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## SYRPHIDAE (*Diptera*) FROM LAMPEDUSA ISLAND

### SUMMARY

Diptera of Lampedusa are poorly known, and the only published data are those of VENTURI (1960) and PISCIOTTA et al. (2008). In the present paper the authors report new records of Syrphidae (Diptera) for Lampedusa island discovered during field investigations carried out for a broader research project in the island. Data are updated to November 2009. Eleven species of Syrphidae new for Lampedusa have been found of which one is new for the Sicilian fauna.

### RIASSUNTO

*Syrphidae (Diptera) dell'isola di Lampedusa.* La ditterofauna di Lampedusa è scarsamente conosciuta e gli unici dati pubblicati si riferiscono agli studi di Venturi del 1960 e di Pisciotta, Zito, Sajeve e Raspi del 2008. In questo lavoro gli autori riportano nuove segnalazioni per l'Isola di Lampedusa. Lo studio è stato effettuato durante un più ampio progetto di ricerca condotto sull'isola. I dati sono aggiornati al mese di novembre 2009. Undici specie di Syrphidae risultano nuove per Lampedusa, una delle quali è nuova per la Sicilia.

### INTRODUCTION

Lampedusa (35°29'28" and 35°21'39" N - 12°30'54" and 12°37'55" E Greenwich) is the largest island of the Pelagie archipelago. It is an emergence of the African Continental platform and is 195 km far from the Sicilian coast and 120 km from Tunisia (AGNESI & FEDERICO, 1995), it is 20.2 km<sup>2</sup> wide, 11 km long (East-West) with a maximum breadth of 3.5 km. The dipterofauna of Lampedusa is poorly known with 45 species described by VENTURI (1960) and

more recently further 7 reported by PISCIOTTA *et al.* (2008). The geographic position of Lampedusa may pose some problems as regard to its inclusion in the Sicilian or African biological communities. A relevant aspect of the biological diversity of the Pelagic Archipelago is the presence of North African elements beside a high level of endemic species. Out of 820 taxa of arthropods known for Lampedusa, several species, genera, and also families (e.g. Hymenoptera Bradynobaenidae) and orders (Solifugae) find the only Italian or European locality in Lampedusa (LO CASCIO, 2002). In the present paper we report new records of Syrphidae (Diptera) for Lampedusa island collected during field investigations carried out in the framework of a more extensive research project on the ecology of *Caralluma europaea* (Guss.) N.E.Br. and *Periploca laevigata* subsp. *angustifolia* (Labill.). Markgraf, started in April 2006. Data are updated to November 2009. Fifteen species for Lampedusa have been identified, of which eleven are new for Lampedusa Island according to VENTURI (1960), and among them one for Sicily.

#### NOTES ON THE STUDIED FAMILY

Hoverflies (Diptera Syrphidae) are a large and diverse group of insects. Many species are important pollinators of flowering plants, and the larvae of numerous species are predators of destructive aphids and other pests (VAN VEEN, 2004). Syrphidae are expert fliers and can hover and fly backward, an ability possessed by few other insects. The adults mainly feed on nectar and pollen. The females are obligate pollen eaters since they need its proteins and aminoacids for the maturation of eggs. Nectar contains mainly sugars, which enables them to fly and hover actively. Being regular visitors of flowers, Syrphidae are important pollinators of various plants including vegetables and fruit trees (e.g. Asteraceae, Brassicaceae and Rosaceae) probably attracted by their colours. Three large ecological groups can be distinguished: predators, miners and decomposers (living on dead organic material - saproxylic larvae). All species of the subfamily of Syrphinae have zoophagous larvae. Their main prey are aphids (greenflies) which attack citrus, subtropical fruit trees, grains, corn, alfalfa, cotton, grapes, lettuce and other vegetables, ornamentals, and many wild host plants (ROTHERAY, 1993).

#### MATERIALS AND METHODS

Captures were done with an entomological net from January 2007 to November 2009. Specimens were kept separately in plastic test-tube and suc-

cessively dry mounted for identification. For each species the following data are reported:

- locality, date, specimens collected and sex;
- references to Sicily;
- corotype according to VIGNA TAGLIANTI *et al.* (1993, 1999), based on distribution as reported by SPEIGHT (2004a, 2010);
- notes.

Captures were done by S. Pisciotta and P. Zito; specimens have been examined and identified by D. Birtele. Collection localities are indicated in Fig. 1, specimens are deposited at the Dipartimento di Scienze Botaniche dell'Università di Palermo.



Fig. 1 — Map of Lampedusa Island. Figures indicate the localities where captures have been done. The inset map shows the position of Lampedusa within the Mediterranean Basin.

#### LIST OF SPECIES

##### 1. *Episyrphus balteatus* (De Geer, 1776) (new for Lampedusa)

Lampedusa, loc. Isola dei Conigli, 21.I.2007, 1 ♂; 18.III.2007, 1 ♂; Cala Pulcino, 17.III.2007, 1 ♀; Valle della Forbice, 2.II.2008, 10 ♂♂; 1.III.2008, 10 ♂♂; 7.XI.2009, 1 ♂.

*References for Sicilian Dipterofauna.* MINÀ PALUMBO, 1887; BEZZI, 1891; BEZZI & DE STEFANI-PEREZ, 1897; VENTURI, 1960; VAN DER GOOT, 1964; BELCARI *et al.*, 1995; MASON *et al.*, 2006; SPEIGHT, 2010.

*Chorotype:* Subcosmopolitan.

2. *Eupeodes (Eupeodes) corollae* (Fabricius, 1794)

Lampedusa, loc. Cala Creta, 20.I.2007, 1 ♂; Isola dei Conigli, 16.II.2007, 1 ♂; Cala Pulcino, 17.III.2007, 1 ♀; Punta Sottile, 19.III.2007, 1 ♀; Valle della Forbice, 2.II.2008, 1 ♀ 3 ♂♂; 1.III.2008, 1 ♂; Isola dei Conigli, 7.IV.2008, 2 ♀♀.

*References for Sicilian DipteroFauna.* MINÀ PALUMBO, 1887; BEZZI, 1892; BEZZI & DE STEFANI-PEREZ, 1897; VENTURI, 1960; VAN DER GOOT, 1964; BELCARI *et al.*, 1995; SOMMAGGIO, 2005; SPEIGHT, 2010.

*Chorotype.* Subcosmopolitan.

3. *Simosyrphus aegyptius* (Wiedemann, 1830) (new for Sicily)

*Ischiodon aegyptius* (Wiedemann, 1830): SACK, 1932: 205; SPEIGHT, 2004b

*Ischidon aegyptius* (Wiedemann, 1830): KHAGHANINIA *et al.*, 2010: 272

Lampedusa, loc. Valle della Forbice, 7.XI.2009, 1 ♀, (D. Birtele collection, Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale).

*Chorotype.* Afrotropical-Mediterranean.

*Notes.* According to LÁSKA *et al.* (2006), *Ischiodon* (Sack, 1913) is synonym of *Simosyrphus* (Bigot, 1882). Recently it has been reported for Iran (KHAGHANINIA *et al.*, 2010). DACCORDI & SOMMAGGIO (2002) and SPEIGHT (2010) report this species for South Italy. According to SPEIGHT (2010) the fact that adults have been seen in southern Europe only during the summer suggests that this species may not be resident, but establishes temporary populations during favourable seasons.

4. *Meliscaeva auricollis* (Meigen, 1822) (new for Lampedusa)

Lampedusa, loc. Cala Pulcino, 17.III.2007, 1 ♂; Punta Sottile, 19.III.2007, 1 ♀; Valle della Forbice, 2.II.2008, 1 ♀ 6 ♂♂; Isola dei Conigli, 1.III.2008, 1 ♀.

*References for Sicilian DipteroFauna.* VAN DER GOOT, 1964; BELCARI *et al.*, 1995; SOMMAGGIO, 2005; SPEIGHT, 2010.

*Chorotype.* W-Palaearctic.

5. *Scaeva pyrastris* (Linnaeus, 1758)

Lampedusa, loc. Casa Teresa, 13.IV.2007, 1 ♂.

*References for Sicilian DipteroFauna.* MINÀ PALUMBO, 1887; BEZZI, 1891; BEZZI & DE STEFANI-PEREZ, 1897; VENTURI, 1960; VAN DER GOOT, 1969; BELCARI *et al.*, 1995; SOMMAGGIO, 2005; SPEIGHT, 2010.

*Chorotype.* Cosmopolitan.

6. *Sphaerophoria rueppelli* (Wiedemann, 1830)

Lampedusa, loc. Capo Grecale, 14.IV.2007, 1 ♀.

*References for Sicilian DipteroFauna.* VENTURI, 1960; VAN DER GOOT, 1964; BELCARI *et al.*, 1995; SOMMAGGIO, 2005; SPEIGHT, 2010.

*Chorotype.* Palearctic.

7. *Sphaerophoria scripta* (Linnaeus, 1758)

Lampedusa, loc. Isola dei Conigli, 14.IV.2007, 1 ♂; Capo Grecale, 22.VI.2007, 1 ♂.

*References for Sicilian DipteroFauna.* MINÀ PALUMBO, 1887; BEZZI & DE STEFANI-PEREZ, 1897; VENTURI, 1960; VAN DER GOOT, 1969; BELCARI *et al.*, 1995; SOMMAGGIO, 2005; MASON *et al.*, 2006; SPEIGHT, 2010.

*Chorotype.* Subcosmopolitan.

8. *Chrysotoxum intermedium* Meigen, 1822 (new for Lampedusa)

Lampedusa, loc. Isola dei Conigli, 1.III.2008, 1 ♂; Valle della Forbice, 1.III.2008, 1 ♂; 2.II.2008, 1 ♂; 2.II.2008, 1 sex undetermined.

*References for Sicilian DipteroFauna.* MINÀ PALUMBO, 1887; BEZZI & DE STEFANI-PEREZ, 1897; VAN DER GOOT, 1964; BELCARI *et al.*, 1995; SOMMAGGIO, 2005; MASON *et al.*, 2006; SPEIGHT, 2010.

*Chorotype.* Mediterranean.

*Notes.* SPEIGHT (2004b) includes this species among those “*incertae sedis*”. It has been identified according to SOMMAGGIO (2001). Recently MASETTI *et al.* (2006) proposed a new phylogenetic arrangement of Italian *Chrysotoxum*, based on morphological and molecular data.

9. *Xanthandrus comtus* (Harris, 1780) (new for Lampedusa)

Lampedusa, loc. Valle della Forbice, 1.III.2008; 8.III.2008, 2 ♂♂.

*References for Sicilian DipteroFauna.* BEZZI & DE STEFANI-PEREZ, 1897; BELCARI *et al.*, 1995.

*Chorotype.* Cosmopolitan.

10. *Paragus (Pandasyophthalmus) coadunatus* Rondani, 1847 (new for Lampedusa)

Lampedusa, loc. Isola dei Conigli, 3.V.2008, 2 ♀♀ 1 ♂.

*References for Sicilian DipteroFauna.* MINÀ PALUMBO, 1887; BELCARI *et al.*, 1995; SPEIGHT, 2004a; MASON *et al.*, 2006; SPEIGHT, 2010.

*Chorotype.* Mediterranean.

*Notes.* According to ROJO *et al.* (2006) *P. ascoensis*, *P. coadunatus*, *P.*

*haemorrhous* e *P. tibialis* belong to a single polymorphic taxon with a high intraspecific variability.

11. *Eumerus barbarus* Coquebert, 1804 (new for Lampedusa)

Lampedusa, loc. Albero Sole, 17.II.2007, 1 ♀; 14.IV.2007, 1 ♀; Valle della Forbice, 8.IX.2008, 1.

*References for Sicilian DipteroFauna.* RONDANI, 1869  
*Chorotype.* Mediterranean.

12. *Eumerus pulchellus* Coquebert, 1804 (new for Lampedusa)

Lampedusa, loc. Albero Sole, 14.IV.2007, 1 ♀; 14.IV.2007, 1 ♂; Valle della Forbice, 2.II.2008, 1 ♂.

*References for Sicilian DipteroFauna.* MINÀ PALUMBO, 1887; BEZZI & DE STEFANI-PEREZ, 1897; VAN DER GOOT, 1964; BELCARI *et al.*, 1995; SPEIGHT, 2010.

*Chorotype.* Mediterranean.

13. *Eumerus pusillus* Loew, 1848 (new for Lampedusa)

Lampedusa, loc. Isola dei Conigli, 14.IV.2007, 1 ♂.

*References for Sicilian DipteroFauna.* BEZZI & DE STEFANI-PEREZ, 1897; BELCARI *et al.*, 1995; SPEIGHT, 2010.

*Chorotype.* Mediterranean.

*Notes.* This species is typical of sunny environments with semi-arid soils, almost without vegetation; in the Mediterranean it prefers sand dunes.

14. *Eristalinus (Eristalodes) taeniops* (Wiedemann, 1818) (new for Lampedusa)

Lampedusa, loc. Valle della Forbice, 2.II.2008, 1 ♂; 6.VIII.2008, 1 ♂.

*References for Sicilian DipteroFauna.* MINÀ-PALUMBO, 1886; BEZZI & DE STEFANI-PEREZ, 1897; VAN DER GOOT, 1964; BELCARI *et al.*, 1995; CARPANETO & VIGNA TAGLIANTI, 1995; MASON *et al.*, 2006; SPEIGHT, 2010.

*Chorotype.* Afrotropical-Indo-Mediterranean.

15. *Eristalis (Eoseristalis) similis* (Fallén, 1817) (new for Lampedusa)

Lampedusa, loc. Valle della Forbice, 7.XI.2008, 1 ♀.

*References for Sicilian DipteroFauna.* MINÀ PALUMBO, 1887; BEZZI & DE STEFANI-PEREZ, 1897; VAN DER GOOT, 1964; DACCORDI & SOMMAGGIO, 2002; MASON *et al.*, 2006; SPEIGHT, 2010.

*Chorotype.* W-Palaearctic.

## CONCLUSIONS

The only previous records of Syrphidae for Lampedusa are those by VENTURI (1960) with 13 species belonging to this family. Out of 15 species recorded in the present study only four species, *Eupeodes corollae*, *Scaeva pyrastris*, *Sphaerophoria scripta*, and *Sphaerophoria rueppelli* were reported by VENTURI (1960) while 11 have not been previously listed for Lampedusa (Tab. 1). Furthermore, in the present paper we report *Symosyrphus* (= *Ischiodon*) *aegyptius* as new for Sicily.

The species reported in this paper and those reported by VENTURI (1960) fall within nine chorotypes belonging to four major groups (Tab. 2).

Table 1

List of all species of Syrphidae reported for Lampedusa by the present authors and by VENTURI (1960).  
(\*) new species for Lampedusa; (\*\*) new species for Sicily.

	SPECIES	VENTURI 1960	Present paper
1	<i>Ceriana vespiformis</i> (Latreille, 1804)	X	
2	<i>Chrysotoxum intermedium</i> Meigen, 1822*		X
3	<i>Episyrphus balteatus</i> (De Geer, 1776)*		X
4	<i>Eristalinus aeneus</i> (Scopoli, 1763)	X	
5	<i>Eristalinus taeniops</i> (Wiedemann, 1818)*		X
6	<i>Eristalis similis</i> (Fallén, 1817)*		X
7	<i>Eristalis tenax</i> (Linnaeus, 1758)	X	
8	<i>Eumerus barbarus</i> Coquebert, 1804*		X
9	<i>Eumerus graecus</i> Becker, 1921	X	
10	<i>Eumerus olivaceus</i> Loew, 1848	X	
11	<i>Eumerus pulchellus</i> Coquebert, 1804*		X
12	<i>Eumerus pusillus</i> Loew, 1848*		X
13	<i>Eupeodes corollae</i> (Fabricius, 1794)	X	X
14	<i>Meliscaeva auricollis</i> (Meigen, 1822)*		X
15	<i>Paragus coadunatus</i> Rondani, 1847*		X
16	<i>Paragus strigatus</i> Meigen, 1822	X	
17	<i>Paragus tibialis</i> (Fallén, 1817)	X	
18	<i>Sphaerophoria interrupta</i> (Fabricius, 1805)	X	
19	<i>Sphaerophoria rueppelli</i> (Wiedemann, 1830)	X	X
20	<i>Sphaerophoria scripta</i> (Linnaeus, 1758)	X	X
21	<i>Scaeva albomaculata</i> (Macquart, 1842)	X	
22	<i>Scaeva pyrastris</i> (Linnaeus, 1758)	X	X
23	<i>Simosyrphus aegyptius</i> (Wiedemann, 1830)**		X
24	<i>Xanthandrus comtus</i> (Harris, 1780)*		X

Table 2

*Chorological categories of the species reported for Lampedusa and their relative percentage. N indicates the number of species.*

<b>Chorotype</b>	<b>N</b>	<b>%</b>
<b>Species widespread in the Holarctic Region</b>	<b>9</b>	<b>37.5</b>
Palaearctic	5	
W- Palaearctic	2	
Turano-European-Mediterranean	1	
Turano- Mediterranean	1	
<b>Cosmopolitan or Subcosmopolitan species</b>	<b>7</b>	<b>29.2</b>
Cosmopolitan	4	
Subcosmopolitan	3	
<b>Species with Mediterranean distribution</b>	<b>6</b>	<b>25.0</b>
Mediterranean	6	
<b>Afrotropical and Oriental species also present in the Mediterranean area</b>	<b>2</b>	<b>8.3</b>
Afrotropico-Indo-Mediterranean	1	
Afrotropico-Mediterranean	1	

The first one includes nine species widespread in the Holarctic region and represent 37.5% of the total. The second group includes seven species with Cosmopolitan and Subcosmopolitan distribution and account for 29.2% of all species reported for Lampedusa. The third group includes six Mediterranean species accounting for 25% of the total. The fourth group includes two species distributed in the Afrotropical and Oriental region which represent 8.3% of all the species reported for Lampedusa.

The total amount of 24 species reported in the present paper and by VENTURI (1960) probably give a comprehensive detail of the Syrphidae of Lampedusa. It would be interesting to continue the monitoring using other techniques and to verify if the presence of *Symosyrphus aegyptius*, collected in November 2009, may be ascribed to a stable population in Lampedusa, which would be the first in Europe.

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