Bulletin of Insectology ***63*** *(1): 99-114, 2010*
ISSN 1721-8861

Hoverflies in the "Guido Grandi Collection" of DiSTA, University of Bologna

Daniele SOMMAGGIO
Dipartimento di Scienze e Tecnologie Agroambientali - Entomologia, Università di Bologna, Italy

Abstract

The Syrphidae in the "Guido Grandi Collection" - held in DiSTA, *Alma Mater Studiorum* University of Bologna – are revised. 3439 specimens and 243 species are present in the collection, which includes an interesting donation made by the Italian entomologist Mario Bezzi. *Merodon unicolor* Strobl is recorded for the first time in Italy and other interesting or rare species are discussed. Several records in the collection improved our knowledge of the fauna of Eastern Po Valley and Emilia Romagna Apennines. The Syrphid fauna of these two areas is revised and a detailed regional list provided. Knowledge of the Po Valley fauna seems to be fairly complete and well described, thanks to a strong research effort in the last few years. On the other hand, knowledge of the syrphid fauna from the Northern Apennines appears to be incomplete, and hence we need to extend monitoring and recording there. Despite this the present lists seem to be sufficiently detailed to be used for practical purposes, including detailed application of the expertise system Syrph the Net in the Emilia Romagna region.

Key words: Diptera Syrphidae, Po Valley, Northern Apennines, Guido Grandi Collection.

Introduction

In the last decades of the 20th century, hoverflies (Diptera Syrphidae) received increasing interest, not just traditional aspects such as taxonomy or aphid control in agriculture, but also new aspects less discussed before. One of the most important topics related to the increased interest in hoverfly research is the use of Syrphidae as bioindicators. In 1986 Speight considered the hoverflies as one of the more promising taxa to be used in environmental evaluation, together with Carabidae (Coleoptera) and Symphyta (Hymenoptera). The development of the database called Syrph the Net represents one of the first attempts to apply a standardised knowledge base to use insects as bioindicators in terrestrial habitats (Speight and Castella, 2001; Speight, 2008a). Syrph the Net is an expert system in which most of the European Syrphidae species are listed with their preferred habitats. The use of Syrphidae as bioindicators needs good knowledge about the biology of the species, their habitat requirements and detailed information about species distribution on a local scale. Sommaggio and Burgio (2004) stressed how one of the main limits in the use of Syrphidae in Italy is due to the scarcity of knowledge about their distribution, particularly evident in regions of central and southern Italy, including Sicily and Sardinia. Despite this limit Syrph the Net has been used with good results in the Po Valley (Sommaggio *et al*., 2005; Burgio and Sommaggio, 2007).

Several efforts have been made in order to improve knowledge of Italian Syrphidae. Recently, active monitoring provides a lot of information about distribution (e.g. Burgio and Daccordi, 1997; Burgio *et al*., 2000; Birtele *et al*., 2002; 2003; Sommaggio and Corazza, 2007; Burgio and Sommaggio, 2007). The revision of old collections not only improves knowledge about species distributions, but contributes to data on past faunas. This was for example the case of the 19th-century Bellardi collection that recorded 8 species new to the Italian fauna and also gave important information about the environment present in the surroundings of Turin one century ago (Sommaggio, 2007).

In the present paper, the author presents a revision of the Syrphidae held in the "Guido Grandi Collection" (GGC) of the Department of Agroenviromental Sciences and Technologies (DiSTA), *Alma Mater Studiorum* University of Bologna. The aim of the paper is to improve knowledge about the Italian syrphid fauna, with particular reference to the Emilia Romagna region (Northern Italy), well represented in this collection. In addition, revision of these Syrphidae contributes to improve our knowledge of the fauna of this area, providing a detailed checklist necessary for the proper use of Syrphidae as bioindicators, including Syrph the Net applications.

Materials and methods

The GGC was previously held in the "Guido Grandi" Institute of Entomology, Bologna University; it has been transferred recently to the DiSTA, and named for the entomologist Guido Grandi. The Syrphidae of the GGC is composed of 27 small entomological boxes (18 × 26 cm). All boxes can easily be identified by their code number: in the case of the Syrphidae, these numbers run from 99 to 125. The GGC collection can be divided in three sections:

- Bezzi donation: this important Dipterologist exchange a lot of material with several Italian and foreign museums and probably sent samples to Bologna University;
- specimens from other collections: several authors working in Agriculture Faculty of Bologna University collected insects during monitoring or collecting trips both in the surroundings of Bologna and in other countries (e.g. Algeria). After identification, the Syrphidae were preserved in the collection of GGC;

- Giovanni Burgio donation: recently this researcher gave his personal Syrphid collection to the GGC.

The GGC is arranged without any division in subfamilies; the genera are ordered following the traditional classification of Syrphidae common during the first part of the 20th century (e.g. Bezzi and Stein, 1907; Sack, 1928-32). All specimens were revised to conform to recent taxonomic changes, but the arrangement of the species was preserved to maintain the original structure of the collection.

In the present paper the species are listed in alphabetical order (table 1). After the name of the species, the following is indicated:

- the number of specimens present in the collection;
- the localities divided in Bezzi Donation; Other Collection; Burgio Donation.

Species with a peculiar distribution or which are rare or new for the Italian fauna (Belcari *et al*., 1995; Daccordi and Sommaggio, 2002), are discussed after the list of species. A detailed list of all specimens together with additional information (collection date; collector; original identification, etc.) will be find in supplemental materials at www.bulletinofinsectology.org

Results and discussion

The GGC consist of 3439 specimens belonging to 243 species. More than half of the specimens belong to Burgio's donation, comprising 1968 specimens of 170 species. Most of these specimens have been recorded already in previous publications (Burgio *et al*., 1997; Burgio and Daccordi, 1997; Burgio *et al*., 2000; Burgio and Sommaggio, 2007). The Bezzi donation consists of 394 specimens and here Bezzi clearly made a selection because 137 species are present with just a few specimens of each species. From the occasional catches of the other collection, 1077 specimens belong to 114 species.

Some species are particularly interesting and/or rare. Except where specified, all information about species biology and distribution was obtained from Speight (2008b).

Brachyopa insensilis Collin and *Brachyopa grundewaldensis* Kassebeer are a couple of species which can be separated only by the male genitalia (Doczkal and Dziock, 2004). Unfortunately only one female is present in the GGC collection, and its real identity cannot be established. Like all other *Brachyopa* species, *B. insensilis* and *B. grundewaldensis* can also be found in forests with old trees, or at least plants with sap-runs on which the larvae can develop. *B. insensilis* is a rare species, not included in the existing Italian checklist, even so its presence was recently confirmed in the Po Valley (Sommaggio and Corazza, 2006) and in old collections (Sommaggio, 2007). *B. grundewaldensis* was described only recently (Kassebeer, 2000) and currently is only known from southern Germany and southern France.

Brachyopa plena Collin was described by in 1939, together with *Brachyopa pilosa* Collin, a similar species, and poses many taxonomic problems. After the description, several *B. pilosa* specimens were recorded and a greater intraspecific variability detected. On the other hand few records of *B. plena* are available. Collin (1939) recorded it from Bohemia (a single male), while Brãdescu (1991) included it in the key of the Syrphidae of Romania as a species present in the Bucharest region and Vujić (1991) recorded one male from Serbia. In fact, *B. plena* seems to be restricted to the Balkan peninsula, but doubts exist about whether these specimens should be considered as belonging to *B. pilosa* or to a separate species. The main difference between the two species seems to be the larger sensory pit on the third antennal segment in *B. plena* males. Almost no differences can be detected between the male genitalia. The male in GGC came from the Balkans and its sensory pit is particularly developed; for this reason it has been considered as belonging to *B. plena.*

Callicera macquarti Rondani: this species is strongly associated with very well-preserved forest with senescent trees where the larvae can develop (Speight, 2008b). Currently known only from central and southern Italy, the present record is the first for northern Italy.

Cheilosia griseiventris Loew: this species is similar to *Cheilosia latifrons* (Zetterstedt) and some authors suggested that they may be the same species (Speight, 2008b). In his key Van Veen (2004) included *C. griseiventris* as separate from *C. latifrons*, and several features seem to indicate that they are distinct (Claussen, per. com.). Currently recorded only from southern Italy and Sicily, the present record is the first one for northern Italy.

Cheilosia semifasciata Becker: this species is quite common in central and northern Europe where it can also be found in urban areas. In Italy it is much rarer, and its presence seems to be restricted to mountain areas. The present record is the first for central Italy.

Meligramma cingulata (Egger) is a rare species, associated with *Abies/Picea* forest. Previously recorded in Italy at Castiglione dei Pepoli (Burgio and Daccordi, 1997) and Campigna (Burgio *et al*., 2000), the present record from Florence is an additional one. In Spain, Marcos-Garcia (2006) included it in the list of threatened species.

Merodon distinctus (Palma) has currently been recorded only for the Mediterranean basin; in the check list of Italian species it has been recorded only from Sicily (Belcari *et al*., 1995; Daccordi and Sommaggio, 2002) while Dirickx (1994) recorded it only from southern Italy. The present records suggest that this species has a much more extended distribution in northern Italy.

Merodon longicornis Sack is a rare species, currently known in Italy only from Van der Goot's (1969) record from Castiglione dei Pepoli. The present record confirms the presence of *M. longicornis* in the Bologna province of the Apennines.

Merodon unicolor Strobl was described at the beginning of the 20th century (Czerny and Strobl, 1909), but it has usually been considered as a junior synonym of *Merodon aeneus* Meigen (e.g. Peck, 1988). Only recently by revising Iberian *Merodon,* Marcos-Garcia *et al*. (2007) reinstated this species and gave sufficient characters to separate it from similar species in the *M. aeneus* group. This is the first record for the Italian fauna.

Platycheirus occultus Goeldin de Tiefenau, Maibach et Speight is a wetland species; in the southern part of its distribution it is associated with *Phragmites* plants (Speight, 2008b). Previously known only from Apennines, the present record is the first for the Po Valley.

Sphegina elegans Schummel is the first record for central Italy; the species is currently known from all of Europe, with the Caucasus and European Russia as its eastern limit.

Thanks to many recent researches, the eastern part of the Po Valley can be considered as one of the areas in Italy where most is known about the Syrphidae fauna, mostly already published (Daccordi, 1979; Daccordi and Marogna, 1989, Burgio, 1991; Burgio *et al*., 1997; Birtele *et al*., 2002; Burgio and Sommaggio, 2002, 2007; Sommaggio and Corazza, 2006). Table 2 lists the Syrphidae currently known, including unpublished researches and present data. The area covered by this list includes Ferrara, Ravenna, Venice and Rovigo provinces and large areas in Bologna, Modena, Parma, Mantova, Verona and Padova (figure 1). The borders of this area were chosen mainly for logistic reasons, and in particular for the availability of data, less frequent in the more western areas of the Po Valley (Sommaggio, 2005).

The Syrphidae fauna of the eastern part of the Po Valley include 121 species; large differences exist among provinces. Ferrara has the highest number (90) corresponding to 74% of the regional fauna, mainly thanks to research efforts of the last 10 years (e.g. Sommaggio *et al*., 2005; Sommaggio and Corazza, 2006). Mantova province has 74 species, little more than 61 %; in this case the Bosco della Fontana forest has been studied (Birtele *et al*., 2002), but few data are available for other areas. This explains the large number of forest and often rare species, and absence of specie more common in other habitats such as *Mesembrius peregrinus* (Loew) and some *Anasimya* species typical of wetland areas. Padova and Ravenna provinces show the poorest fauna, surely due to the few studies made in such areas. The GGC can add 36 new records to the list, but only one species, *Platycheirus occultus,* was not previously recorded for the eastern Po Valley. More studies are necessary to understand better the Syrphidae fauna of poorly monitored provinces, but the present list seems to give a good overall picture of the fauna of this area. For this reason application of Syrph the Net is possible because of the availability of a good detailed list of species.

Several records in the GGC came from the Apennines, in particular localities in the Emilia Romagna region, including northern slopes of the northern part of the Apennines. In the past, the Apennines near Parma were studied by Rondani (1857), but recently very few studies have focused on the syrphid fauna of this area. Burgio and Daccordi (1997) studied the Castiglione dei Pepoli area, previously the object of faunistic research by Van der Goot (1969). Burgio *et al*. (2000) sampled Syrphidae in the Campigna forest, while Birtele *et al*. (2003) supplied a list of species from three natural areas dominated by European beech trees.

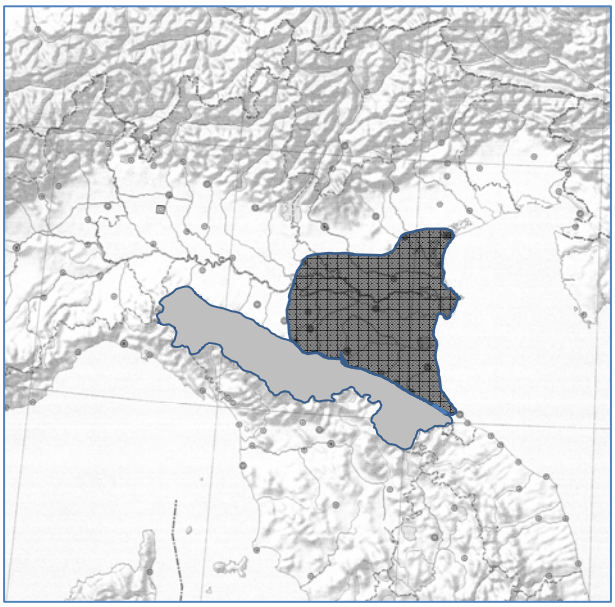

Figure 1. Oriental Po Valley (dark grey) and the Emilia Romagna Apennines (clear grey) as considered in the text.

Table 3 gives the first account of the fauna of the Emilia Romagna Apennines. Rondani's (1857) records were not been included due to the great taxonomic changes since the work of this important Italian dipterologist. Table 3 includes the records from GGC, except those already published, in particular specimens from Castiglione dei Pepoli (Burgio and Daccordi, 1997) and Campigna (Burgio *et al*., 2000). The number of species is clearly higher in the Apennines compare to the Po Valley: 181 species as opposed to 121. The higher number of different habitats and the reduced human impact can probably explain this difference. Data from the GGC greatly improved the total number of species: 16 of the 61 species from GGC have not been previously recorded in this area. Many of these species are present also in the Po Valley, such as for example *Cheilosia latifrons*, *Ceriana conopsoides* (L.) or *Brachyopa bicolor* (Fallén), and it is possible that at lower altitudes they are present also in the Apennines. Some species are typical of more xeric areas, largely unsampled in the previous research, focused mainly on forest areas; this is, for example, the case of *Merodon armipes* Rondani, *Merodon clavipes* (F.), *Merodon funestus* (F.) and *Xanthogramma citrofasciatum* (de Geer). Finally there are some species usually associated with old forest, such as *Ferdinandea aurea* Rondani or *Callicera macquarti*; the specimens in the GGC are old (before 1950), and it is possible that these species have become rarer or even extinct from the area. The present data suggest that the available list of Syrphidae from the Emilia Romagna Apennines must be considered complete enough, but provisional, and more studies, particularly of less well sampled habitats, will probably improve the knowledge of this fauna.

Table 1. The species present in the "Guido Grandi Collection".

Species	N	Bezzi Collection	Occasional Collection	Burgio Collection
Anasimyia lineata (F. 1787)	3♂			MN: Grazie; RA: Conselice
Anasimyia transfuga (L. 1758)	1♂			BO: Crevalcore
Arctophila bombiforme (Fallén 1810)	1♀		AN: Acquasanta	
Arctophila superbiens (Müller 1776)	1♂			FC: Campigna
Baccha elongata (F. 1775)	14♂ 18♀	CO: Erba; MC: Macerata; SO: Sondrio	SWITZERLAND Biol	BO: CP; FC: Campigna
Blera fallax (L. 1758)	2♂ 1♀	SO: Val Livrio		TN: Sega di Ala
Brachyopa plena Collin 1939	1♂	ROMANIA: Comana Vlasca, Bucarest		
Brachyopa bicolor (Fallén 1817)	2♂	SO: Sondrio	BO: Ronzano	
Brachyopa insensilis Collin 1939 / *Brachyopa grunewaldensis* Kassebeer 2000	1♀	MC: Macerata		
Brachyopa scutellaris Robineau-Desvoidy 1844	1♀			MO: Nov
Brachypalpoides lentus (Meigen 1822)	1♂			FC: Rif. La Burraia
Brachypalpus laphriformis (Fallén 1816)	1♀			BO: CP
Brachypalpus valgus (Panzer 1798)	1♂	TO: Torino		
Caliprobola speciosa (Rossi 1790)	1♀	FI: Vallombrosa		
Callicera aurata (Rossi 1790)	1♂ 1♀		Abruzzo Nat. Park	BO: CP
Callicera macquarti Rondani 1844	2♀		BO: Grizzana	
Callicera spinolae Rondani 1844	2♀	RM: Roma	BO: Bologna	
Ceriana conopsoides (L. 1758)	4♂ 6♀	MI: Milano; AQ: L'Aquila	BO: Bologna; MO: Sestola; RN: Viserba; SS: Sassari	BO: Ronzano; MO: Nov
Ceriana vespiformis (Latreille 1804)	2♂ 2♀		LI: San Vincenzo; TUNISIA: Beja	NA: Sorrento
Chalcosyrphus nemorum (F. 1805)	2♂ 1♀			BO: SGP; MO: Nov
Chamaesyrphus scaevoides (Fallén 1817)	1♀			UD: M. Coglians
Cheilosia aerea Dufour 1848	1♀			M. Sibillini
Cheilosia antiqua (Meigen 1822)	1♀			TN: M. Pasubio
Cheilosia barbata Loew 1857	9♂ 7♀	BG: Selvino; MC: Bolognola; SO: Teglio, Chiesa		BZ: Rid; FC: Campigna; VR: Bosco Chisanuova; VI: M. Summano; M. Sibillini
Cheilosia bracusi Vujić & Claussen 1994	1♂ 2♀			BO: CP; FC: Foresta Lama
Cheilosia caerulescens (Meigen 1822)	2♀	SO: Val Venina; UN		
Cheilosia canicularis (Panzer 1801)	6♂ 28♀	AN: Acquasanta; TN: Mori; ROMANIA: Sinaia, Azuga	AO: M. Bianco; BL: Val Boite; PT: Maresca; TN: Cavalese, Val di Fiemme;	BZ: Rid; FC: Campigna; M. Sibillini
Cheilosia carbonaria Egger 1860	1♀			BZ: Rid
Cheilosia chrysocoma (Meigen 1822)	1♀			VI: M. Summano
Cheilosia crassiseta Loew 1859	1♂			SO: Passo Spluga
Cheilosia cynocephala Loew 1840	1♂	SO: Sondrio		
Cheilosia derasa Loew 1857	1♀			TN: Mazzin
Cheilosia gigantea Loew 1857	2♂ 2♀	SO: Val Livrio; Val Venina; TN: Cusiano		
Cheilosia griseiventris Loew 1857	6♂		BO: Ravone Creek	
Cheilosia grossa (Fallén 1817)	1♀		BO: S. Anna	
Cheilosia himantopa (Panzer 1798)	7♂ 2♀		AO: M. Bianco; PT: Maresca; TN: Val Cadino, Brusago	BO: CP
Cheilosia illustrata (Harris 1776)	11♂ 6♀	CO: Val Bova; MC: Bolognola; SO: Chiesa; TO: Val di Susa	TN: Brusago; Stava	BZ: Rid
Cheilosia impressa Loew 1804	11♂ 4♀	SO: Val Livrio; Val Venina	BO: Bor	BO: CP, Ripoli; BZ: Rid; VR: Lessini; SLOVENIA: Portorose
Cheilosia impudens Becker 1894	1♂	UN		
Cheilosia laticornis Rondani 1857	2♂ 1♀		BL: V. Boite	BO: CP; TN: M. Pasubio
Cheilosia latifrons (Zetterstedt 1843)	4♂ 4♀		BO: Ravone Creek	BO: Bologna, Bora; FE: Ostellato; CT: Spina Sanata, Foce Simeto; MO: Nov
Cheilosia lenis Becker 1894	1♂ 1♀			BO: CP; PT: Abetone
Cheilosia longula (Zetterstedt 1838)	2♂ 1♀			BO: CP
Cheilosia melanopa (Zetterstedt 1843)	1♂	SO: Val Livrio		
Cheilosia melanura Becker 1894	4♂ 3♀	SO: Val Livrio; Val Venina; Val Togno	AO: M. Bianco	TN: Cavalese, Val Mocheni
Cheilosia montana Egger 1860	1♂			SO: Passo Spluga
Cheilosia mutabilis Fallén 1817	3♂	SO: Malenco, Chiesa, UN		
Cheilosia nigripes (Meigen 1822)	3♂ 12♀	LC: Paderno; MC: Macerata; SO: Sondrio	BO: Gaibola; PT: Maresca	FC: Campigna; TN: Sega di Ala
Cheilosia pagana (Meigen 1822)	5♂ 1♀	MI: Milano; SO: Sondrio		BZ: Rid
Cheilosia pedemontana Rondani 1857	4♂			BO: CP
Cheilosia personata Loew 1857	3♀		BL: V. Boite	VI: Tonezza
Cheilosia proxima (Zetterstedt 1843)	5♂ 2♀	SO: Val Livrio; Val Venina	BO: Bor	BO: CP; TN: M. Staber, Val Mocheni
Cheilosia ranunculi Doczkal 2000	19♂	LU: Bagni; MC: Bolognola	BO: Ravone Creek; BS: Renzano	BO: Bora, CP, CSP, Crevalcore, Sal; MO: Nov; PZ: M Vulture; TN: M Stabar, Val Mocheni

(continued)

(Table 1 continued)

Species	N	Bezzi Collection	Occasional Collection	Burgio Collection
Cheilosia rhyncops Egger 1860	1♂ 9♀			FC: Campigna; TN: M. Pasubio
Cheilosia scutellata Fallén 1817	15♂ 9♀	BO: Barbiano; CO: Erba; MC: M. Rotondo; TN: Cusiano, Mori		BO: CP; Bor; FC: Campigna; VT: Monti Cimini
Cheilosia semifasciata Becker 1894	1♂	MC: Meriggio		
Cheilosia soror (Zetterstedt 1845)	3♂ 4♀		BO: Bor; FG: Foresta Umbra; LU: Cor	Monti Sibillini
Cheilosia urbana (Meigen 1822)	3♂ 2♀	MC: Macerata; SO: Val Livrio; Val Togno, Scais	BO: Bologna	
Cheilosia variabilis (Panzer 1798)	12♂ 4♀	SO: Malenco; Val Fontana; UN; AUSTRIA: Manhartsberg		BO: CP; FC: Campigna; TN: M. Pasubio
Cheilosia vernalis (Fallén 1817)	4♂ 1♀	SO: Sondrio		BZ: Rid; TN: V. Calamento
Cheilosia vicina (Zetterstedt 1849)	1♂ 2♀	SO: L. Pirola		TN: V. Malene, M. Pasubio
Cheilosia vulpina (Meigen 1822)	2♂		BL: Val Boite	
Chrysogaster solstitialis (Fallén 1817)	1♂ 2♀	SO: Sondrio; TO: V. Susa		
Chrysotoxum bicinctum (L. 1758)	7♂ 34♀	MC: Macerata; SO: S. Maria Valmalenco; TN: Mollaro, Mori	BO: Bor, Castel d'Aiano; BL: Sappada, Falcade, Val Boite; LI: Livorno; MO: Sestola; PR: Casarola; RE: San Anna Pelago; TN: Brasago, Pinzolo, V. Genova; Abruzzo Nat. Park	FC: Campigna
Chrysotoxum cautum (Harris 1776)	8♂ 14♀	AT: Bolla; MC: Bolognola; SO: Chiesa; TO: Torino	BO: Bor, Ripoli; TN: Val di Fiemme; TV: Cessalto; GERMANY: Harz	BO: Crevalvore, Bora, San Lazzaro, Settefonti, CP
Chrysotoxum elegans Loew 1841	1♂ 5♀	TN: Mori	BO: Gabbio; MO: Sestola; PR: Casarola	BO: CP
Chrysotoxum fasciatum (Müller 1764)	2♂ 2♀		AO: Valt.	FC: Campigna; SWITZERLAND: Valais
Chrysotoxum fasciolatum (de Geer 1776)	3♂ 2♀		BO: Bor; TN: Pinzolo; CN: Rif. Balma; BL: Val Boite	FC: Campigna
Chrysotoxum festivum (L. 1758)	5♂ 16♀	MC: Bolognola; Torino	AO: Valt; BO: Bor, Badi, Ripoli; BL: Val Boite; MO: Valle delle Pozze; PR Casarola; PT: Maresca; TO: Val Susa; TN: Brusago; Abruzzo Nat Park	BO: CP; FC: Campigna
Chrysotoxum intermedium Meigen 1822	11♂ 8♀	MC: Macerata; OT: Tempio Pausania; ALGERIA; UN	BO: Bor, Paderno; PZ: Laghi di Monticchio; RN: Viserba, Rimini; SS: Tissi, Torralba	
Chrysotoxum lessonae Giglio Tos 1890	3♀		TN: Brusago	FC: Campigna
Chrysotoxum octomaculatum Curtis 1837	1♂ 3♀	CO: Carpesino; SO: Chiesa	BO: Bor	
Chrysotoxum vernale Loew 1841	4♂ 5♀	MC: Macerata; VE: Venezia; Piemonte	BG: Locatello; TN: Cavalese	
Chrysotoxum verralli (Collin 1940)	1♀	AN: Acquasanta		
Criorhina asilica (Fallén 1816)	1♀			FC: Campigna
Criorhina berberina (F. 1805)	7♂ 3♀	MC: Bolognola		BO: CP; FC: Campigna; BZ: Rid
Dasysyrphus albostriatus (Fallèn 1817)	3♂ 3♀	SO: Sondrio; MC: Portocivitanova		BO: CP; FE: Comacchio; FC: Campigna
Dasysyrphus friulensis (Van der Goot 1960)	2♀			BZ: Rid; TN: M Pasubio
Dasysyrphus pinastri (de Geer 1776)	4♂ 2♀			BO: CP; GR: San Rabano
Dasysyrphus tricinctus (Fallén 1817)	3♀			BO: CP; FC: Campigna
Didea alneti (Fallén 1817)	1♂ 2♀	MC: Meriggio; SO: Val Venina; TN: Pejo		
Didea fasciata Macquart 1843	1♂ 4♀	UN; ROMANIA: Comana Vlasca		BO: CP; FC: Campigna
Doros profuges (Harris 1780)	1♂		PT: Maresca	
Epistrophe diaphana (Zetterstedt 1843)	1♀			BO: CP
Epistrophe eligans (Harris 1780)	9♂ 3♀	MC: Macerata; SO: Sondrio; TO: Torino		BO: Bora, Crevalcore; PZ: M. Serra del Prete
Epistrophe glossulariae (Meigen 1822)	7♂ 7♀			BO: CP; BZ: Rid; FC: Campigna
Epistrophe nitidicollis (Meigen 1822)	2♂ 5♀	MC: Bolognola		BO: Bora, Settefonti; MO: Nov
Episyrphus balteatus (de Geer 1776)	69♂ 76♀	SO: Masino;TN: Mori; Piemonte	AO: Valt; BO: Bologna, Bor, Ronzano, Granaglione, Crevalcore; MO: Zocca; PG: Foligno; Abruzzo Nat Park; GERMANY: Harz	BO: Sal, Bora; FC: Campigna; RA: Conselice
Eriozona erratica (L. 1758)	1♂ 3♀	SO: Chiesa; Chiareggio		BZ: Rid; TN: M. Pasubio
Eriozona syrphoides (Fallèn 1817)	1♂ 1♀	UN		BO: CP
Eristalinus aeneus (Scopoli 1763)	30♂ 21♀	CA: Cagliari; PV: Pavia; TUNISIA: Djerba	BO: Bologna, Bor, Grizzana, Varignana; Ravenna; Rimini; FE: Valle Pega; ALGERIA: Biskra, Djamaa, Ghardaia, Touggourt	BO: Bora; FE: Ostellato
Eristalinus sepulchralis (L. 1758)	6♂ 10♀	TN: Rovereto; Piemonte	BG: Locatello; BO: Bologna, Gaibola; Livorno; Ravenna	BO: Crevalcore; FE: Ostellato; TO: Torino
Eristalinus taeniops (Wiedemann 1818)	15♂ 2♀	CA: Cagliari; GR: Isola del Giglio	MS: Ronchi; PT: Gavignana, Maresca	BO: CP

(continued)

(Table 1 continued)

Species	N	Bezzi Collection	Occasional Collection	Burgio Collection
Eristalis arbustorum (L. 1758)	109♂ 118♀	ROMANIA: Bucarest	BL: Val Boite; BO: Bologna, Bor, Ronzano, Ravone Creek, Granaglione, Castel d'Aiano; FG: Foresta Umbra; LU: Cor; MS: Ronchi; PT: Taviano; SS: Picaghe, Sors; TN: Cavalese, Vigo Fassa; Abruzzo Nat Park; ALGERIA: Biskra; Philippeville	BO: Sal; Bora, Crevalcore, CSP; FE: Ostellato; MO: Nov; RA: Conselice, Bardello
Eristalis horticola (de Geer 1776)	1♂ 1♀	So: Sondrio; UN		
Eristalis intricaria (L. 1758)	2♂ 1♀	SVEZIA		
Eristalis nemorum (L. 1758)	1♂ 6♀	PU: Fossato	BL: Val Boite; BO: Bor; Abruzzo Nat Park	BZ: Rid
Eristalis pertinax (Scopoli 1763)	13♂ 6♀	MC: Bolognola; TO: Moncenisio; UD: Collio	BO: Ronzano, Ravone Creek; LU: Cor; TN: Brusago; GERMANY: Harz	BO: CP; FC: Campigna; Fangacci
Eristlias rupium F. 1805	4♂ 10♀	SO: Val Venina; Piemonte	BL: Sappada; TN: Brusago, Cavalese; GERMANY: Harz	BZ: Rid
Eristalis similis (Fallén 1817)	16♂ 9♀		BO: Bologna, Bor; FE: Valle Pega; LU: Cor; PT: Maresca ALGERIA: Philippeville	BO: CSP, CP; MO: Nov
Eristalis tenax (L. 1758)	85♂ 96♀	MC: Bolognola; ROMANIA: Bucarest, Azuga	AO: Valt; BL: Val Boite; BO: Bologna, Bor, Granaglione, Grizzana; CA: Cagliari; MS: Ronchi; PA: La Favorita, M. Cuccio; TN: Stava, Passo Rolle, Cavalese, Val Genova; Como Lake; Abruzzo Nat. Park; ALGERIA: Biskra, Philippeville, Touggourt	BO: Crevalcore, CSP; FC: Campigna; FE: Ostellato
Eumerus amoenus Loew 1848	6♂ 7♀			BO: Bologna, Bora, CSP, Crevalcore; MO: Nov
Eumerus argyropus Loew 1848	2♂			MO: Nov
Eumerus basalis Loew 1848	1♂		BO: Bor	
Eumeurs olivaceus Loew 1848	1♂ 1♀	MC: Serroni		FC: Campigna
Eurmerus ornatus Meigen 1822	1♂ 4♀			BO: Bora; FC: Campigna
Eumerus sogdianus Stackelberg 1952	31♂			BO: Bologna, Bora, CSP, Crevalcore; MO: Nov
Eumerus tarsalis Loew 1848	3♂	SO: Val Venina		VI: M. Summano; SWITZERLAND: Valais
Eumerus tricolor (F. 1798)	1♀	TO: Val Susa		
Eupeodes bucculatus (Rondani 1857)	1♂	SO: Malenco		
Eupeodes corollae (F. 1794)	39♂ 62♀	CA: Cagliari; LC: Paderno; MC: Bolognola; LIBYA: Cirenaica	BG: Locatello; BO: Bologna, Bor, Ronzano, PA: M. San Pellegrino; PG: Foligno; ALGERIA: Biskra	BO: Crevalcore, CSP, Bora, SGP; FE: Ostellato, Comacchio; MO: Nov; RA: Casal Borsetti
Eupeodes lapponicus (Zetterstedt 1838)	22♂ 7♀	SO: Chiereggio; TN: Cusiano	AO: Valt.; BO: Ravone Creek; TN: Brusago	BO: CP; BZ: Rid; FC: Campigna
Eupeodes latifasciatus (Macquart 1829)	4♂ 11♀			BO: CP, Bora
Eupeodes lucasi (Marcos-Garcia et Laska 1983)	1♂		BO: Bor	
Eupeodes luniger (Meigen 1822)	18♂ 20♀	MC: Bolognola; SO: Masino; TN: Cusiano, Mori	AO: Valt; BG: Locatello; BO: Bor, Ronzano, Ravone Creek; Abruzzo Nat. Park	BO: Crevalcore, CSP, SGP; MO: Nov; FC: Campigna; FI: Valico Paretaio; M. Sibillini
Eupeodes nielseni (Dusek et Láska 1976)	1♀		BL: Val Boite	
Ferdinandea aurea Rondani 1844	3♂		BO: Grizzana, Gaggio	
Ferdinandea cuprea (Scopoli 1763)	3♂ 3♀	PU: Pesaro; TO: V. Susa	PT: Maresca	BO: Ripoli; FC: Campigna
Helophilus pendulus (L. 1758)	15♂ 9♀			BO: Bologna, Sal, Bora, CP, Crevalcore; FE: Comacchio; MO: Nov
Helophilus trivittatus (F. 1805)	8♂ 10♀	TN: Caldonazzo, Rovereto; MI: Milano; ROMANIA: Comana Vlasca	BO: Ronzano; RA: Ravenna; MS: Ronchi; LI: San Vincenzo	BO: Sal, CSP; FE: Mezzano, Ostellato
Heringia heringi (Zetterstedt 1843)	1♂ 1♀		BO: Bor	BO: Bora
Heringia brevidens (Egger 1865)	2♂			BO: Sal; MO: Nov
Heringia pubescens (Delucchi & Pschorn-Wlacher 1955)	1♀	SO: Val Livrio		
Heringia vitripennis (Meigen 1822)	1♂			BO: CP
Lejogaster metallina (F. 1776)	1♀	PV: Pavia		
Lejogaster tarsata (Meigen 1822)	3♂ 9♀			BO: SGP, Crevalcore, CP, Bora; MO: Nov; VE: Marcon
Leucozona glaucia (L. 1758)	1♂ 1♀	UN; AUSTRIA: Siebeck		
Leucozona laternaria (Müller 1776)	2♀		BL: Val Boite	BZ: Rid
Leucozona lucorum (L. 1758)	2♂ 5♀	SO: Val Livrio; BG: Publino	MO: Sestola; TN: Val Genova	BO: CP; VR: Bosco Chiesanuova
Melangyna lasiophthalma (Zetterstedt 1843)	1♂			TN: Ala

(continued)

(Table 1 continued)

Species	N	Bezzi Collection	Occasional Collection	Burgio Collection
Melangyna umbellatarum (F. 1794)	1♂ 3♀	MC: Macerata, M. Rotondo, Acquasanta; SO: Val Venina		
Melanogaster nuda (Macquart 1829)	2♂ 5♀	ROMANIA: Comana Vlasca		BZ: Rid; TV: Casacorba; GREECE: Joannina; SWITZERLAND: Lac Retaud
Melanostoma mellinum (L. 1758)	59♂ 74♀	MC: Bolognola; MI: Milano; TV: Treviso	BO: Bologna; PG: Foligno; PU: Fano; Alto Polesine	BO: Bologna, Sal, CP, CSP, Crevalcore, SGP, Bora; FE: Comacchio; FI: Passo Carnevale; MO: Nov; RA: Casal Borsetti, Conselice
Melanostoma scalare (F. 1794)	15♂ 26♀	CO: Erba; MC: Macerata, Bolognola	RA: Cervia	BO: Sal, Bora, CSP, SGP, CP; RA: Bardello; FC: Campigna; MO: Nov
Meligramma cingulata (Egger 1860)	1♂ 1♀		FI: Firenze	FC: Campigna
Meliscaeva auricollis (Meigen 1822)	10♂ 5♀	BO: Bologna; SO: Val Venina; Val Togno; TO: Moncenisio	BO: Bologna	BO: CP; BZ: Rid; FC: Campigna
Meliscaeva cinctella (Zetterstedt 1843)	12♂ 24♀	SO: Val Livrio	BO: Bor; PT: Maresca	BO: CP; FC: Campigna
Merodon aberrans Egger 1860	3♂ 1♀	MC: M. Rotondo	Abruzzo Nat. Park	
Merodon aeneus Meigen 1822	5♂ 5♀	RE: Passo del Cerreto; RM: Roma; SO: Chiesa; TO: Val Susa; UN	BL: Val Boite; BO: Badi	BO: CP; VR: Passo Fittanze
Merodon albifrons Meigen 1822	3♂ 6♀	CB: Campobasso; MO: M. Gibbio; UN	MS: Ronchi; RN: Viserba	
Merodon armipes Rondani 1843	6♂ 1♀	UN	BO: Ravone Creek; PR: Albareto	
Merodon avidus (Rossi 1790)	33♂ 10♀	FG: Gargano; SO: Chiesa; TN: Serrada; Pavia	BO: Granaglione; SP: Campiglia; SS: Sassari	BO: CP; FE: Comacchio; MO: Nov; TN: Ala
Merodon cinereus (F. 1794)	3♂ 4♀	SO: Chiareggio, Val Livrio; Val Venina; UN	TN: Vigo Fassa	TN: Val Mocheni; M Cornetto
Merodon clavipes (F. 1781)	19♂ 5♀	PG: Perugia	BO: Bologna, Croara, Ronzano, Gaibola; PR: Barbiano; SS: Ploaghe, Sorso; TO: Val di Susa	
Merodon constans (Rossi 1794)	1♂ 1♀			VI: Passo Xovo, Velo d'Astico
Merodon distinctus (Palma 1863)	2♀		LI: San Vincenzo; PI: Molina di Quosa	
Merodon equestris (F. 1794)	5♂ 4♀	MC: Macerata; TO: Val Chisone	BO: Croara, Ronzano, Gaibola	MS: M. Tambura
Merodon funestus (F. 1794)	4♂ 8♀	GE: Genova; MC: Bolognola; UN	BO: Bologna, Rastignano, Ravone Creek, Ronzano; LI: Campiglia Marittima	
Merodon longicornis Sack 1913	1♀		BO: Granaglione	
Merodon nigritarsis Rondani 1845	2♂ 3♀		LI: San Vincenzo; PR: Barbiano; Abruzzo Nat. Park	
Merodon pruni (Rossi 1790)	7♂ 2♀	PZ: M. Vulture; UN	PU: Fano; RN: Rimini, Cervia	
Merodon ruficornis Meigen 1822	1♂			PZ: M Pollino
Merodon unicolor Strobl 1909	1♂ 1♀		MO: Sestola	
Mesembrius peregrinus (Loew 1846)	1♂ 3♀			FE: Comacchio
Microdon analis (Macquart 1842)	1♂	SO: Val Livrio		
Microdon mutabilis (L. 1758)	1♂		TV: Lovadina	
Milesia crabroniformis (F. 1775)	4♂ 5♀	TO: Moncenisio; UN	BO: Bor; GE: Chiavari; LI: San Vincenzo; LU: Cor; PR: Casarola; PT: Taviano	
Milesia semiluctifera (Villers 1789)	12♂ 1♀	AQ: L'Aquila	BO: Ronzano; LI: San Vincenzo, Campiglia Marittima; PI: Casciana Terme, Molina di Quosa	
Myathropa florea (L. 1758)	60♂ 66♀	MC: Bolognola;PG: Foligno TO: Stupinigi	AO: Valt; BO: Bologna, Badi, Bor, Ravone Creek, Gaggio, Grizzana; FG: Foresta Umbra; LU: Cor; MO: Sestola; MS: Ronchi;PT: Maresca, Taviano; PU: Fano; RN: Rimini,Viserba; TN: Stava, Brusago, Vigo Fassa	BO: Bologna; BO: Sal, CP, Crevalcore, Bora; FC: Campigna; TN: Val di Genova
Myolepta dubia (F. 1805)	1♂ 1♀	CB: Fossalto; MC: Macerata		
Neoascia annexa (Müller 1776)	4♂	AN: Acquasanta; MC: Bolognola; SO: Sondrio		
Neoascia interrupta (Meigen 1822)	1♂ 3♀			MO: Nov
Neoascia podagrica (F. 1775)	8♂ 1♀	MC: Bolognola; SVIZZERA: Lugano	PU: Fano	BO: Crevalcore
Neoascia tenur (Harris 1780)	2♀			MO: Nov; SWITZERLAND: Vaud
Orthonevra brevicornis (Loew 1843)	3♀	SO: Sondrio; TN: Rabbi; UN		
Orthonevra nobilis (Fallén 1817)	1♂ 3♀	MC: Bolognola; SO: Sondrio, Malenco		TO: Sestriere
Paragus albifrons (Fallén 1817)	1♂	MI: Milano		

(continued)

(Table 1 continued)

Species	N	Bezzi Collection	Occasional Collection	Burgio Collection
Paragus bicolor (F. 1794)	4♂ 10♀	GE: Genova; PV: Pavia; TN: Caldonazzo	BO: Bologna, Bor; PR: Ronzano; PU: Fano	BO: Bora; FE: Mezzano; FI: Vallico Paretaio; MO: Nov
Paragus constrictus Simić 1986	1♂			FE: Comacchio
Paragus haemorrhous Meigen 1822	11♂			BO: Bora, Crevalcore; MO: Nov; TN: Sega di Ala
Paragus hyalopteri Marcos-Garcia et Rojo 1994	2♂			MO: Nov
Paragus pecchiolii Rondani 1857	9♂ 7♀	MC: Macerata; SO: Chiesa; TV: Treviso		BO: Crevalcore, Bora; MO: Nov
Paragus punctulatus (Zetterstedt 1838)	1♂			SWITZERLAND: Valais Saas Fee
Paragus quadrifasciatus Meigen 1822	5♂ 3♀		BO: Bologna	BO: Bora, Crevalcore; CA: Castiadas; MO: Nov; PU: Fano
Paragus tibialis (Fallén 1817)	3♂	MC: Macerata		BO: CSP; FG: Rodi Gargano
Parasyrphus annulatus (Zetterstedt 1838)	1♂ 4♀	BG: Publino; SO: Val Livrio		TN: M Pasubio
Parasyrphus lineolus (Zetterstedt 1843)	1♂			BO: CP
Parasyrphus punctulatus (Verrall 1873)	2♀			VE: Castelberto; VI: Marcesine
Parhelophilus versicolor (F. 1794)	7♂ 4♀			BO: Crevalcore; FE: Comacchio; MO: Nov; RA: Bardello; SS: Azarchena
Pipiza austriaca Meigen 1822	1♀			BO: CP
Pipiza festiva Meigen 1822	1♀	BG: Resegone		
Pipiza quadrimaculata (Panzer 1802)	3♂ 2♀	SO: Val Livrio; MC: Meriggio	BO: Bor	TN: Camposilvano
Pipizella divicoi (Goeldlin de Tiefenau 1974)	2♂	SO: Chiareggio; UN		
Pipizella maculipennis (Meigen 1822)	30♂	CN: Alba; MC: Meriggio	BO: Bor, Grizzana	BO: Crevalcore, CSP, SGP, Bora, Ripoli, Montefredente; MO: Nov
Pipizella nigriana (Séguy 1961)	1♂			SWITZERLAND: Valais
Pipizella viduata (L. 1758)	38♂	SO: Sondrio		BO: Bora
Pipizella zeneggensis (Goeldlin de Tiefenau 1974)	1♂	MC: Tennacola		
Platycheirus albimanus (F. 1781)	36♂ 20♀	MC: Bolognola; SO: Val Venina	AO: Valt	BO: CP; FC: Campigna; VT: Rif Revolto
Platycheirus angustatus (Zetterstedt 1843)	1♀			BO: Bora
Platycheirus angustipes Goeldlin de Tiefenau 1974	1♀			SWITZERLAND: Vaud Lac Retaud
Platycheirus clypeatus (Meigen 1822)	1♂ 1♀			SWITZERLAND: Vaud La Rogivue Tur des Mosses
Platycheirus fulviventris (Macquart 1829)	3♂ 4♀			BO: Crevalcore; FE: Ostellato; MO: Nov; TO: Brandizzo
Platycheirus granditarsus (Foerster 1771)	1♀			SWITZERLAND: Lac Retaud
Platycheirus manicatus (Meigen 1822)	3♂ 4♀	SO: Val Livrio; MC: Meriggio; TO: Torino, Moncenisio		VT: Purga di Velo; Monti Sibillini
Platycheirus melanopsis Loew 1856	1♀			SWITZERLAND: Saas Fee
Platycheirus occultus Goeldin de Tiefenau, Maibach et Speight 1990	1♂			BO: Bora
Platycheirus rosarum (F. 1787)	1♂ 1♀	TO: Val Susa; BELGIUM		
Platycheirus scutatus (Meigen 1822)	1♂ 5♀	MC: Bolognola; SO: Chiesa; Val Livrio		FC: Campigna
Platynochaetus setosus (F. 1794)	1♀		ALGERIA: Philippeville	
Rhingia campestris Meigen 1822	3♂ 2♀	BG: Resegone; MC: Bolognola; SO: Sondrio; UN		SWITZERLAND: Col Bretolet
Rhingia rostrata (L. 1758)	4♂ 4♀	Como; MC: Bolognola; Sondrio; Piemonte	Tuscany Appennin	BO: CP
Riponnesia splendens (Meigen 1822)	1♂ 1♀	MC: Macerata	TV: Treviso	
Rohdendorfia alpina Sack 1938	1♂ 1♀			SO: Passo Stelvio
Scaeva albomaculata (Macquart 1842)	1♂ 3♀	LYBIA: Cirenaica	LI: San Vincenzo; PG: Foligno	
Scaeva dignota (Rondani 1857)	1♂ 3♀	SO: Chiesa	BO: Bologna; Abruzzo Nat. Park	BO: CP
Scaeva pyrastri (L. 1758)	16♂ 30♀	OT: Tempio Pausania; SO: Chiareggio; UN	AO: Valt; AQ: Pescasseroli; BO: Bologna, Ronzano, Ravone Creek, Bor; LU: Cor; MO: V. Pozze, Sestola; MS: Ronchi; PG: Foligno; ALGERIA: Touggourt	BO: CP; FE: Comacchio; FC: Campigna
Scaeva selenitica (Meigen 1822)	2♂	BI: Biella		FE: Comacchio
Sericomyia silentis (Harris 1776)	1♂	GERMANY		
Sphaerophoria chongjini Bankowska 1964	3♂	LC: Merate; SO: Sondrio		
Sphaerophoria infuscata Goeldlin de Tiefenau 1974	2♂			BZ: Rid; TO: Usseglio
Sphaerophoria interrupta (F. 1805)	1♂			VI: Tonezza
Sphaerophoria laurae Goeldlin de Tiefenau 1989	1♂			FRANCE M. Renoso - Corsica
Sphaerophoria rueppelli Wiedemann 1830	14♂ 4♀		PU: Fano	BO: Crevalcore, CP, SGP; MO: Nov; FE: Ostellato, Comacchio; LI: Cecina; RA: Casalborsetti
Sphaerophoria scripta (L. 1758)	158♂ 128♀	MC: Bolognola; SO: Stelvio; TO: Stupinigi	BO: Bologna, Bor; Ravone Creek; CI: Carloforte; FI: Granaiolo; FG: Foresta Umbra; MO: Casinalbo; PA: M. Pellegrino; PG: Foligno; PU: Fano; Abruzzo Nat. Park	BO: Bologna, Sal, CSP, CPas, Crevalcore, Bora, Ripoli, SGP, Settefonti; FC: Campigna; FE: Ostellato, Mezzano, Comacchio; RA: Conselice

(continued)

(Table 1 continued)

Species	N	Bezzi Collection	Occasional Collection	Burgio Collection
Sphaerophoria taeniata (Meigen 1822)	1♂			BO: Sal
Sphegina clunipes (Fallén 1816)	5♂ 9♀		BZ: Trofoi	BZ: Brixien; FC: Campigna
Sphegina elegans Schummel 1843	3♀	AV: Serroni; SO: Sondrio; UN		
Spilomyia digitata (Rondani 1865)	2♀		LI: San Vincenzo	
Spilomyia saltuum (F. 1794)	3♀	AQ: Assergi	LI: Campigna Marittima; UN	
Syritta flaviventris Macquart 1842	18♂ 3♀	EGYPT: Alexandria		BO: CSP; FE: Comacchio, Mezzano; RA: Bardello
Syritta pipiens (L. 1758)	72♂ 47♀	ROMANIA: Bucarest	BO: Bor, Grizzana; LI: San Vincenzo; LU: Cor; MS: Ronchi; PG: Foligno; Abruzzo Nat. Park	BO: Sal, SGP, Crevalcore, CSP, Ripoli; FE: Mezzano, Comacchio; FC: Campigna
Syrphocheilosia claviventris (Strobl 1910)	1♂			SO: Passo Stelvio
Syrphus nitidifrons Becker 1921	1♂ 3♀			BO: CP
Syrphus ribesii (L. 1758)	30♂ 31♀	MC: Bolognola; SO: Chiesa, Val Venina	BO: Bologna, Bor, Ravone Creek; FC: Cesena; FG: Foresta Umbra; LU: Cor; PG: Foligno; Abruzzo Nat. Park	BO: CP, Crevalcore; FE: Comacchio; FC: Campigna
Syrphus torvus Osten Sacken 1875	2♂ 4♀	SO: Sondrio, Chiareggio, Val Togno		MO: Nov; TN: Lago Calaita; VI: Campomulo
Syrphus vitripennis Meigen 1822	22♂ 23♀	MC:Macerata, Bolognola; SO: Sondrio; TO: Torino	BO: Bologna, Bor, Granaglione; LU: Cor; Abruzzo Nat. Park	BO: Crevalcore, CP, SGP; FE: Comacchio; MO: Nov; Monti Sibillini
Triglyphus primus Loew 1840	1♂ 1♀			BO: Crevalcore; MO: Nov;
Tropidia scita (Harris 1776)	3♂ 2♀			BO: Sal; FE: Mezzano
Volucella bombylans (L. 1758)	12♂ 11♀	MC: Bolognola; SO: Val Bitto; TO: Val Susa; Piemonte; UN; SWEDEN;	AO: Val Ferret; BL: Val Boite; LU: Cor; MO: Zocca; PR: Casarola; PT: Maresca, Abetone; TN: Val Cadino, Vigo Fassa; Abruzzo Nat. Park	BO: CP; VR: Castelberto
Volucella inanis (L. 1758)	21♂ 17♀	AO: V d'Ayas; TN: Cusiano, Mori; TO: V. Chisone;	BL: Val Boite; BO: Grizzana, Granaglione; MO: Valle delle Pozze, Sestola; PR: Casarola; PT: Taviano; SO: Stelvio; TN: Cavalese, Brusago, Val Genova	BO: CP; FC: Campigna; MO: Passo Radisi
Volucella inflata (F. 1794)	1♂		PR: Casarola	
Volucella pellucens (L. 1758)	25♂ 34♀	AO: Val d'Ayas; SO: Val Livrio; SVEZIA; UN	AO: Courmayeur; Valt; BL: Val Biote; LU: Cor; PT: Abetone, Maresca; TN: Cavalese, Pinzolo, Stava, Val Cadino, Brusago, Val Genova, Vigo Fassa; UN	BO: CP; FC: Campigna; AO: Gran Paradiso
Volucella zonaria (Poda 1761)	14♂ 28♀	CB: Campobasso; PV: Pavia; UN	BO: Bor, Castel d'Aiano, Grizzana, Ronzano; LI: Campiglia Marittima, San Vincenzo; FG: Foresta Umbra; LU: Cor; MO: Valle delle Pozze, Zocca; MS: Ronchi; PI: Molina di Quosa; PR: Casarola; TN: Val Genova; Abruzzo Nat. Park	VR: Montorio; M. Sibillini
Xanthandrus comtus (Harris 1776)	5♂ 5♀	SO: Chiesa, Chiareggio; TN: Tenna	BO: Ravone Creek, Ronzano, Grizzana	BO: CP; VI: Asiago
Xanthogramma citrofasciatum (de Geer 1776)	7♂ 3♀	TO: Val Susa	BO: Bor, Ravone Creek; PG: Foligno; TV: Cessalto	
Xanthogramma dives (Rondani 1857)	7♂ 13♀	CN: Alba; SO: Sondrio, Chiesa; TO: Torino; Piemonte; ROMANIA: Bucarest	BO: Bor, Grizzana; MO: Valle delle Pozze	BO: CSP; MO: Nov; AQ: L'Aquila
Xanthogramma pedissequum (Harris 1780)	3♂		BO: Bologna	FC: Campigna
Xylota caeruleiventris (Zetterstedt 1838)	1♀		BL: Val Boite	
Xylota ignava (Panzer 1798)	1♂ 1♀		LU: Cor; TN: Vigo Fassa	
Xylota jakutorum Bagatshanova 1980	2♂		TN: Val Cadino	BZ: Rid
Xylota segnis (L. 1758)	16♂ 12♀	MC: Bolognola; SO: Chiesa; MI: Milano	BO: Bor; LU: Cor; MS: Ronchi; PT: Gavignana, Maresca	BO: Bologna, CSP, SGP, CP, Crevalcore; BZ: Rid; FC: Campigna; VR: M. Lessini
Xylota sylvarum (L. 1758)	8♂ 9♀	AUSTRIA	BL: Val Boite; Abruzzo Nat. Park	BO: CP; FC: Campigna
Xylota xanthocnema Collin 1939	2♂			BO: CP; FC: Campigna

Abbreviations:

Provinces - AN: Ancona; AT: Asti; AV: Avellino; BG: Bergamo; BI: Biella; BL: Belluno; BO: Bologna; BZ: Bolzano; CA: Cagliari; CB: Campobasso; CO: Como; CN: Cuneo; CT: Catania; FE: Ferrara; FI: Firenze; FC: Forlì-Cesena; FG: Foggia; GE: Genova; LC: Lecco; LI: Livorno; LU: Lucca; MC: Macerata; MI: Milano; MO: Modena; MS: Massa-Carrara; NA: Napoli; OT: Olbia-Tempio; PA: Palermo; PG: Perugia; PI: Pisa; PR: Parma; PT: Pistoia; PU: Pesaro-Urbino; PV: Pavia; PZ: Potenza; RA: Ravenna; RE: Reggio Emilia; RM: Roma; RN: Rimini; SO: Sondrio; SP: La Spezia; SS: Sassari; TN: Trento; TO: Torino; TV: Treviso; UD: Udine; VE: Venezia; VI: Vicenza; VR: Verona.

Localities - Bor: Borgo Capanne; CP: Castiglione dei Pepoli; CSP: Castel San Pietro; Cor: Corfino di Garfagna; Nov: Novi Modenese; Rid: Val Ridanna; Sal: Sala Bolognese; SGP: San Giovanni in Persiceto; Valt: Valtovananche; UN: unclear label.

Table 2. The list of species currently known from the eastern part of the Po Valley.

Species	VR	VE	RO	PD	FE	BO	RA	MO	MN
Anasimyia contracta Claussen et Torp	✓	✓			✓				
Anasimyia lineata	✓				✓		+		+
Anasimyia transfuga	✓				✓	+		✓	
Baccha elongata		✓							✓
Brachyopa bicolor					✓	+			✓
Brachyopa insensilis					✓				
Brachyopa scutellaris					✓			✓	✓
Brachypalpoides lentus									✓
Brachypalpus valgus					✓				
Caliprobola speciosa									✓
Callicera fagesii Guerin-Meneville									✓
Ceriana conopsoides	✓				✓			✓	✓
Ceriana vespiformis		✓							
Chalcosyrphus nemorum					✓	✓		✓	✓
Chamaesyrphus scaevoides		✓	✓		✓				
Cheilosia flavipes (Panzer)		✓							
Cheilosia grossa		✓				+			✓
Cheilosia latifrons		✓			✓	+		✓	✓
Cheilosia pagana	✓								✓
Cheilosia ranunculi					✓	+		✓	✓
Cheilosia scutellata					✓			✓	✓
Cheilosia urbana		✓	✓						
Chrysotoxum cautum		✓			✓	✓		✓	✓
Chrysotoxum festivum					✓				✓
Chrysotoxum intermedium					✓				
Chrysotoxum vernale	✓		✓		✓				
Criorhina berberina									✓
Dasysyrphus albostriatus	✓	✓	✓		✓				✓
Didea fasciata		✓							
Epistrophe eligans	✓	✓			✓	✓		✓	
Epistrophe melanostoma (Zetterstedt)					✓				✓
Epistrophe nitidicollis	✓	✓			✓	✓		✓	✓
Epistrophella euchroma (Kowarz)									✓
Episyrphus balteatus	✓	✓	✓	✓	✓	✓	✓	✓	✓
Eristalinus aeneus	✓	✓	✓		✓	+	+	✓	✓
Eristalinus sepulchralis	✓	✓	✓		✓	+			✓
Eristalinus taeniops									✓
Eristalis arbustorum	✓	✓			✓	✓	+	✓	✓
Eristalis pertinax		✓	✓		✓			✓	✓
Eristalis similis		✓	✓		✓	+		✓	✓
Eristalis tenax	✓	✓	✓		✓	✓		✓	✓
Eumerus amoenus		✓			✓	+		✓	
Eumerus argyropus			✓		✓			✓	
Eumerus flavitarsis Zetterstedt									✓
Eumerus funeralis Meigen	✓				✓				
Eumerus ornatus		✓			✓	+			✓
Eumerus sogdianus		✓	✓		✓	✓		✓	✓
Eupeodes corollae	✓	✓	✓	✓	✓	✓	✓	✓	✓
Eupeodes lapponicus	✓	✓	✓		✓				
Eupeodes latifasciatus	✓	✓			✓	✓		✓	
Eupeodes luniger	✓	✓	✓		✓	+		✓	
Ferdinandea cuprea					✓				✓
Helophilus pendulus	✓	✓	✓		✓	✓		✓	✓
Helophilus trivittatus	✓	✓			✓	✓	+	✓	✓
Heringia brevidens		✓			✓	+		✓	
Heringia heringi		✓			✓	+			
Heringia vitripennis	✓				✓				
Lejogaster metallina					✓				
Lejogaster tarsata					✓	+		✓	
Mallota fuciformis (F.)									✓
Melanostoma mellinum	✓	✓	✓		✓	✓	+	✓	✓
Melanostoma scalare		✓	✓		✓	✓	+	✓	✓
Meliscaeva auricollis	✓	✓	✓		✓	✓		✓	✓

(continued)

(Table 2 continued)

Species	VR	VE	RO	PD	FE	BO	RA	MO	MN
Merodon avidus		✓			✓			✓	✓
Merodon clavipes					✓	+			
Merodon constans									✓
Merodon equestris						+			
Mesembrius peregrinus	✓	✓			✓			✓	
Microdon devius (L.)		✓							✓
Myathropa florea	✓	✓	✓		✓	✓		✓	✓
Myolepta vara (Panzer)									✓
Neoascia interrupta					✓	✓		✓	
Neoascia podagrica					✓	+			✓
Neoascia tenur	✓				✓			✓	
Orthonevra brevicornis	✓								
Paragus albifrons					✓				
Paragus bicolor	✓	✓			✓	+		✓	
Paragus constrictus		✓			✓				
Paragus haemorrhous		✓	✓		✓	✓		✓	✓
Paragus hyalopteri					✓			✓	
Paragus pecchiolii		✓	✓		✓	✓		✓	
Paragus quadrifasciatus		✓			✓	+		✓	
Paragus tibialis	✓	✓	✓		✓				
Parhelophilus frutetorum (F.)									✓
Parhelophilus versicolor	✓	✓			✓	+	+	✓	✓
Pelecocera tricincta Meigen		✓							
Pipiza nocticula (L.)					✓				
Pipizella maculipennis					✓	+			
Pipizella viduata	✓				✓	✓		✓	✓
Platycheirus albimanus	✓				✓				
Platycheirus angustatus					✓	+			
Platycheirus fulviventris		✓			✓	+			✓
Platycheirus occultus						+			
Platycheirus rosarum	✓								✓
Platycheirus scutatus					✓				✓
Psilota anthracina Meigen									✓
Scaeva pyrastri	✓	✓	✓	✓	✓	✓		✓	
Scaeva selenitica	✓	✓	✓			✓			✓
Sphaerophoria loewi Zetterstedt					✓				
Sphaerophoria rueppelli	✓	✓	✓		✓	✓	✓	✓	✓
Sphaerophoria scripta	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sphaerophoria taeniata		✓				✓			✓
Spilomyia saltuum									✓
Syritta flaviventris		✓			✓	+	+	✓	✓
Syritta pipiens	✓	✓			✓	✓		✓	✓
Syrphus ribesii	✓	✓	✓	✓	✓	✓		✓	✓
Syrphus torvus	✓		✓		✓			✓	✓
Syrphus vitripennis	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trichopsomyia flavitarsis (Meigen)		✓			✓				
Triglyphus primus					✓	+			
Tropidia scita					✓	+			
Volucella bombylans									✓
Volucella inanis									✓
Volucella inflata					✓				✓
Volucella pellucens		✓			✓				✓
Volucella zonaria		✓	✓		✓				✓
Xanthandrus comtus	✓	✓	✓		✓				✓
Xanthogramma citrofasciatum					✓	✓			✓
Xanthogramma dives						+		+	
Xanthogramma pedissequum	✓	✓			✓	✓			✓
Xylota segnis		✓	✓		✓	✓			✓
Xylota sylvarum		✓							✓
Total = 121	44	63	33	6	90	58	13	50	74

Abbreviations:

Provinces - VR: Verona; VE: Venice; RO: Rovigo; PD: Padova; FE: Ferrara; BO: Bologna; FE: Ferrara; RA: Ravenna; MO: Modena; MN: Mantova.

✓: previous recording; +: present data.

Table 3. The list of species currently known from the Emilia Romagna Apennines.

Species	Campigna	Castiglione dei Pepoli	Apennines Reserves	Current
Arctophila bombiforme	✓		✓	
Arctophila superbiens	✓			
Baccha elongata	✓	✓	✓	
Brachyopa bicolor				+
Brachyopa pilosa Collin	✓		✓	
Brachypalpoides lentus	✓	✓	✓	+
Brachypalpus laphriformis	✓		✓	
Caliprobola speciosa	✓			
Callicera aurata	✓		✓	
Callicera macquarti				+
Ceriana conopsoides				+
Cheilosia alba Vujic et Claussen			✓	
Cheilosia antiqua			✓	
Cheilosia barbata			✓	
Cheilosia bracusi	✓	✓		
Cheilosia caerulescens			✓	
Cheilosia canicularis	✓	✓	✓	
Cheilosia carbonaria	✓	✓		
Cheilosia griseiventris				+
Cheilosia grisella (Becker)			✓	
Cheilosia himantopa	✓			
Cheilosia impressa	✓	✓	✓	+
Cheilosia insignis Loew			✓	
Cheilosia laticornis		✓	✓	
Cheilosia latifrons				+
Cheilosia lenis		✓	✓	
Cheilosia longula		✓	✓	
Cheilosia mutabilis	✓	✓		
Cheilosia nigripes	✓		✓	+
Cheilosia pedemontana		✓	✓	
Cheilosia proxima			✓	
Cheilosia pubera (Zetterstedt)			✓	
Cheilosia ranunculi				+
Cheilosia rhynchops	✓		✓	
Cheilosia scutellata	✓	✓		
Cheilosia soror			✓	+
Cheilosia variabilis	✓	✓	✓	
Cheilosia vernalis		✓	✓	
Cheilosia vicina			✓	
Chrysogaster solstitialis	✓		✓	
Chrysotoxum bicinctum	✓	✓	✓	+
Chrysotoxum cautum	✓	✓	✓	+
Chrysotoxum elegans		✓	✓	+
Chrysotoxum fasciatum	✓	✓	✓	
Chrysotoxum fasciolatum	✓	✓	✓	+
Chrysotoxum festivum	✓		✓	+
Chrysotoxum intermedium				+
Chrysotoxum lessonae	✓		✓	
Chrysotoxum octomaculatum		✓	✓	+
Chrysotoxum vernale		✓	✓	
Criorhina asilica	✓			
Criorhina berberina	✓	✓	✓	
Criorhina floccosa (Meigen)	✓			
Dasysyrphus albostriatus	✓	✓		
Dasysyrphus pinastri	✓	✓	✓	
Dasysyrphus tricinctus	✓	✓	✓	
Dasysyrphus venustus (Meigen)			✓	
Didea alneti			✓	
Didea fasciata	✓	✓	✓	
Doros profuges	✓		✓	
Epistrophe eligans	✓		✓	
Epistrophe flava Doczkal et Schmid	✓			

(continued)

(Table 3 continued)

Species	Campigna	Castiglione dei Pepoli	Apennines Reserves	Current
Epistrophe glossulariae	✓	✓		
Epistrophe nitidicollis	✓	✓		
Episyrphus balteatus	✓	✓	✓	+
Eriozona erratica	✓	✓	✓	
Eriozona syrphoides		✓		
Eristalinus aeneus			✓	+
Eristalinus sepulchralis		✓		+
Eristalinus taeniops		✓		
Eristalis arbustorum	✓	✓	✓	+
Eristalis horticola			✓	
Eristalis nemorum				+
Eristalis pertinax	✓	✓	✓	+
Eristalis similis		✓	✓	+
Ersitalis tenax	✓		✓	+
Eumerus amoenus		✓		
Eumerus basalis		✓		+
Eumerus olivaceus	✓		✓	
Eumerus ornatus		✓		
Eumerus sabulonum (Fallén)			✓	
Eumerus strigatus (Fallén)	✓			
Eumerus uncipes Rondani		✓		
Eupeodes bucculatus		✓	✓	
Eupeodes corollae		✓	✓	+
Eupeodes flaviceps (Rondani)			✓	
Eupeodes lapponicus	✓	✓	✓	+
Eupeodes latifasciatus	✓	✓	✓	
Eupeodes lucasi	✓		✓	+
Eupeodes luniger		✓	✓	+
Eupeodes nitens (Zetterstedt)			✓	
Ferdinandea aurea				+
Ferdinandea cuprea	✓	✓		+
Helophilous pendulus		✓	✓	
Helophilous trivittatus		✓	✓	+
Heringia heringi		✓		+
Heringia latitarsis			✓	
Heringia vitripennis		✓	✓	
Leucozona lucorum	✓	✓		
Melangyna lasiophthalma			✓	
Melangyna umbellatarum	✓		✓	
Melanostoma mellinum	✓	✓	✓	
Melanostoma scalare	✓	✓	✓	+
Meligramma cincta (Fallén)	✓			
Meligramma cingulata	✓	✓		
Meliscaeva auricollis	✓	✓	✓	
Meliscaeva cinctella	✓	✓	✓	+
Merodon aberrans	✓	✓	✓	+
Merodon aeneus	✓	✓	✓	
Merodon armipes				+
Merodon avidus		✓		+
Merodon cinereus		✓		
Merodon clavipes				+
Merodon constans		✓		
Merodon equestris				+
Merodon funestus				+
Merodon longicornis		✓		+
Merodon pruni		✓		
Microdon mutabilis	✓			
Milesia crabroniformis				+
Milesia semiluctifera		✓		+
Myathropa florea	✓	✓	✓	+
Neoascia annexa	✓		✓	
Neoascia podagrica	✓	✓	✓	

(continued)

(Table 3 continued)

Species	Campigna	Castiglione dei Pepoli	Apennines Reserves	Current
Orthonevra nobilis		✓		
Paragus albifrons		✓		
Paragus bicolor		✓		+
Paragus haemorrhous			✓	
Paragus pecchiolii		✓		
Paragus quadrifasciatus		✓		
Paragus tibialis		✓		
Parasyrphus annulatus			✓	
Parasyrphus lineolus	✓		✓	
Parasyrphus macularis (Zetterstedt)	✓			
Parasyrphus punctulatus	✓		✓	
Parasyrphus vittiger (Zetterstedt)		✓	✓	
Pipiza bimaculata Meigen		✓	✓	
Pipiza festiva			✓	
Pipiza nocticula			✓	
Pipiza quadrimaculata				+
Pipizella annulata Macquart	✓		✓	
Pipizella calabra (Goeldlin)			✓	
Pipizella divicoi		✓		
Pipizella elegantissima Lucas	✓			
Pipizella maculipennis		✓		+
Pipizella virens (F.)		✓		
Pipizella zeneggensis			✓	
Platycheirus albimanus	✓	✓	✓	
Platycheirus angustipes			✓	
Platycheirus clypeatus			✓	
Platycheirus occultus			✓	
Platycheirus rosarum		✓		
Platycheirus scutatus	✓			
Rhingia rostrata		✓		
Scaeva dignota			✓	
Scaeva pyrastri	✓	✓	✓	+
Scaeva selenitica	✓	✓	✓	
Sericomyia silentis			✓	
Sphaerophoria interrupta			✓	
Sphaerophoria rueppelli		✓		
Sphaerophoria scripta	✓	✓		+
Sphegina clunipes	✓			
Sphegina verecunda Collin	✓			
Spilomyia manicata (Rondani)		✓		
Syritta pipiens	✓	✓		+
Syrphus nitidifrons	✓	✓		
Syrphus ribesii	✓	✓		+
Syrphus vitripennis	✓	✓		+
Volucella bombylans	✓	✓		
Volucella inanis	✓	✓		+
Volucella inflata	✓			+
Volucella pellucens	✓	✓		
Volucella zonaria	✓	✓	✓	+
Xanthandrus comtus	✓	✓	✓	+
Xanthogramma citrofasciatum				+
Xnthogramma dives				+
Xanthogramma pedissequum	✓	✓	✓	+
Xylota segnis	✓	✓	✓	+
Xylota sylvarum	✓	✓	✓	
Xylota tarda Meigen	✓			
Xylota xanthocnema	✓	✓		
Total = 181	89	98	102	61

Data were recorded from: Campigna: Burgio *et al*., 2000; Castiglione dei Pepoli: Burgio and Daccordi, 1997; Apennines Reserves: Birtele *et al*., 2003.

✓: previous recording; +: present data.

Acknowledgements

I would like to thank Prof. Piero Baronio who strongly stimulated this study and allowed me to examine the "Guido Grandi Collection"; Clauss Claussen, who helped me in the identification of critical species, and Giovanni Bazzocchi, for his technical support. Three referees greatly improved the manuscript with many suggestion and corrections; Stefano Maini and Davide Montanari help in editing has been very precious. I wish also to thank my friend Giovanni Burgio, who always stimulates and supports me in all my work.

References

BELCARI A., DACCORDI M., KOZANEK M., MUNARI L., RASPI A., RIVOSECCHI L., 1995.- Diptera Platypezoidea, Syrphoidea. In: *Checklist delle specie della fauna italiana*, 70 (MINELLI A., RUFFO S., LA POSTA S., Eds).- Calderini, Bologna, Italy.

BEZZI M., STEIN P., 1907.- Cyclorrhapha Aschiza. Syrphoidea. In: *Katalog der Paläarktischer Dipteren*, 3 (BECKER T., BEZZI M., KERTESZ K., STEINS P., Eds).- Budapest, Hungary.

BIRTELE D., SOMMAGGIO D., SPEIGHT M. C. D., TISATO M., 2002.- Syrphidae, pp. 115-118. In: *Invertebrati di una foresta della Pianura Padana Bosco della Fontana* (MASON F., CERRETTI P., TAGLIAPIETRA A., SPEIGHT M. C. D., ZAPPAROLI A., Eds).- Gianluigi Arcari Editore, Mantova, Italy.

BIRTELE D., SOMMAGGIO D., SPEIGHT M. C. D., 2003.- Syrphidae, pp. 154-163. In: *Artropodi dell'orizzonte del faggio nell'Appennino settentrionale* (CERRETTI P., TAGLIAPIETRA A., TISATO M., VANIN S., MASON F., ZAPPAROLI M.).- Gianluigi Arcari Editore, Mantova, Italy.

BRĂDESCU V., 1991.- Les Syrphides de Roumanie (Diptera, Syrphidae). Clés de détermination et répartition.- *Travaux du Muséum d'Histoire Naturelle "Grigore Antipa"*, 31: 7-83.

BURGIO G., 1991.- Ditteri Sirfidi della Provincia di Ferrara (Diptera, Syrphidae).- *Quaderni della Stazione di Ecologia del Civico Museo di Storia Naturale di Ferrara*, 4: 53-63

BURGIO G., DACCORDI M., 1997.- Ditteri Sirfidi dell'abetina di Castiglione dei Pepoli (Bologna).- *Bollettino del Museo Regionale di Scienze Naturali, Torino*, 15: 63-73

BURGIO G., SOMMAGGIO D., 2002.- Diptera Syrphidae caught by Malaise trap in Bologna province and new record of *Neoascia interrupta* (Meigen) in Italy.- *Bulletin of Insectology*, 55: 43-47.

BURGIO G., SOMMAGGIO D., 2007.- Diptera Syrphidae as landscape bioindicators in Italian agoecosystems.- *Agriculture Ecosystems and Environment*, 120: 416-422.

BURGIO G., FERRARI R., BORIANI L., 1997. Il ruolo delle siepi nell'ecologia del campo coltivato: analisi di comunità dei Ditteri Sirfidi in aziende della provincia di Bologna.- *Bollettino dell'Istituto di Entomologia "Guido Grandi" della Università degli Studi di Bologna*, 51: 69-77.

BURGIO G., SPEIGHT M. C. D., CAMPADELLI G., CRUDELE G., 2000.- Indagine faunistica sui Ditteri Sirfidi della riserva naturale biogenetica di Campigna.- *Bollettino dell'Istituto di Entomologia "Guido Grandi" della Università degli Studi di Bologna*, 54: 175-182.

COLLIN J. E., 1939.- Notes on Syrphidae (Diptera) III.- *Entomologists Monthly Magazine*, 75: 104-109.

CZERNY L., STROBL G., 1909.- Spanische Dipteren. III. Beitrag.- *Verhandlungen der Zoologisch-botanischen Gesellschaft in Wien*, 59: 121-301.

DACCORDI M., 1979.- Ditteri Sirfidi in un frutteto a lotta integrata nella provincia di Verona.- *Quaderni dell'Azienda Agraria Serimentale di Villafranca*, 1: 3-35.

DACCORDI M., MAROGNA A., 1989.- Studi sulla Palude del Busatello (Veneto - Lombardia). 25. I Ditteri Sirfidi.- *Memorie del Museo Civico di Storia Naturale di Verona*, 7: 223-230.

DACCORDI M., SOMMAGGIO D., 2002.- 070 Syrphidae.- *Bollettino della Società Entomologica Italiana*, 134: 192-198.

DIRICKX H. G., 1994.- Atlas des Diptères syrphides de la région méditerranéenne.- *Documents de Travail de l'Institut Royal des Sciences naturelles de Belgique*, 75: 1-314.

DOCZKAL D., DZIOCK F., 2004.- Two new species of *Brachyopa* Meigen from Germany, with notes on *B. grunewaldensis* Kassebeer (Diptera, Syrphidae).- *Volucella*, 7: 35-59.

KASSEBEER C. F., 2000.- Eine neue *Brachyopa* Meigen, 1822 (Diptera, Syrphidae) aus dem Grunewald.- *Dipteron*, 3: 7-12.

MARCOS GARCÍA M. A., 2006.- *Caliprobola speciosa* (Rossi, 1790); *Mallota dusmeti* Andréu, 1926; *Meligramma cingulata* (Egger, 1860), pp. 173-176. In: *Libro rojo de los invertebrados de España* (VERDÚ J. R., GALANTE E., Eds).- Dirección General para le Biodiversidad, Ministerio e Medio Ambiente, Madrid, Spain.

MARCOS-GARCÍA M. A., VUJIĆ A., MENGUAL X., 2007.- Revision of Iberian species of the genus *Merodon* (Diptera: Syrphidae).- *European Journal of Entomology*, 104: 531-572.

PECK L. V., 1988.- Syrphidae, pp. 11-230. In: *Catalogue of Palaearctic Diptera*, 8 (SOÓS A., PAPP L., Eds.).- Akad. Kiado, Budapest, Hungary.

RONDANI C., 1857. Species Italiacae, ordinis Dipterorum in genera characteribus definita, ordinatim collectae, methodo analitica distinctae, et novis vel minus cognitis descriptis. Pars prima. Oestridae: Syrpfhidae: Conopidae. Parmae.

SACK P., 1928-32.- Syrphidae, pp.1-451. In: *Die Fliegen der Palaerktischen Region*, 31 (LINDNER L., Ed.).- Schweizerbart, Stuttgart, Germany.

SOMMAGGIO D., 2005.- Insecta Diptera Syrphidae (Syrphinae, Syrphini). In: *Checklist e distribuzione della fauna italiana* (RUFFO S., STOCH F., Eds).- *Memorie del Museo Civico di Storia Naturale di Verona. 2Serie. Sezione Scienze della Vita*, 16: 245-246.

SOMMAGGIO D., 2007.- Revision of Diptera Syrphidae in Bellardi's Collection, Turin.- *Bollettino del Museo Regionale di Scienze Naturali di Torino*, 24: 121-158.

SOMMAGGIO D., BURGIO G, 2004.- I Sirfidi come bioindicatori: lo stato dell'arte in Italia, pp. 197-203. In: *Atti XIX Congresso Nazionale Italiano di Entomologia*, Catania, 10-15 giugno 2002.

SOMMAGGIO D., CORAZZA C., 2006.- Contributo alla conoscenza dei Sirfidi (Diptera Syrphidae) della città di Ferrara.- *Quaderni di Ecologia Museo di Ferrara*, 16: 5-20.

SOMMAGGIO D., CORAZZA C., BURGIO G., 2005.- Misurare la Biodiversità: i Ditteri Sirfidi. In: *XIV congresso della Società Italiana di Ecologia*, 4-6 Ottobre 2004, Siena, Italy. [online] URL: http://www.ecologia.it/congressi/XIV/articles/Sommaggio-22.pdf

SPEIGHT M. C. D., 1986.- Criteria for the selection of insects to be used as bioindicators in nature conservation research, pp. 485-488. In: *Proceedings of 3rd European congress of entomology* (VELTHIUS H. H. W., Ed.), Amsterdam, August 1986. Amsterdam, The Netherlands.

SPEIGHT M. C. D., 2008a.- Database of Irish Syrphidae (Diptera).- *Irish Wildlife Manuals*, 36. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

SPEIGHT M. C. D., 2008b.- Species accounts of European Syrphidae (Diptera) 2008. In: *Syrph the Net, the database of European Syrphidae*, 55 (SPEIGHT M. C. D., CASTELLA E., SARTHOU J.-P., MONTEIL C., Eds).- Syrph the Net publications, Dublin, Ireland.

SPEIGHT M. C. D., CASTELLA E., 2001.- An approach to interpretation of lists of insects using digitised biological information about the species.- *Journal of Insect Conservation*, 5: 131-139.

VAN DER GOOT V. S., 1969.- Italian Syrphidae (Diptera).- *Entomologische Berichten*, 29: 89-96.
VAN VEEN M., 2004.- *Hoverflies of Northwest Europe: identification keys to the Syrphidae*.- KNNV Publishing, Utrecht, Netherlands.
VUJIĆ A., 1991.- Species of genus *Brachyopa* Meigen 1822 (Diptera: Syrphidae) in Yugoslavia.- *Glasnik prirodnjackog Muzeja u Beogradu*, B46: 141-150.

Author's address: Daniele SOMMAGGIO (e-mail: dsommaggio@tiscali.it), DiSTA - Entomologia, *Alma Mater Studiorum* Università di Bologna, viale G. Fanin 42, 40127 Bologna, Italy.

Received October 22, 2009. Accepted January 29, 2010.