

Observations on the spider family Gnaphosidae (Araneae) in the nature reserve 'Oasis of Simeto' (Italy, Sicily)

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Abstract

New data on the Gnaphosidae fauna of the riparian nature reserve 'Oasis of Simeto' (Sicily - Italy) are presented. The specimens were collected by pitfall trapping over 13 months from May 1994 in different wetland environments, each characterised by a specific plant community. Among the species identified *Poecilochroa furcata* and *Poecilochroa senilis* are first records of the species in Italy, while *Leptodrassus albidus*, *Haplodrassus macellinus hebes* and *Zelotes reconditus* are first records for Sicily. Differences in both diversity and abundance of species and specimens are recorded for the environments investigated. Most species have a Mediterranean distribution.

Key words: Araneae, Gnaphosidae, faunistics, nature reserve 'Oasis of Simeto', Sicily, Italy

INTRODUCTION

The 'Oasis of Simeto' is a nature reserve located in the eastern part of Sicily near the mouth of the Simeto River, a few kilometres from Catania. It is one of the larger and more interesting riparian areas of Sicily and represents an important wintering area for migratory birds. It is also particularly interesting for scientific purposes as it is very rich in species that, due to their origin, distribution and ecology, provide significant evidence concerning the origin of the Sicilian fauna. In spite of the importance of this area the invertebrate fauna has not yet been well investigated; the only data available are on Coleoptera, Lepidoptera, Hymenoptera (Insecta), Isopoda (Crustacea) (Balletto & Toso 1982; Baroni-Urbani 1964; Caltabiano et al. 1984; Magistretti 1967; Vandel 1969) and on the orientation behaviour of some species of the spider genus *Arctosa* (Lycosidae) (Papi 1955ab, 1959; Papi & Tongiorgi 1963). New research on the invertebrate fauna of the nature reserve has been carried out and preliminary results on the

spider fauna were reported by Di Franco & Lovetere (2000). Among the spiders living on the ground, the Gnaphosidae was the most abundant family in terms of both number of species and specimens. Data on this family is hereby provided.

MATERIALS AND METHODS

Specimens were collected with pitfall traps filled with acetic acid and 5% formalin. Five traps were placed in each of four different areas and were replaced every 20 days for 13 months, beginning in May 1994. The sampling areas were representative for the main vegetation types of the reserve, i.e. psammophilus and halophilus plants (Brullo et al. 1988). Two of these areas were about 2 km from the mouth of the Simeto River (Tamarisk and Quagmire areas) and the others were close to the sea (Saltwort area and Dunes). Sampling was also done at two other areas, situated near the sea, but they have been only partially investigated due to human disturbance. These environ-

ments included a pine forest and an adjacent area (Foredunes) characterised by the presence of plants typical of dunes like *Agropyrum junceum*, *Ammophila arenaria* and *Eryngium maritimum*.

The vegetation types of the four main areas sampled are listed below:

1. Quagmire area, plant community: *Juncetum-maritimo-acuti* Horvatic 1934, characterised by *Juncus acutus*, *Aster tripolium*, *Juncus maritimus*, *Carex extensa*, *Lotus preslii* and *Holoshoenus australis*, and halophilous plants such as *Inula crithmoides*, *Sarcocornia fruticosa* and *Limonium angustifolium*.
2. Tamarisk area, plant community: *Nerio-Tamaricetea* Br.-Bl. & O. Obolòs 1957, characterised by *Tamarix gallica*, *Tamarix africana*, *Salix alba*, *Salix purpurea* and *Salix* cfr. *pedicellata*.
3. Saltwort area, plant community: *Salicornie-*

tum radicans BR.-Bl. 1993; the typical plants of this community are *Sarcocornia perennis* (= *Salicornia radicans*) and *Aleuropus lagopoides*.

4. Dunes, plant community: *Centaureo-Ononidetum ramosissimae* Br.-Bl & M. Frei 1937; the species that characterise this community are *Ononis ramosissima*, *Seseli tortuosum* var. *maritimum* and *Centaurea spheroccephala*.

RESULTS

Faunistics

The identified specimens belong to 28 species and 12 genera (Table 1). It includes a male of *Poecilochroa furcata* that was captured outside the sampling area, but within the reserve. *P. furcata* and *Poecilochroa senilis* are first records of these species in Italy, and *Haplodrassus macellinus hebes*, *Leptodrassus albidus* and *Zelotes reconditus* are first records of these species in Sic-

Table 1. Total number of species and specimens found in the different areas studied. The table includes also a male of *Poecilochroa furcata* captured in another environment of the Reserve.

Species	Species distribution	Quagmire	Tamarisk	Saltwort	Dunes	Pine wood	Fore dunes
<i>Berlandina plumalis</i> (O. P.-Cambridge, 1872)	Holarctic	1					
<i>Drassodes lapidosus</i> (Walckenaer, 1802)	Palaearctic	3	1	1		2	
<i>Drassodes persimilis</i> Denis, 1937	S-euromaghrebian			3			
<i>Drassyllus</i> sp.n.	Endemic	5	4	1			
<i>Gnaphosa alacris</i> Simon, 1878	S-euromaghrebian	13	2	2	1		
<i>Haplodrassus dalmatensis</i> (L. Koch, 1866)	Palaearctic	2			6		
<i>Haplodrassus invalidus</i> (O.P.-Cambridge, 1872)	Mediterranean	1	1	12			
<i>Haplodrassus macellinus hebes</i> (O.P.-Cambridge, 1874)	Not defined	4					
<i>Haplodrassus severus</i> (C.L. Koch, 1839)	S-euromaghrebian	14	1	1	3		
<i>Leptodrassus albidus</i> Simon, 1914	West Mediterranean		1		1		
<i>Leptodrassus femineus</i> (Simon, 1873)	W-medit.-atlantic	2		1	1		
<i>Nomisia exornata</i> (C.L. Koch, 1839)	Europe to central Asia	8		2	10	1	
<i>Nomisia recepta</i> (Pavesi, 1880)	West Mediterranean					8	
<i>Poecilochroa furcata</i> Simon, 1914							
<i>Poecilochroa senilis</i> (O.P.-Cambridge, 1872)	Mediterranean				1		
<i>Scotophaeus blackwalli</i> (Thorell, 1871)	Cosmopolitan					1	
<i>Setaphis carmeli</i> (O.P.-Cambridge, 1872)	Mediterranean	3	1		3		
<i>Trachyzelotes barbatus</i> (L. Koch, 1866)	Medit. to central Asia	18	14	17	2		
<i>Trachyzelotes lyonnetii</i> (Audouin, 1827)	Medit. to central Asia			334			
<i>Trachyzelotes mutabilis</i> (Simon, 1878)	Mediterranean	1	3	17			
<i>Zelotes atrocaeruleus</i> (Simon, 1878)	Palaearctic	16	6	2			
<i>Zelotes callidus</i> (Simon, 1878)	North Mediterranean	5					
<i>Zelotes denisi</i> Marinaro, 1967	Sicily-Maghreb	1			5		
<i>Zelotes labilis</i> Simon, 1914	S-european			3			
<i>Zelotes maccaricus</i> Di Franco, 1998	Endemic				21	3	48
<i>Zelotes nilicola</i> (O.P. Cambridge, 1874)	Mediterranean	20		10	1	7	1
<i>Zelotes reconditus</i> Simon, 1914	Not defined	1	2	1			
<i>Zelotes tenuis</i> (L. Koch, 1866)	Mediterranean	11	52	13	1	2	
Number of species		19	12	16	13	7	2
Number of specimens		129	88	420	56	24	49

ily. *Drassodes persimilis*, *Leptodrassus femineus*, *Zelotes labilis* and *Zelotes maccaricus* are second records for Sicily (Di Franco 1986, 1993, 1997).

The distribution of the species collected depends on the habitat preferences of each species. The Quagmire area was the most diverse in terms of species (19 species) and ranged second in number of individuals found (129). Both *Berlandina plumalis*, *Zelotes callidus* and *Haplodrassus macellinus hebes* were only found in this area. The number of species found in the Saltwort area was also high (16 species) and this was also the area where most specimens were found (420). Most of this abundance was caused by high numbers of *Trachyzelotes lyonnetii* (334), a species only found in this habitat type. Adults of this species appear at the beginning of spring and reach a peak of abundance in May, whereafter their numbers decrease; in autumn and winter we have not captured individuals of this species. In spring 1995 individuals of *T. lyonnetii* were not captured as the weather was bad. They first appeared later, after the sampling period ended. Two other species were only captured in the Saltwort area: *D. persimilis* and *Z. labilis*. Two other species, *Trachyzelotes mutabilis* and *Haplodrassus invalidus*, were also quite abundant in the Saltwort area (17 specimens of each) and were only found in low numbers in the Quagmire area (1 specimen) and Tamarisk area (3 specimens).

The number of species (12) and specimens (88) was lower in the Tamarisk area and there were no species unique for this environment. *Zelotes tenuis* was more abundant in the Tamarisk area than in any other area. The number of species recorded from the Dune area was almost similar (13) to the number of species recorded from the Tamarisk area, but had fewer individuals (56 specimens). This could be due to the harsh environmental conditions. Interesting is the presence of *P. senilis*, captured only here, and *Z. maccaricus* that seems to be particularly linked to the dune environment. In the Pine forest it is interesting to note the unique presence of *Nomisiolepis recepta*, a species particularly linked to wooded and shrubby habitats.

The data show that in each of the four environments there are different communities of Gnaphosidae. The communities of Quagmire, Saltwort and Tamarisk are more similar to each other whereas the community of the Dunes is quite different. The species that have broad habitat preferences have been captured in almost all the habitats, but they are more abundant where the ecological conditions are more suitable for them (Table 1). The species which have restricted habitat preferences have been found only in 1 or 2 areas, as *T. lyonnetii* that is a dominant species in the Saltwort area, and *Z. maccaricus* particularly linked to the Dune environment.

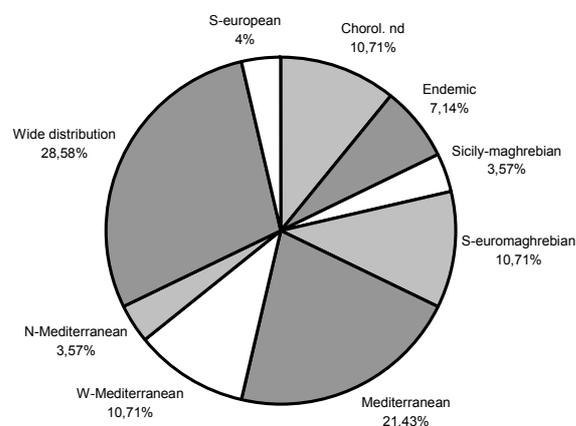


Fig. 1. Pie diagram showing species distribution: wide distribution, South-european, South-euromaghrebian, Mediterranean, West-Mediterranean, North-Mediterranean, Sicily-Maghrebian, endemic, chorology not defined.

Chorology

Most species of Gnaphosidae sampled in the nature reserve 'Oasis of Simeto' have a Mediterranean distribution (Table 1, Fig. 1). Among the species with a Mediterranean distribution there is a remarkable percentage of species with South-euromaghrebian, West Mediterranean, and Sicily-maghrebian distributions. The presence of these species in the Sicilian nature reserve is further evidence of the ancient links between Sicily and the west Mediterranean territories. At present the endemic species are *Zelotes maccharicus* and a possibly new species of *Drassyllus*.

ACKNOWLEDGEMENTS

The study was supported by 'Progetti di ricerca d'Ateneo 1999-2000, Conservazione della Biodiversità in ambienti mediterranei'. The author would like to acknowledge the support of Director Prof. A. Messina.

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