

On soil-inhabiting spiders of Nagy-Szénás Hill in Hungary

By

Á. SALLAI * and Á. TÓTH **

Abstract. More than one thousand species of the group Araneidea are known in Hungary. From three studied plant associations (Festuco pallenti-Brometum pannonicum, Fago-Ornetum, Querco-Carpinetum) 87 spider species in 1317 individuals were collected, of which only a few species were observed as frequent in all three associations. Since the soil-inhabiting macrofauna was investigated, the species living in litter, below rocks and beneath shrubs were trapped. The several-year collection made possible a comparison of the spider faunas characteristic for the diverse plant associations. Species of low individual number can not be used for characterization, nevertheless, they are included in the list.

In the Nagy-Szénás Hill three plant associations were studied: *a)* Closed dolomite rocky grassland, Festuco pallenti-Brometum pannonicum. The steep northern slopes of the dolomite hill have a cool, fairly constant microclimate. *b)* Mixed karstic woodland, Fago-Ornetum. This is the characteristic forest association of the steep northern slopes. The two characteristic species of mixed karstic woodland, the coincidence of the cool-loving beech and the warm-loving *Fraxinus ornus* indicate a postglacial relic character of the association. *c)* Hornbeam-oak wood, Querco-Carpinetum. A closed canopy woodland. The stands are often mixed with single individuals of beech or hornbeam, or other tree species (Sallai, 1992).

So-called Barber traps were used. The first traps were set in October 1982, then checked in November and left out during winter. Subsequently, traps were checked in March, summer and October 1983, as well as in January 1984. As seen in the analysis, a part of the deposited traps were destroyed, so the material of several areas had to be pooled (Sallai, 1992).

Spider species observed in large individual number

The species *Harpactes rubicundus* (Dysderidae) represented by the largest number of specimens (266) has been found in all three plant associations. *H. rubicundus* is the most common *Harpactes* species in Hungary. It occurs from North-Africa to Poland, prefers forests. The second most abundant species (129) is

*Ágnes Sallai, Magyar Tudományos Akadémia Könyvtára (Library of the Hungarian Academy of Sciences), 1051 Budapest, Arany János u. 1, Hungary.

**Ágnes Tóth, 1132 Budapest, Alig u. 10, Hungary.

the throughout common *Leptyphantes flavipes* (Linyphiidae), it was characteristic to the Fago-Ornetum association.

Alopecosa trabalis (96) and *Trochosa terricola* (93) were nearly equal in abundance. The first was characteristic for the Festuco pallenti-Brometum pannonicum association, while the second occurred in considerable number in the Fago-Ornetum association. *A. trabalis* prefers open habitats, in Hungary it is not rare in hilly regions. This spider is distributed in Europe, Central Asia, Asia Minor. *T. terricola* is an euryoec species.

The fourth most abundant species was *Cicurina cicur* (83, Agelenidae) with high dominance in Fago-Ornetum association. It prefers damp places, and is widespread in Europe, but it lives in Japan, too. In Hungary it occurs in the hilly regions.

According to the number of trapped individuals, the next one was *Microneta viaria* (51, Linyphiidae). It was observed in large number (48) in Fago-Ornetum association.

Centromerus similis (50, Linyphiidae) was found in all three plant associations. A considerable number of specimens was registered in *Festuco pallenti-Brometum pannonicum* (23) and *Fago-Ornetum* (20) associations.

Short characterization of the families

Atypidae: Because of its rare incidence, *Atypus affinis* collected in *Quercus-Carpinetum* is worth mentioning. The species lives in oak forests in mountains of medium height in Hungary. Distribution: Europe (north to Denmark), North-Africa, Caucasus, on chalk hillsides.

Pholcidae: *Pholcus opilionides* came from the *Quercus-Carpinetum*. It is common in Hungary, distributed in Europe, Central Asia, China, in warm regions.

Dysderidae: From the three species on the spot, some individuals of *Dysdera erythrina* have been trapped in *Quercus-Carpinetum* and *Fago-Ornetum*. Beside the formerly mentioned *Harpactes rubicundus* of general incidence, some individuals of *H. hombergi* came from *Fago-Ornetum*. *D. erythrina* and *H. hombergi* inhabit the hilly regions in Hungary.

Agelenidae: From the seven collected species, *Cicurina cicur* occurred in all the three plant associations. *Coelotes longispina* was characteristic for the *Festuco pallenti-Brometum pannonicum* and *Fago-Ornetum* associations. This species comes from warm southern, south-western slopes. *Tegeneria agrestis* is a migratory species, it turned up in 1937 in Hungary. Some individuals could be found in every plant association. *Agelena gracilens*, *T. torpida* and *T. silvestris* have been trapped in low individual number in *Fago-Ornetum*. *Cybaeus angustiorum* is a rare species, one single specimen was collected in the *Festuco-pallenti-rometum pannonicum* association. *A. gracilens* likes warm places, and is common in hilly regions, it is widespread in Europe. *T. torpida* occurs in forests, *T. silvestris* in forests and bushy places. *C. angustiorum* prefers beech woods and other cool forests, it is sporadic in *Quercus-Carpinetum* association.

Pisauridae: The family was represented by *Pisaura mirabilis*. Each individual was collected in the Festuco pallenti-Brometum pannonici association. This species lives in woods; it is widespread in Europe.

Lycoşidae: *Alopecosa trabalis* and *Trochosa terricola* have already been mentioned among the abundant species. Individuals of *A. sulzeri* were found in the Festuco pallenti-Brometum pannonici association. The species is known from scrub, on grassy rocks of hilly regions, and also in dry oak forests. *Pardosa lugubris* was found in some individuals in all three plant associations. The species comes from sunny places in woods; it is common and widespread throughout. *Aulonia albimana* was trapped in Festuco pallenti-Brometum pannonici and Fago-Ornetum. It occurs on grassy or stony places with warm and sunny exposition. Widespread in Europe, but uncommon in north. *Alopecosa aculeata* occurs in Festuco pallenti-Brometum pannonici. It is a mountainous species.

Mimetidae: Some individuals of one species, *Ero furcata*, were found. This species is fairly common throughout.

Metidae: One species, *Meta segmentata*, with low number of individuals. This spider lives in woods, gardens, wasteland. Abundant throughout.

Linyphiidae: This was the most significant family of the studied plant associations, being the richest in both number of species (27) and of individuals (536). 40% of all trapped animals belonged to this family. Among species observed in large number of individuals, *Leptyphantes flavipes* (129), *Microneta viaria* (51) and *Centromerus similis* (50) have already been mentioned. Because of their high dominance within the family, *Linyphia hortensis* (48), *Lepthyphantes collinus* (29), *L. minutus* (28), *L. mansuetus* (28), *L. mengei* (26), *L. angulipalpis* (26), *Macrargus rufus* (21) shall be mentioned. Their distribution is shown in Table 1.

Micryphantidae: It is represented by 13 species in the associations, three of which deserve attention. One of them is *Wideria simplex*, all individuals (14), with one exception, were found in Fago-Ornetum. *Minirioloides* sp. and *Araeoncus* sp. are members of northern group of species, but it is improbable that they are glacial relics.

Theridiidae: Each of its five species were represented by one individual in the associations (Table 1).

Gnaphosidae: Nine species were found. They were collected in the Festuco pallenti-Brometum pannonici association, except for *Drassodes pubescens* which was found in all three plant associations, under stones in woods and more exposed places. It is rather uncommon, but widespread throughout. Two individuals of *Zelotes erebeus* were collected in Querco-Carpinetum.

Clubionidae: Five species were found (Table 1).

Thomisidae: Five species were found, as can be seen in the Table 1.

Salticidae: The only species observed was *Evarcha laetabunda*. It lives in dry places and is widespread in Europe.

Tab. 1. List of species and their individual number in the plant associations studied
(a: *Festuco pallenti-Brometum pannonici*; b: *Fago-Ornetum*; c: *Quercu-Carpinetum*, S: total number of individuals)

Species	a	b	c	S
ATYPIDAE				
<i>Atypus affinis</i> (Eichw.)			1	1
PHOLCIDAE				
<i>Pholcus opilionides</i> (Schrank)		1	1	
DYSDERIDAE				
<i>Dysdera erythrina</i> (Walck.)		2	1	3
<i>Harpactes rubicundus</i> (C.L. Koch)	8	142	56	266
<i>Harpactes hombergi</i> (Scop.)		4		4
AGELENIDAE				
<i>Tegeneria agrestis</i> (Walck.)	2	2	1	5
<i>Tegeneria torpida</i> (C.L. Koch)		2		2
<i>Tegeneria silvestris</i> (C.L. Koch)		1		1
<i>Agelena gracilens</i> (C.L. Koch)		1		1
<i>Coelotes longispina</i> (Kulcz.)		10	14	24
<i>Cybaeus angustiorum</i> (C.L. Koch)	1		1	
<i>Cicurina cicur</i> (Fabr)	16	57	10	83
PISAURIDAE				
<i>Pisaura mirabilis</i> (Cl.)	7			7
LYCOSIDAE				
<i>Aulonia albimana</i> (Walck.)	4	1		5
<i>Pardosa lugubris</i> (Walck.)	5	3	2	10
<i>Trochosa terricola</i> (Thor.)	49	39	5	93
<i>Alopecosa aculeata</i> (Pav)	1			1
<i>Alopecosa cuneata</i> (Cl.)		1		1
<i>Alopecosa sulzeri</i> (Cl.)	13	1		14
<i>Alopecosa trabalis</i> (Cl.)	88	6	2	96
MIMETIDAE				
<i>Ero furcata</i> (Villers)	2	1		3
METIDAE				
<i>Meta segmentata</i> (Cl.)	1	9	5	15
LINYPHIIDAE				
<i>Macrargus rufus</i> (Wid)	1	18	2	21
<i>Microneta viaria</i> (Blackw.)	43	8		51
<i>Tapinopa longidens</i> (Wid)	1	1		2
<i>Stemoniphantes lineatus</i> (Linné)	7			7
<i>Sydera gracilis</i> (Menge)			1	1
<i>Centromerus sylvaticus</i> (Blackw.)	9	2	3	14
<i>Centromerus similis</i> (Kulcz.)	23	20	7	50
<i>Centromerus serratus</i> (Kulcz.)		3		3
<i>Centromerus jacksoni</i> (Denis)	3	2		5
<i>Bolyphantes crucifer</i> (Menge)	2			2
<i>Leptyphantes collinus</i> (Westr.)	23	6		29
<i>Leptyphantes minutus</i> (Blackw.)	2	24	2	28
<i>Leptyphantes cristatus</i> (Menge)	2		1	3
<i>Leptyphantes flavipes</i> (Blackw.)	3	102	24	129
<i>Leptyphantes tenebricola</i> (Wid)	5	6	5	16
<i>Leptyphantes mengei</i> (Kulcz.)	22	4		26
<i>Leptyphantes mansuetus</i> (Thor.)	16	9	3	28
<i>Leptyphantes nanus</i> (Kulcz.)			1	1
<i>Leptyphantes leprosus</i> (Ohl.)			10	10
<i>Leptyphantes pallidus</i> (O.P. Cambr.)	1	4		5
<i>Leptyphantes angulipalpis</i> (Westr.)		21	5	26
<i>Stylophora concolor</i> (Wid)	13	1		14

<i>Drapetisca socialis</i> (Sund.)	2	1	3	
<i>Linyphia hortensis</i> (Sund.)	4	29	15	48
<i>Linyphia clathrata</i> (Sund.)	5		4	9
<i>Porrhoma convexa</i> (Westr.)		4		4
<i>Mikrolyniphia pusilla</i> (Sund.)		1		
MICRYPHANTIDAE				
<i>Wideria simplex</i> (Kulcz.)	1	14		15
<i>Wideria cucullata</i> (C.L. Koch)		2		2
<i>Wideria antica</i> (C.L. Koch)	1			1
<i>Wideria capito</i> (Westr.)		1		1
<i>Wideria melanocephala</i> (O.P. Cambr.)		3		3
<i>Nematogmus sanguinolentus</i> (Walck.)		1		1
<i>Tigellinus furcillatus</i> (Menge)	3			3
<i>Gonatium corallipes</i> (O.P. Cambr.)		2	1	6
<i>Ceratinella scabrosa</i> (O.P. Cambr.)	2		2	
<i>Tapinocyba insecta</i> (C.L. Koch)			1	1
<i>Minirioloides</i> sp.	24	2		26
<i>Trichoncus scrofa</i> (Sim.)	1	1		2
<i>Araeoncus</i> sp.	1			1
THERIDIIDAE				
<i>Robertus arundineti</i> (O.P. Cambr.)			1	2
<i>Pholcomma gibbum</i> (Westr.)		3		3
<i>Theridium ovatum</i> (Cl.)	1			1
<i>Episinus lugubris</i> (Sim.)	1	1		2
<i>Dipoena melanogaster</i> (C.L. Koch)	1		1	
GNAPHOSIDAE				
<i>Drassodes pubescens</i> (Thor.)	7	1	5	13
<i>Drassodes lapidosus</i> (Walck.)	1			1
<i>Haplodrassus silvestris</i> (Blackw.)	2		1	3
<i>Zelotes electus</i> (C.L. Koch)	1		1	2
<i>Zelotes villicus</i> (Thor.)	2			2
<i>Zelotes erebeus</i> (Thor.)			2	2
<i>Zelotes serotinus</i> (C.L. Koch)	3			3
<i>Phaeoedus braccatus</i> (C.L. Koch)				1
<i>Gnaphosa</i> sp.	1			1
CLUBIONIDAE				
<i>Clubiona terrestris</i> (Westr.)	14		2	16
<i>Clubiona compta</i> (C.L. Koch)	1			1
<i>Clubiona marmorata</i> (Webstr.)		1		1
<i>Agroeca pullata</i> (Thor.)	10	1		11
<i>Scotina celans</i> (Blackw.)			3	3
THOMISIDAE:				
<i>Xysticus cambridgei</i> (Blackw.)		1		1
<i>Oxyptila atomaria</i> (Panz.)	2			2
<i>Xysticus</i> sp.	3	1		4
<i>Thanatus vulgaris</i> (Sim.)	1			1
<i>Philodromus aureolus</i> (Cl.)		1		1
SALTICIDAE				
<i>Evarcha laetabunda</i> (C.L. Koch)	2			2

Spider species characteristic for the plant associations

Festuco pallenti-Brometum pannonicum: The species collected in the largest number of individuals was *Alopecosa trabalis*, and also significant were the following ones: *Harpactes rubicundus*, *Trochosa terricola*, *Centromerus similis* and *Leptyphantes mengei*.

Fago-Ornetum: *Harpactes rubicundus*, *Leptyphantes flavipes*, *Cicurina cicur*, *Microneta viaria*, *Trochosa terricola*, *Linyphia hortensis* were common in this association.

Quercu-Carpinetum: *Harpactes rubicundus*, *Leptyphantes flavipes*, *Linyphia hortensis* were characteristic.

Summary

87 spider species in 1317 individuals have been registered on the territory. Only a few species could be found with significant frequency in all the three plant associations. According to the original conditions - the seeking of phytocenological parallelisms - the results certify that in the spider fauna there had not been found species of glacial relic character. The explication can be found primarily in the movement - active migrations - of the spiders. Relic species of last glaciation had only been found in swamps (Bátorliget, Csaroda, Ócsa) in Hungary (Tóth, 1985).

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