

## Contributions to the ground-dwelling spider fauna (Araneae) of Villányi Hills

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LAJOS L. & VADKERTI E.: *Contributions to the spider fauna of Villányi Hills*

**Abstract:** Ground-dwelling spiders were investigated in 9 localities of the Villányi Hills in spring, summer and autumn 2002. A total of 732 spiders were collected, belonging to 21 families, 44 genera and 65 species. Altogether 14 species were discovered as new to the fauna of the Villányi Hills: *Dipoena inornata* (O. P.-Cambridge, 1861); *Alopecosa aculeata* (Clerck, 1757); *Alopecosa solitaria* (Herman, 1876); *Liocranum rutilans* (Thorell, 1875); *Gnaphosa lugubris* (C. L. Koch, 1839); *Zelotes aurantiacus* Miller, 1967; *Zelotes latreillei* (Simon, 1878); *Zelotes subterraneus* (C. L. Koch, 1833); *Zora nemoralis* (Blackwall, 1861); *Zora silvestris* Kulczyński, 1897; *Thanatus formicinus* (Clerck, 1757); *Xysticus sabulosus* (Hahn, 1832); *Xysticus ulmi* (Hahn, 1832) and *Talavera aequipes* (O. P.-Cambridge, 1871). Thus, the number of spider species described from the Villányi Hills has increased to 201. The present paper includes a comprehensive species list of the Villányi Hills.

**Keywords:** ground-dwelling spiders, Villányi Hills

### Introduction

Spider faunal studies in the Villányi Hills were done by KOLOSVÁRY (1935) on Nagy-Hill, by LOKSA (1966) on Tenkes Hill, and by KOLOSVÁRY (1935), LOKSA (1966), KÉKESI and SEGESDI (1979), LOKSA (1984, 2002), SZINETÁR et al. (1998), SZINETÁR and LAJOS (2000) on Szársomlyó Hill.

The first remarkable paper was published in 1935, in which KOLOSVÁRY (1935) summarized former spider faunal research in the region of Nagyarsány and Csarnóta. A total of 10 species were listed. *Xysticus embriki* was described as a species new to science, and the presence of *Nemesia pannonica* in South Baranya was confirmed.

In his analysis of Carpathian bush-forests Loksa (1966) presented 70 spider species to be present on Tenkes, Villányi Hills.

KÉKESI and SEGESDI (1979), lead by Imre Loksa performed soil-zoological investigations on Szársomlyó Hill. In their thesis dissertation they listed 95 spider species (unpublished data).

With specimens of *Nemesia pannonica* collected from Szársomlyó Hill, István Loksa (1984, 2002) carried out complex studies into the biology of the species.

SZINETÁR et al. (1998) collected empty snail shells in 12 Hungarian localities to find out which spiders occupy them for the winter period. Altogether 5 species were reported from Szársomlyó Hill, of which *Pellenes nigrociliatus* was the absolutely dominating species.

Based on the processing of material collected between 1995—2000 on Szársomlyó Hill, SZINETÁR and LAJOS (2000) reported 119 species, of which 4 were new to Hungarian fauna. Another species, *Pelecopsis loksai* (SZINETÁR and SAMU 2003), new to science, was also discovered in this collecting period.

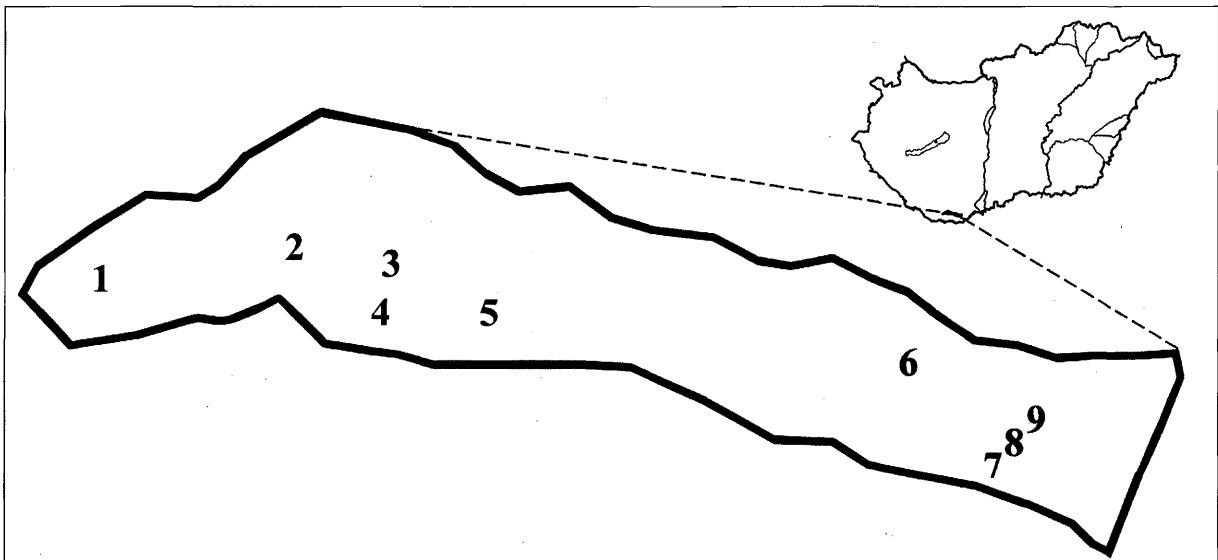


Fig. 1. Map of the study sites in the Villányi Hills

As part of a research project (KAC KO 440322001), we have performed the comparative analysis of spider communities living in open areas of Mecsek and Villányi Hills. Besides gathering further faunal data, our aim has been to extend our research onto new areas not having studied from arachnofaunal aspect, the spider faunas of Köves-máj, Csukma and Fekete-Hill have not been studied yet.

The present paper contains faunal data on the Villányi Hills.

### Material and methods

The investigations were performed in 2002 in Villányi Hills (Fig.1). Villányi Hills is Hungary's southernmost mountain range, stretching out for 27 kilometres from the east to the west, its highest peak rising to 442 m. Two of its hills, Fekete-Hill and Szársomlyó Hill are strictly protected conservation areas. Its climate has submediterranean character.

The sampling areas were plateau locations or slopes with southern exposure, within natural or semi-natural habitats, at altitudes varying between 200 and 400 metres a.s.l. The studies were performed in 9 different arid locations of Villányi Hills. The various habitats were categorized according to HGHC, the Hungarian General Habitat Classification system (FEKETE et al. 1997) (Table 1).

For the purposes of sampling, we used 200 ml plastic glasses as Barber pitfall traps. They had diameter of 8 cm and high of 12 cm and were half filled with 65 % etilen-glykol, 10%-os acetic acid and water mixed in 1:5:1 proportions, and with 1 ml of surface-active detergent added to every 1 liter of solution.

A total of 330 (3×110) traps were laid out for three successive sessions (in the first week of April, first week of June, and the third week of September), and were operated for an average of three weeks during each period. In the particular areas traps were positioned in line transects at distances of 10 or 15 m, with varying number of traps (Nagy-Hill: 15; Tenkes: 15;

Köves-máj plateau: 10; Köves-máj slope: 10; Csukma: 15; Fekete-Hill: 15; Szársomlyó edge: 10; Szársomlyó rocky grassland: 10; Szársomlyó ridge: 10). As concluded from earlier studies (SZINETÁR and LAJOS 2000), in spring such a sampling period was selected that the ground-dwelling spider fauna was still well represented, but the protected *Nemesia pannonica* population suffered only minimal loss due to trapping.

Specimens were separated under laboratory conditions, and were conserved in 70% ethanol. For taxonomic determination the works by LOKSA (1969, 1972); HEIMER and NENTWIG (1991); ROBERTS (1995); SZITA and SAMU (2000); and WUNDERLICH (1991) were used.

For naming the species we followed the nomenclature used by PLATNICK (1997, 2004), and our data were collated with the current checklist for Hungary (SAMU and SZINETÁR 1999).

### Results and discussion

Altogether 732 spiders were collected, belonging to 21 families, 44 genera and 65 species (104 females, 382 males, 246 juveniles) (Table 2.).

Certain species were trapped only in small numbers. This can have two explanations. Either the particular ground-dwelling species is rare in the area or it lives on vegetation rather than on the ground and therefore its trappability with pitfall traps is quite incidental. To be able to differentiate between these two possible causes, we also indicated life form types for each species. Based on their life forms the species were classified into 3 categories: ground-dwelling species, ground-dwelling and herb layer life forms, herb layer species (JEDLIČKOVÁ 1988, ROBERTS 1995, BUCAR 1992, LOKSA 1969, 1972). Although the category „Synanthropic” is not a type of life form, but the occurrence of such species is again incidental in pitfall traps, therefore we deal with this category also here. Another advantage of indicating categories is that it makes it easier to compare species lists compiled by various authors.

Table 1. Habitat types of the studied areas in the Villányi Hills; codes are according to the Hungarian General Habitat Classification (HGHC).

N°	Localities	HGHC code	Habitats
1.	Nagy Hill	H3	Grassy steppe slopes and forest-steppe meadows
2.	Tenkes Hill	H4	Stabilized meso-xeric clearings and grasslands
3.	Köves-máj plateau	M1	Bushy woodland of pubescent oak
4.	Köves-máj slope	H4	Stabilized meso-xeric clearings and grasslands
5.	Csukma Hill	H3	Grassy steppe slopes and forest-steppe meadows
6.	Fekete Hill	H1	Closed rocky grassland
7.	Szársomlyó edge	P2	Forested areas with spontaneous bushy growth
8.	Szársomlyó rocky grass	H1	Closed rocky grassland
9.	Szársomlyó plateau	M1	Bushy woodland of pubescent oak

Table 2. Spider collected by pitfall traps in the Villányi Hills in 9 localities (1. Nagy Hill, 2. Tenkes Hill, 3. Köves-máj plateau, 4. Köves-máj slope, 5. Csukma Hill, 6. Fekete Hill, 7. Szársomlyó edge, 8. Szársomlyó rocky grass, 9. Szársomlyó plateau). Life form: G = ground-dwelling species, G-H = ground-dwelling and herb layer life form both, H = herb layer species. S = synanthrop species. Specimens: females/males/juveniles.

Species	Life form	Localities								
		1.	2.	3.	4.	5.	6.	7.	8.	9.
<b>Atypidae</b>										
<i>Atypus affinis</i>	G	-/4/1	-/1/-	-/5/-	-/2/-					
<i>Atypus muralis</i>	G							-/2/1		
<i>Atypus</i> sp.							-/1/1			
<b>Nemesiidae</b>										
<i>Nemesia pannonica</i>	G	-/34/2	-/30/1	-/11/-	-/30/-	-/21/3	-/10/4	-/9/4	-/10/-	-/9/-
<b>Dysderidae</b>										
<i>Dysdera longirostris</i>	G									-/2/-
<i>Dysdera</i> sp.				-/1/1						
<b>Theridiidae</b>										
<i>Dipoena inornata</i>	G-H		1/-/1							
<i>Episinus angulatus</i>	G-H	1/-/1					1/-/1			
<i>Theridion</i> sp.		-/1/1								
<b>Linyphiidae</b>										
<i>Linyphia hortensis</i>	G-H									-/1/-
<i>Microlinyphia</i> sp.				-/1/1						
<i>Minicia marginella</i>	G	-/1/-								
<b>Araneidae</b>										
<i>Mangora acalypha</i>	H						1/-/1			
<b>Lycosidae</b>										
<i>Alopecosa accentuata</i>	G	3/25/-	-/6/-			2/5/-	1/2/-			
<i>Alopecosa aculeata</i>	G			2/-/1						
<i>Alopecosa cuneata</i>	G	2/9/-			-/3/-					
<i>Alopecosa cursor</i>	G			-/3/-					2/6/-	
<i>Alopecosa mariae</i>	G						-/1/-			
<i>Alopecosa solitaria</i>	G		1/-/1							
<i>Alopecosa</i> sp.		-/1/6	-/1/5	-/1/1	-/1/1	-/1/5				-/1/1
<i>Arctosa lutetiana</i>	G-H						1/-/1			
<i>Hogna radiata</i>	G	5/3/-	2/2/-	-/1/-		2/2/-	2/1/1	3/3/2	-/1/1	-/1/2
<i>Pardosa lugubris</i>	G				-/3/-	-/2/-	-/3/-			
<i>Pardosa</i> sp.		-/1/9	-/1/2	-/1/1	-/1/3	-/1/9	-/1/5	-/1/2	-/1/8	-/1/1
<i>Trochosa robusta</i>	G	1/-/1	-/2/-			3/-/1				
<i>Trochosa terricola</i>	G	5/-/1			3/1/-					1/-/1
<i>Trochosa</i> sp.		-/1/3	-/1/2		-/1/1	-/1/1				-/1/4
<i>Lycosidae</i> sp.						-/1/9	-/1/11	-/1/22		
<b>Pisauridae</b>										
<i>Pisaura mirabilis</i>	H	-/1/3				-/1/-				-/1/-
<b>Oxyopidae</b>										
<i>Oxyopes lineatus</i>	H				-/1/2					
<b>Agelenidae</b>										
<i>Tegenaria domestica</i>	S								-/1/-	
<i>Tegenaria</i> sp.						-/1/1				
<b>Hahniidae</b>										
<i>Hahnia nava</i>	G					-/1/-				
<b>Dictynidae</b>										
<i>Lathys stigmatisata</i>	G	-/2/-								
<b>Amaurobiidae</b>										
<i>Amaurobius ferox</i>	G						-/1/-			-/2/-
<i>Amaurobius</i> sp.		-/1/1								
<i>Coelotes longispinus</i>	G	2/9/-	-/1/-	-/1/-	-/2/-	-/1/-	-/1/-		-/1/-	
<i>Coelotes</i> sp.		-/1/1								
<b>Titanoecidae</b>										
<i>Titanoeca quadriguttata</i>	G	-/1/-	-/1/-				-/1/-			
<i>Titanoeca schineri</i>	G			-/1/-			-/2/-			

<b>Liocranidae</b>									
<i>Agroeca cuprea</i>	G-H							1/-	
<i>Liocranum rupicola</i>	G								-1/-
<i>Phrurolithus</i> sp.			-1/-1						
<i>Scotina celans</i>	G	-2/-					-1/-		
<i>Liocranidae</i> sp.				-1/-1					
<b>Zodariidae</b>									
<i>Zodarion germanicum</i>	G								1/1/-
<i>Zodarion</i> sp.									-1/3
<b>Gnaphosidae</b>									
<i>Drassodes</i> sp.			-1/-2		-1/-1	-1/-1	-1/-1		
<i>Gnaphosa lucifuga</i>	G				2/2/-				
<i>Gnaphosa lugubris</i>	G						2/-		-1/-
<i>Gnaphosa opaca</i>	G					1/1/-	-2/-		
<i>Nomisia exornata</i>	G							2/-	
<i>Zelotes aurantiacus</i>	G	1/-		-1/-				-1/-	
<i>Zelotes caucasicus</i>	G							5/2/-	7/6/-
<i>Zelotes electus</i>	G		1/-						
<i>Zelotes erebeus</i>	G	1/-	1/-		1/-	1/-			1/1/-
<i>Zelotes hermani</i>	G-H	-1/-	-1/-		3/2/-	-3/-	2/1/-	1/1/-	
<i>Zelotes latreillei</i>	G								-1/-
<i>Zelotes subterraneus</i>	G	1/-							
<i>Zelotes</i> sp.		-1/4	-1/1		-1/3	-1/6	-1/4	-1/7	-1/6
<b>Zoridae</b>									
<i>Zora nemoralis</i>	G					1/-			
<i>Zora silvestris</i>	G	-1/-							
<i>Zora</i> sp.		-1/1	-1/2						-1/1
<b>Philodromidae</b>									
<i>Thanatus formicinus</i>	G-H	-2/-	-3/-	-1/-					
<i>Thanatus</i> sp.			-1/3	-1/1	-1/1		-1/1	-1/1	-1/1
<b>Thomisidae</b>									
<i>Ozyptila atomaria</i>	G				-1/-				1/-
<i>Ozyptila claveata</i>	G		1/1/-	3/-	2/-		1/2/-		
<i>Ozyptila</i> sp.		-1/1	-1/2		-1/3		-1/1		-1/2
<i>Runcinia grammica</i>	H						-1/2	-1/2	
<i>Thomisus onustus</i>	H							-1/1	
<i>Xysticus acerbus</i>	G-H	-1/-						-2/-	
<i>Xysticus cristatus</i>	G-H			-1/-		-1/-			
<i>Xysticus kochi</i>	G-H	1/1/-	-2/-	-1/-	-5/-	1/3/-			-3/-
<i>Xysticus ninnii</i>	G					1/-			
<i>Xysticus robustus</i>	G	-1/-			-1/-				-2/-
<i>Xysticus sabulosus</i>	G-H							-4/-	
<i>Xysticus ulmi</i>	G-H								-1/-
<i>Xysticus</i> sp.		-1/1	-1/3	-1/4	-1/5	-1/2			
<b>Salticidae</b>									
<i>Asianellus festivus</i>	G-H					4/3/-			
<i>Asianellus</i> sp.						-1/3			
<i>Euophrys lanigera</i>	G-H							-1/-	
<i>Pellenes nigrociliatus</i>	G	1/1/-	1/1/-		1/2/-				
<i>Pellenes</i> sp.					-1/2	-1/2			
<i>Philaeus chrysops</i>	G-H		1/-						
<i>Phlegra fasciata</i>	G-H				2/1/-				
<i>Phlegra fuscipes</i>	G				-2/-			-1/-	
<i>Talavera aequipes</i>	G-H								-1/-
<i>Salticidae</i> sp.			-1/2	-1/1	-1/4		-1/4		

Table 3. Spider species of the Villány Hills in our and previous works. (\*: new species to the fauna of the Villányi Hills, \*\*: new species to science, published by Szinetár and Samu in 2003)

Species	Kolosváry 1935	Loksa 1966	Loksa, Kékesi, Segesdi 1979	Szinetár et al. 1998	Szinetár, Lajos 2000	Lajos, Vadkerti 2002
<b>Atypidae</b>						
<i>Atypus affinis</i>	-	+	-	-	+	+
<i>Atypus muralis</i>	-	-	-	-	+	+
<i>Atypus piceus</i>	-	-	+	-	+	-
<b>Nemesiidae</b>						
<i>Nemesia pannonica</i>	-	+	+	-	+	+
<b>Pholcidae</b>						
<i>Pholcus opilionoides</i>	-	+	-	-	+	-
<b>Segestriidae</b>						
<i>Segestria bavarica</i>	-	+	-	-	-	-
<i>Segestria senoculata</i>	-	-	+	-	-	-
<b>Dysderidae</b>						
<i>Dysdera longirostris</i>	-	+	+	-	-	+
<i>Dysdera westringi</i>	-	-	+	-	-	-
<i>Harpactea hombergi</i>	-	-	+	-	-	-
<i>Harpactea rubicunda</i>	-	+	+	-	+	-
<i>Harpactea saeva</i>	-	-	+	-	-	-
<b>Mimetidae</b>						
<i>Ero furcata</i>	-	-	+	-	-	-
<b>Eresidae</b>						
<i>Eresus cinnaberinus</i>	-	+	+	-	+	-
<b>Uloboridae</b>						
<i>Uloborus walckenaerius</i>	-	-	-	-	+	-
<b>Theridiidae</b>						
<i>Dipoena inornata*</i>	-	-	-	-	-	+
<i>Dipoena melanogaster</i>	-	-	-	-	+	-
<i>Enoplognatha ovata</i>	-	-	+	-	-	-
<i>Enoplognatha thoracica</i>	-	-	+	-	-	-
<i>Episinus angulatus</i>	-	-	+	-	+	+
<i>Episinus truncatus</i>	-	+	+	-	-	-
<i>Euryopsis quinqueguttata</i>	-	-	-	+	+	-
<i>Lasaeola tristis</i>	-	-	+	-	-	-
<i>Neottiura suaveolens</i>	-	-	+	-	+	-
<i>Pholcomma gibbum</i>	-	-	+	-	-	-
<i>Steatoda albomaculata</i>	+	+	-	-	-	-
<i>Theridion tinctum</i>	-	-	-	-	+	-
<b>Linyphiidae</b>						
<i>Acartauchenius scurrilis</i>	-	-	+	-	-	-
<i>Araeoncus humilis</i>	-	+	-	-	+	-
<i>Centromerita bicolor</i>	-	+	-	-	+	-
<i>Centromerus sylvaticus</i>	-	-	+	-	+	-
<i>Ceratinella brevipes</i>	-	-	+	-	-	-
<i>Ceratinella brevis</i>	-	-	-	-	+	-
<i>Ceratinella major</i>	-	+	+	-	-	-
<i>Diplostyla concolor</i>	-	-	+	-	-	-
<i>Erigone dentipalpis</i>	-	-	-	-	+	-
<i>Erigonoplus globipes</i>	-	+	-	-	-	-
<i>Frontinellina frutetorum</i>	-	-	-	-	+	-
<i>Gonatium paradoxum</i>	-	-	+	-	-	-
<i>Lepthyphantes angulipalpis</i>	-	+	+	-	-	-
<i>Lepthyphantes crucifer</i>	-	+	-	-	-	-
<i>Lepthyphantes flavipes</i>	-	+	+	-	+	-
<i>Lepthyphantes keyserlingi</i>	-	+	-	-	-	-
<i>Lepthyphantes leprosus</i>	-	-	+	-	-	-
<i>Lepthyphantes liguricus</i>	-	+	-	-	-	-
<i>Lepthyphantes mansuetus</i>	-	+	-	-	-	-
<i>Lepthyphantes mengi</i>	-	-	+	-	+	-
<i>Lepthyphantes minutus</i>	-	-	+	-	-	-
<i>Lepthyphantes pallidus</i>	-	+	+	-	-	-

<i>Lepthyphantes tenebricola</i>	-	-	+	-	-	-
<i>Lepthyphantes tenuis</i>	-	-	-	-	+	-
<i>Linyphia hortensis</i>	-	-	-	-	+	+
<i>Linyphia tenuipalpis</i>	-	-	-	-	+	-
<i>Linyphia triangularis</i>	-	-	-	-	+	-
<i>Megalepthyphantes collinus</i>	-	+	+	-	+	-
<i>Meioneta mollis</i>	-	-	+	-	+	-
<i>Meioneta rurestris</i>	-	+	+	-	+	-
<i>Microneta viaria</i>	-	-	+	-	-	-
<i>Minicia marginella</i>	-	+	+	-	+	+
<i>Nematogmus sanguinolentus</i>	-	-	-	-	+	-
<i>Neriere clathrata</i>	-	-	+	-	-	-
<i>Oedothorax retusus</i>	-	-	-	-	+	-
<i>Panamomops mengei</i>	-	-	+	-	-	-
<i>Pelecopsis loksai</i> **	-	-	-	-	-	-
<i>Pelecopsis radicolata</i>	-	-	+	-	-	-
<i>Poecilometes variegata</i>	-	+	-	-	-	-
<i>Porrhomma convexum</i>	-	-	+	-	-	-
<i>Sintula spiniger</i>	-	+	+	-	+	-
<i>Stemonyphantes lineatus</i>	-	+	-	-	-	-
<i>Tapinocyba pygmaeus</i>	-	+	-	-	-	-
<i>Trichoncus affinis</i>	-	-	+	-	+	-
<i>Trichoncus auritus</i>	-	-	-	-	+	-
<i>Trichopterna cito</i>	-	-	-	-	+	-
<i>Walckenaeria antica</i>	-	+	-	-	-	-
<i>Walckenaeria furcillata</i>	-	-	+	-	-	-
<i>Walckenaeria mitrata</i>	-	-	-	-	+	-
<b>Tetragnathidae</b>						
<i>Metellina segmentata</i>	-	-	-	-	+	-
<b>Araneidae</b>						
<i>Agalenatea redii</i>	-	-	-	-	+	-
<i>Araniella opisthographa</i>	-	-	-	-	+	-
<i>Argiope bruennichi</i>	-	-	-	-	+	-
<i>Cyclosa conica</i>	-	-	-	-	+	-
<i>Cyclosa oculata</i>	-	-	-	-	+	-
<i>Gibbaranea bituberculata</i>	-	-	-	-	+	-
<i>Mangora acalypha</i>	-	-	-	-	+	+
<b>Lycosidae</b>						
<i>Alopecosa accentuata</i>	-	+	+	-	-	+
<i>Alopecosa aculeata</i> *	-	-	-	-	-	+
<i>Alopecosa cuneata</i>	-	-	+	-	-	+
<i>Alpoecosa cursor</i>	-	-	+	-	+	+
<i>Alopecosa mariae</i>	-	-	+	-	+	+
<i>Alopecosa solitaria</i> *	-	-	-	-	-	+
<i>Alopecosa sulzeri</i>	-	+	+	-	-	-
<i>Arctosa lutetiana</i>	-	-	+	-	-	+
<i>Aulonia albimana</i>	+	-	+	-	+	-
<i>Hogna radiata</i>	-	+	+	-	+	+
<i>Pardosa hortensis</i>	-	-	-	-	+	-
<i>Pardosa lugubris</i>	-	+	+	-	-	+
<i>Pardosa nebulosa</i>	+	-	-	-	-	-
<i>Trochosa robusta</i>	-	-	+	-	+	+
<i>Trochosa ruricola</i>	-	+	-	-	-	-
<i>Trochosa terricola</i>	-	+	+	-	+	+
<b>Pisauridae</b>						
<i>Pisaura mirabilis</i>	+	-	-	-	+	+
<b>Oxyopidae</b>						
<i>Oxyopes lineatus</i>	-	-	+	-	+	+
<b>Agelenidae</b>						
<i>Tegenaria campestris</i>	-	-	-	-	+	-
<i>Tegenaria domestica</i>	+	-	-	-	-	+
<i>Tegenaria silvestris</i>	-	+	-	-	-	-
<b>Hahniidae</b>						
<i>Hahnia nava</i>	-	-	+	-	+	+
<b>Dictynidae</b>						
<i>Lathys stigmatisata</i>	-	+	+	-	-	+

<b>Amaurobiidae</b>						
<i>Amaurobius ferox</i>	-	-	+	-	+	+
<i>Coelotes longispinus</i>	-	+	+	-	+	+
<b>Titanoecidae</b>						
<i>Titanoeca quadriguttata</i>	+	+	+	-	-	+
<i>Titanoeca schineri</i>	-	-	-	-	+	+
<b>Liocranidae</b>						
<i>Agroeca brunnea</i>	-	-	-	-	+	-
<i>Agroeca cuprea</i>	-	-	-	-	+	+
<i>Apostenus fuscus</i>	-	-	+	-	-	-
<i>Liocranum rupicola</i>	-	-	+	-	-	+
<i>Liocranum rutilans*</i>	-	-	-	-	-	+
<i>Phrurolithus festivus</i>	-	+	+	-	-	-
<i>Phrurolithus pullatus</i>	-	+	+	-	+	-
<i>Phrurolithus szilyi</i>	-	+	+	-	-	-
<i>Scotina celans</i>	-	+	+	-	-	+
<b>Clubionidae</b>						
<i>Cheiracanthium elegans</i>	-	-	-	-	+	-
<i>Cheiracanthium montanum</i>	-	-	-	-	+	-
<i>Clubiona comta</i>	-	+	+	-	-	-
<i>Clubiona terrestris</i>	-	-	+	-	-	-
<b>Zodariidae</b>						
<i>Zodarion germanicum</i>	-	+	+	-	+	+
<b>Gnaphosidae</b>						
<i>Callilepis schusztleri</i>	-	+	+	-	-	-
<i>Drassodes lapidosus</i>	-	+	+	-	-	-
<i>Drassyllus villicus</i>	-	+	+	-	-	-
<i>Gnaphosa lucifuga</i>	+	-	-	-	-	+
<i>Gnaphosa lugubris*</i>	-	-	-	-	-	+
<i>Gnaphosa modestior</i>	-	+	-	-	-	-
<i>Gnaphosa opaca</i>	-	+	+	-	+	+
<i>Haplodrassus signifer</i>	-	-	+	-	-	-
<i>Haplodrassus silvestris</i>	-	+	+	-	-	-
<i>Micaria fulgens</i>	-	+	-	-	-	-
<i>Nomisia exornata</i>	+	-	+	-	+	+
<i>Phaeoecedeus braccatus</i>	-	-	+	+	+	-
<i>Trachyzelotes pedestris</i>	-	-	+	-	-	-
<i>Zelotes apricorum</i>	-	+	+	-	-	-
<i>Zelotes aurantiacus*</i>	-	-	-	-	-	+
<i>Zelotes caucasicus</i>	-	-	+	-	+	+
<i>Zelotes clivicola</i>	-	-	+	-	-	-
<i>Zelotes electus</i>	-	+	+	-	-	+
<i>Zelotes erebeus</i>	-	+	+	-	+	+
<i>Zelotes hermani</i>	+	-	+	-	+	+
<i>Zelotes latreillei*</i>	-	-	-	-	-	+
<i>Zelotes longipes</i>	-	-	+	-	-	-
<i>Zelotes subterraneus*</i>	-	-	-	-	-	+
<b>Zoridae</b>						
<i>Zora nemoralis*</i>	-	-	-	-	-	+
<i>Zora pardalis</i>	-	+	+	-	+	-
<i>Zora silvestris*</i>	-	-	-	-	-	+
<i>Zora spinimana</i>	-	+	-	-	-	-
<b>Philodromidae</b>						
<i>Philodromus cespitum</i>	-	-	-	-	+	-
<i>Philodromus dispar</i>	-	-	-	-	+	-
<i>Thanatus formicinus*</i>	-	-	-	-	-	+
<i>Thanatus sabulosus</i>	-	-	-	-	+	-
<i>Thanatus vulgaris</i>	-	-	+	-	+	-
<i>Tibellus oblongus</i>	-	-	+	-	+	-
<b>Thomisidae</b>						
<i>Heriaeus hirtus</i>	-	-	+	-	-	-
<i>Heriaeus melloteei</i>	-	-	-	-	+	-
<i>Misumena vatia</i>	-	-	-	-	+	-
<i>Ozyptila atomaria</i>	-	+	+	-	+	+
<i>Ozyptila blackwalli</i>	-	+	+	-	+	-
<i>Ozyptila claveata</i>	-	-	+	-	+	+

<i>Ozyptila praticola</i>	-	-	+	-	-	-
<i>Runcinia grammica</i>	-	-	-	-	+	+
<i>Thomisus onustus</i>	-	-	-	-	+	+
<i>Xysticus acerbus</i>	-	-	+	-	+	+
<i>Xysticus cristatus</i>	-	-	-	-	+	+
<i>Xysticus embriki</i>	+	-	-	-	+	-
<i>Xysticus erraticus</i>	-	-	+	-	-	-
<i>Xysticus graecus</i>	-	+	-	-	-	-
<i>Xysticus kochi</i>	-	-	-	+	+	+
<i>Xysticus luctator</i>	-	+	-	-	-	-
<i>Xysticus ninnii</i>	-	+	-	-	+	+
<i>Xysticus robustus</i>	-	+	-	-	+	+
<i>Xysticus sabulosus*</i>	-	-	-	-	-	+
<i>Xysticus ulmi*</i>	-	-	-	-	-	+
<b>Salticidae</b>						
<i>Asianellus festivus</i>	-	+	-	-	+	+
<i>Ballus chalybeius</i>	-	-	-	-	+	-
<i>Ballus rufipes</i>	-	-	-	-	+	-
<i>Euophrys frontalis</i>	-	+	+	-	+	-
<i>Euophrys lanigera</i>	-	-	-	-	+	+
<i>Euophrys obsoleta</i>	-	+	+	-	+	-
<i>Evarcha arcuata</i>	-	-	-	-	+	-
<i>Evarcha falcata</i>	-	-	-	-	+	-
<i>Heliophanus cupreus</i>	-	-	-	-	+	-
<i>Heliophanus flavipes</i>	-	-	+	-	+	-
<i>Heliophanus kochii</i>	-	-	-	+	+	-
<i>Neon pictus</i>	-	-	+	-	-	-
<i>Neon rayi</i>	-	+	+	-	+	-
<i>Neon reticulatus</i>	-	-	+	-	-	-
<i>Pellenes nigrociliatus</i>	-	-	-	+	+	+
<i>Philaeus chrysops</i>	-	+	+	-	-	+
<i>Phlegra fasciata</i>	-	-	+	-	-	+
<i>Phlegra fuscipes</i>	-	-	-	-	+	+
<i>Pseudeuophrys obsoleta</i>	-	-	-	-	+	-
<i>Sitticus inexpectus</i>	-	-	-	-	+	-
<i>Sitticus penicillatus</i>	-	-	-	+	-	-
<i>Talavera aequipes*</i>	-	-	-	-	-	+
<i>Talavera thorelli</i>	-	-	-	-	+	-

According to the findings of LOKSA (1966), KÉKESI and SEGESDI (1979), LOKSA (1984, 2002), SZINETÁR and LAJOS (2000), *Nemesia pannonica*, the only Hungarian representative of the *Nemesiidae* family is absolutely dominant in the study area, a fact related to its preference of warm areas, rocky grasslands and bushy forests. Now it was found in all 9 localities, and was most abundant in the early spring period. It is protected, therefore we suggest that no pitfall trapping is done at all in the early spring months.

There are further 4 protected species in Villányi Hills. *Atypus piceus*, *A. affinis*, *A. muralis*, the only 3 European members of *Atypidae* family. Their distribution areas overlap in Europe (WUNDERLICH 1991). The protected *Eresus cinnaberinus* is characteristic in the Villányi Hills but it was not occurred in the traps in 2001.

There were 14 species found to be new to the fauna of the Villányi Hills: *Dipoena inornata* (O. P.-Cambridge, 1861); *Alopecosa aculeata* (Clerck, 1757); *Alopecosa solitaria* (Herman, 1876); *Liocranum rutilans* (Thorell, 1875); *Gnaphosa lugubris* (C. L. Koch, 1839); *Zelotes*

*aurantiacus* Miller, 1967; *Zelotes latreillei* (Simon, 1878); *Zelotes subterraneus* (C. L. Koch, 1833); *Zora nemoralis* (Blackwall, 1861); *Zora silvestris* Kulczynski, 1897; *Thanatus formicinus* (Clerck, 1757); *Xysticus sabulosus* (Hahn, 1832); *Xysticus ulmi* (Hahn, 1832); *Talavera aequipes* (O. P.-Cambridge, 1871). Thus, the current number of spider species described in the Villányi Hills has grown to 201 (Tabl. 3.).

*Dipoena inornata* has only one published occurrence (CHYZER and KULCZYNSKI 1918) now we found a female specimen on Tenkes Hill. It is a species with wide distribution in Europe (ROBERTS 1995), but it is not common. It favours dry, open areas (AAKRA and HAUGE 2000), is strongly threatened in Germany (PLATEN et al. 1996) and is endangered in Slovakia (GAJDOS et al. 1999).

Among wolf-spiders *Alopecosa aculeata* and *A. solitaria* were found to be new to this fauna. The occurrence of *A. solitaria* is not surprising, since it prefers warm and dry areas, and was earlier found on Sas-Hill, a place with similar climatic conditions (LOKSA 1977, BALOGH 1935, BLEICHER et. al, 1999). *A. aculeata* is



a species with holarctic distribution, dominating in dry grassland habitats (JEDLIČKOVÁ 1988), and is widely distributed in Hungary also (SAMU and SZINETÁR 1999).

*Liocranum rutilans* is usually found in arid habitats, under rocks (KREUELS and PLATEN 1999). It occurs in several Hungarian locations (LOKSA 1966, 1971, 1991).

Among members of the *Gnaphosidae* family there were 4 species found to be new to the fauna of Villányi Hills. *Gnaphosa lugubris* and *Zelotes aurantiacus* favour dry, warm habitats (BUCHAR 1992). Their occurrence in Hungary is sporadic (SAMU and SZINETÁR 1999, SZINETÁR and MILTÉNYI 2000). *Zelotes latreillei* lives under stones in damp forest and also occurs in dry biotopes (JEDLIČKOVÁ 1988). It is reported to be common in Hungary (SAMU and SZINETÁR 1999, KERÉKES 1988, LOKSA 1988, SAMU et al. 1996, SZINETÁR 1998). *Zelotes subterraneus* occurs under rocks, in forest clearings and edges, in dry grassy habitats (JEDLIČKOVÁ 1988) and in orchards as well (BOGYA and MARKÓ 1999). Although it is widely distributed in Europe, it is not common (ROBERTS 1995), and has only few published occurrences in Hungary (SAMU and SZINETÁR 1999).

Out of the 5 species of the *Zoridae* family that occur in Hungary, 4 are found in the Villányi Hills, *Zora nemoralis* and *Z. silvestris* being new to the fauna of the studied areas. Both species are common in Hungary. *Z. manicata* has been found in the Budai Hills (BALOGH 1935, KISBENEDEK 1991), in similar habitats to some locations in the study area, therefore its occurrence here is possible.

*Thanatus formicinus* is a xerobiotic species (Szita and SAMU 2000, KREUELS and PLATEN 1999), typical of dry, open, sandy areas primarily (KERÉKES 1988, ROBERTS 1995), but occurs also on dolomite rock in mountains (KISBENEDEK 1991). It has holarctic distribution, found on vegetation (JEDLIČKOVÁ 1988) as well as on soil surface.

*Xysticus sabulosus* is a species with western, palearctic distribution (BALOGH 1935), found mostly on dry soil (KREUELS and PLATEN 1999), or sometimes in low vegetation (ROBERTS 1995). In Belgium it was found to be an indicator species of meso-oligotrophic, short, sparse vegetation, and sandy patches (BONTE et al. 2002). In Hungary its occurrence has been reported in lowland sandy areas (LOKSA 1981, 1987, KERÉKES 1988), and in mountain regions (KISBENEDEK 1991, LOKSA 1977, 1979, 1988).

*Xysticus ulmi* is a Euro-Siberian species (JEDLIČKOVÁ 1988), with a wide spectrum of habitat choice. In Belgium it was found to be an indicator species of moist, nutrient-rich areas (BONTE et al. 2002), and was reported from similar habitats by LOKSA (1991), SZINETÁR (1992a, 1998, 2001), and

ROBERTS (1995). TÓTH et al. (1996) found it in winter wheat, whereas SZINETÁR (1992b) discovered this species in buildings as well. It is reported to be common in Hungary (LOKSA 1981).

*Talavera aequipes* occurs widely in Europe, but has sporadic distribution (KREUELS and PLATEN 1999, AAKRA and HAUGE 2000). In Hungary it is found in dry, open, sandy areas (SZITA and SAMU 1999, KERÉKES 1988) and dolomite (BALOGH 1935, LOKSA 1977).

KÉKESI and SEGESDI (1979), thesis students working with Loksa, report in their dissertation (unpublished data) that *Nothocyba subaeolis* (Westr.), *Leptyphantes ericeus* (Blackw.), and *L. stygius* Sim. occur on Szársomlyó Hill. In the checklist compiled by PLATNICK (2004) these species are listed as *Micrargus subaequalis*, *Palludiphantes ericaeus* and *P. stygius*, but they are not included in the Hungarian checklist (SAMU and SZINETÁR 1999). No proof specimens have been found since then, thus to confirm the presence of these three species further research is required.

*Micrargus subaequalis* is a xerobiotic, Euro-Siberian species (KREUELS and PLATEN 1999) which lives on rocks and in man-made habitats too (RŰŽIČKA 2000), based on which it seems possible that it occurs in our study area as well.

*Palludiphantes ericaeus* is a palearctic species (TANASEVITCH 1999) and common throughout the British Isles, frequently recorded from heather and grass, usually in dry habitats, and has also been recorded from hay meadows and heathland. It exhibits a strong preference for undisturbed, well vegetated sites, characterised by taller vegetation (MCFERRAN, 1997). KÉKESI and SEGESDI (1979) collected 6 specimens on Szársomlyó Hill in silver lime rocky slope (3), bushy forest (1) and rocky grassland (2). The possibility of its Hungarian presence cannot be excluded.

*Palludiphantes stygius* is a species with palearctic distribution (TANASEVITCH 1999), found primarily in Mediterranean areas such as Portugal (CARDOSO 2003), Spain, France, Azores (PLATNICK 2004), and Macaronesia (TANASEVITCH 1999). With a view to its known geographic distribution, the occurrence of this species in the studied area is unlikely.

#### Acknowledgments

We thank Csaba Szinetár for his help in innumerable ways during this study and we are grateful to him for his constructive discussion. Research has been financed by the environmental grant KAC KO 440322001 won by L. Lajos and E. Vadkerti. Research activities were permitted by the Danube-Drava National Park Directorate.

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## Adatok a Villányi-hegység talajlakó pókfaunájához (Araneae)

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2002-ben a Villányi-hegység 9 különböző élőhelyén végeztünk talajcsapdás mintavételezést (Nagy-hegy, Tenkes, Köves-máj plató, Köves-máj lejtő, Csukma, Fekete-hegy, Szársomlyó szegély, Szársomlyó sziklagyep, Szársomlyó plató) a talajlakó pókfauna további vizsgálatának céljából. A mintavételi helyek plató illetve déli kitettséű területek voltak, természetes és természetközeli élőhelyeken, tengerszint felett 200 és 400 méter közötti magasságokban. Összesen 330 talajcsapdát raktunk le három alkalommal és egy vizsgálati időszakon belül átlagosan három hétig üzemeltettük ezeket. Összesen 732 pókot gyűjtöttünk, melyek 65 fajból kerültek ki. A Villányi hegység faunájára 14 új fajt találtunk: *Dipoena*

*inornata* (O. P.-Cambridge, 1861); *Alopecosa aculeata* (Clerck, 1757); *Alopecosa solitaria* (Herman, 1876); *Liocranum rutilans* (Thorell, 1875); *Gnaphosa lugubris* (C. L. Koch, 1839); *Zelotes aurantiacus* Miller, 1967; *Zelotes latreillei* (Simon, 1878); *Zelotes subterraneus* (C. L. Koch, 1833); *Zora nemoralis* (Blackwall, 1861); *Zora silvestris* Kulczyński, 1897; *Thanatus formicinus* (Clerck, 1757); *Xysticus sabulosus* (Hahn, 1832); *Xysticus ulmi* (Hahn, 1832); *Talavera aequipes* (O. P.-Cambridge, 1871). Ezzel 201 fajra nőtt a Villányi-hegység leírt pókfajainak száma. A cikk tartalmazza a Villányi-hegység összesített fajlistáját is.