

Study of the spiders (Arachnida: Araneae) in the Fânațele Clujului Botanical Reservation

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Abstract

The present paper deals with the spider-fauna of the Fânațele Clujului Botanical Reservation, Cluj, Romania. Spiders were sampled by pitfall (Barber) traps. List of species is presented.

The spider-fauna of this area is characterized by a relatively great diversity. 2541 spider specimens were caught belonging to 21 families and 120 species. *Tapinocyboides pygmaeus* (MENGE, 1869), *Cheiracanthium campestre* LOHMANDER, 1944, and *Talavera thorelli* KULCZYNSKI, 1891 are new for the Romanian fauna.

Some aspects of their ecology are discussed.

The presence of such faunistical values should suggest a more severe protection of this area.

Rezumat

Studiul păianjenilor (Arachnida: Araneae) din rezevația botanică Fânațele Clujului

Programului de cercetare Fânațele Clujului s-a desfășurat în cadrul Societății Eco Studia. Lucrarea de față prezintă materialul arahnologic colectat în anul 1996 cu capcane tip Barber. Unele rezultate preliminare au fost deja publicate în anul 1997 într-o lucrare care pe lângă câteva specii rare, semnalează trei specii noi pentru arahnofauna României: *Tapinocyboides pygmaeus* (MENGE, 1869), *Cheiracanthium campestre* LOHMANDER, 1944, *Talavera thorelli* KULCZYNSKI, 1891 (URÁK & WEISS 1997).

Lista de specii conține 120 specii din 20 de familii (Tabel 1.). Majoritatea araneelor colectate fac parte din familia Lycosidae (40,36%), în timp ce din punct de vedere al numărului de specii cea mai bine reprezentată este familia Linyphiidae (25%). Un rol determinant în această distribuție a numărului de specii și indivizi a avut metoda de colectare folosită. Speciile epigeice (75%), care vânează activ pe suprafața solului, cad cu mai mare șansă în capcane, decât cele arboricole (11,9%), care stau mai mult pe plante.

Din punct de vedere a habitatului, majoritatea speciilor preferă ca mediu de viață pajiștile (51,8%), dar sunt reprezentate printr-un procentaj destul de mare și speciile care preferă tufărișurile și pădurile (36,15%). În cea ce privește exigența față de umiditate, se observă o dominanță a speciilor xerofile (41,17%), după care urmează cu aproape același procentaj cele mezohigrofile (28,25%) și mezoxerofile (29,41%), apoi cele stenoxerofile (11,76%) și eurihigrice (3,58%). Spectrul speciilor privind exigența lor față de lumină și temperatură este următoarea: mezombrofile 33,55%, mezofotofile 24,45%, termofile 22,77%, stenofotofile 7,55%, stenombrofile 7,51% și euriterme 5,16% (Fig. 5.), reflectând caracteristicile ecologice ale ecosistemelor studiate.

Ca o concluzie finală, pe baza celor prezentate, putem afirma că rezervația Fânațele Clujului este valoroasă și din punct de vedere faunistic, nu numai floristic, fapt dovedit și de lucrările faunistice apărute în ultimul timp (RÁKOSY & LÁSZLÓFFY 1997, URÁK & WEISS 1997, LÁSZLÓFFY 1998). Bogăția faunistică și prezența unor specii caracteristice ar trebui să atragă după sine acordare statutului de rezervație complexă a acestei zone.

Keywords: Aranea, taxonomy, faunistics, ecology.

Introduction

The first arachnological researches were carried out by Otto HERMAN in the surrounding Cluj-Napoca. In his monography on the Hungarian spiders he mentions 133 species from Transylvania. Some species were collected around Cluj-Napoca

(HERMAN 1876, 1878, 1879).

The recent publications deal with spiders from Cheile Turzii (NECULCE 1970 a, b) and Suatu I. Botanical Rezervation (URÁK 1999).

In 1997 we published previous results on three new species from the Romanian spiderfauna: *Tapinocyboides pygmaeus* (MENGE, 1869), *Cheira-*

canthium campestre LOHMANDER, 1944, *Talavera thorelli* KULCZYNSKI, 1891 (URÁK & WEISS 1997).

Materials and method

The material was collected by pitfall traps with concentrated NaCl-solution, the spiders were preserved in 70° ethylic alcohol and identified with the help of a stereoscopic microscope.

The major part of the arachnological material was determined by Ingmar WEISS. The other part was identified on the basis of the comparative material selected by Ingmar WEISS and we also used various reference sources (LOCKET & MILLIDGE 1951, LOKSA 1969 și 1972, FUHN & NICULESCU-BURLACU 1985, STERGHIU 1985, HEIMER & NENTWIG 1991, FUHN & GHERASIM 1995). WEISS (1987) and MAURER & HÄNGGI (1990) offered us ecological data on the species.

The arachnological material is in the authors collection and the other part is in the Zoological Museum of Babeş-Bolyai University in Cluj-Napoca, Romania as well as in the Biological Museum of Linz, Austria.

Results and discussions

From March to November 1996 the number of 2541 spider specimens were captured belonging to 21 families and 120 species. From these species the greatest abundance had: *Alopecosa pulverulenta* (CLERCK, 1757) (6,92%), *Pardosa monticola* (CLERCK, 1757) (5,82%), *Alopecosa accentuata* (LATREILLE, 1817) (5,54%), all of these species belonging to the family of Lycosidae. The identified materials were arranged taxonomically (table 1.). Percentile degree representation of aranean families according to the numbers of specimens and species collected at Fânatele Clujului Botanical Reservation were represented in fig. 1. The richest families in species are Linyphiidae (25%, 30 species), Lycosidae (15,83%, 19 species), Gnaphosidae (15%, 18 species), Salticidae (9,16%, 11 species) and Thomisidae (8,33%, 10 species). Whereas the poorest families in species (Atypidae, Zodaridae, Tetragnathidae, Mimetidae, Agelenidae, Amaurobiidae, Pisauridae, Philodromidae, Thomisidae, Zoridae) are represented by a single species with few specimens and two of them, Atypidae and Agelenidae are represented by a single specimen. The majority of the specimens belong to the family Lycosidae (40,37%, 1026 specimens) followed by Thomisidae (20,46%, 420 specimens) and only after that succeed Linyphiidae (10,54%, 268 specimens), which the richest family in spe-

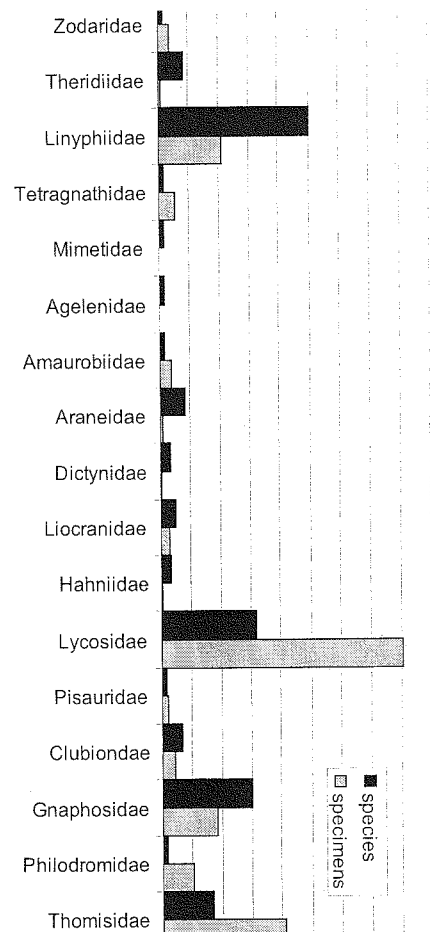


Fig. 1. Percentile representation of the families

cies. This distribution of families and species was determined by the ecological condition of studied ecosystems and by the collection methods, too. The pitfall traps captured successfully the epigeical species (75%), the ground wanderer spiders, with active hunter lifestyle, when running free on the soil surface. The arboreal species (11,9%), the web builders or plant wanderers fall in the traps accidentally (fig. 2.). The great presence of species belonging to

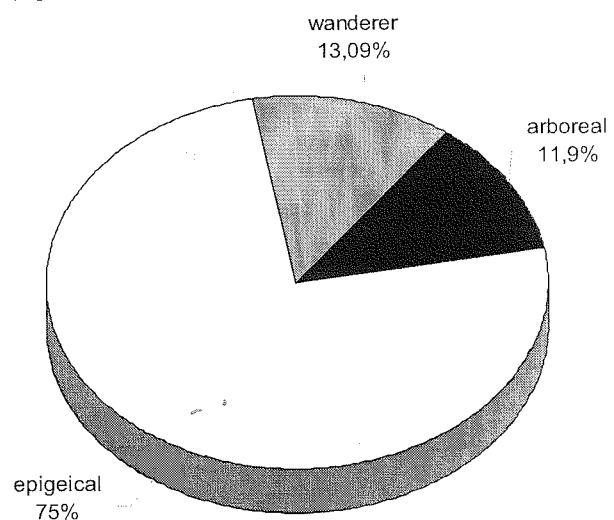


Fig. 2. The perpendicular stratification of the species

the family of Linyphidae is logical knowing that approximately a half of aranean species belong of this family, nevertheless most of the captured species are represented by one-two specimens.

Most spiders live in a defined environment with limitations set by physical conditions, such as temperature, wind and light intensity, as well as biological factors, such as type of vegetation, food supply, competitions and enemies. On the basis of their habitat preferences, the distribution of spiders collected at Fânațele Clujului Botanical Reservation is the following: 51,8% prefer grasslands, 36,15% the brush woods and forests, and 12,05% of species are euritop (fig. 3.).

The ecological analysis reveals the presence

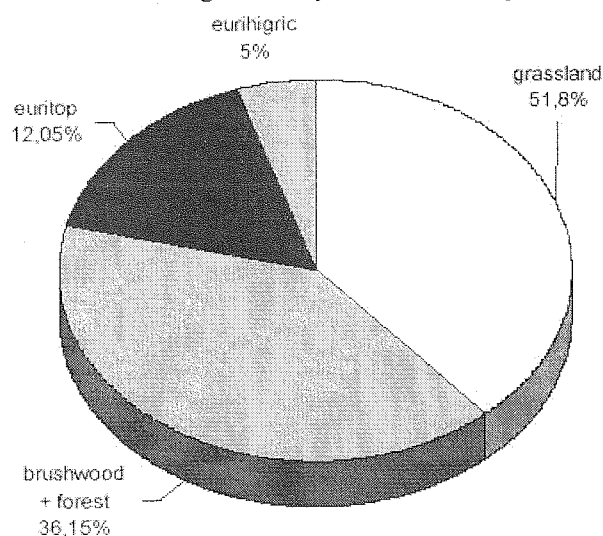


Fig. 3. The habitat preferences of the species

of fairly variable elements. The local ecosystems ensure relatively great spider diversity. We can conclude the dominance of the mesophyl (51,8%) and the xerophyl (41,17%) species followed by the mesohigrophyl (28,25%), mezoxerophyl (29,41%), stenoxerophyl (11,76%) and the eurihigric (3,58%) species on the basis of the humidity preferences of aranean species collected at Fânațele Clujului Botanical Reservation (fig. 4.). The distribution of species by heat and light preferences as follows: mesoumbrophyl 33,55%, mesofotophyl 24,45%, termophyl 22,77%, stenofotophyl 7,55%, stenoumbrophyl 7,51% and euriterm 5,16% (fig. 5.).

Conclusions

The Fânațele Clujului Botanical Reservation has divers and rich spider communities with some rare species. The presence of such faunistical values should suggest a more severe protection of this area by the authorities concerning not just the botanical values, but also the fauna. This study justifies the

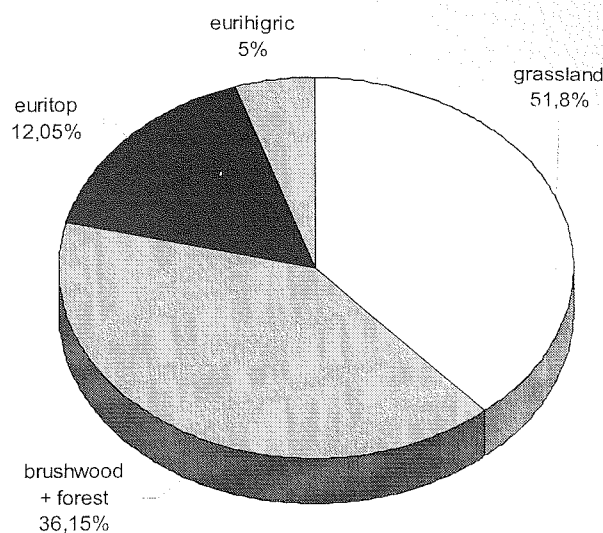


Fig. 4. The distribution of the species on the basis of their humidity preferences

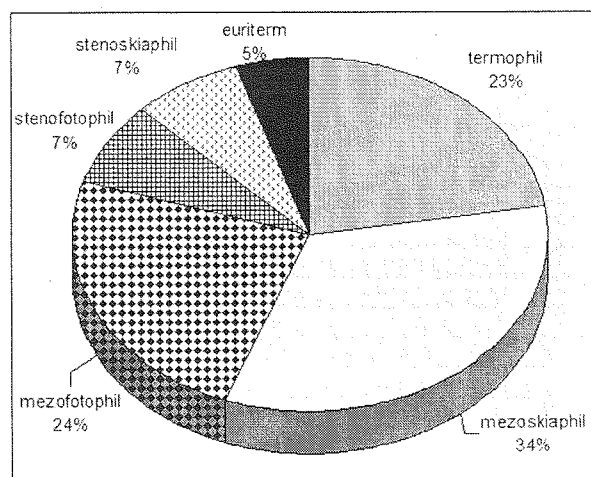


Fig. 5. The distribution of the species based on their heat and light preferences

conclusions of other recent faunistical papers dealing with this Reservation (RAKOSY & LÁSZLÓFFY 1997, URÁK & WEISS 1997, LÁSZLÓFFY 1998).

The exposed results lead us to propose the Fânațele Clujului Botanical Reservation for general ecological protection.

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Table 1.

The checklist of Araneae collected from the Fănațele Clujului Botanical Rezerve

| Nr. | TAXA | Σ | M | F | J |
|---------------------------|---|------------|------------|-----------|-----------|
| I. ATYPIDAE | | 1 | 1 | | |
| 1 | <i>Atypus muralis</i> Bertkau, 1890 | 1 | 1 | | |
| II. DYSDERIDAE | | 24 | 11 | 11 | 2 |
| 2 | <i>Dysdera hungarica</i> Kulczynski, 1897 | 7 | 2 | 5 | |
| 3 | <i>Harpactea rubicunda</i> (C. L. Koch, 1838) | 16 | 9 | 6 | 1 |
| III. ZODARIIDAE | | 48 | 42 | 1 | 5 |
| 4 | <i>Zodarion germanicum</i> (C. L. Koch, 1837) | 48 | 42 | 1 | 5 |
| IV. THERIDIIDAE | | 12 | 7 | 1 | 4 |
| 5 | <i>Enoplognatha ovata</i> (Clerck, 1757) | 1 | 1 | | |
| 6 | <i>Enoplognatha thoracica</i> (Hahn, 1833) | 3 | 1 | | 2 |
| 7 | <i>Episinus truncatus</i> Latreille 1809 | 4 | 3 | 1 | |
| 8 | <i>Steatoda phalerata</i> (Panzer, 1801) | 2 | 2 | | |
| 9 | <i>Theridion</i> sp. | 2 | | | 2 |
| V. LINYPHIIDAE | | 268 | 109 | 93 | 66 |
| 10 | <i>Abacoproeces saltuum</i> (L. Koch, 1872) | 119 | 56 | 63 | |
| 11 | <i>Agyneta simplicatarsis</i> (Simon, 1884) | 1 | 1 | | |
| 12 | <i>Centromerus sylvaticus</i> (Blackwall, 1841) | 3 | 2 | 1 | |
| 13 | <i>Ceratinella brevis</i> (Wider, 1834) | 7 | 5 | 2 | |
| 14 | <i>Ceratinella major</i> Kulczynski, 1894 | 4 | 3 | 1 | |
| 15 | <i>Diplocephalus picinus</i> (Blackwall, 1841) | 2 | | 2 | |
| 16 | <i>Dipoena</i> sp. | 1 | 1 | | |
| 17 | <i>Erigone dentipalpis</i> (Wider, 1834) | 1 | 1 | | |
| 18 | <i>Eurryopsis</i> sp. | 1 | | | 1 |
| 19 | <i>Leptyphantes menzei</i> Kulczynski, 1887 | 13 | 7 | 5 | 1 |
| 20 | <i>Leptyphantes quadrimaculatus</i> Kulczynski, 1898 | 1 | | 1 | |
| 21 | <i>Linyphia triangularis</i> (Clerck, 1757) | 4 | 4 | | |
| 22 | <i>Meioneta rurestris</i> (C. L. Koch, 1836) | 10 | 3 | 7 | |
| 23 | <i>Meioneta fuscipalpa</i> (C. L. Koch, 1836) | 6 | 2 | 4 | |
| 24 | <i>Microlinyphia pusilla</i> (Sundevall, 1830) | 1 | 1 | | |
| 25 | <i>Microneta viaria</i> (Blackwall, 1841) | 3 | 1 | 2 | |
| 26 | <i>Minicia marginella</i> (Wider, 1834) | 2 | 2 | | |
| 27 | <i>Panamomops inconspicuus</i> (Miller & Val., 1964) | 1 | 1 | | |
| 28 | <i>Panamomops</i> sp. | 1 | 1 | | |
| 29 | <i>Pelecopsis radiccicola</i> (L. Koch, 1872) | 2 | | 2 | |
| 30 | <i>Sintula cornigera</i> (Blackwall, 1856) | 1 | 1 | | |
| 31 | <i>Sintula spinigera</i> Balogh | 1 | 1 | | |
| 32 | <i>Stemonyphantes lineatus</i> (Linne, 1758) | 7 | 3 | 1 | 3 |
| 33 | <i>Styloctetor romanus</i> (O.P.-Cambridge, 1872) | 6 | 6 | | |
| 34 | <i>Tapinocyboides pygmaeus</i> (Menge, 1869) | 1 | 1 | | |
| 35 | <i>Trichopterna cito</i> (O.P.-Cambridge, 1872) | 1 | 1 | | |
| 36 | <i>Walckenaeria antica</i> (Wider, 1834) | 1 | 1 | | |
| 37 | <i>Walckenaeria atrotibialis</i> (O.P. Cambridge, 1872) | 3 | 1 | 2 | |
| 38 | <i>Walckenaeria dysderoides</i> (Wider, 1834) | 1 | 1 | | |
| 39 | <i>Walckenaeria furcillata</i> (Menge, 1871) | 2 | 2 | | |
| VI. TETRAGNATHIDAE | | 67 | 34 | 31 | 2 |
| 40 | <i>Pachignatha degeeri</i> Sundevall, 1830 | 67 | 34 | 31 | 2 |
| VII. MIMETIDAE | | 2 | 1 | 1 | |
| 41 | <i>Ero furcata</i> (Villers, 1789) | 2 | 1 | 1 | |
| VIII. AGELENIDAE | | 1 | 1 | | |
| 42 | <i>Agelena gracilens</i> C. L. Koch, 1841 | 1 | 1 | | |
| IX. AMAUROBIIDAE | | 44 | 29 | 7 | 8 |
| 43 | <i>Coelotes longispina</i> Kulczynski, 1897 | 44 | 29 | 7 | 8 |
| X. ARANEIDAE | | 9 | 3 | 6 | |
| 44 | <i>Araneus diadematus</i> Clerck, 1757 | 1 | 1 | | |
| 45 | <i>Araneus marmoreus</i> Clerck, 1757 | 1 | | 1 | |
| 46 | <i>Araneus quadratus</i> Clerck, 1757 | 3 | 1 | 2 | |
| 47 | <i>Mangora acalypha</i> (Walckenaer, 1802) | 2 | | 2 | |

| Nr. | TAXA | Σ | M | F | J |
|-----------------------------|---|-------------|------------|------------|------------|
| 48 | <i>Meta segmentata</i> (Clerck, 1757) | 2 | 1 | 1 | |
| XI. DICTYNIDAE | | 6 | 6 | | |
| 49 | <i>Argenna subnigra</i> (O.P. Cambridge, 1861) | 3 | 3 | | |
| 50 | <i>Lathys puta</i> (O.P. Cambridge, 1863) | 3 | 3 | | |
| XII. LIOCRANIDAE | | 34 | 10 | 23 | 1 |
| 51 | <i>Agroeca cuprea</i> Menge, 1873 | 27 | 9 | 18 | |
| 52 | <i>Agroeca lusatica</i> (L. Koch, 1875) | 5 | 1 | 4 | |
| 53 | <i>Phrurolithus pullatus</i> Kulczynski, 1897 | 2 | | 1 | 1 |
| XIII. HAHNIIDAE | | 3 | 3 | | |
| 54 | <i>Hahnia nava</i> (Blackwall, 1841) | 2 | 2 | | |
| 55 | <i>Hahnia pusilla</i> C. L. Koch, 1841 | 1 | 1 | | |
| XIV. LYCOSIDAE | | 1026 | 654 | 160 | 212 |
| 56 | <i>Alopecosa accentuata</i> (Latreille, 1817) | 141 | 112 | 29 | |
| 57 | <i>Alopecosa cuneata</i> (Clerck, 1757) | 64 | 53 | 11 | |
| 58 | <i>Alopecosa mariae</i> (Dahl, 1908) | 11 | 6 | 5 | |
| 59 | <i>Alopecosa pulverulenta</i> (Clerck, 1757) | 176 | 146 | 30 | |
| 60 | <i>Alopecosa solitaria</i> (Herman, 1876) | 1 | | 1 | |
| 61 | <i>Alopecosa trabalis</i> (Clerck, 1757) | 9 | 9 | | |
| 62 | <i>Arctosa figurata</i> (Simon, 1876) | 1 | | | 1 |
| 63 | <i>Aulonia albimana</i> (Walckenaer, 1805) | 22 | 17 | 4 | 1 |
| 64 | <i>Pardosa agrestis</i> (Westring, 1861) | 1 | 1 | | |
| 65 | <i>Pardosa bifasciata</i> (C. L. Koch, 1834) | 1 | | 1 | |
| 66 | <i>Pardosa hortensis</i> (Thorell, 1872) | 2 | 2 | | |
| 67 | <i>Pardosa lugubris</i> (Walckenaer, 1802) | 131 | 98 | 21 | 12 |
| 68 | <i>Pardosa monticola</i> (Clerck, 1757) | 148 | 119 | 29 | |
| 69 | <i>Pardosa palustris</i> (Linne, 1758) | 44 | 33 | 11 | |
| 70 | <i>Pardosa prativaga</i> (L. Koch, 1870) | 1 | | 1 | |
| 71 | <i>Trochosa robusta</i> (Simon, 1876) | 65 | 44 | 13 | 8 |
| 72 | <i>Trochosa ruricola</i> (Degeer, 1778) | 3 | 2 | | 1 |
| 73 | <i>Trochosa terricola</i> Thorell, 1856 | 16 | 12 | 4 | |
| 74 | <i>Xerolycosa</i> sp. | 3 | | | 3 |
| XV. PISAURIDAE | | 26 | 16 | 5 | 5 |
| 75 | <i>Pisaura mirabilis</i> (Clerck, 1757) | 26 | 16 | 5 | 5 |
| XVI. CLUBIONIDAE | | 53 | 17 | 19 | 17 |
| 76 | <i>Cheiracanthium campestre</i> (Lohmander, 1944) | 25 | 6 | 14 | 5 |
| 77 | <i>Clubiona caerulescens</i> L. Koch, 1867 | 1 | | 1 | |
| 78 | <i>Clubiona comta</i> C. L. Koch, 1839 | 12 | 10 | 2 | |
| 79 | <i>Clubiona diversa</i> O.P. Cambridge, 1862 | 3 | 1 | 2 | |
| XVII. GNAPHOSIDAE | | 237 | 105 | 70 | 62 |
| 80 | <i>Drassodes lapidosus</i> (Walckenaer, 1802) | 4 | 2 | 2 | |
| 81 | <i>Drassodes pubescens</i> (Thorell, 1856) | 3 | 2 | 1 | |
| 82 | <i>Drassylus praeficus</i> (L. Koch, 1866) | 6 | 4 | 2 | |
| 83 | <i>Drassylus pusillus</i> (C.L. Koch, 1833) | 17 | 10 | 7 | |
| 84 | <i>Gnaphosa lucifuga</i> (Walckenaer, 1802) | 5 | 4 | 1 | |
| 85 | <i>Haplodrassus kulczynskii</i> Lohmander, 1942 | 1 | | 1 | |
| 86 | <i>Haplodrassus signifer</i> (C. L. Koch, 1839) | 37 | 27 | 10 | |
| 87 | <i>Micaria dives</i> (Lucas, 1846) | 6 | 3 | 3 | |
| 88 | <i>Micaria fulgens</i> (Walckenaer, 1802) | 25 | 13 | 10 | 2 |
| 89 | <i>Micaria romana</i> C. L. Koch, 1866 | 47 | 18 | 20 | 9 |
| 90 | <i>Trachyzelotes pedestris</i> (C.L. Koch, 1837) | 8 | 4 | 4 | |
| 91 | <i>Zelotes apricorum</i> (L. Koch, 1876) | 1 | 1 | | |
| 92 | <i>Zelotes atrocaeruleus</i> (Simon, 1878) | 5 | 5 | | |
| 93 | <i>Zelotes aurantiacus</i> Miller, 1967 | 6 | 6 | | |
| 94 | <i>Zelotes gracilis</i> (Canestrini, 1868) | 1 | 1 | | |
| 95 | <i>Zelotes latreillei</i> (Simon, 1878) | 4 | 4 | | |
| 96 | <i>Zelotes longipes</i> (L. Koch, 1866) | 9 | | 9 | |
| 97 | <i>Zelotes petrensis</i> (C. L. Koch, 1839) | 1 | 1 | | |
| XVIII. PHILODROMIDAE | | 129 | 106 | 12 | 11 |
| 98 | <i>Thanatus arenarius</i> L. Koch, 1872 | 129 | 106 | 12 | 11 |
| XIX. THOMISIDAE | | 520 | 425 | 35 | 60 |
| 99 | <i>Ozyptila atomaria</i> (Panzer, 1801) | 7 | 5 | 1 | 1 |

| Nr. | TAXA | Σ | M | F | J |
|------------------------|---|-----------|-----------|----------|----------|
| 100 | <i>Ozyptila praticola</i> (C. L. Koch, 1837) | 71 | 62 | 5 | 4 |
| 101 | <i>Ozyptila pullata</i> (Thorell, 1875) | 5 | 5 | | |
| 102 | <i>Ozyptila scabricola</i> (Westring, 1851) | 17 | 16 | 1 | |
| 103 | <i>Xysticus acerbus</i> Thorell, 1872 | 83 | 65 | 18 | |
| 104 | <i>Xysticus cristatus</i> (Clerck, 1757) | 68 | 63 | 5 | |
| 105 | <i>Xysticus erraticus</i> (Blackwall, 1834) | 1 | 1 | | |
| 106 | <i>Xysticus kemplenii</i> Thorell, 1872 | 2 | 2 | | |
| 107 | <i>Xysticus kochii</i> Thorell, 1872 | 78 | 73 | 5 | |
| 108 | <i>Xysticus ninnii</i> Thorell, 1872 | 133 | 133 | | |
| XX. ZORIDAE | | 6 | 3 | 3 | |
| 109 | <i>Zora spinimana</i> (Sundewall, 1833) | 6 | 3 | 3 | |
| XXI. SALTICIDAE | | 25 | 13 | 6 | 6 |
| 110 | <i>Asianellus festivus</i> (C. L. Koch, 1834) | 2 | 2 | | |
| 111 | <i>Ballus chalybeius</i> (Walckenaer, 1802) | 1 | | 1 | |
| 112 | <i>Evarcha arcuata</i> (Clerck, 1757) | 4 | 3 | | 1 |
| 113 | <i>Heliophanus cupreus</i> (Walckenaer, 1802) | 2 | 2 | | |
| 114 | <i>Heliophanus flavipes</i> (Hahn, 1892) | 1 | | 1 | |
| 115 | <i>Marpissa</i> sp. | 1 | | | 1 |
| 116 | <i>Myrmarachne formicaria</i> (Degeer, 1778) | 2 | 1 | 1 | |
| 117 | <i>Phlegra fasciata</i> (Hahn, 1826) | 4 | | 3 | 1 |
| 118 | <i>Phlegra fuscipes</i> Kulczynski | 1 | 1 | | |
| 119 | <i>Talavera aequipes</i> (O.P. Cambridge, 1871) | 3 | 3 | | |
| 120 | <i>Talavera thorelli</i> Kulczynski 1891 | 1 | 1 | | |

Abbreviations: Σ = total number of specimens, M = number of male specimens, F = number of female specimens, J = number of juvenile specimens.

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