

A faunistic study on spiders (Araneae) of Terzioğlu Island (Uluabat Lake, Bursa)

Rahşen S. Kaya* and İsmail Hakkı Uğurtaş

Department of Biology, Faculty of Arts and Sciences, Uludağ University, 16059 Nilüfer, Bursa, Turkey

ABSTRACT

Terzioğlu Island of Uluabat Lake (Bursa), west part of Turkey, was surveyed for Araneae between September 2003 and July 2005. This work represents the most recent spider faunal survey of Terzioğlu Island. Spiders of 35 species belonging to 33 genera and 16 families were collected. The Palearctic species are dominant in the island. *Glyptogona sextuberculata* (Keyserling, 1863) of family Araneidae and *Cyrrba algerina* (Lucas, 1846) of family Salticidae are new records to the Turkish araneofauna.

Key Words: Uluabat Lake, Island Fauna, Araneae, Turkey.

INTRODUCTION

Uluabat Lake is located in Bursa, Northwestern part of Turkey, lying east to west, south of the Marmara Sea. The length of the lake from east to west is approximately 15 km. Uluabat Lake is one of the eutrophic lakes and most important wetlands of Turkey from the point of view of biological productivity. Because of its rich biodiversity, lying on a migratory bird route and almost all its shores being covered with submerged plants, the lake is protected by the Ramsar Convention.

Terzioğlu Island (40°10'26"N, 28°39'17"E) (Fig.1) is one of 9 major islands located of the Uluabat Lake. The land of the island is mainly composed of grasslands, but large farming areas (cultivated olives) and rocky habitats are also present. The coastal region of the island is covered with reeds. In the medial parts of the island, some trees such as *Salix* sp., *Platanus* sp., *Celtis* sp., *Pistacia* sp. and *Ficus* sp., and some herbaceous plants of families such as Rosaceae and Compositae were most commonly found.

A list of 302 species of Araneae from Turkey was firstly published by Karol (1967) and later supplemented by Bayram (2002). The total number of species of Araneae in Turkey was increased to 613, belonging to 43 families by Topçu et al. (2005).

The list presented here contains 35 species of Araneae from Turkey and all of them are new records for the study area.

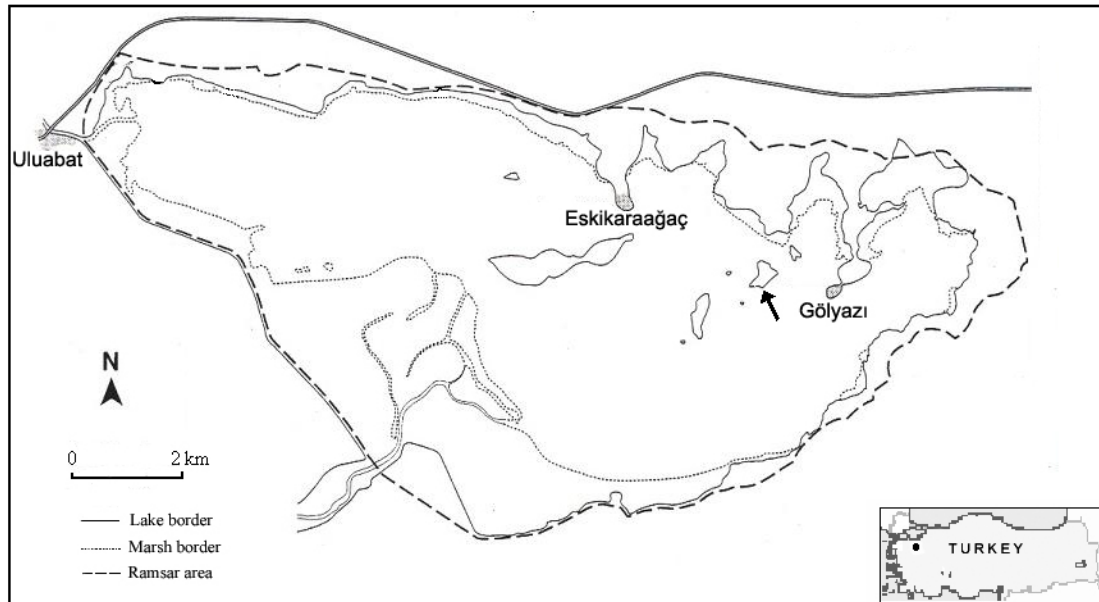


Figure 1. Map showing the Terzioğlu Island (→) in Uluabat Lake (Turkey), from which the spider specimens have been recorded.

* Corresponding author: rkaya@uludag.edu.tr

MATERIALS AND METHODS

We collected spiders from Terzioğlu Island between September 2003 and July 2005. Spider species that belong to 16 different families were collected from the island by hand collecting and pitfall traps. Specimens were preserved in alcohol + 5% glycerin. The material is housed in the Department of Biology, Zoology Museum, Uludağ University, Bursa, Turkey. The taxonomy follows Platnick (2006).

The spider specimens were identified according to Decae (1996), Heimer and Nentwig (1991), Levy (1996, 1997), Metzner (2006), Nentwig et al. (2006), Prószyński (2006) and Roberts (1996).

RESULTS

Thirty five species were found among the spiders collected in Terzioğlu Island, Uluabat Lake from September 2003 - July 2005, including: 2 Agelenidae, 1 Amaurobiidae, 5 Araneidae, 1 Ctenizidae, 1 Dictynidae, 1 Dysderidae, 5 Gnaphosidae, 3 Lycosidae, 1 Miturgidae, 1 Philodromidae, 1 Pholcidae, 4 Salticidae, 2 Tetragnathidae, 1 Theridiidae, 5 Thomisidae, 1 Titanoecidae. This presents the first faunal study of the Araneae on Terzioğlu Island, Uluabat Lake.

The determined species are as follows:

Family Agelenidae C. L. Koch, 1837

Genus Agelena Walckenaer, 1805

***Agelena labyrinthica* (Clerck, 1757)**

Specimens examined: 5♀♀ 16.09.2003.

Distribution: Palearctic.

Genus Maimuna Lehtinen, 1967

***Maimuna vestita* (C. L. Koch, 1841)**

Specimens examined: 1♂ 16.09.2003, 2♂♂, 1♀ 14.10.2004, 8♀♀ 25.04.2005, 2♀♀ 26.05.2005.

Distribution: Eastern Mediterranean.

Remarks: This species was common along the island. It was especially found in rocky habitats and many webs can be seen near or under only one stone.

Family Amaurobiidae Thorell, 1870

Genus Amaurobius C. L. Koch, 1837

***Amaurobius fenestralis* (Ström, 1768)**

Specimens examined: 2♀♀ 30.06.2004.

Distribution: Europe to Central Asia.

Family Araneidae Simon, 1895

Genus Araneus Clerck, 1757

***Araneus angulatus* Clerck, 1757**

Specimen examined: 1♂ 29.06.2004.

Distribution: Palearctic.

Genus Argiope Audouin, 1826

***Argiope bruennichi* (Scopoli, 1772)**

Specimens examined: 3♂♂, 6♀♀ 29.06.2004.

Distribution: Palearctic.

Genus Glyptogona Simon, 1884

***Glyptogona sextuberculata* (Keyserling, 1863)**

Specimens examined: 5♂♂, 8♀♀ 26.05.2005.

Distribution: Italy to Israel (Italy, Dalmatia, Romania, Greece, Rhodes, Lebanon and Israel) (Levy, 1997).

Genus Larinioides Caporiacco, 1934

***Larinioides cornutus* (Clerck, 1757)**

Specimens examined: 8♀♀ 16.09.2003, 4♂♂, 6♀♀ 29.06.2004, 1♀ 25.04.2005, 1♀ 26.05.2005.

Distribution: Holarctic.

Remarks: This species was found close to coast line of the lake. Among the araneids, *L. cornutus* was the most abundant species.

Genus Neoscona Simon, 1864

***Neoscona adianta* (Walckenaer, 1802)**

Specimens examined: 3♀♀ 29.06.2004.

Distribution: Palearctic.

Family Ctenizidae Thorell, 1887

Genus *Cyrtocarenum* Ausserer, 1871

***Cyrtocarenum cunicularium* (Olivier, 1811)**

Specimen examined: 1♂ 14.10.2004.

Distribution: Greece, Crete, Rhodes, Turkey.

Remarks: Only one male specimen was found under a stone.

Family Dictynidae O. P.-Cambridge, 1871

Genus *Dictyna* Sundevall, 1833

***Dictyna latens* (Fabricius, 1775)**

Specimens examined: 3♂♂, 4♀♀ 29.06.2004, 5♀♀ 09.06.2005.

Distribution: Europe to Central Asia.

Remarks: It was interesting that we collected this species only inside curled leaves of fig trees (*Ficus carica*) on the island.

Family Dysderidae C. L. Koch, 1837

Genus *Dysdera* Latreille, 1804

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

Specimens examined: 3♂♂ 14.10.2004, 4♂♂ 09.06.2005.

Distribution: Cosmopolitan.

Family Gnaphosidae Pocock, 1898

Genus *Drassodes* Westring, 1851

***Drassodes lapidosus* (Walckenaer, 1802)**

Specimens examined: 4♀♀ 16.09.2003, 7♂♂, 9♀♀ 25.04.2005, 6♂♂, 10♀♀ 26.05.2005, 1♀ 09.06.2005, 2♀♀ 06.07.2005.

Distribution: Palearctic.

Genus *Haplodrassus* Chamberlin, 1922

***Haplodrassus signifer* (C. L. Koch, 1839)**

Specimens examined: 2♂♂, 5♀♀ 25.04.2005.

Distribution: Holarctic.

Genus *Nomisia* Dalmas, 1921

***Nomisia exornata* (C. L. Koch, 1839)**

Specimens examined: 1♀ 16.09.2003, 1♀ 09.05.2005, 4♂♂, 2♀♀ 26.05.2005.

Distribution: Europe to Central Asia.

Genus *Scotophaeus* Simon, 1893

***Scotophaeus scutulatus* (L. Koch, 1866)**

Specimens examined: 1♀ 16.09.2003, 1♀ 14.10.2004, 1♀ 06.07.2005.

Distribution: Europe to Central Asia, Algeria.

Genus *Zelotes* Gistel, 1848

***Zelotes* sp.**

Specimens examined: 1♀ 16.09.2003, 2♂♂ 25.04.2005, 4♀♀ 26.05.2005, 1♀♀ 09.06.2005.

Family Lycosidae Sundevall, 1833

Genus *Pardosa* C. L. Koch, 1847

***Pardosa* sp.**

Specimens examined: 2♀♀ 16.09.2003, 4♂♂, 4♀♀ 25.04.2005, 1♂ 26.05.2005, 2♀♀ 26.07.2005.

Genus *Pirata* Sundevall, 1833

***Pirata piraticus* (Clerck, 1757)**

Specimens examined: 2♀♀ 09.06.2005.

Distribution: Holarctic.

Remarks: Two females were found running on the surface of water.

Genus *Trochosa* C. L. Koch, 1847

***Trochosa hispanica* Simon, 1870**

Specimens examined: 2♀♀ 14.10.2004, 3♀♀ 26.07.2005.

Distribution: Mediterranean to Central Asia.

Family Miturgidae Simon, 1885

Genus *Cheiracanthium* C. L. Koch, 1839

***Cheiracanthium punctorium* (Villers, 1789)**

Specimens examined: 1♂ 16.09.2003, 2♀♀ 26.05.2005.

Distribution: Europe to Central Asia.

Family Philodromidae Thorell, 1870

Genus *Philodromus* Walckenaer, 1826

***Philodromus cespitum* (Walckenaer, 1802)**

Specimens examined: 4♀♀ 16.09.2003, 1♂ 29.06.2004, 4♀♀ 26.05.2005.

Distribution: Holarctic.

Family Pholcidae C. L. Koch, 1851

Genus *Holocnemus* Simon, 1873

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

Specimen examined: 1♂ 14.10.2004.

Distribution: Mediterranean, introduced in Central Europe.

Family Salticidae Blackwall, 1841

Genus *Cyrba* Simon, 1876

***Cyrba algerina* (Lucas, 1846)**

Specimens examined: 8♂♂ 26.05.2005, 2♂♂, 15♀♀ 09.06.2005.

Distribution: It has a wide range which runs from the Canary Islands through the Mediterranean region to the Himalayas (Murphy and Murphy, 2000).

Genus *Evarcha* Simon, 1902

***Evarcha arcuata* (Clerck, 1757)**

Specimens examined: 3♀♀ 16.09.2003.

Distribution: Palearctic.

Genus *Menemerus* Simon, 1868

***Menemerus semilimbatus* (Hahn, 1829)**

Specimens examined: 2♂♂, 5♀♀ 16.09.2003.

Distribution: Canary Islands to Azerbaijan; Argentina.

Genus *Philaeus* Thorell, 1869

***Philaeus chrysops* (Poda, 1761)**

Specimens examined: 3♂♂, 5♀♀ 26.05.2005.

Distribution: Palearctic.

Family Tetragnathidae Menge, 1866

Genus *Tetragnatha* Latreille, 1804

***Tetragnatha extensa* (Linnaeus, 1758)**

Specimens examined: 5♀♀ 16.09.2003, 9♀♀ 14.10.2004, 1♀ 26.05.2005, 8♀♀ 09.06.2005.

Distribution: Holarctic, Madeira.

***Tetragnatha montana* Simon, 1874**

Specimens examined: 1♂ 16.09.2003, 1♂ 25.04.2005, 7♀♀ 09.06.2005.

Distribution: Palearctic.

Family Theridiidae Sundevall, 1833

Genus *Steatoda* Sundevall, 1833

***Steatoda paykulliana* (Walckenaer, 1805)**

Specimens examined: 3♀♀ 16.09.2003, 1♀ 14.10.2004, 1♂, 6♀♀ 25.04.2005, 3♀♀ 26.05.2005.

Distribution: Europe, Mediterranean to Central Asia.

Family Thomisidae Sundevall, 1833

Genus *Runcinia* Simon, 1875

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

Specimens examined: 5♀♀ 29.06.2004.

Distribution: Palearctic, St. Helena, South Africa.

Genus *Synema* Simon, 1864

***Synema globosum* (Fabricius, 1775)**

Specimens examined: 2♂♂, 3♀♀ 29.06.2004, 5♀♀ 09.06.2005.

Distribution: Palearctic.

Genus *Thomisus* Walckenaer, 1805

***Thomisus onustus* Walckenaer, 1805**

Specimens examined: 7♀♀ 09.06.2005.

Distribution: Palearctic.

Genus *Xysticus* C. L. Koch, 1835

***Xysticus kempeleni* Thorell, 1872**

Specimen examined: 1♂ 06.07.2005.

Distribution: Europe to Central Asia.

***Xysticus striatipes* L. Koch, 1870**

Specimens examined: 4♀♀ 16.09.2003, 1♀ 06.07.2005.

Distribution: Palearctic.

Family Titanoecidae Lehtinen, 1967

Genus *Nurscia* Simon, 1874

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

Specimens examined: 6♀♀ 29.06.2004.

Distribution: Europe to Central Asia.

DISCUSSION

Uluabat Lake is one of the important wetlands in Turkey. So, it is protected by Ramsar Convention. Although, some studies have been published (Altınsoçlu and Griffiths, 2001; Karacaoğlu et al., 2004; Mutlu, 2005), there is no information on the spider fauna of this region.

A total of 308 individuals from 35 species, 33 genera and 16 families were sampled in Terzioğlu Island during the study period. The importance of this study is the presence of *Glyptogona sextuberculata* and *Cyrba algerina* in the study area. Only a single *Glyptogona* species is as yet known from a few Mediterranean countries. Only one specimen, a subadult male, was collected for the first time from Turkey (İstanbul) in 2001 (Kebapçı, 2002). Our specimens are the first adult male and female records for this rare species. We saw this species only in May. Some of them were collected when they are mating. All specimens were taken in their orb webs on bushes in the median part of the island. *Cyrba algerina*, this beautiful jumping spider was reported from Turkey only by Bristowe (1935) but in that paper he did not mention any place nor information about where from the species was collected in Turkey. Also this beautiful spider has not been collected by any Turkish author until now (Bayram, 2002; Topçu et al., 2005). Female and male specimens are similar in general body shape and all specimens were found under stones, in stony areas. The specimens listed here fit the previous descriptions of *Cyrba algerina* (Metzner, 2006; Prószyński, 2006). The colour and shape of our specimens are similar to those of European specimens collected from Greece, in both sexes (Metzner, 2006). But our specimens, especially females body length, are bigger than those specimens. In addition, no significant differences have been determined in genital structures.

Agricultural activity takes place mainly on the islands of Uluabat Lake. A large area of Terzioğlu Island land is used for agricultural activity and the rest of the area is used for feeding cattle. Unfortunately, insecticides are used in some sites. For these reasons, we used only 4 pitfall traps. So, the numbers of spiders collected were few. More intensive collecting trips to this island are needed. We observed that Gnaphosidae (*Drassodes lapidosus*), Salticidae (*Philaeus chrysopeus*), Lycosidae (*Pardosa* sp.) and Thomisidae (*Xysticus*) were abundant in pitfall traps. Only one male specimen of *Xysticus kempeleni* was collected by a pitfall trap.

In this study, the most abundant families were Gnaphosidae, Araneidae and Salticidae. Among them, the Gnaphosidae and Araneidae were the most diverse families, with a total of 5 species found for each family.

Some families were more widely distributed throughout the area (Gnaphosidae, Araneidae) while others were restricted to one or a few habitat types (Ctenizidae, Pholcidae). Two families were found at all sites, i.e. ground living spiders (Gnaphosidae) and orb-weaving spiders (Araneidae). These families were found in 90% of the sites. Numerically dominant species was *Drassodes lapidosus*. Families that were only found at a single site included: Ctenizidae, Pholcidae. It must be noted that although these families were found at only one site, the species were not necessarily rare. They may be cryptic or have a patchy distribution and thus may not have been adequately sampled.

Spiders can be divided into three main functional groups: the over-plant wanderers, ground wanderers and the web builders. Overall, the number of wandering spiders was greater than that of web builders. Ground wanderers were the most abundant and widely distributed. They comprised 44% of total spiders sampled. Web builders comprised 40% and over-plant wanderers comprised 16%. The numerically dominant species among web builders was *Tetragnatha extensa*. This species is usually found on vegetation near water and sitting in the centre of the orb webs or on the bushes. When disturbed, it leaves the web extremely fast and hides itself under a leaf or a branch. *Synema globosum* was the dominant species among the plant

wanderers. This species was found on the plants especially on flowers of Umbelliferae. In examined specimens, the lighter-coloured parts of abdomen varied among yellow, orange-red and white.

This study represents the first areneofaunal study of this island. The human activities are related to the decrease of spider density on this island. Some regulations must be established for this Ramsar area, otherwise biodiversity of this island will be damaged very quickly in next years.

ACKNOWLEDGMENTS

We would like to thank Mr. Arthur E. Decae (Netherlands) for identifying the *Cyrtocarenum cunicularium* specimen. We also thank Prof. Dr. Abdullah Bayram (Turkey) for identifying some species. We are extremely indebted to Mr. Hisham El-Hennawy (Egypt) for providing literature. This study was supported by Uludağ University (The Scientific Research Project) Project no: 2003/8. We are indebted to Uludağ University for its financial support.

REFERENCES

- Altınsoy S., and Griffiths H.I. (2001). Ostracoda (Crustacea) of Lake Uluabat (Apoluyont Gölü) (Bursa Province, Turkey). *Limnologica* 31(2): 109-117.
- Bayram A. (2002). Distribution of Turkish Spiders. In: *Zoogeography of Turkey* (Ed.: A. Demirsoy). Meteksan Publ., Ankara, pp. 638-657.
- Bristowe W.S. (1935). The spiders of Greece and the adjacent islands. *Proc Zool Soc Lond* 1934: 733-788.
- Decae A. E. (1996). Systematics of the trapdoor spider genus *Cyrtocarenum* Ausserer, 1871 (Araneae, Ctenizidae). *Bull Br Arachnol Soc* 10:161-170.
- Heimer S. and Nentwig W. (1991). *Spinnen Mitteleuropas*. Verlag Paul Parey, Berlin.
- Karacaoğlu D., Dere Ş., and Dalkıran N. (2004). A Taxonomic study on the Phytoplankton of Lake Uluabat (Bursa). *Turk J Bot* 28: 473-485.
- Karol S. (1967). *Türkiye Örümcekleri I. Ön Liste*. Ankara Üniversitesi. Fen Fakültesi Yayınları. Ankara.
- Kebabçı Ü. (2002). Systematics and ecology of orb-weaving spiders (*Araneae, Araneidae*) in Thracian Part of Istanbul. M.Sc.Thesis. University of Fatih, İstanbul, Turkey. 89 p.
- Levy G. (1996). The agelenid funnel-weaver family and the spider genus *Cedicus* in Israel (Araneae, Agelenidae and Cybaeidae). *Zool Scripta* 25(2): 85-122.
- Levy G. (1997). Twelve genera of orb-weaver spiders (Araneae, Araneidae) from Israel. *Isr J Zool* 43: 311-365.
- Metzner H. (2006). Arachnida: Araneae: Salticidae. Version 2006 January 6. <http://www.springspinnen.de>
- Murphy F., and Murphy J. (2000). An Introduction to the spiders of South East Asia. Malaysian Nature Society. Malaysia. 624 pp.
- Mutlu S. (2005). Uluabat Gölünde 2003 Yılında Üreyen Kuş Türleri Üzerine Araştırmalar. M.Sc. Thesis. University of Uludağ, Bursa, Turkey. 98 p.
- Nentwig W., Hänggi A., Kropf C., and Blick T. (2006). *Spinnen Mitteleuropas/Central European Spiders*. An internet identification key. <http://www.araneae.unibe.ch> Version 8.12.2003.
- Platnick N.I. (2006). The world spider catalog, version 7.0. American Museum of Natural History, online at <http://research.amnh.org/entomology/spiders/catalog/index.html>
- Prószyński J. (2006). Salticidae (Araneae) of the World. 2003 version, revised in part on March 20th, 2006. Internet: <http://salticidae.org/salticid/main.htm>
- Roberts M.J. (1996). *Spiders of Britain and Northern Europe*. Harper Collins Publishers, London.
- Topçu A., Demir H., and Seyyar O. (2005). A Checklist of the spiders of Turkey. *Serket* 9(4): 109-140.