

Linzer biol. Beitr.	35/2	747-762	19.12.2003
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New records of "Sphecidae" (Hymenoptera: Sphecidae & Crabronidae) from Sicily (Italy) and Malta

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Abstract: Two large samples from Sicily and Malta are revised. They include 126 species from Sicily, 19 species of them are new for the fauna of Sicily: *Astata gallica*, *Belomicrus italicus*, *Crabro peltarius bilbaoensis*, *Crossocerus podagricus*, *Gorytes procrustes*, *Lindenius albilabris*, *Lindenius laevis*, *Passaloecus pictus*, *Pemphredon austriaca*, *Pemphredon lugubris*, *Rhopalum clavipes*, *Spilomena troglodytes*, *Stigmus solskyi*, *Synnevrus decemmaculatus*, *Tachysphex julliani*, *Trypoxylon kolazyi*, *Trypoxylon medium*. *Miscophus mavromoustakisi*, found in Sicily, is also new for the fauna of Italy. A species of the genus *Synnevrus* is probably unknown to science. The total number of species in Sicily is 217 now. Zoogeographical aspects are discussed. Most of the recorded species are by origin from central or southern Europe. A few species have an eastern, resp. western Mediterranean distribution pattern. A species is a northern African element.

Key words: Hymenoptera, Apoidea, Sphecidae, Crabronidae, Sicily, Italy, Malta, fauna, zoogeographical aspects, endemism.

Introduction

The fauna of Sphecidae from Sicily was never treated in a special publication. PAGLIANO (1990), in his catalogue of the Sphecidae from Italy, was the first who listed all published records of Sphecidae from Sicily. NEGRISOLO (1995) completed the listing in the 'Checklist della specie della fauna Italiana'. He listed 186 species names, and some subspecies names from Sicily. Nevertheless, the fauna of Sicily is far from being completely known.

I had the opportunity to examine two large collections from Sicily. Bernhard Merz collected in June 1999 Diptera at Sicily and Malta and took also many Aculeate with him. J. Halada visited Sicily in June 2002. I could add some single records from various collectors which I identified in the last few years.

Till now, there are no published records of Sphecidae from Malta. For his reason, I include the records from Bernhard Merz in the present publication. Also, a single record from Lampedusa completes the present list, which contributes an interesting zoogeographical viewpoint. The islands of Malta and Lampedusa are southwards of Sicily between Europe and Africa. Faunal aspects of this region are important to understand the distribution of species between both continents.

Material and Methods

Records: Only localities of examined specimens from Sicily and Malta are listed. For exact data, see the list below. J. Halada collected some specimens at Italian Mainland (north of Calabria), which are also added. The two main depositories for the specimens are also given in the next list (OLL = Österreichisches Landesmuseum Linz/Austria; Merz = coll. Dr. Bernhard Merz, Genf/Switzerland). Some specimens are also in the collection of the author. The total number of examined specimens is given in brackets (males-females). If the records are not from Sicily, the main area (Malta, Lampedusa or Italian mainland) is marked.

Locations:

Sicily:

Agrigento	25 km N Agrigento, 30.5.2002 (OLL)
Amenta	30 km SW Palermo, Massiv Amenta, 8.6.2002 (OLL)
Armerina:	35km N Gela, NE Piazza Armerina 27.5.2002 (OLL)
Avola	Avola Vecchia, 10.06.99 (Merz)
Bronte	Bronte, Mt. Minardo, 11.06.99 (Merz)
Cammarata	80 km N of Agrigento, 31.5.2002 (OLL)
Castellamare	55km E Trapani, Castellamare, 9.6.2002 (OLL)
Citelli	Etna, Rif. Citelli, 12.06.99 (Merz)
Gela	20 km W Gela, beach, 30.5.2002 (OLL)
Linguaglossa	Linguaglossa, 06.06.99 (Merz)
Madonie	Madonie, 4 km E of Collesano, 800 m NN 15.6.2002 (OLL)
Mareneve	Etna, Mareneve 12.06.99 (Merz)
Milo	Etna, 3km NW Milo, 05.06.99 (Merz)
Nebrodi	Nebrodi, Troina Lago d'Ancipa, 08.06.99 (Merz)
Piano	Etna, Piano d'Donne 05.06.99 (Merz)
Ragusa	35 km SW Ragusa, beach 18.6.2002 (OLL)
Randazzo	Randazzo 06.06.99 (Merz)
Vendicari	Sicily, Noto, Vendicari N.P., 10.06.99 (Merz)

Malta:

Busket	Malta, Busket Gardens, 14.06.99 (Merz)
Mgarr	Gozo, Mgarr ix Xini, 6.06.99 (Merz)
Ramla	Gozo, Ramla Bay, 16.06.99 (Merz)

Southern Italy

Lauria	20 km SW Lauria, 26.5.2002 (prov. Basilicata, 40°02'N 15°49'E) (OLL)
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The following abbreviations are used in the text: Distr. = Distribution in the western Palaearctic: EUR = Europe, MED = Mediterranean area; s, n, w, e = south, north, west, east, c = central. The Distribution is only a summarization, for detailed distribution see BITSCH et al. (1993, 1997 and 2001). The distribution in Asia is not taken into account.

Faunistics: The information about the fauna of Sicily bases on data given by NEGRISOLO (1995). All species which are not mentioned by NEGRISOLO (1995) for Sicily are marked as new for the fauna of Sicily. The checklist of NEGRISOLO (1995) is based mainly on the more detailed catalogue of Sphecidae from Italy by PAGLIANO (1990), which lists detailed literature citations of Sphecidae from Italy and many new records. The new species are also marked with *.

I d e n t i f i c a t i o n : The species identification bases on BITSCH et al. (1993, 1997 and 2001). If these keys are not sufficient, further comments are given. The genera and species are listed in alphabetic order not taking the separation of "Sphecidae" and "Crabonidae" into account.

Prof. K. Schmidt from Heidelberg/Germany identified the genera *Cerceris*, *Astata* and *Tachysphex* from the Merz collection. Dr. Pavel Nemkov from Vladivostok/Russia identified the genera *Nysson* and *Synnevrus*, and J.v.d. Smissen from Bad Schwartau/ Germany identified the *Pemphredon lethifer*-group. Some *Tachysphex* from the OLL collection are not identified yet.

Also, in the present list are all subspecies names, which are used in the current literature for taxa in Sicily. This is done for reasons of simplicity, and should not be understood as my acceptance of the rank of these taxa as subspecies. The subspecies concept used in Sphecidae until now is not very satisfactory, because often it distinguishes (color) forms instead of subspecies in sense of a modern species concept. But this is not the place to discuss the problems of subspecific classification.

Checklist of species

Ammatomus coarctatus SPINOLA

R e c o r d s : Castellamare (3-0) - Malta, Ramla (0-1). Distr: sEUR

Ammophila heydeni DAHLBOM

R e c o r d s : Armerina, Madonie, Ragusa, Bronte, Citelli, Nebrodi, Italian mainland: Lauria (13-0).
Distr: Med.

Ammoplanus perrisi GIRAUD

(= *Ammoplanus wesmaeli* GIRAUD)

R e c o r d s : Agrigento, Castellamare (10-6). Distr: Med-cEur.

Ammoplanus marathroicus DE STEFANI

(= *Ammoplanus handlirschi* Gussakovskij)

R e c o r d s : Agrigento (1-0). Distr: Med-cEur.

R e m a r k s : NEGRISOLO (1995) listed the conspecific taxa, *marathroicus* and *handlirschi*, separately in the fauna of Sicily.

Argogorytes mystaceus LINNE

R e c o r d s : Madonie (0-1). Distr: Eur.

Argogorytes hispanicus MERCET

R e c o r d s : from Italian mainland: Matera/Pulia 19.5.1988 coll Amsterdam (0-1). Distr: sEur.

R e m a r k s : The distribution of the species in southern Europe is not well known, because it was often confused with *A. mystaceus* in older publications. See BITSCH et al. (1997) for correct identification. It is also mentioned from Sicily (NEGRISOLO 1995, BITSCH et al. 1997).

Astata boops SCHRANK

R e c o r d s : Castellamare, Nebrodi (4-1). Distr: Med-cEur.

***Astata costae* COSTA**

Records: Modica/40 km W Syrakus 13.9.1999 (leg. et coll. Tischendorf), Ragusa, Castellamare, Bonte, Nebrodi, Randazzo (3-3). Distr: Med-cEur.

Astata gallica* DE BEAUMONT

Records: Castellamare (0-1). Distr: wMed-Hungaria. First record for Sicily!

***Astata kashmirensis* NURSE**

Records: Castellamare, Italian mainland: Lauria (4-0). Distr: Med-cEur.

***Astata sicula* KOHL**

Records: Castellamare (0-1) - Malta, Mgarr (1-0). Distr: Endemic to Sicily and Malta.

Belomicrus italicus* COSTA

Records: Madonie, Amenta, Armerina, Bronte (9-6) - Malta, Ramla (0-1). Distr: Med-cEur. First record for Sicily!

***Bembecinus meridionalis* Costa**

Record: female 5.1923 Sicilia, Taormina (ETH Zürich) - male, female „Sizilien [leg] Trautmann“ (Museum Berlin); from Italian mainland: Lauria: (3-1). female 30 July 1995 Pugila, Mt. Gargano, S. Giovanni (Merz). Distr: eMed.

***Bembecinus tridens* FABRICIUS**

Records: Armerina, Madonie, Ragusa (21-1). Distr: Med-cEur.

***Bembix flavescens bolivari* HANDLIRSCH**

Records: Ragusa (0-2). Distr: Med.

Remarks: DE BEAUMONT (1957), in his revision of the *flavescens* group, was not sure whether the populations of *flavescens* from southern Italy belong to the ssp. *bolivari* from southwest Europe or to the ssp. *inimica* DE BEAUMONT from northern Algeria and Tunisia. DE BEAUMONT (1957) mentioned a single male from 'Calabria' with the typical dark lemon yellow color of the ssp. *inimica*, but the author questioned the accuracy of the label.

The two females from Ragusa are similar in color pattern with females of the ssp. *bolivari* from Spain and Portugal (pale tergal bands are 1/3 as wide as tergal length, thorax is nearly all black). They differ in gaster color from the typical ssp. *bolivari*. The former is pale whitish with a trace yellow, and the latter from France, Spain and Portugal being (normal) yellow. So it cannot be conspecific with the ssp. *inimica* from northern Africa, which has golden to lemon yellow body marks (markedly darker yellow as *bolivari* from Spain and Portugal). Consequently I treat the specimens from Sicily provisional as members of the ssp. *bolivari*, until a final examination of males can confirm this observation.

Identification: *B. flavescens* might easily be confused with *oculata* when identified with the key in BITSCH et al. (1997). Color pattern and form of male sternal tubercle II and teeth on male femora is variable in both species. Both species can be distinguished as follows (in the whole range of the species):

1. **Male:** Flagellomere X more or less parallel-sided, 1.5x as long as wide. Sternite VII laterally each with a small dentiform pointed tubercle. Scapus all black. **Female:** Scapus all black *B. oculata* LATREILLE
- **Male:** Flagellomere X distinctly convex at inner side, as long as wide. Sternite VII laterally without a tubercule. Scapus at least yellow beneath. **Female:** Scapus at least yellow beneath *B. flavescens* SMITH

***Bembix oculata* PANZER**

R e c o r d s : Ragusa, Armerina, Bronte, Vendicari (44-26) (most specimens from Ragusa) - Malta, Ramlà (0-1). Distr: Med.

R e m a r k s : The specimens from Ragusa belong to a smaller form (9-16 mm) with pale body color, compared with specimens from the remaining Italy. The males are pale whitish colored with small tergal bands. No male has an isolated black spots in the tergal band II. The females are pale yellow colored, also with small tergal bands. Only three females have isolated black spots in the band II, the remaining females have small or larger black spots in the yellow band II, which are connected with the basal black color. The isolated black spots in the tergal band II are mostly present in specimens from Turkey and northern Africa. This character is variable and not suited for species recognition as used in some keys about *Bembix*.

***Bembix olivacea* FABRICIUS**

R e c o r d s : Ragusa, Armerina (16-3). Distr: Med.

***Bembix rostrata* LINNÉ**

R e c o r d s : Randazzo, Bronte (2-0). Distr: Med-cEur.

***Cerceris arenaria* LINNÉ**

R e c o r d s : Castellamare, Linguaglossa, Citelli (3-0). Distr: Med-cEur.

***Cerceris flavilabris* FABRICIUS**

R e c o r d s : Castellamare, Randazzo (2-0). Distr: Med-cEur.

***Cerceris lunata funerea* A. COSTA**

R e c o r d s : Malta, Busket (1-0). Distr: Med.

R e m a r k s : The specimen belongs to the ssp. *funerea* A. COSTA, occurring in Sicily and Malta, which is darker than the nominal subspecies.

***Cerceris quadricincta* PANZER**

R e c o r d s : Caltanissetta/60km NE Agrigento 13.6.1999 (Tischendorf), Armerina; Madonie; Amenta Linguaglossa Randazzo (11-1) - Malta, Busket (2-0). Distr: Med-cEur.

***Cerceris quinquefasciata* ROSSI**

R e c o r d s : Linguaglossa (1-0). Distr: Eur.

***Cerceris sabulosa* PANZER**

R e c o r d s : Nebrodi, Armerina; Castellamare, Madonie; Cammarata (20-0) - Malta, Mgarr (1-0). Distr: Med-cEur.

***Cerceris specularis* A. COSTA**

R e c o r d s : Randazzo (1-0). Distr: Med-cEur.

***Chalybion femoratum* FABRICIUS**

R e c o r d s : Randazzo (0-1). Distr: sEur, northwards to Austria.

***Crabro cribarius* LINNÉ**

R e c o r d s : Randazzo (0-1). Distr: Eur.

Crabro peltarius bilbaoensis* LECLERCQ

R e c o r d s : Armerina (0-1). Distr: Eur. First record for Sicily!

R e m a r k s : *Crabro peltarius* s.str. is widespread in Central and Northern Europe, its range reaches Italy southward to Emilia Romagna (BITSCH & LECLERCQ 1993). The subspecies *bilbaoensis* was described from Spain in 1960, it is also mentioned from southern France. In contrast to the information in BITSCH & LECLERCQ (1993), *C. peltarius* is listed for Sicily in NEGRISOLO (1995). This record has to be verified.

***Crossocerus acanthophorus* KOHL**

R e c o r d s : Agrigento, Castellamare, Randazzo (8-9). Distr: Eur.

***Crossocerus elongatulus trinacrius* DE BEAUMONT**

R e c o r d s : Castellamare, Agrigento Armerina, Milo, Citelli, Nebrodi (14-5) - Malta, Fommir-Rih Bay 08.06.1999 (0-1). Distr: of *elongatulus*: Med-cEur. The ssp. *trinacrius* is endemic to Sicily and Malta.

Crossocerus podagricus* VANDER LINDEN

R e c o r d s : Armerina, Milo (2-1). Distr: Eur, not mentioned for southern Spain and Greece. First record for the fauna of Sicily!

***Crossocerus quadrimaculatus* FABRICIUS**

R e c o r d s : Linguaglossa (1-0). Distr: Med-cEur.

***Crossocerus tarsatus* SHUCKARD**

R e c o r d s : Randazzo Castellamare (4-3). Distr: Med-cEur.

***Crossocerus varus* LEPELETIER & BRULLE**

R e c o r d s : Randazzo, Mareneve, Citelli (4-1). Distr: Eur, not mentioned for Spain and Greece.

***Dinetus pictus* JURINE**

R e c o r d s : Mt. Etna/30 km NW Catania, 13.9.1999 (Tischendorf), Armerina, Madonie, Linguaglossa (13-7) Distr: Eur.

***Diodontus minutus* FABRICIUS**

R e c o r d s : Armerina, Ragusa, Madonie, Castellamare (24-12). Distr: Eur.

***Dolichurus corniculus* SPINOLA**

R e c o r d s : Castellamare, Randazzo (3-0). Distr: Med-cEur.

***Dolichurus haemorrhous* COSTA**

R e c o r d s : Agrigento, Ragusa, Amenta, Castellamare (8-0). Distr: sEur, also in Egypt.

R e m a r k s : The species is rarely mentioned in the literature. Recently it was often found in samples of malaise traps or yellow pan traps from different countries in southern Europe (my own observations). Probably it is more widespread and common in the area as thought before.

***Dryudella freygessneri* CARL**

Literature citation: Etna 1900 m NN (BITSCH et al. 2001). Distr: Eur, higher mountain areas.

***Dryudella tricolor* VANDER LINDEN**

R e c o r d s : Armerina; Ragusa, Madonie, Castellamare (18-5). Distr: Med.

***Ectemnius confinis* WALKER**

R e c o r d s : Castellamare (1-0). Distr: Med-cEur.

***Ectemnius continuus sulphureipes* F. Smith**

R e c o r d s : Randazzo (0-1). Distr of *continuus* s.str.: Med-cEur.

R e m a r k s : After BISCH & LECLERQ (1993), the populations of Sicily and Malta belong to the subspecies *sulphureipes* F. SMITH, which is characterized by some color differences.

***Ectemnius crassicornis* SPINOLA**

R e c o r d s : Castellamare, Cammarata, Amenta, Avola, Nebrodi, Randazzo (6-1). Distr: Med.

***Ectemnius hypsae* DE STEFANI**

R e c o r d s : Castellamare; Ragusa, Avola, Randazzo, Italian mainland: Lauria (3-3). Distr: Med.

Ectemnius massaliensis* KOHL

R e c o r d s : Randazzo, Bronte (3-1) Distr: sEur.

R e m a r k s : Not mentioned from Sicily by NEGRISOLO (1995), but by BITSCH & LECLERQ (1993).

***Ectemnius meridionalis* A. COSTA**

R e c o r d s : Castellamare, Bronte (8-1) Distr: Med.

***Entomognathus brevis* VANDER LINDEN**

R e c o r d s : Castellamare, Agrigento, Amenta, Madonie, Armeria, Nebrodi (33-32) Distr: Med-cEur.

***Gorytes laticinctus* LEPELETIER**

R e c o r d s : Linguaglossa (1-0). Distr: Med-cEur.

Gorytes procrustes* HANDLIRSCH

R e c o r d s : Randazzo (0-1) (SCHMID-EGGER 2002). Distr: s-seEur. First record for Sicily!

***Gorytes quinquefasciatus* FABRICIUS**

R e c o r d s : Linguaglossa, Randazzo, Armeria, Madonie, Castellamare, Ragusa (34-2). Distr: Med-cEur.

***Harpactus affinis* SPINOLA**

R e c o r d s : Armerina (0-2). Distr: Eur.

***Harpactus consanguineus* HANDLIRSCH**

R e c o r d s : Armerina (11-0). Distr: eMed-France.

***Harpactus elegans siculus* DE BEAUMONT**

R e c o r d s : Madonie, Armerina, Linguaglossa (1-5). Distr of *elegans* s.str.: Eur.

R e m a r k s : The populations of *elegans* from Sicily belongs to the endemic ssp. *siculus*, which is darker colored than *elegans* from remaining Europe.

***Harpactus laevis* LATREILLE**

R e c o r d s : Madonie, Milo, Nebrodi, Randazzo (5-0). Distr: Med-cEur.

***Harpactus quadrisignatus* PALMA**

R e c o r d s : Madonie, Armerina (5-0). Distr: Italy, France, Portugal, Morocco.

R e m a r k s : The species was described from Sicily. DE BEAUMONT mentioned specimens from central Italy which he suspected to belong to the ssp. *ifranensis* NADIG from Morocco. The ssp. is characterized by a more extended red body color. The subspecies classification is unclear and needs further investigations.

***Hoplisoides punctuosus* EVERSMAAN**

R e c o r d s : Madonie, Armerina, Gela, Ragusa, Linguaglossa (11-9). Distr: Med-cEur.

***Isodontia mexicana* SAUSSURE**

R e c o r d s from Italian mainland: Lauria (0-1). Distr: s-cEur, introduced in Europe (France) from America after second world war.

R e m a r k s : The species increased its range in the last years markedly (PAGLIANO et al. 2000). The record from Lauria in southern Italy seems to be the most southern published record in Italy until now. The findings of *I. mexicana* in Calabria and Sicily can be expected within the next years.

***Isodontia paludosa* ROSSI**

R e c o r d s : Madonie, Italian mainland: Lauria (3-0). Distr: Med-cEur.

***Lestica clypeata* SCHREBER**

R e c o r d s : Linguaglossa, Randazzo Nebrodi (2-1) - Malta, Busket(1-0). Distr: Med-cEur.

Lindenius albilabris* FABRICIUS

R e c o r d s : Armerina (0-1). Distr: Eur. First record for Sicily!

Lindenius laevis* COSTA

R e c o r d s : Agrigento (3-3). Distr: Eur. First record for Sicily!

***Lindenius pygmaeus* ROSSI**

R e c o r d s : Castellamare (4-8). Distr: Eur.

***Liris niger* FABRICIUS**

R e c o r d s : Castellamare, Madonie (0-3). Distr: Med-cEur.

***Liris festinans praetermissus* RICHARDS**

(= *Liris praetermissus* RICHARDS)

R e c o r d s : Castellamare (2-0). Distr: Med. The ssp. *festinans* F. SMITH occurs in east Asia.

***Mimesa grandii* MAIDL**

R e c o r d s : Castellamare, Ragusa (3-0). Distr: Med-cEur.

***Miscophus ater* LEPELETIER**

R e c o r d s from Italian mainland: Lauria (1-0). Distr: Eur.

Miscophus eatoni* SAUNDERS

R e c o r d s : Lampedusa 15.8.1982 coll. Pagliano (0-1). Distr: wMed-cEur. Not recorded in Sicily!

R e m a r k s : The species has a west-Mediterranean distribution pattern. It is not recorded from southern Italy. The populations in Lampedusa might have originated from Tunisia, where the species is common.

***Miscophus helveticus* KOHL**

Records: female 26.7.1956 Etna (f. *obscurus* ANDRADE, coll. Lausanne), female 2.8.1949 Acireale (f. *rubriventris* FERTON, coll. Lausanne); Castellamare, Ragusa (2-2). Distr: Med-sEur.

Remarks: The species occur in his whole range in some color forms. The mostly red colored f. *rubriventris* is restricted to Spain and southern Italy. Its taxonomical status and relationship to *helveticus* s.str. is not clear at all. The subject needs further revision (SCHMID-EGGER in prep.).

Miscophus mavromoustakisi* ANDRADE

Records: Madonie (1-0). Distr: eEur. First record for the fauna of Italy and Sicily!

Remarks: The species occurs in south-eastern Europe, Turkey and Cyprus. It is wrongly mentioned from Greece as *M. nicolai* in BITSCH et al. (2002). *Miscophus nicolai* is restricted only to the western Mediterranean area. It can be distinguished from *M. mavromoustakisi* by the longer propodeum (SCHMID-EGGER in prep.).

***Miscophus niger* DAHLBOM**

Records: 2 males 28.7.2000 Fontana Bianca (coll Liebig), Amenta, Madonie (2-4). Distr: eMed-cEur.

***Miscophus spurius* DAHLBOM**

Remarks: The records of *M. spurius* from Italy and Sicily (NEGRISOLO 1995, PAGLIANO 1990) are probably wrong. This species was earlier confused with *M. niger* and *M. ater*. *Miscophus spurius* is restricted to northern and central Europe (BITSCH et al. 2001).

***Nysson dimidiatus* JURINE**

Records: Armerina, Madonie (9-14). Distr: Eur.

***Nysson maculosus* GMELIN**

Records: Linguaglossa, Armerina, Madonie (9-10). Distr: Eur.

***Nysson variabilis* CHEVRIER**

Records: Armerina, Madonie (10-3). Distr: Eur.

***Oxybelus bipunctatus* OLIVIER**

Records: Armerina, Madonie (27-3). Distr: Med-cEur.

***Oxybelus latro* OLIVER**

Records: Armerina (4-0). Distr: Eur.

***Oxybelus mucronatus* FABRICIUS**

Records: Vendicari (0-1), Distr: Med-cEur.

***Oxybelus quatuordecimnotatus* JURINE**

Records: Armerina, Ragusa, Madonie, Milo, Piano, Citelli (16-20). Distr: Med-cEur.

***Oxybelus subspinosus* KLUG**

Records: Armerina (1-0). Distr: Med.

***Oxybelus variegatus* WESMAEL**

Records: Armerina (0-1). Distr: Eur.

***Palmodes occitanicus* LEPELETIER & SERVILLE**

R e c o r d s : Castellamare, Bronte, Randazzo (3-0). Distr: Med.

***Passaloecus gracilis* CURTIS**

R e c o r d s : Castellamare, Amenta (1-3). Distr: Med-cEur.

Passaloecus pictus* RIBAUT

R e c o r d s : Milo, Vendicari (1-3) - Malta, Mgarr, Malta, Ghadira Beach 15.06.99 (1-1). Distr: Eur.
First record for Sicily!

***Passaloecus singularis* DAHLBOM**

R e c o r d s : Madonie, Amenta (0-3). Distr: Eur, in Italian mainland southwards to central Italy.

Pemphredon austriaca* KOHL

R e c o r d s : Amerina (1-0). Distr: Med-cEur. (det. Smissen). First record for Sicily!

***Pemphredon lethifer* SHUCKARD**

R e c o r d s : Amerina, Castellamare, Gela, Bronte, Linguaglossa, Randazzo (13-12) - Malta, Mgarr, Busket (3-0). Distr: Med-cEur. (det. Smissen).

R e m a r k s : The specimen belongs to *lethifer* s.str. f. *lethifer* WAGNER sensu Smissen. The taxonomic state in the *lethifer*-group is not finally solved, and the synonymisation of some related taxa by DOLLFUSS (see BITSCH et al. 2001, p. 79) is not justified in my opinion. A revision of this group is in preparation (SMISSEN in prep.).

***Pemphredon lugens* DAHLBOM**

R e c o r d s : Randazzo (0-1). Distr: Eur.

Pemphredon lugubris* FABRICIUS

R e c o r d s : Randazzo (0-1). Distr: Eur. First record for Sicily!

***Philanthus coarctatus sicularis* DE STEFANI**

R e c o r d s : Ragusa, Armerina, Vendicari (25-1) - Malta, Ramla (1-0). Distr: sMed.

R e m a r k s : In southern Italy occurs the ssp. *sicularis* DE STEFANI. It is endemic to Sicily, Calabria and Malta, whereas *P. coarctatus* SPINOLA s. str. occurs in North Africa and Arabia. The taxonomical state of *sicularis* is questionable, it might also be a valid species.

***Philanthus triangulum* FABRICIUS**

R e c o r d s : Vendicari (1-0) - Malta, Ramla (3-0). Distr: Med-cEur.

***Philanthus venustus* ROSSI**

R e c o r d s : Ragusa, Armerina (2-0). Distr: Eur, northwards to Austria, westwards to France.

***Pison atrum* SPINOLA**

R e c o r d s : Castellamare (1-1). Distr: Med.

***Podalonia fera* LEPELETIER**

R e c o r d s : Madonie (0-1). Distr: eMed, westwards to France.

***Podalonia hirsuta* SCOPOLI**

R e c o r d s : Armerina, Madonie (1-5). Distr: Med-cEur.

***Prionyx kirbyi* VANDER LINDEN.**

R e c o r d s : Ragusa (0-1). Distr: Med.

***Prionyx subfuscatus* DAHLBOM**

R e c o r d s : Linguaglossa, Bronte (1-3). Distr: Med.

***Psammaecius punctulatus* VANDER LINDEN**

R e c o r d s : Bronte, Linguaglossa (1-3). Distr: Med.

***Psenulus pallipes* PANZER**

R e c o r d s : Castellamare; Dobra (3-3). Distr: Med-cEur.

R e m a r k s : The specimens are very small (males 5 mm, females 5,5-6 mm). The tyloides on male flagellomeres are barley or not visible. In the key of BITSCH et al. (2001) specimens in both sexes key out to *P. pallipes* and resemble the forma *pygmaea* Tournier (sensu BITSCH et al. 2001). The closer *pallipes*-group is in need of a revision, because specimens which are smaller or different from Central European specimens, occur also at other places in the Mediterranean area.

Rhopalum clavipes* LINNÉ

R e c o r d s : Piano, Randazzo (1-1). Distr: Eur, rare in the south. The most southern record in Italy comes from Latium. First record for Sicily!

***Sceliphron destillatorium* ILLIGER**

R e c o r d s : Castellamare, Ragusa (5-5). Distr: Med.

***Sceliphron madraspatanum tubifex* LATREILLE**

R e c o r d s : Castellamare (2-0). Distr: Med.

***Sceliphron spirifex* LINNÉ**

R e c o r d s : Avola (1-0) - Malta, Mgarr, Busket (1-2). Distr: Med.

***Solierella compedita* PICCIOLI**

R e c o r d s : Castellamare, Ragusa, Madonie, Amenta (10-2). Distr: Med-cEur.

***Sphex flavipennis* FABRICIUS**

R e c o r d s : Madonie (3-4). Distr: Med.

***Sphex funerarius* GUSSAKOWSKJI**

(= *Sphex rufocinctus* BRULLÉ).

R e c o r d s : Armeria, Ragusa, Vendicari, Randazzo (8-5) - Malta, Ramla (1-0). Distr: Med-cEur.

***Spilomena mocsaryi* VANDER LINDEN**

R e c o r d s : Armerina (0-1). Distr: Eur.

***Spilomena troglodytes* VANDER LINDEN**

R e c o r d s : Castellamare (0-2) - Malta, Mgarr, Busket (0-6). Distr: Eur. First record for Sicily!

Stigmus solskyi* A. MORAWITZ

R e c o r d s : Milo (0-1). Distr: Eur, in Italian mainland southwards to central Italy. First record for Sicily!

***Stizus pubescens* KLUG**

R e c o r d s : Armerina, Castellamara, Ragusa, Italian mainland: Lauria (4-0). Distr: Med.

R e m a r k s : BITSCH et al. (1997) distinguish the taxa *pubescens* and *ruficornis* FORSTER, both occurring in Sicily, whereas PAGLIANO (1992) and NEGRISOLO (1995) treat both as conspecific with the taxon name *ruficornis* (see also discussion in BITSCH et al. 1997: p 263). My results are based on the key of BITSCH et al. (1997).

The key in BITSCH et al. (1997) does not include *Stizus rufipes* FABRICIUS, a species from North Africa which was also found at the island of Lampedusa near Sicily (PAGLIANO 1990). It can be distinguished from all other species of *Stizus* in Italy by the completely black tergites VI and VII. The tergite VI is at least partly or all yellow in the remaining species.

***Stizus ruficornis* FORSTER**

R e c o r d s : Malta, Ramla (0-1). Distr: Med, also mentioned for Sicily (BITSCH et al. 1997).

***Synnevrus decemmaculatus* SPINOLA ***

R e c o r d s : Castellamare (6-1). Distr: sEur-eMed, not in Spain and Portugal. First record for Sicily!

Synnevrus spec.

R e c o r d s : Castellamare, male.

R e m a r k s : The genus is currently under revision by P. Nemkov. He commented the specimen as follows: "possibly new *Synnevrus* or rare species described in Nysson".

***Tachysphex consocius* KOHL**

R e c o r d s : Piano (1-0). Distr: Med.

***Tachysphex fulvitaris* A. COSTA**

R e c o r d s : Nebrodi, Randazzo (2-0). Distr: Med-cEur.

***Tachysphex incertus* RADOSZKOVSKI**

R e c o r d s : Ferla/30km W Syrakus 13.9.1999 (Tischendorf), Ragusa, Milo, Nebrodi, Randazzo, Bronte (6-1). Distr: Med.

***Tachysphex julliani* KOHL ***

R e c o r d s : Bronte (1-0). Distr: Med. First record for Sicily!

***Tachysphex obscuripennis* SCHENCK**

R e c o r d s : Milo (3-0). Distr: Eur.

***Tachysphex panzeri* VANDER LINDEN**

R e c o r d s : Armerina, Vendicari (2-1). Distr: Med-cEur.

***Tachysphex pompiliiformis* PANZER**

R e c o r d s : Nebrodi, Citelli (2-0). Distr: Med-cEur.

***Tachysphex tarsinus* LEPELETIER**

R e c o r d s : Milo, Randazzo, Vendicari (3-1). Distr: Med-cEur.

***Tachysphex unicolor* PANZER**

R e c o r d s : Noto/30 km SW Syrakus (Tischendorf), Milo, Nebrodi, Randazzo (2-1). Distr: Med-cEur.

***Tachytes freygessneri* KOHL**

R e c o r d s : Ragusa (1-0). Distr: Med.

***Tracheliodes quinquenotatus* JURINE**

R e c o r d s : Armerina, Gela, Madonie, Ragusa (6-14). Distr: Med.

***Trypoxylon attenuatum* F. SMITH**

R e c o r d s : Castellamare, Madonie, Randazzo (2-2) - Malta, Mgarr; Busket (2-1). Distr: Med-cEur.

R e m a r k s : The specimens were not finally identified by the new species of ANTROPOV (BITSCH et al. 2003), but they belong probably to *attenuatum* s.str.

***Trypoxylon figulus* LINNE**

R e c o r d s : Nebrodi (0-1). Distr: Med-cEur.

***Trypoxylon kolazyi* SPINOLA ***

R e c o r d s : Castellamare (1-4) – Malta: Ramla, Mgarr (2-0). Italian mainland: 2 males Umbria, Montefalco 20.6.1993 (coll. SE). Distr: Med-cEur. First record for Sicily!

R e m a r k s : *T. kolazyi* is very similar to *clavicerum* LEPELETIER & SERVILE and might easily confused with it. The male has a longer flagellomere XI (as long as FL VII-X), whereas FL XI is only as long as FL IX-X in *clavicerum* (cf. also fig. 72 g and h in BITSCH et al. 2001). The apical margin of the clypeus is normally markedly tridentate in *kolazyi* and bidentate in *clavicerum*, but the apical margin is worn down in the male from Castellamare. The female of *kolazyi* has a markedly tridentate (or trilobate) apical margin of clypeus, the middle lobe is something bifurcate or bidentate apically (only seen with high magnification of 80× or more), whereas *clavicerum* has only two marked teeth or lobes. In general, *kolazyi* is smaller than *clavicerum*, but often *clavicerum* reaches the average size of *kolazyi*.

***Trypoxylon medium* DE BEAUMONT ***

R e c o r d s : Amenta, Armerina, Randazzo (4-0). Distr: Med-cEur. First record for Sicily!

***Trypoxylon minus* DE BEAUMONT**

R e c o r d s : Milo (0-1). Distr: Med-cEur.

***Trypoxylon scutatum* CHEVRIER**

R e c o r d s : Castellamare, Amenta, Agrigento (13-0). Distr: Med-cEur.

Discussion

General aspects about the fauna of Sicily

In the present examination, 126 species are found in Sicily. 19 species are new for the fauna of the island: *Astata gallica*, *Belomicrus italicus*, *Crabro peltarius bilbaoensis*, *Crossocerus podagricus*, *Gorytes procrustes*, *Lindenius albilabris*, *Lindenius laevis*, *Miscophus mavromoustakisi*, *Passaloecus pictus*, *Pemphredon austriaca*, *Pemphredon lugubris*, *Rhopalum clavipes*, *Spilomena troglodytes*, *Stigmus solskyi*, *Synnevrus decemmaculatus*, *Tachysphex julliani*, *Trypoxylon kolazyi*, *Trypoxylon medium*. A species of the genus *Synnevrus* is unknown to science. NEGRISOLO (1995) listed 189 species (only one subspecies by species taken into account), so that the total number of species is 218 now.

Most species found in the present examination are more or less common with a central-south-European or Mediterranean distribution pattern. About 10 species, which are new for the fauna of Sicily, are small, black wasps which traditionally were easily overlooked by authors of the first half of the 20th century. The remaining new species are more or less rare, but nevertheless regularly present in recent samples from southern Europe. This gives a hint about the fact that the fauna of Sicily is poorly examined, and a lot of further species can be expected in future from the island.

Zoogeographical viewpoints

The island of Sicily is situated in the central Mediterranean Sea and is separated only by a small sound (street of Messina) from the Italian mainland. Hence, most of the species found in this examination are widespread in central and southern Europe (the discussion includes only species which were recorded in the present samples). Some of them reach the limit of their southern distribution in Sicily.

It is noteworthy that some of the species which are new for the fauna of Sicily were never found before in the southern part of Italy or in the extreme south of Europe as Greece and southern Spain (e.g. *Crossocerus podagricus*, *Crossocerus varus*, *Rhopalum clavipes*, *Stigmus solskyi*). So the question remains whether these species are isolated relicts from colder periods, if these species have been overlooked in southern Italy or if they have been introduced.

A taxon, *Crabro peltarius bilbaoensis*, has its origin in the western Mediterranean area (Spain and southern France). The ssp. *peltarius* is restricted to central and south-central Europe and lives also in northern Italy southwards to Emilie-Romagna. The finding of this isolated population of the ssp. *bilbaoensis* gives a hint to a western Mediterranean influence on the fauna of Sicily. *Bembix flavescens bolivari* has also a western Mediterranean distribution pattern. It occurs only in the coastal zone of Spain and Portugal. But with this species some doubts remain, because it occurs also in northern Africa in various subspecies. So it can not be excluded that it colonized Sicily from Algeria or Tunisia. More specimens, specially males from Sicily, have to be examined to decide to which ssp. the populations from Sicily belong. The third species of this group is *Astata gallica*, which occurs only in the western Mediterranean area. It is also recorded from southern Italy and Sardinia.

More evident is the influence of eastern Mediterranean elements in Sicily. *Bembecinus meridionalis* and *Miscophus mavromoustakisi* occur in south-east Europe, Turkey and eastwards. Both are missing in northern and central Italian mainland and in Croatia. This makes a direct settlement from Greece to southern Italy probable (the minimal distance between Otranto in Apulia and Albania is about 80 km).

Another important species group has an African origin. In the present examination it is represented by *Philanthus coarctatus siculus*, which is widely distributed (with the ssp. *coarctatus*) in northern Africa.

Briefly summarized, it is evident that the Sphecidae fauna of Sicily was influenced by all important areas around the island. A few faunistic elements from the west, the east, and the south are represented in Sicily. But the main influence comes from the Italian mainland. A more detailed study which also takes other insect groups into account, has to clear the main zoogeographical influences in Sicily (cf. also WAHIS & TERZO 1996).

Subspecies and endemism

A few species are endemic to Sicily or occur here with an endemic subspecies. Examples from the present examination are *Astata sicula*, *Cerceris lunata funerea*, *Crossocerus elongatulus trinacrius*, *Ectemnius continuus sulphureipes*, *Harpactus elegans siculus*, and *Philanthus coarctatus siculus*. It is not the place to discuss the value of these subspecies and forms (e.g. *A. sicula* first was described as a subspecies of *A. boops* and is very close to it, some authors discuss the possibility that *Philanthus coarctatus siculus* is a valid species). In any case it is likely that some species in Sicily had long enough been isolated from other (mainland) populations to be able to develop distinct populations or even species.

Malta and Lampedusa

The fauna of Malta is currently too little known to discuss zoogeographic aspects. No summarizing publication about the Sphecidae fauna of Malta is known. In the present examination, 25 species are reported from the Malta. In general, the fauna seems to be similar to the one of Sicily, which is not unexpected. Some of the endemic taxa of Sicily occur also in Malta as *Astata sicula*, *Cerceris lunata funerea*, *Crossocerus elongatulus trinacrius*, or *Philanthus coarctatus siculus*. WAHIS (1997, 1998) examined the Pompilidae fauna of Malta. He reported some species with an African origin in Malta, which do not occur in Sicily. Such records were not made in Sphecidae in the current examination.

The island of Lampedusa (Italy) was examined by PAGLIANO & SCARAMOZZINO (1995). It is situated closer to the African mainland than to Sicily. So findings of African species are not unexpected. The authors reported *Stizus rufipes*, which is not recorded from Europe. Noteworthy is also the recent finding of *Miscophus eatoni* in Lampedusa, which does not occur in southern and central Italy. It is to suspect that the species - with a western Mediterranean distribution pattern - colonized Lampedusa from Tunisia. But most of the species from Lampedusa belong to the southern European fauna.

Acknowledgements

I greatly appreciate the help of F. Gusenleitner, Linz/Austria and Dr. B. Merz, Geneve/Switzerland for loan of specimens, Prof. Dr. K. Schmidt, Heidelberg/Germany, Dr. Pavel Nemkov, Vladivostok/Russia and J.v.d. Smissen, Bad Schwartau/Germany for identifying of some specimens. M. Hauser and K. Algin, Urbana/Illinois kindly checked the draft and the English.

Zusammenfassung

In der vorliegenden Arbeit werden zwei größere Spheciden-Aufsammlungen von Sizilien und Malta bearbeitet, die insgesamt 126 Arten aus Sizilien umfassen. 19 Arten sind neu für die Fauna von Sizilien: *Astata gallica*, *Belomicrus italicus*, *Crabro peltarius bilbaoensis*, *Crossocerus podagricus*, *Gorytes procrustes*, *Lindenius albilabris*, *Lindenius laevis*, *Passaloecus pictus*, *Pemphredon austriaca*, *Pemphredon lugubris*, *Rhopalum clavipes*, *Spilomena troglodytes*, *Stigmaeus solskyi*, *Synnevrus decemmaculatus*, *Tachysphex julliani*, *Trypoxylon kolazyi*, *Trypoxylon medium*, eine davon auch neu für Italien: *Miscophus mavromoustakisi*. Eine Art aus der Gattung *Synnevrus* ist wahrscheinlich neu für die Wissenschaft. Die aktuelle Fauna von Sizilien umfasst damit 217 Arten. Zoogeographische Aspekte der behandelten Faunen werden diskutiert. Der überwiegende Anteil der sizilianischen Arten ist mittel- und südeuropäisch verbreitet. Einzelne Arten sind von

ihrem Ursprung her eindeutig west-, bzw. ostmediterran und besitzen in Sizilien die Grenze ihrer Verbreitung, bzw. bilden isolierte Vorposten. Eine Art ist afrikanischen Ursprungs.

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Zeitschrift/Journal: [Linzer biologische Beiträge](#)

Jahr/Year: 2003

Band/Volume: [0035_2](#)

Autor(en)/Author(s): Schmid-Egger Christian

Artikel/Article: [New records of "Sphecidae" \(Hymenoptera: Sphecidae & Crabronidae\) from Sicily \(Italy\) and Malta 747-762](#)