

# Checklist of spiders and opiliones (Arachnida Araneae, Opiliones) of Sicilian southest swamp lakes "Pantano Cuba", "Pantano Longarini" and "Pantano Bruno" (Italy). Fifth contribution to knowledge of Sicilian spider fauna

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## ABSTRACT

We present a first checklist of Araneae and Opiliones of Pantano Bruno, Pantano Cuba and Pantano Longarini, swamp lakes which are part of one of the most important Sicilian wetland, never studied before for this group of arthropoda, located in the southeast coast of Sicily, between Ispica (Ragusa) and Pachino (Syracuse). From March 2016 until February 2021 samples and data were collected on the field, investigating different types of habitat. In total, 98 different species belonging to 86 genera and 27 families of spiders were found in the area, plus 3 species of 2 genera and 1 families of opilions. The checklist includes interesting first sicilian records of *Cyrtarachne ixoides* (Simon, 1870) (Araneidae), *Crustulina guttata* (Wider, 1834) (Theridiidae), *Eratigena fuesslini* (Pavesi, 1873) (Agelenidae), *Nurscia albomaculata* (Lucas, 1846) (Titanocidae) and *Tibellus maritimus* (Menger, 1875) (Phlo-dromidae). Additional biological, distribution and chorotype information are indicated for each of the new records.

## KEY WORDS

Arachnids; Araneofauna; Sicily; Stiftung Pro Artenvielfalt; Wetland.

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## INTRODUCTION

Currently, 1583 species of spiders are reported for Italy, represented by a total of 51 families and 474 genus (Netwing, 2021). The richest region in species is actually Trentino Alto-Adige, north of Italy, with 831 species and the major islands Sardinian and Sicily, for which are up to date respectively reported 522 species (44 families and 245 genus) and 428 species (44 families and 201 genus) (Pantini & Isaia, 2019). As regards the Opiliones, 134 species are reported for Italy, represented by 44 genus and 11 families, of which only 19 species, 17 genus and 6 families

for Sicily (Pantini & Isaia, 2019). All the surveys carried out over the time have been showing an ever increasing number of species for this region, (Dentici, 2017; Dentici & Amata, 2018; Schifani et al., 2019; Dentici, 2019; Bolognin et al., 2021; Dentici & Amata, 2021; Dentici et al., 2021): if on the one hand this is the result of a deeper and wider field research, on the other hand is partly the consequence of a constant change of Mediterranean araneofauna.

This paper represents a contribution to the current knowledge of Mediterranean and Italian spiders and opiliones, as well as a remarkable update of the Sicilian checklist.

## MATERIAL AND METHODS

### *Study area*

A focused survey on spiders and opiliones was conducted at the swamp lakes named “Pantano Bruno” (36°41’56.36”N, 14°58’59.12”E), “Pantano Longarini” (36°42’42.41”N, 15° 0’25.97”E) and “Pantano Cuba” (36°42’26.20”N, 15° 1’38.70”E), in the southeast coast of Sicily, near Ispica and Pachino, respectively in the Ragusa and Siracusa provinces (Fig. 1).

These three coastal swamp lakes, which extend in total for no less than 350 hectares, are part of the most important southernmost Italian wetland-complex as well as one of the most important coastal wetland of southern Europe. Together with others smaller swamp lakes located along the southern coastline (named, from East to West, Ponterio, Ciaramiraro, Baronello, Auruca, Cannone, Gorgo Salato), the whole wetland-complex is included in Natura 2000 as Special Areas of Conservation (SACs ITA090003) and Special Protection Areas (SPAs ITA090029), designated respectively under the Habitats Directive (Directive 92/43/EEC of 21 May 1992) and the Birds Directive (Directive

79/409/EEC of 2 April 1979 and 2009/147/EC of 30 November 2009). Due to their great relevance for the Mediterranean biodiversity and their peculiar flora and fauna, Pantano Cuba and Pantano Longarini were purchased, starting from 2013, by the German foundation “Stiftung Pro Artenvielfalt ®” - Foundation Pro Biodiversity, which is specialized on biodiversity protection and conservation, for a total of about 380 hectares. The same foundation promoted this survey. Pantano Bruno, Pantano Cuba and Pantano Longarini are dynamic habitats characterized by shallow, brackish and standing waters, surrounded by a variable and diversified vegetation and habitats. Because of the short distance between them (Pantano Bruno is only 1.5 km away from Pantano Longarini and 3 km away from Pantano Cuba), the three lakes are in this study considered as a single study area.

Despite of the remarkable biodiversity richness of this area, the most of the updated scientific studies and monitoring projects were focused on avifauna (Galasso et al., 2021) and, only recently, on some groups of arthropoda, such as dragonflies (Galasso et al., 2016; Galasso et al., 2020), but never before on spiders and opiliones.



Figure 1. Geographical location of the study area: Pantano Bruno (B), Pantano Longarini (L) and Pantano Cuba (C), in the southeastern coast of Sicily, Italy.

### Sampling methods

All samples, both spiders and opiliones, have been collected directly on sight on vegetation, old rural buildings, under stones or from their webs by hand or using an entomological sweep net, in many different habitats such as open meadows, uncultivated fields, fruit gardens, edges of canals, Mediterranean scrub, ecotones, etc... Some species were also sampled using pitfall traps and part of them were in addition photographed in nature using a professional digital camera.

Collection of samples and data started in March 2016 to proceed regularly until February 2021, but mainly focused on January-September 2020, with a more systematic and intensified collection.

At least one adult specimen has been observed under a stereomicroscope for a correct determination, for most of the species recorded.

All samples were preserved and transported in centrifuge tubes of different sizes and fixed in 75% ethanol (Levi, 1977); they are actually stored in the collection of one of the authors (Dentici A.). Classification, taxonomy and distribution in Sicily, follow Roberts (1995), Trotta (2004), Pantini & Isaia (2019) and World Spider Catalog (2020).

### RESULTS

In total, 98 different species (4 sp., 1 cfr) belonging to 86 genera and 27 families of spiders were found: among these, 5 species and 3 genera are reported for the first time in Sicily, and thus marked by (\*) in the checklist below (Table 1). In addition, 3 species of 2 genera and 1 families of Opilions are also reported.

#### Checklist of spiders and opiliones of Sicilian southest swamp lakes

The presence of the species is specified by a letter at the end of the species name, after the author: Pantano Cuba (C), Pantano Longarini (L) and Pantano Bruno (B).

Ordo ARANEAE Clerck, 1757

Familia AGELENIDAE C.L. Koch, 1837

*Eratigena* Bolzern, Burckhardt et Hänggi, 2013

\**Eratigena fuesslini* (Pavesi, 1873) - C

*Lycosoides* Lucas, 1846

*Lycosoides coarctata* (Dufour, 1831) - L - C

*Textrix* Sundevall, 1833

*Textrix caudata* L. Koch, 1872 - C

Familia AMAUROBIIDAE Thorell, 1870

*Amaurobius* C.L. Koch, 1837

*Amaurobius erberi* (Keyserling, 1863) - L

Familia ARANEIDAE Clerck, 1757

*Aculepeira* Chamberlin et Ivie, 1942

*Aculepeira armida* (Audouin, 1826) - C

*Araneus* Clerck, 1757

*Araneus angulatus* Clerck, 1757 - C

*Araniella* Chamberlin et Ivie, 1942

*Araniella* sp. – L

*Argiope* Audouin, 1826

*Argiope trifasciata* (Forsskål, 1775) - L - C - B

*Cyclosa* Menge, 1866

*Cyclosa conica* (Pallas, 1772) - L

*Cyclosa insulana* (Costa, 1834) - L - C - B

\**Cytarachne* Thorell, 1868

\**Cyrtarachne ixoides* (Simon, 1870) - L - B

*Larinioides* Caporiacco, 1934

*Larinioides cornutus* (Clerck, 1757) - L - C

*Larinioides suspicax* (O. Pickard-Cambridge, 1876) - L - C - B

*Lipocrea* Thorell, 1878

*Lipocrea epeirodes* (O. Pickard-Cambridge, 1872) - L

*Neoscona* Simon, 1846

*Neoscona subfusca* (C.L. Koch, 1837) - C

*Zilla* C.L. Koch, 1836

*Zilla diodia* (Walckenaer, 1802) - L - C

*Zygiella* F.O. Pickard-Cambridge, 1902

*Zygiella x-notata* (Clerck, 1757) - L - C - B

Familia CHEIRACANTHIIDAE Wagner, 1887

*Cheiracanthium* C.L. Koch, 1839

*Cheiracanthium angulitarse* Simon, 1878 - L - C

*Cheriacanthium mildei* L. Koch, 1864 - C

Familia CLUBIONIDAE Wagner, 1887

*Porrhoclubiona* Lohmander, 1944

***Phorroclubiona*** sp. - C

Familia DICTYNIDAE O.Pickard-Cambridge, 1871

*Brigittea* Lehtinen, 1967

***Brigittea civica*** (Lucas, 1850)

Familia DYSDERIDAE C.L. Koch, 1837

*Dysdera* Latreille, 1804

***Dysdera crocata*** C.L. Koch, 1838 - L - C - B

Familia FILISTATIDAE Ausserer, 1867

*Filistata* Latreille, 1810

***Filistata insidiatrix*** (Forsskål, 1775) - L - C - B

Familia GNAPHOSIDAE Pocock, 1898

*Drassodes* Westring, 1851

***Drassodes*** sp. - L

*Echemus* Simon, 1878

***Echemus angustifrons*** (Westring, 1861) - L

*Gnaphosa* Latreille, 1804

***Gnaphosa montana*** (L. Koch, 1866) - C

*Nomisias* Dalmas, 1921

***Nomisias aussereri*** (L. Koch, 1872) - L - C

*Poecilochroa* Westring, 1874

***Poecilochroa furcata*** Simon, 1914 - C

Familia LINYPHIIDAE Blackwall, 1859

*Araeoncus* Simon, 1884

***Araeoncus humilis*** (Blackwall, 1841) - L

*Frontinellina* van Helsdingen, 1969

***Frontinellina frutetorum*** (C.L. Koch, 1835) - L - C - B

*Linyphia* Latreille, 1804

***Linyphia triangularis*** (Clerck, 1757) - L

*Microlinyphia* Gerhardt, 1928

***Microlinyphia pusilla*** (Sundevall, 1830) - C

*Tenuiphantes* Saaristo et Tanasevitch, 1996

***Tenuiphantes herbicola*** (Simon, 1884) - C

*Trichoncus* Simon, 1884

***Trichoncus aurantiipes*** Simon, 1844 - L

Familia LYCOSIDAE Sundevall, 1833

*Alopecosa* Simon, 1885

***Alopecosa albofasciata*** (Brullé, 1832) - L - C - B

*Arctosa* C.L. Koch, 1847

***Arctosa fulvolineata*** (Lucas, 1846) - C

***Arctosa*** cfr *lacustris* (Simon, 1876) - L

*Hogna* Simon, 1885

***Hogna radiata*** (Latreille, 1817) - L - C - B

*Pardosa* C.L. Koch, 1847

***Pardosa proxima*** (C.L. Koch, 1847) - C

*Trabea* Simon, 1876

***Trabea paradoxa*** Simon, 1876 - C

*Trochosa* C.L. Koch, 1847

***Trochosa ruricola*** (De Geer, 1778) - L - C

***Trochosa terricola*** Thorell, 1856 - C

Familia MITURGIDAE Simon, 1886

*Zora* C.L. Koch, 1847

***Zora manicata*** Simon, 1878 - L - C

Familia OECOBIIDAE Blackwall, 1862

*Oecobius* Lucas, 1846

***Oecobius navus*** Blackwall, 1859 - L - C

Familia PHILODROMIDAE Thorell, 1870

*Philodromus* Walckenaer, 1826

***Philodromus margaritatus*** (Clerck, 1757) - B

*Pulchellodromus* Wunderlich, 2012

***Pulchellodromus glaucinus*** (Simon, 1870) - L - C

*Thanatus* C.L.Koch, 1837

***Thanatus vulgaris*** Simon, 1870 - L

*Tibellus* Simon, 1875

***\*Tibellus maritimus*** (Menge, 1875) - L - C

Familia PHOLCIDAE C.L. Koch, 1850

*Holocnemus* Simon, 1875

***Holocnemus pluchei*** (Scopoli, 1763) - C

*Pholcus* Walckenaer, 1805

***Pholcus phalangioides*** (Fuesslin, 1775) - L - C

Familia PISAURIDAE Simon, 1890

*Pisaura* Simon, 1886

***Pisaura*** sp. - C



Familia SALTICIDAE Blackwall, 1841

*Attulus* Simon, 1889

***Attulus pubescens*** (Fabricius, 1775) - C

*Chalcoscirtus* Bertkau, 1880

***Chalcoscirtus infimus*** (Simon, 1868) - C - B

*Cyrba* Simon, 1876

***Cyrba algerina*** (Lucas, 1846) - L - C - B

*Evarcha* Simon, 1902

***Evarcha jucunda*** (Lucas, 1846) - L - C - B

*Hasarius* Simon, 1871

***Hasarius adansoni*** (Audouin, 1826) - C

*Heliophanus* C.L. Koch, 1833

***Heliophanus tribulosus*** Simon, 1868 - L - B

*Icius* Simon, 1876

***Icius hamatus*** (C.L. Koch, 1846) - C - B

*Marpissa* C.L. Koch, 1846

***Marpissa nivoyi*** (Lucas, 1846) - C

*Menemerus* Simon, 1868

***Menemerus semilimbatus*** (Hahn, 1829) - L - C - B

***Menemerus taeniatus*** (L. Koch, 1867) - C

*Neaetha* Simon, 1884

***Neaetha membrosa*** (Simon, 1868) - C

*Phlegra* Simon, 1876

***Phlegra bresnieri*** (Lucas, 1846) - L

*Pseudicius* Simon, 1885

***Pseudicius encarpatus*** (Walckenaer, 1802) - L - C

*Salticus* Latreille, 1804

***Salticus propinquus*** Lucas, 1846 - L - C - B

***Salticus scenicus*** (Clerck, 1757) - L - B

***Salticus zebraneus*** (C.L. Koch, 1837) - L

*Thyene* Simon, 1885

***Thyene imperialis*** (Rossi, 1846) - C

Familia SCYTODIDAE Blackwall, 1864

*Scytodes* Latreille, 1804

***Scytodes thoracica*** (Latreille, 1802) - L - C

Familia SEGESTRIIDAE Simon, 1893

*Segestria* Latreille, 1804

***Segestria bavarica*** C.L. Koch, 1843 - C

Familia SICARIIDAE Keyserling, 1880

*Loxosceles* Heineken et Lowe, 1832

***Loxosceles rufescens*** (Dufour, 1820) - L - C

Familia SPARASSIDAE Bertkau, 1872

*Micrommata* Latreille, 1804

***Micrommata ligurina*** (C.L. Koch, 1845) - L - C

*Olios* Walckenaer, 1837

***Olios argelasius*** (Walckenaer, 1806) - C

Familia TETRAGNATHIDAE Menge, 1866

*Pachygnatha* Sundevall, 1823

***Pachygnatha degeeri*** Sundevall, 1830 - L

*Tetragnatha* Latreille, 1804

***Tetragnatha extensa*** (Linnaeus, 1758) - L - C - B

***Tetragnatha obtusa*** C.L. Koch, 1837 - L - C - B

Familia THERIDIIDAE Sundevall, 1833

*Anelosimus* Simon, 1891

***Anelosimus pulchellus*** (Walckenaer, 1802) - C

*Asagena* Sundevall, 1833

***Asagena phalerata*** (Panzer, 1801) - C

*Argyrodes* Simon, 1864

***Argyrodes argyrodes*** (Walckenaer, 1841) - L - C - B

*Crustulina* Menge, 1868

**\**Crustulina guttata*** (Wider, 1834) - L

*Enoplognatha* Pavesi, 1880

***Enoplognatha mandibularis*** (Lucas, 1846) - L - B

*Euryopsis* Menge, 1868

***Euryopsis episinoides*** (Walckenaer, 1847) - L - C

*Kochiura* Archer, 1950

***Kochiura aulica*** (C.L. Koch, 1838) - L - C - B

*Platnickina* Kocak et Kemal, 2008

***Platnickina nigropunctata*** (Lucas, 1846) - C

*Steatoda* Sundevall, 1833

***Steatoda grossa*** (C.L. Koch, 1838) - L

***Steatoda paykulliana*** (Walckenaer, 1806) - C

***Steatoda triangulosa*** (Walckenaer, 1802) - L - C - B

*Theridion* Walckenaer, 1805

***Theridion mystaceum*** C.L. Koch, 1870 - C

Familia THOMISIDAE Sundevall, 1833

*Monaeses* Thorell, 1869

***Monaeses paradoxus*** (Lucas, 1846) - L - C

*Platnickina* Kocak et Kemal, 2008

***Platnickina nigropunctata*** (Lucas, 1846) - B

*Runcinia* Simon, 1875

***Runcinia grammica*** (C.L. Koch, 1837) - L - C - B

*Synema* Simon, 1864

***Synema globosum*** (Fabricius, 1775) - L - C - B

*Thomisus* Walckenaer, 1805

***Thomisus onustus*** Walckenaer, 1805 - L - C - B

*Xysticus* C.L. Koch, 1835

***Xysticus bufo*** Simon, 1820 - L - C

Familia TITANOECIDAE Lehtinen, 1967

\**Nurscia* Simon, 1874

\****Nurscia albomaculata*** (Lucas, 1846) - C

Familia ULOBORIDAE Thorell, 1869

*Uloborus* Latreille, 1806

***Uloborus plumipes*** Lucas, 1846 - L - C

Familia ZODARIIDAE Thorell, 1881

*Zodarion* Walckenaer, 1826

***Zodarion ludibundum*** Simon, 1914 - C

***Zodarion elegans*** (Simon, 1873) - L - C

Ordo OPILIONES Sundevall, 1833

Familia PHALANGIIDAE Latreille, 1802

*Metaphalangium* Roewer, 1911

***Metaphalangium abruptum*** (Roewer, 1911) - L

***Metaphalangium cirtanum*** (C.L. Koch, 1839) - L - C - B

*Opilio* Herbst, 1798

***Opilio canestrinii*** (Thorell, 1876) - L - C - B

### New records

For each new Sicilian records (\*), "legit" and collection data are below indicated, as well as locality and / or collection site:

Ordo ARANEAE Clerck, 1757

Familia AGELENIDAE C.L.Koch, 1837

Genus *Eratigena* Bolzern, Burckhardt et Hänggi, 2013

***Eratigena fuesslini*** (Pavesi, 1873)

MATERIAL EXAMINED. Pachino (Syracuse), Pantano Cuba, 36°42'29.9"N 15°01'20.1"E, 10.I.2020, 1 ♀, legit A. Dentici.

DISTRIBUTION. Europe, Turkey.

REMARKS. New species for Sicily. The specimen was collected from its web, built among a pile of stones, in an open meadow near to the swamp lake. Several other webs and specimens were observed near to the same location.

Familia ARANEIDAE Clerck, 1757

Genus *Cyrtarachne* Thorell, 1868

***Cyrtarachne ixoides*** (Simon, 1870)

MATERIAL EXAMINED. Ispica (Ragusa), Pantano Bruno, 36°41'50.59"N 14°58'53.80"E, 12.VI.2020, 1 ♀, legit P. Galasso; Pachino (Syracuse), Pantano Longarini, 36°42'31.65"N 15°1'8.60"E, 20.II.2021, 1 ♀, legit P. Galasso.

DISTRIBUTION. Mediterranean, Caucasus, Madagascar.

REMARKS. New genus and new species for Sicily. The specimen was found and collected on a *Pistacia lentiscus* L.

Familia PHILODROMIDAE Thorell, 1870

Genus *Tibellus* Simon, 1875

***Tibellus maritimus*** (Menge, 1875)

MATERIAL EXAMINED. Pachino (Syracuse), Pantano Cuba, 36°42'32.2"N 15°01'20.3"E, 18.I.2020, 1 ♂ subadult, legit A. Dentici; Pachino (Syracuse), Pantano Longarini, 36°42'15.3"N 14°59'58.0"E, 01.VII.2020, 2 ♀, legit P. Galasso.

DISTRIBUTION. Global distribution (WSC, 2021), including North America, Europe, Caucasus, Russia (Europe to Far East), Central Asia and China.

REMARKS. New genus for Sicily, already found in Monte Pellegrino (Dentici, in press) and new species. The specimens were collected on top of halophilic vegetation.

Familia THERIDIIDAE Sundevall, 1833  
Genus *Crustulina* Menge, 1868

***Crustulina guttata* (Wider, 1834)**

MATERIAL EXAMINED. Ispica (Ragusa), Pantano Longarini (Mouth), 36°42'15.3"N 14°59'58.0"E, 15.I.2020, 1 ♀, legit A. Dentici.

DISTRIBUTION. Canary Islands, Europe, Caucasus, Russia (Europe to South Siberia), Central Asia, China, Korea, Japan.

REMARKS. New species for Sicily; collected on its web, built on low herbaceous vegetation. It has been bred and observed: on 25.II.2020 it made a moult, probably the last one before sexual maturation, as on 20.V.2020 it produced a cocoon, and on 26.V.2020 a second one, but 1/3 in size compared to the first. The reason of non-fertile eggs production has not been clarified. It did not show any kind of parental care, cocoons are like an accessory of the tangle web, characteristic of the Theridiidae family.

Familia TITANOECIDAE Lehtinen, 1967  
Genus *Nurscia* Simon, 1874

***Nurscia albomaculata* (Lucas, 1846)**

MATERIAL EXAMINED. Pachino (Syracuse), Pantano Cuba, 36°42'28.67"N 15° 1'15.46"E, 28.V. 2016, 1 ♀, legit P. Galasso.

DISTRIBUTION. Europe, Turkey, from Egypt to Central Asia.

REMARKS. New genus and new species for Sicily; specimen found under a stone and photographed (Figure 2), but not sampled. Considering the well-defined pattern and the distribution of the *N. albomaculata* species, the authors identified it as such. In addition, another specimen (legit Angelo Ditta) was sampled in Mazara del Vallo (TP) on 5.I.2021, which confirms the identification made by photography.



Figure 2. *Nurscia albomaculata* photographed in Pantano Cuba on 25.V.2016 (photo by P. Galasso).



## DISCUSSION

Collected data show a rich spider community for this wetland, considering the relatively short time of this preliminary study. It is mainly represented by families of Salticidae (18% of the total species), Araneidae (14%) and, secondly, by Theridiidae (12%) and Lycosidae (8%). All the others families are poorly represented, often with only 1–3 species per family (Fig. 3). Obviously, all the percentages of different families are purely indicative and closely related to the examined material into the limits of the work carried out. Furthermore, please note that several families, such as Sicariidae, are monospecific in our territory, as well as families as Salticidae and Theridiidae are instead well represented with many genera and species. Furthermore, mostly crepuscular or nocturnal spiders, not well-represented in the checklist, are probably “escaped” from sampling activities, therefore, the results only show the main families and species actually sampled and identified and does not want to be a study on the intraspecific abundance of different species.

Despite this, as a consequence of the data collected thanks to this survey, the actual number of Sicilian spiders reported in the available bibliography and equal to 428 species, including 44 families and 201 genus (Pantini & Isaia, 2019) can be definitively updated to 433, including 44 families and 204 genus.

An extension of this survey, for such a rich and important area for Mediterranean biodiversity, would certainly provide additional interesting data and, why not, probably additional new Sicilian records, thus contributing to the further expansion of regional knowledge of spiders and opiliones.

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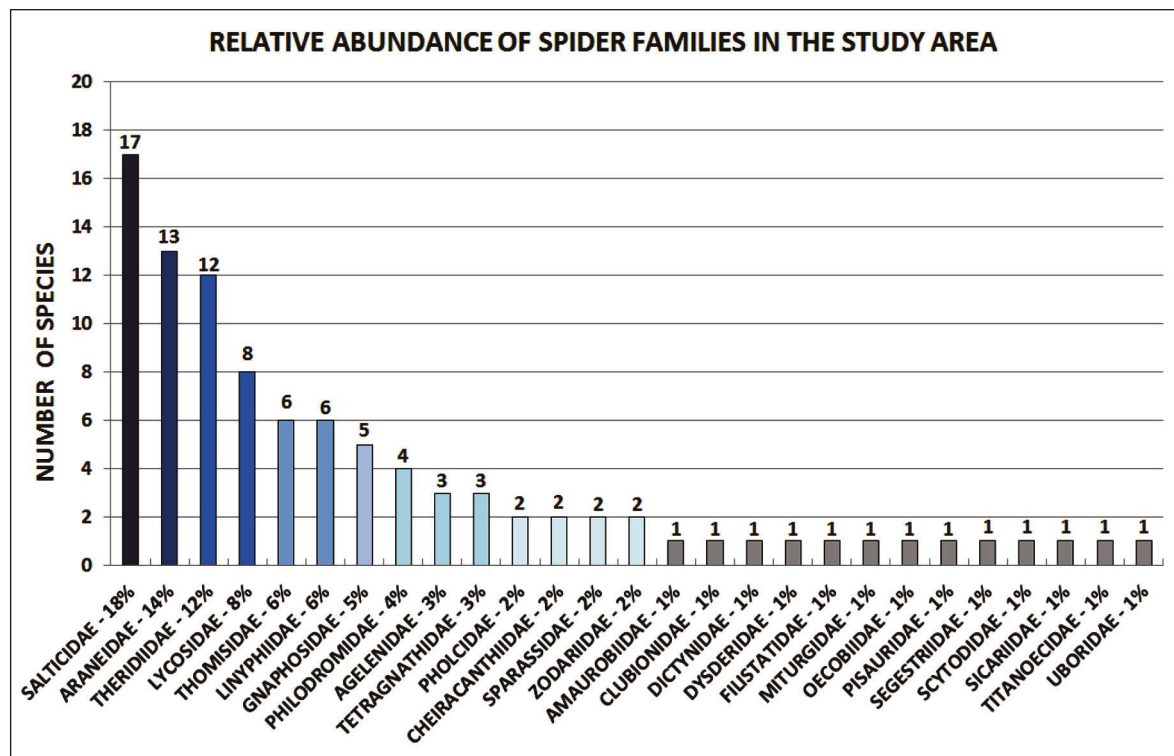


Figure 3. Structure of the spider community of the study area on a total of 98 species and 27 related families recorded.



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