuals were caught sun basking on an overgrown wire fence and feeding on *Salix* species. In general, the species prefers acidophilic and wet forests, but also hedgerows, suburban gardens, shrubs and orchards (Speight 2010). It is found mostly on forest edges and open areas in forests with flowering trees and undergrowth. The species is common throughout Slovenia.

***Meligramma guttata*** (Fallen, 1817)

1 female, 5.8.2009, Tomiselj, Krim, x: 92247, y: 458690, Leg: M. de Groot

This is a medium sized species which flies mainly among tree canopies (Speight 2010). This specimen was found along a forest road among flowers. They often descend to visit flowers in open places in the forest. This specimen was found in a mixed forest of *Fagus sylvatica* and *Abies alba*. It is a Holarctic species and Slovenia lies at its southern range border. In the alpine region, the population is decreasing.

***Merodon aberrans*** Egger, 1860

1 male, 21.6.2003, Volovja reber, Suhi vrh, x: 49018 y: 446604, Leg: M. de Groot

This is a middle sized *Merodon* species with a brown-black coloured, cone-shaped abdomen. Most of its range lies in Europe (Speight *et al.* 2010). The species was found at the end of June, but is expected to fly from May till August, depending on the altitude (Speight 2010). The species was found on calcareous montane grassland. Specimens were found flying low over the ground between the vegetation.

***Parhelophilus frutetorum*** (Fabricius, 1775)

1 male, 9.5.2008, Ljubljana, Mestni log, x: 98329, y: 458397, Leg: D. Fekonja

Middle sized *Parhelophilus* with completely yellow fore tibia, a row of black hairs behind the eyes and a tubercle on the base of the hind femur (Reemer *et al.* 2009). It is a Palearctic species. The species was already recorded for Italy and Hungary. The flight period is from May until July. The male was found in a pool in an alluvial softwood forest. It occurs throughout Europe, though decreasing in numbers (Speight 2010).

***Orthonевра intermedia*** Lundbeck, 1916

1 female, 2.5.2009, Ljubljansko Barje, Iski morost, x: 93369, y: 459958, Leg: T. Faasen

This is the second member of the genus *Orthonевра* observed in Slovenia, after *O. frontalis* (Loew, 1843) (De Groot & Govedič 2008). It was found feeding on *Caltha palustris* in sedges (*Carex*). It also feeds on umbellifers, *Frangula alnus* and *Potentilla*. It is confined mostly to wetlands, nearby neutral/calcareous springs, and flushes in various situations. It occurs throughout Europe and is not threatened.

***Platycheirus occultus*** Goeldlin, Maibach and Speight, 1990

1 male, 19.6.2009, Brdo near Kranj, x: 127690, y: 454283, Leg: M. de Groot; 1 male, 1 female, 12.7.2009, Ljubljana, Mestni log, x: 96591, y: 459458, Leg: M. de Groot

*Platycheirus occultus* forms, together with *P. angustipes* Goeldlin, 1974, *P. angustatus* (Zetterstedt, 1843), *P. clypeatus* (Meigen, 1822) and *P. europaeus* Goeldlin, Maibach and Speight, 1990, a group of very similarly looking species. The latter two were already recorded for Slovenia (De Groot & Govedič 2008). *P. occultus* can be separated from the others by the smooth part on the front meta-tarsus with a black depression in the middle.

It has a northern and central European distribution and records from Slovenia lie on the south-eastern border of its range. It is documented as decreasing in the Alps and the continental region of Europe (Speight *et al.* 2010). Its flight period is from April until September with peaks in May/mid June and mid July/August (Speight *et al.* 2010). The specimens were found in wet sedge meadows in Mestni log and on the banks of a stream in Brdo near Kranj. Other habitats where the species could be found are coastal marshes, periphery raised bogs and fen (Speight 2010).

***Rhingia borealis*** Ringdahl, 1928

1 female, 6.5.2009. Logatec, Planinsko polje, Laze, x: 81351, y: 442480, Leg: T. Faasen (Fig 4)



**Fig 4:** Female of *Rhingia borealis* Ringdahl, 1928, Planinsko polje (Photo: T. Faasen).

This is a small *Rhingia* with pilose arista and a strong, bended snout. The species occurs in Hungary and Italy (Speight et al. 2010). The flight period is from May until August (Speight 2010). The specimen was found in humid *Fagus/Picea* forest. It is also expected in a coniferous forest *Picea/Abies* zone (Speight 2010). Its distribution lies in the Palaearctic and populations are decreasing in Europe.

***Spazigaster ambulans*** (Fabricius, 1798)

1 female, 24.7.2002, Bled, Pokljuka, Šijec, x: 133472, y: 422314, Leg: M. de Groot

This is a small, elongate species with a striking sexual dimorphism, females have red abdomen and males are completely black. The first observation of this species was in a boggy area in *Picea abies* forest along the road. In subsequent years, it was found in all fens and wet meadows in the vicinity. It occurs particularly near *Alnus viridis* thickets along seepages and streams in poorly-drained, unimproved, calcareous and non/calcareous alpine and montane grasslands (Speight 2010). The flight period starts at the end of June and ends mid August. It occurs predominantly in Europe and is not threatened.

***Sphaerophoria chongjini*** Bankowska, 1964

1 male, 10.8.2005, Ljubljansko barje, Mali plac, x: 94529.4, y: 450590.3, M. de Groot; 1 male, 16.8.2005, Ljubljana, Dragomer, x: 97036, y: 453423, M. de Groot;

2 males, 3.6.2006, Krakovski gozd, x: 80894, y: 532097, (Fig 5), M. de Groot; 1 male, 21.6.2006, Ljubljana, Mestni log, x: , y: , M. de Groot

This is a small elongate species which can only be identified by male genitalia. It was found at several locations in flower rich forest edges (Mali plac), near a ditch in a well-drained meadow (Dragomer), and in wet meadows with sedges in humid deciduous forests (Krakovski gozd, Mestni log). In Europe this species occurs from mid June until the end of August. It occurs over the whole Palaearctic. Its populations are in decline (Speight 2010).

***Sphaerophoria fatarum*** Goeldlin, 1989

2 males, 24-8-2008, Bled, Pokljuka, Šijec, x: 132944, y: 423020, Leg: M. De Groot

*Sphaerophoria fatarum* is a member of the same group as *S. chongjini*. Two males were found on an oligotrophic *Molinia* grassland near Sijec bog on Pokljuka, flying syntopically with *S. scripta*. It has two flight peaks, one in May and June and one in August and September. It occurs over the whole Palaearctic and is not threatened.

### Taxonomic split

Recently, molecular studies showed that the species *Merodon aeneus* (= *M. aureus* in Milankov et al. 2007) hides a complex of species (Marcos-Garrfa et al. 2007; Milankov et al 2007). In Slovenia two species occur: *Merodon aeneus* A/B and



**Fig 5:** *Sphaerophoria chongjini* Bankowska, 1964, Krakovski gozd (Photo: T. Faasen).

C. The species still have to be officially described and names have to be instated (Milankov et al 2007). Until then, we will use the nomenclature used by Milankov et al. (2007).

### ***Merodon aeneus* A/B**

1 male, 21.5.2006, Bohinj lake, Planina Sp. Grintovica, x: 132613, y: 413061, Leg: M. de Groot.; 2 males, 2 females, 7.6.2006, Cerknica, Cerkniško jezero, Otok, x: 66423, y: 451587, Leg. M. de Groot; 1 male, 23.8.2006, Ljubljana, Dragomer, x: 97679.7, y: 453071.4, Leg: M. de Groot; 2 males, 21.5.2009, Lake Bohinj, Ribčev Laz, x: 414265, y: 125550, Leg: M. de Groot; 1 female, 1.6.2008, Ljubljana, Krim, x: 85165, y: 456819, Leg. M. de Groot.

Under the name *M. aeneus* A/B are two species that are morphologically indistinguishable (Milankov et al. 2007). For our purpose, we will take them as morphospecies and refer to them as *M. aeneus* A/B. Further molecular research should establish the possible occurrence of both species in Slovenia.

The key characteristic of *M. aeneus* A/B is the presence of dark hairs on the upper half of the eye and pale hairs on the lower part. This species was found throughout Slovenia on unimproved (montane) dry grasslands, but also occurs in thermophilous *Quercus* forest.

### ***Merodon aeneus* C**

1 male, 24.8.1978, Ig, Kremenica hrib, UTM: VL68, S. Breljih; 1 male and 1 female, 23.8.2005, Ljubljana, Dragomer, x: 97883, y: 451713, M. de Groot

*M. aeneus* C differs from *M. aeneus* A/B by having pale hairs over the entire eye. It was found on unimproved meadows in the vicinity of forests on both karstic and acid soils, which is similar to the habitat of *M. aeneus*. In Slovenia, it has so far been found only on hill slopes around Ljubljansko Barje, but is expected to occur in other parts of Slovenia as well. All specimens were found in August. The entire flight period is not known.

## **Deleted species**

One species, *Xylota caeruliventris* (Zetterstedt, 1838) should be deleted from the list of hoverfly fauna of Slovenia. A study of the specimen published as *X. caeruliventris* in De Groot and Govedič (2008) showed that it belongs to *X. jakutorum*.

## **Concluding remarks**

With the additions and deletion of the species presented in this paper, there are now 288 hoverfly species known for Slovenia. Fifteen species are recorded as new for the fauna of Slovenia and one is deleted from the checklist. Slovenia has a high species potential because of its different habitats and climates. The addition of 15 species to the fauna of Slovenia in such a small period of time indicates that more species will most likely be found in the coming years.

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## References

- De Groot, M. & Govedic, M.**, 2008: Checklist of the hoverflies (Diptera: Syrphidae) of Slovenia. *Acta Entomologica Slovenica* 16(1): 67-87.
- Marcos-Garria, M. A., Vujic, A. & Mengual, X.**, 2007: Revision of Iberian species of the genus *Merodon* (Diptera: Syrphidae). *European Journal of Entomology* 104: 531-572.
- Milankov, V., Stahls, G., Stamenkovic, J. & Vujic, A.**, 2007: Genetic diversity of populations of *Merodon aureus* and *M. cinereus* species complexes (Diptera, Syrphidae): Integrative taxonomy and implications for conservation priorities on the Balkan peninsula. *Conservation Genetics*.
- Reemer, M., Renema, W., van Steenis, W., Zeegers, T., Barendregt, A., Smit, J. T., Van Veen, M. P., van Steenis, J. & van der Leij, L. J. J. M.**, 2009: De Nederlandse zweefvliegen (Diptera: Syrphidae). 442 Natuurhistorisch Museum Naturalis, KNNV uitgeverij, European Invertebrate Survey - Nederland. Leiden.
- Renema, W. & Wakkie, B.**, 2001: Het zweefvliegengenus *Callicera* in Nederland en België (Diptera: Syrphidae). *Nederlandse Faunistische Mededelingen* 14: 1-12.
- Sommaggio, D.**, 1999: Syrphidae: can they be used as environmental bioindicator? *Agriculture, Ecosystems and Environment* 74: 343-356.
- Speight, M.C.D.** 2010 Species accounts of European Syrphidae (Diptera) 2010. *Syrph the Net, the database of European Syrphidae*, vol. 59, Syrph the Net publications, Dublin.
- Speight, M.C.D., Monteil, C., Castella, E. & Sarthou, J.-P.** 2010 StN 2010. In: Speight, M.C.D., Castella, E., Sarthou, J.-P. & Monteil, C. (eds). *Syrph the Net on CD, Issue 7. The database of European Syrphidae*. Syrph the Net Publications, Dublin.
- Thompson, F. C.**, 1980: The problem of old names as illustrated by *Brachyopa "conica* Panzer" with a synopsis of Palaearctic *Brachyopa* Meigen (Diptera: Syrphidae). *Entomologica scandinavica* 11: 209-216.
- Van Veen, M.**, 2004: Hoverflies of Northwest Europe, Identification keys to the Syrphidae KNNV Publishing. Utrecht.
- Vujic, A.**, 1991: Species of genus *Brachyopa* Meigen (Diptera: Syrphidae). *Bulletin of Natural History Museum in Belgrade* 46: 141-150.

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