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Ground spider variability in a dry meadow

Lupi, Daniela[1], Rocco, Anna[1], Eördegh, F. Romana, Jucker, Constanza[1]; Pantini, Paolo[2]
[1]University of Milan DeFENS, Via Celoria 2, 20133 Milano, Italy; [2]Museum of Natural Sciences "E. Caffi", Piazza Cittadella 10, 24129 Bergamo, Italy

Abstract: The present study is focused on the ground spider population of a dry meadow located in Brescia Prealps (Lombardy) in proximity to a crowded and industrialized city and hence subjected to strong anthropogenic impact. Preliminary results obtained from pitfall samplings from April to August 2010 are reported. More than 160 spiders have been captured and 33 taxa belonging to 12 families identified (Amaurobiidae, Corinnidae, Dysderidae, Gnaphosidae, Linyphiidae, Lycosidae, Philodromidae, Pisauridae, Salticidae, Theridiidae, Thomisidae, and Zodariidae).

Key words: Araneae, faunistic, ecology, pitfall traps

Introduction

Dry meadows are often located on limestone soils with karst phenomena, subjected to extensive grazing. They have outstanding conservative value, because they were created by centuries of sustainable agriculture allowing the settlement of many xerophilic species (Duelli, 1997; Venn *et al.*, 2013). In Italy these habitats are distributed all over the peninsula at different altitudes (in the Alps, in the Apennine, in the Po plain) and also in the islands (Bonato *et al.*, 2005). However, in the last decades they have been dramatically reduced all over Europe because of worldwide declining of the traditional livestock grazing and erosion due to the excessive spread of adventitious and invasive plant species (Bavcon & Marinček, 2004). In Italy many natural meadows and pastures have turned spontaneously to scrub and woodland (Guidi & Piussi, 1993).

Ryszkowski *et al.* (1991) demonstrated the importance of this habitat for biodiversity conservation by comparing meadows with cereal crops in Poland, Romania, Russia and Italy. Although spiders are considered good bioindicators (Nyffeler & Benz, 1988), the araneological community in dry meadow habitats in Italy is poorly studied. The present study has the purpose of providing preliminary information on the spider composition in a dry meadow in an area subject to a strong anthropogenic influence.

Material and methods

Study area

The current study has been conducted in a dry meadow located at 750 m AMLS on the south east side of Monte Maddalena in Brescia Prealps in northern Italy (Brescia Province, Lombardy region). The soil is shallow and highly calcareuos and the flora is typical of a xerobrometum. The area is in proximity to the crowded and industrialized city of Brescia and is subjected to strong antropogenic impact. In the last decade the reduction of pasture and the establishment of invasive plant species such as *Robinia pseudoacacia*, *Rubus* sp. and *Sambucus nigra* caused a progressive destruction of the meadows in the area.

Methods

The study aims to improve the knowledge of the spiders taxocenosis inhabiting dry meadows. Pitfall traps were placed from April to August 2010 and inspected fortnightly. Two sets of 5 traps were positioned in the habitat. Spiders have been separated in different families, labeled, and conserved in ethyl alcohol 75% until identification to the species level. Adults were then classified using a stereomicroscope (Leica MZ 12.5, Leica Microsystems GmbH, Wetzlar, Germany; and Wild Heerbrugg M5A, Leica Geosystems GmbH, Heerbrugg, Switzerland). All the samples are conserved at Museum of Natural Sciences "E. Caffi" of Bergamo.

Results and discussion

A total of 161 specimens belonging to 12 families have been collected. A total of 33 taxa have been classified (Table 1) and the most species-rich families were Gnaphosidae and Lycosidae (Figure 1).

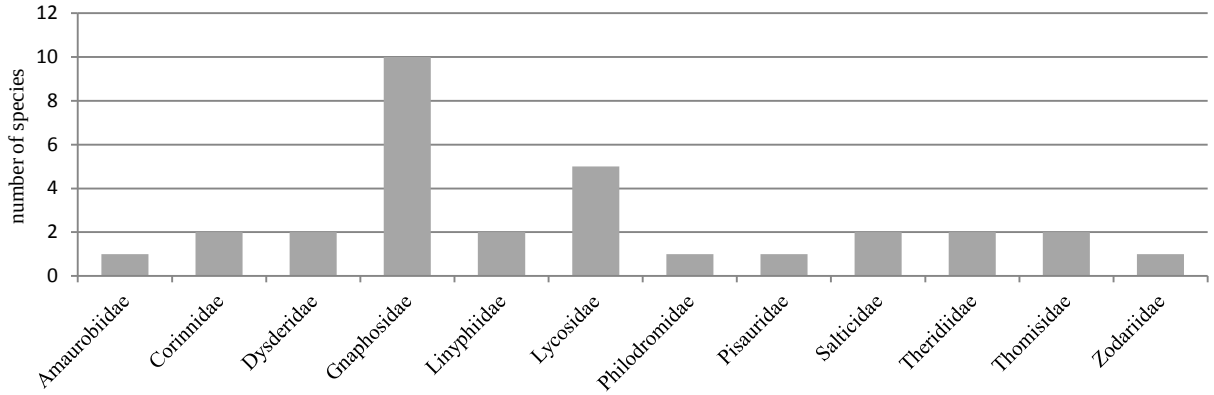

Figure 1. Distribution of spider species across families.

The spider-coenosis is dominated by the wolf spider *Alopecosa pulverulenta* (Clerck, 1757) (36.6%), a eurytopic diurnal active hunter that can be found in all kinds of open grassland (Lugetti & Tongiorgi, 1969; Kronestedt, 1990; Buchholz & Hartman, 2008). Among the remaining species, 19 are subrecedent or recedent as their percentage against the entire range is less than 2%. While most of the species are very common in Italy, 11 are new for Brescia Province. Among these *Callilepis schuszteri* (Herman, 1879) and *Zelotes atrocoeruleus* (Simon, 1878) have only been found in two other localities in Lombardy (Isaia *et al.*, 2007); and *Theonina cornix* (Simon, 1881), a species frequently detected in Trentino-Alto Adige (Noflatscher, 1988, 1990, 1991; Ballini, 2009) has only been found in few regions in Northern Italy (Isaia *et al*., 2007; Ballarin *et al*., 2011) and in Tuscany (di Caporiacco, 1923). With regard to the autoecology, 16 species are typically xerophilic (Table 1). Among these were two endemic species: *Amaurobius crassipalpis* Canestrini & Pavesi, 1870; a nocturnal active hunter known in the Central Alps from Canton Ticino to Southern Trentino-Alto Adige, and *Dasumia taeniifera* Thorell, 1875; also nocturnal and known in the area from the Prealps in Lombardy to the Central Apennine. These preliminary results suggest that the dry meadow considered can host a complex community of spiders and that this habitat has to be protected.

Table 1: List of the species, abundance, species typical of dry meadows according to Isaia *et al.* (2007) (xerophilic species) and first detection for Brescia province.

Family	**Species**	**Male**	**Female**	**Xerophilic Species**	**New for Brescia province**
Amaurobiidae	*Amaurobius crassipalpis* Canestrini & Pavesi, 1870	3	1	*	
Corinnidae	*Phrurolithus festivus* (C.L. Koch, 1835)	-	1	*	
	Phrurolithus minimus C.L. Koch, 1839	-	1	*	
Dysderidae	*Dasumia taeniifera* Thorell, 1875	1	2	*	*
	Dysdera ninnii Canestrini, 1868	3	-	*	
Gnaphosidae	*Callilepis schuszteri* (Herman, 1879)	-	1	*	*
	Drassodes lapidosus (Walckenaer, 1802)	7	6		
	Drassodes pubescens (Thorell, 1856)	7	5		
	Drassyllus praeficus (L. Koch, 1866)	3	-	*	
	Gnaphosa lugubris (C. L. Koch, 1839)	2	-	*	
	Haplodrassus signifer (C. L. Koch, 1839)	1	-		
	Trachyzelotes pedestris (C. L. Koch, 1837)	2	-		*
	Zelotes atrocoeruleus (Simon, 1878)	-	1		*
	Zelotes petrensis (C. L. Koch, 1839)	1	3	*	*
	Zelotes oblongus (C. L. Koch, 1833)	1	-	*	
Linyphiidae	*Tenuiphantes* sp.	-	1		
	Theonina cornix (Simon, 1881)	1	-	*	*
Lycosidae	*Alopecosa accentuata* (Latreille, 1817)	-	1	*	
	Alopecosa pulverulenta (Clerck, 1757)	35	24		
	Aulonia albimana (Walckenaer, 1805)	8	1		
	Pardosa gr *lugubris* (Walckenaer, 1805)	-	7		
	Pardosa saltans Töpfer-Hofmann, 2000	3	4		*
	Trochosa sp.	-	7		
	Trochosa hispanica Simon, 1870	4	-	*	*
Philodromidae	*Thanatus* sp.	-	1		
Pisauridae	*Pisaura* sp.	1	-		
Salticidae	*Euophrys* sp.	-	2		
	Pseudeuophrys erratica (Walckenaer, 1826)	1	-		*
Theridiidae	*Enoplognatha thoracica* (Hahn, 1833)	1	-	*	
	Episinus truncatus Latreille, 1809	1	-		*
Thomisidae	*Xysticus* cfr *kempeleni* Thorrel, 1872	-	1		
	Xysticus ninnii Thorell, 1872	1	-	*	*
Zodariidae	*Zodarion italicum* (Canestrini, 1868)	3	2	*	

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References

Ballarin, F., Pantini, P. & Hansen, H. 2011: Catalogo ragionato dei ragni (Arachnida, Araneae) del Veneto. Mem. Museo Civ. St. Nat. Verona (II ser.) 21: 1-151.

Ballini, S. 2009: Arborikole und epigäische Spinnen (Arachnida: Araneae) in Laubmischwäldern bei Lana und Burgstall (Südtirol, Italien). Gredleriana 9: 187-212.

Bavcon, J. & Marinček, A. 2004: A dry meadov as a live seed bank and an object of research. Scripta. Bot. Belg. 29:131-134.

Bonato, L., Di Turi, A., Fontana, A., Minelli, A., Peccenini, S. & Solari, M. 2005: I prati aridi. Coperture erbacee in condizioni critiche. Quaderni Habitat 12. Museo Friulano di Storia Naturale, Udine.

Buchholz, S. & Hartmann, V. 2008: Spider fauna of semi-dry grasslands on a military training base in Northwest Germany (Münster). Arachnol. Mitt. 35: 51-60.

di Caporiacco, L. 1923: Aracnidi dei dintorni di Firenze. Mem. Soc. Ent. Ital. 2: 177-226.

Duelli, P. 1997: Biodiversity evaluation in agricultural landscapes: An approach at two different scales. Agric. Ecosyst. Environ. 62: 81-91.

Guidi, M. & Piussi, P. 1993: Natural afforestation and landscape changes in the Eastern Prealps of Italy. Rev. geogr. Alpine. 81 (3): 95-102.

Isaia, M., Pantini, P., Beikes, S. & Badino, G. 2007: Catalogo ragionato dei ragni (Arachnida, Araneae) del Piemonte e della Lombardia. Mem. Assoc. natural. Piemont. 9: 1-161.

Kronestedt, T. 1990: Separation of two species standing as *Alopecosa aculeata* (Clerck) by morphological, behavioural and ecological characters, with remarks on related species in the *pulverulenta* group (Araneae, Lycosidae). Zool. Scr. 19: 203-225.

Lugetti, G. & Tongiorgi, P. 1969: Ricerche sul genere *Alopecosa* Simon (Araneae-Lycosidae). Atti Soc. Tosc. Sci. Nat. Mem. B 76: 1-100.

Noflatscher, M. T. 1988: Ein Beitrag zur Spinnenfauna Südtirols: Epigäische Spinnen an Xerotherm- und Kulturstandorten bei Albeins (Arachnida: Aranei). Ber. nat-med. Verein Innsbruck 75: 147-70.

Noflatscher, M. T. 1990: Zweiter Beitrag zur Spinnenfauna Südtirols: Epigäische Spinnen an Xerothermstandorten bei Säben, Guntschna und Castelfeder (Arachnida: Aranei). Ber. nat-med. Verein Innsbruck 77: 63-75.

Noflatscher, M. T. 1991: Beitrage zur Spinnenfauna Südtirols – III: Epigäische Spinnen an Xerotherm-Standorten am Mitterberg, bei Neustift und Sterzing (Arachnida, Aranei). Ber. nat-med. Verein Innsbruck 78: 79-92.

Nyffeler, M. & Benz, G. 1988: Spiders inhabiting the field layer of a dry meadow near Zurich, Switzerland. Mitt. Schweiz. Entomol. Ges. 61: 21-28.

Ryszkowski, L., Karg, L., Margarit, G., Paoletti, M. G. & Zlotin, R. 1991: Above ground insects biomass in agricultural landscapes of Europe. In: Landscape Ecology and Agroecosystems (eds. Bunce, R. G. H., Ryskowski, L., Poincelot, R. & Paoletti, M. G.). CRC Press, Boca Raton.

Venn, S. J., Kotze, D. J., Jari, T. L. & Niemela, K. 2013: Urban dry meadows provide valuable habitat for granivorous and xerophylic carabid beetles. J. Insect. Conserv. 17: 747-764.