

ARACHNOLOGICAL STUDIES IN THE RETEZAT NATIONAL PARK (ROMANIA)

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ABSTRACT

The present paper deals with the spider-fauna of the Retezat National Park - Biosphere Reserve (Retezat Mountains, Romania). Until now 144 species from 88 genera were recorded, belonging to 20 families. Out of these, 26 species are new records in Retezat Mountains. The list of species is presented. The arachnofauna of this area is characterized by the presence of a considerable number of rare species. *Bolyphantes index* (Thorell, 1856) and *Ceratinella wideri* (Thorell, 1871) from the family Linyphiidae were recorded for the first time in Romania from this area. Three genera *Agniphantes* Hull, 1932, *Palliduphantes* Saaristo and Tanasevitch, 2001 and *Parazygiella* Wunderlich, 2004 were also mentioned for the first time in the Romanian fauna from this area.

ZUSAMMENFASSUNG: Arachnologische Untersuchungen im Nationalpark Retezat (Rumänien).

Unser Artikel beschäftigt sich mit der Spinnenfauna des Nationalparks Retezat - Biosphere Reservats (Retezat Gebirge, Rumänien). Bislang wurden 144 Spezies aus 88 Genera erforscht, die in 20 Familien geordnet werden können. 26 Spezies von den 144 sind faunistisch neue Niederschriften. Die Liste der Spezies ist beiliegend. Die Spinnenfauna dieses Gebietes ist für die Anwesenheit mehrerer seltener Spezies charakteristisch. *Bolyphantes index* (Thorell, 1856) und *Ceratinella wideri* (Thorell, 1871) der Familie Linyphiidae wurden in Rumänien zum ersten mal gefunden und niedergeschrieben. Drei Genera, nämlich *Agniphantes* Hull, 1932, *Palliduphantes* Saaristo und Tanasevitch, 2001 und *Parazygiella* Wunderlich, 2004 wurden ebenso zum ersten mal in der rumänischen Fauna erwähnt.

REZUMAT: Studii arachnologice în Parcul Național Retezat (România).

În lucrarea de față sunt prezentate rezultatele studiilor referitoare la fauna de aranee din Parcul Național Retezat - Rezervația Biosferei (Munții Retezat, România). Până în prezent au fost identificate 144 specii din 88 genuri, reprezentând 20 de familii. Dintre aceste specii 26 sunt semnalate pentru prima dată în Munții Retezat. Lista de specii este prezentată în lucrare. Fauna de aranee din această zonă cuprinde un număr mare de specii rare care apar pe listele roșii ale mai multor țări din Europa. *Bolyphantes index* (Thorell, 1856) și *Ceratinella wideri* (Thorell, 1871), ambele din familia Linyphiidae sunt specii noi pentru fauna României. Genurile *Agniphantes* Hull, 1932, *Palliduphantes* Saaristo și Tanasevitch, 2001 și *Parazygiella* Wunderlich, 2004 sunt menționate pentru prima oară în fauna țării.

INTRODUCTION

Descriptive faunistic studies are essential to obtain satisfactory information on the biodiversity of different regions, especially in natural reserves.

The history of arachnological survey in Retezat Mountains has shown a slow but steady progress. In the first paper published by Gebhardt (1932) only nine species from seven families were mentioned. Five years later, in 1937, Kolozsvári identified 28 species from 15 families. In 1967, Fuhn published a short description of the spider fauna of the Retezat Mountains. Fuhn found 12 species from five families. A total number of 42 species were mentioned in these three papers.

Recent taxonomical and faunistic publications have contributed significantly to the knowledge of the distribution of spider species in the Retezat Mountains (Urák, 2001; Fetykó and Urák, 2004). In these papers 97 species were mentioned from 18 families. *Pardosa oreophila*, *Gongylidiellum vivum*, *Helophora insignis* and *Midia midas* were new records for Romanian spider fauna. The genus *Midia* was mentioned for the first time.

MATERIALS AND METHODS

The sampling was carried out between 3 and 7 September 2002. The study area was the South-Eastern part of the Retezat Mountains, around the refuges Buta and Păpușii Lakes.

Spiders were sampled by hand (ground and plant search, turning rocks and leaf litter shifting), using a sweep net, and by using beating tray for grass and low shrubs. All materials were preserved in 70° ethylic alcohol and identified under stereoscopic microscope.

The species were identified using various keys (Loksa, 1969 and 1972; Fuhn and Niculescu-Burlacu, 1985; Sterghiu, 1985; Roberts, 1985 and 1987; Heimer and Nentwig, 1991; Fuhn and Gherasim, 1995) and were ranged taxonomically according to world spider catalogue of Platnick (2006).

RESULTS AND DISCUSSIONS

Altogether 631 spider specimens were collected, 301 adults (112 males and 189 females) and 330 juveniles, belonging to 63 species of 14 families (Tab. 1). Out of these 26 species were new records for Retezat National Park, and two species were new records for Romania. Previously 118 species were recorded from the Retezat National Park, thus the total number of species increased to 144 on the basis of the present study.

The richest families in species are Linyphiidae, represented by 29 species (48.33%) followed by Lycosidae, with six species (10%). The rest of the families are represented by less than five species. The majority of specimens belong also to the family Linyphiidae, 358 specimens (56.74%), followed by Salticidae with 55 specimens (8.72%) and Lycosidae with 42 specimens (6.66%). The rest of the families are represented by fewer specimens (Fig. 1).

The most frequent species was *Diplocephalus latifrons* represented by 51 specimens (23 males and 28 females) and *Bolyphantes alticeps* represented by 41 specimens (11 males and 30 females) both from the family Linyphiidae, and *Sitticus rupicola* represented by 51 specimens (13 males, 20 females and 18 juveniles) from family Salticidae.

Two species were mentioned for the first time in Romanian arachnofauna: *Bolyphantes index* and *Ceratinella wideri*, both from the family Linyphiidae.

Bolyphantes index is a very rare species, in sub alpine semi-humid open or semi-open habitats, on steep rocky slopes and in grasslands (Buchar and Ruzicka, 2002). We found nine specimens of this species, three males and six females. It is a winter-active spider, which can maintain normal activity down to - 5°C. However, at - 9.3°C it becomes comatized (chill coma) and below the super-cooling point of - 15.3°C will freeze solid (Hågvar, 1973).

28	<i>Gongyliellum vivum</i> (O.P. Cambridge, 1885)									+
29	<i>Helophora insignis</i> (Blackwall, 1841)									+
30	<i>Incestophantes annulatus</i> (Kulczynski, 1881)		1	0	1					+
31	<i>Lepthyphantes leprosus</i> (Ohlert, 1865)									+
32	<i>Linyphia triangularis</i> (Clerck, 1757)								+	+
33	<i>Macrargus rufus</i> (Wider, 1834)	1	1	0	2					+
34	<i>Mansuphantes arciger</i> (Kulczynski, 1882)	2	3	0	5					
35	<i>Mansuphantes mansuetus</i> (Thorell, 1875)		6	0	6					
36	<i>Maso sundevalli</i> (Westring, 1851)									+
37	<i>Meioneta milleri</i> Thaler, 1997	8	7	0	15					+
38	<i>Meioneta rurestris</i> (C.L. Koch, 1836)	1	2	0	3					+
39	<i>Micrargus georgescue</i> (Millidge, 1975)	5	4	0	9					
40	<i>Micrargus herbigradus</i> (Blackwall, 1854)	1		0	1					+
41	<i>Microlinyphia pusilla</i> (Sundevall, 1830)	1		0	1			+		+
42	<i>Midia midas</i> Simon, 1884									+
43	<i>Mughiphantes mughi</i> (Fickert, 1875)	6	9	2	17					+
44	<i>Neriere clathrata</i> (Sundevall, 1830)									+
45	<i>Neriere emphana</i> (Walckenaer, 1842)		2	0	2					+
46	<i>Neriere peltata</i> (Wider, 1834)									+
47	<i>Oedothorax agrestis</i> (Blackwall, 1853)									+
48	<i>Oedothorax apicatus</i> (Blackwall, 1850)									+
49	<i>Oedothorax fuscus</i> (Blackwall, 1834)								+	
50	<i>Oedothorax gibbifer</i> (Kulczynski, 1882)									+
51	<i>Palliduphantes insignis</i> (O.P. Cambridge, 1913)		1	0	1					
52	<i>Porrhomma convexum</i> (Westring, 1851)									+
53	<i>Porrhomma errans</i> (Blackwall, 1841)									+
54	<i>Stemonyphantes lineatus</i> (Linnaeus, 1758)									+
55	<i>Tapinocyba affinis</i> (Lessert, 1907)		1	0	1					
56	<i>Tenuiphantes alacris</i> (Blackwall, 1853)									+
57	<i>Tenuiphantes jacksoni</i> (Schenkel, 1925)		1	0	1					
58	<i>Tenuiphantes mengei</i> (Kulczynski, 1887)		1	0	1					+
59	<i>Tenuiphantes tenebricola</i> (Wider, 1834)	1	1	0	2					+
60	<i>Tenuiphantes tenuis</i> (Blackwall, 1852)									+
61	<i>Thyreostenius parasiticus</i> (Westring, 1851)	5	1	0	6					

93	<i>Pardosa palustris</i> (Linnaeus, 1758)		3	0	3			+	+	
94	<i>Pardosa prativaga</i> (L. Koch, 1870)		1	0	1				+	+
95	<i>Pardosa riparia</i> (C.L. Koch, 1833)									+
96	<i>Pardosa saltuaria</i> (L. Koch, 1870)							+		
97	<i>Pardosa sordidata</i> (Thorell, 1875)						+			
98	<i>Trochosa terricola</i> Thorell, 1856							+		+
99	<i>Xerolycosa miniata</i> (C. L. Koch, 1834)						+			
IX	Pisauridae									
100	<i>Pisaura mirabilis</i> (Clerck, 1757)						+			+
X	Agalenidae	1	1	1	3					
101	<i>Chryphoea sylvicola</i> (L. Koch, 1834)	1	1	1	3					
102	<i>Tegenaria ferruginea</i> (Panzer, 1804)									+
103	<i>Tegenaria silvestris</i> L. Koch, 1872								+	+
XI	Cybaeidae									
104	<i>Cybaeus angustiarum</i> L. Koch, 1868						+	+		+
XII	Hahniidae									
105	<i>Cryphoea carpathica</i> (Herman, 1879)						+			
106	<i>Cryphoea silvicola</i> (C.L. Koch, 1834)						+		+	
XIII	Amaurobiidae	1	4	18	23					
107	<i>Amaurobius fenestralis</i> (Stroem, 1768)						+			+
108	<i>Callobius claustrarius</i> (Hahn, 1833)						+	+		+
109	<i>Coelotes atropos</i> (Walckenaer, 1830)						+	+		
110	<i>Coelotes inermis</i> (L. Koch, 1855)	1	1	0	2					
111	<i>Coelotes terrestris</i> (Wider, 1834)		3	0	3				+	+
XIV	Clubionidae	1	1	12	14					
112	<i>Clubiona alpicola</i> (Kulczynski, 1881)		1	0	1					+
113	<i>Clubiona diversa</i> (O.P. Cambridge, 1871)	1		0	1					
114	<i>Clubiona lutescens</i> Westring, 1851									+
115	<i>Clubiona neglecta</i> O.P. Cambridge, 1862							+		
116	<i>Clubiona reclusa</i> O. P. Cambridge, 1863									+
117	<i>Clubiona similis</i> L. Koch, 1867						+			
118	<i>Clubiona trivialis</i> C.L. Koch, 1841									+
XV	Corinnidae									
119	<i>Phrurolithus festivus</i> (C.L. Koch, 1835)									+
XV	Gnaphosidae	3	4	14	21					

120	<i>Drassodes cupreus</i> (Blackwall, 1834)		1	0	1						
121	<i>Drassodes lapidosus</i> (Walckenaer, 1802)					+	+	+			
122	<i>Gnaphosa leporine</i> (L. Koch, 1866)					+		+			
123	<i>Haplodrassus signifier</i> (L. Koch, 1855)		1	0	1	+		+			
124	<i>Micaria pullicaria</i> (Sundevall, 1832)	2	1	0	3				+		
125	<i>Zelotes aeneus</i> (Simon, 1878)	1	1	0	2						
126	<i>Zelotes apricorum</i> (L. Koch, 1876)								+		
127	<i>Zelotes subterraneus</i> (C.L. Koch, 1833)								+		
xvii	Philodromidae		1	34	35						
128	<i>Philodromus aureolus</i> (Clerck, 1757)		1	0	1	+	+				
129	<i>Philodromus cespitum</i> (Walckenaer, 1802)								+		
130	<i>Philodromus vagulus</i> Simon, 1875								+		
131	<i>Tibellus oblongus</i> (Walckenaer, 1802)						+				
xviii	Dictynidae			6	9						
132	<i>Mastigusa macrophtalma</i> (Kulczynski, 1897)	1	2	4	7						
XIX	Thomisidae			15	15						
133	<i>Diaea dorsata</i> (Fabricius, 1777)						+				
134	<i>Misumena vatia</i> (Clerck, 1757)								+		
135	<i>Misumenops tricuspidatus</i> (Fabricius, 1775)						+				
136	<i>Thomisus onustus</i> Walckenaer, 1806						+				
137	<i>Xysticus cristatus</i> (Clerck, 1757)								+		
138	<i>Xysticus viduus</i> Kulczynski, 1898					1					
XX	Saltacidae	13	21	21	55						
139	<i>Dendryphantes hastatus</i> (Clerck, 1757)						+				
140	<i>Evarcha arcuata</i> (Clerck, 1757)								+		
141	<i>Evarcha falcate</i> (Clerck, 1757)		1	2	3				+		
142	<i>Heliophanus cupreus</i> (Walckenaer, 1802)								+		
143	<i>Salticus scenicus</i> (Clerck, 1757)			1	1						
144	<i>Sitticus rupicola</i> (L. Koch, 1855)	13	20	18	51				+		
Total			112	189	330	631	9	28	12	42	75

Abbreviation: m - number of male specimens, f - number of female specimens, j - number of subadult and juvenile specimens, s - total number of species, G - species mentioned by Gebhardt (1932), K - species mentioned by Koložsvári (1937), F - species mentioned by Fuhn (1967), U - species mentioned by Urák (2001), FU - species mentioned by Fetykó and Urák (2004).

Ceratinella wideri is a rare, vulnerable species, living in the sparse vegetation of dry and open habitats (Buchar and Ruzicka, 2002). We found only one male specimen. It is included in the Red List of Austrian spiders (Kreuels and Platen, 1999).

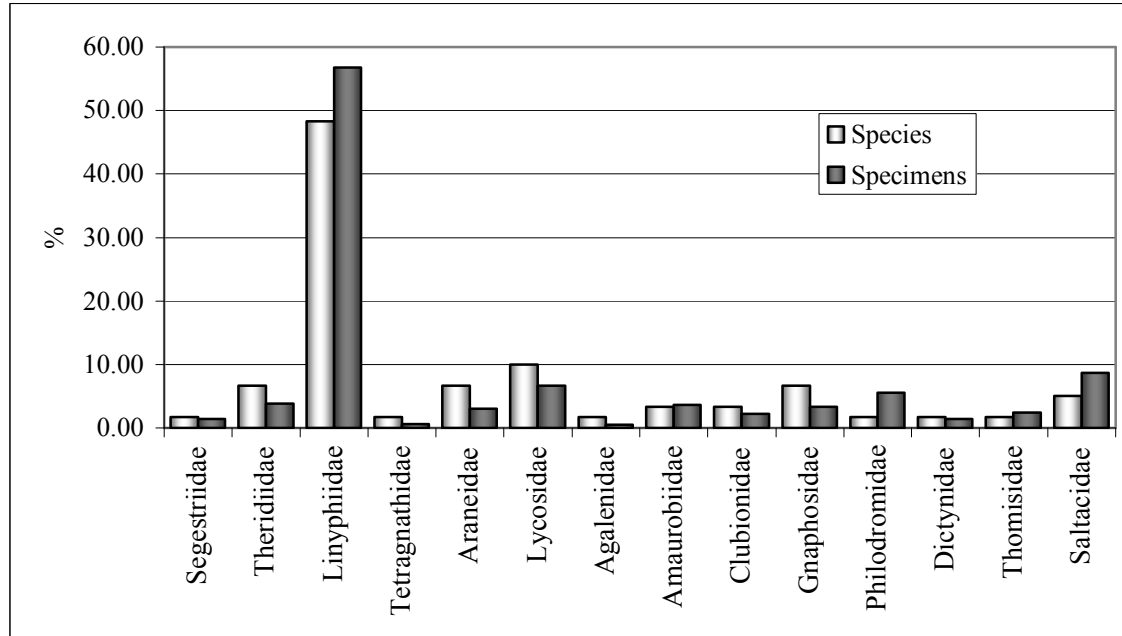


Fig. 1: The percentage representation of the spider families.

The occurrences of *Araneus saevus* were confirmed in the Romanian arachnofauna. This species was included in the lists by Weiss and Petrișor (1999), Weiss and Urák (2000) based on bibliographical data (Fuhn and Oltean, 1970). Those data could not be confirmed yet, because of the absence of specimens in collections from Romania. We found only one male specimen on the spruce beside the Buta refuge. It is a rare species, which is included in the Red List of Swedish species (Gärdenfors, 2000).

The occurrence of *Xysticus viduus* in the Romanian fauna, mentioned by Gebhardt (1932) is questionable, because of the absence of specimens from collections.

It is five years since the last checklist of Romanian spiders was published (Weiss and Urák, 2000). Within this time important changes occurred in the taxonomy and nomenclature of this group (Platnick, 2006). Some species were placed in new genera, and thus new names appeared in the checklist of Romanian arachnofauna.

The changes are following: *Lepthyphantes expunctus* from family Linyphiidae was moved in the newly created genus *Agnyphantes*, and *Lepthyphantes insignis* from family Linyphiidae was moved in the newly created genus *Palliduphantes*, whereas *Zygiella montana* from the family Tetragnathidae was moved in the newly created genus *Parazygiella*, from family Araneidae. Genera *Agnyphantes* Hull, 1932, *Palliduphantes* Saaristo and Tanasevitch, 2001 and *Parazygiella* Wunderlich, 2004 were mentioned for the first time in the Romanian fauna.

CONCLUSIONS

In the Retezat Mountains a total number of 144 spider species were identified, from 88 genera, belonging to 20 families. 26 species were new records from this area, two species are new records from Romania and three genera were mentioned for the first time in Romanian fauna. The high number of species, especially the high number of new records is remarkable. Nevertheless these new records mostly occurred due to the sporadic, desultory character of previous studies.

These latest studies (Urák, 2001; Fetykó and Urák, 2004) of the Retezat National Park's arachnofauna filled gaps. Long-term researches based on systematic and methodologically accurate collection of biological materials will be important for obtaining satisfactory information on the biodiversity of spiders in Retezat National Park.

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