

Spider Fauna of the Argyopiformia Group of the North-East Blacksea Region (Superfamily: Argyopiformia, Araneae)

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Abstract

In this research, spiders of the Argyopiformia (web-spinning) group that collected from different localities in the North-east Blacksea Region between 1994 and 1998 were investigated. A total of 283 specimens (159 adults and 124 immatures) belong to the Superfamily Argyopiformia (Theridiidae, Nesticidae, Linyphiidae, Araneidae, Metidae, and Tetragnathidae) were examined and identified at species level. In the research region, a total of 41 species and 27 genera belong to above families were found. Hand aspirator, sweeping net and Japanese beating umbrella were used in the collection. The specimens were preserved in the Zoology Research Laboratory of Kırıkkale University.

Key words: Argyopiformia, Araneae, Fauna, Turkey, North-east Blacksea.

INTRODUCTION

More than 35.000 spider species were identified so far. Spiders are among the important predators of the agricultural ecosystems. The ecological and faunistic studies which have been performed on forests, fields and grasslands showed that spiders are more common predators of the harmful insects [1-3]. According to some researchers spiders can be effectively used in pest control [4-5].

Turkey is located in the Mediterranean Subregion, and phytogeographically contains the Blacksea, Irano-Turan and East Mediterranean Areas [6]. In this respect, the spider fauna of Turkey is important. However, limited studies were done

on spiders in Turkey. On some localities of the North-eastern [7], Eastern [8-11], South-eastern [12] and Central [13-14] Anatolia some investigations were done but except the work of Bayram [15] on araneids and theridiids of Canik Mountains, the Blacksea Region is lacking in spider studies. The aim of this article is get contributions to the spider fauna of the Eastern Blacksea Region.

MATERIAL AND METHODS

The research area contains Ordu, Giresun, Trabzon, Rize and Artvin provinces (Fig. 1). This area takes place in the Colchic sector of Euxin of the Euro-Siberian Region. Quantity

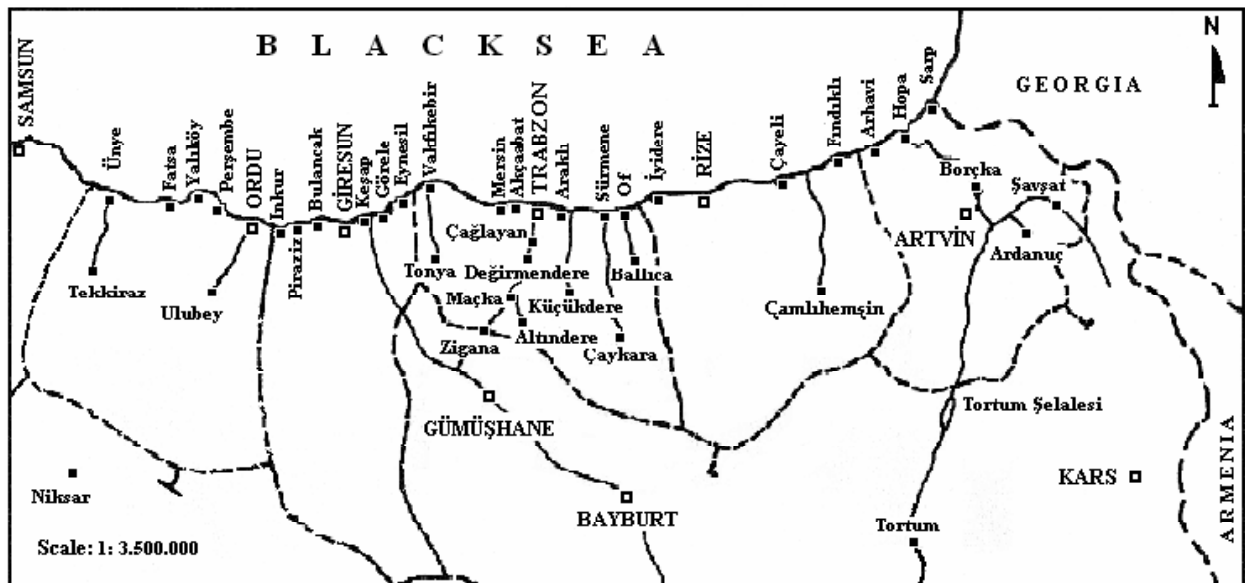


Figure 1. The sites of study that worked in the research area

of rainfall is high. Conifers are dominant above 1200 m from sea level. In Coniferophyta, *Pinus sylvestris* L. (yellow pine), *Picea orientalis* (L.) Link. (spruce) and *Abies nordmanniana* (Stev) Spach. (Blacksea fir) are remarkable. Under 1200 m *Carpinus betulus* L. (common hornbeam), *Fagus orientalis* Lipsky (beech), *Fraxinus exelsiör* L. (ash), *Acer platanoides* L. (maple) and *Corylus avellana* L. (hazelnut) are seen. The most cultivated plant is *Camellia sinensis* (L.) (tea) in Rize (Fig. 2a), hazelnut in Ordu, Giresun and Trabzon, and *Zea mays* L. (corn) in all of the Eastern Blacksea Region [6].

The following habitat types were mainly studied:



Figure 2a. *Camellia sinensis* (tea) field in Rize

Coast (HT1): This habitat type was studied in district of Ünye, Fatsa, Perşembe, Piraziz, Bulancak, Keşap, Eynesil, Vakfikebir and Akçaabat. In the localities, mainly bushes such as lackberry in 2-3 m high are found. There were some grasslands, rushes, shores or trees of maple, hornbeam around of the bushes.

Forest (HT2): Common hornbeam, beech and ash were remarkable in Tekkiraz, Ulubey and Tonya forests. There were some bushes or herbaceous plants such as *Daphne pontica* L., *Achillea biebersteinii* Afan (yarrow), *Centaurea salicifolia* Bieb. Ex Wiild. (cornflower), *Rhododendron ponticum* L. (Pontic rhododendron), *Salvia tomentosa* Miller (sage), *Melica ciliata* L. under the trees. Altitude is under 600 m. However, in the forests of Maçka, Değirmendere, Sürmene, Çamlıhemşin, Arhavi, Hopa and Borçka, yellow pine, spruce and Blacksea fir were conspicuous together with hornbeam, beech and ash. In addition, *Rosa* sp. *Rubus* sp. *Festuca orientalis* Markgr-Dann, *Capsella bursapastoris* (L.), *Silene armenia* L., *Dianthus floribundus* Boiss. and *Veronica arvensis* L. were found (Fig. 2b). Altitude is above 600 m in some localities.

Hazelnut, corn and tea fields (HT3): Hazelnut in Ordu and Giresun, tea in Rize, corn in all cities of Eastern Blacksea are widespread. These fields are surrounded by different kind of shrubs and herbaceous plants (Fig. 2a).

From the sites a total of 857 specimens were collected, however, only 283 specimens that belong to the Argyropiformia group were investigated. Hand aspirator, sweeping net and Japanese umbrella were used in the collections. The collections were done in spring and summer months. The specimens were put into alcohol 70 percent, labeled and carried to the laboratory for identification. The keys of Heimer & Nentwig [16], Roberts [17] and Tyschenko [18] were used. The specimens were

preserved in the Zoology Research Laboratory of Kirikkale University.

RESULTS

From 42 localities a total of 283 specimens were examined as belong to Theridiidae, Nesticidae, Linyphiidae, Araneidae, Metidae and Tetragnathidae. Among the specimens 159 individuals were adult, so, 41 species in 27 genera were recorded from the area. The taxa recorded are shown in Table 1.

The most encountered spiders were araneids (Garden orb-weavers). These kind of spiders prefer gardens and forests. They enjoy weave vertical orbs among the branches of trees. The most encountered species was *Argiope bruennichi* (Scopoli 1772) (Tiger spider, % 11.32, Fig. 3a) and *Araneus diadematus* Clerck 1757 (Garden spider, % 8.8, Fig. 3b). *Argiope bruennichi* was seen especially on the coast area. There is a vertical zigzag in silver colour in the centre of the web. This spider prefers bushes for hunting. On the dorsum of *Araneus diadematus* there is a white cross. This species were found all of the research area.



Figure 2b. Forest, Sürmene, Trabzon

12 species were recorded in Theridiidae (Comb-footed spiders). *Enoplognatha ovata* (Clerck 1757) (% 8.8) and *Achaearanea tepidariorum* (C.L.Koch 1841) (% 5.66) were most visible species (Fig. 3c-d). *E. ovata* weaves unordinary webs on trees, bushes and long grasses. They prefer dens vegetation. Also, they like sunny and hot places.



Figure 3a. *Argiope bruennichi*

Table 1. The spider species that collected from the Eastern Blacksea Region, and distribution of the species according to the villages (TAN=Total Adult Number)

T A X A	ORDU	GİRESUN	TRABZON	RİZE	ARTVİN	TAN
Family: Araneidae						
<i>Araneus diadematus</i> Clerck 1757	2	4	3	4	1	14
<i>Araneus angulatus</i> Clerck 1757	1		1			2
<i>Araneus grossus</i> (Koch C.L. 1844)	1					1
<i>Araneus alsine</i> (Walckenaer 1802)		1				1
<i>Araneus marmoreus</i> Clerck 1757		1				1
<i>Argiope bruennichi</i> (Scopoli 1772)	3	5	4	4	2	18
<i>Larinioides suspicax</i> (O.P.-Cambridge 1876)	2	1				3
<i>Larinioides cornutus</i> (Clerck 1757)	1	2				3
<i>Neoscona subfusca</i> (C. L. Koch 1837)		2				2
<i>Neoscona adianta</i> Walckenaer 1802	1	1	1			3
<i>Nuctenea umbratica</i> (Clerck 1757)	1	2				3
<i>Mangora acalypha</i> (Walckenaer 1802)		3		2		5
<i>Hypsosinga sanguinea</i> (Koch C.L. 1844)	2			1	1	4
<i>Zygiella</i> sp		1				1
Family: Theridiidae						
<i>Steatoda bipunctata</i> (Linnaeus 1758)	2	2				4
<i>Steatoda grossa</i> (Koch C.L. 1838)	1	1				2
<i>Steatoda castanea</i> (Clerck 1757)	1	2				3
<i>Steatoda triangulosa</i> (Walckenaer 1802)		1				1
<i>Episinus angulatus</i> (Blackwall 1836)		1		1		2
<i>Episinus truncatus</i> Latreille 1809	1		2	2		5
<i>Achaearanea tepidariorum</i> (C.L.Koch 1841)	2	3	1	1	2	9
<i>Achaearanea riparia</i> (Blackwall 1834)	1					1
<i>Enoplognatha ovata</i> (Clerck 1757)	4	3	2	3	2	14
<i>Theridion varians</i> Hahn 1833		1				1
<i>Neottiura bimaculata</i> (Linnaeus 1767)	1					1
<i>Dipoena melonogaster</i> (C.L.Koch 1837)	1		1			2
Family: Tetragnathidae						
<i>Tetragnatha extensa</i> (Linnaeus 1758)	3	2	1	1	2	9
<i>Tetragnatha montana</i> Simon 1874	1	1	2	1	1	6
<i>Pacyhgnatha degeeri</i> (Sundevall 1830)	2	1	1	2	1	7
Family: Linyphiidae						
<i>Linypha hortensis</i> Sundevall 1830	2					2
<i>Linypha triangularis</i> (Clerck 1757)	2					2
<i>Neriene clathrata</i> (Sundevall 1830)	1	2	1		1	5
<i>Trematocephalus cristatus</i> (Wider 1834)			1			1
<i>Ostearius melanopygius</i> (OP-Cambridge 1879)				1		1
<i>Erigone dentipalpis</i> (Wider 1834)		1				1
<i>Frontinella frutetorum</i> (C.L.Koch 1834)	3	4	2	3	2	14
<i>Tenuiphantes tenebricola</i> (Wider 1834)			1			1
<i>Tenuiphantes tenuis</i> (Blackwall 1852)				1		1
<i>Neriene furtiva</i> (O.P.-Cambridge 1871)				1		1
Family: Nesticidae						
<i>Nesticus</i> sp.					1	1
Family: Metidae						
<i>Metellina segmentata</i> (Clerck 1757)			1			1
Total Adult Number	42	48	25	28	16	159

However, *A. tepidariorum* can be seen on walls and high trees. Some specimens were collected from buildings and barracks.

In Tetragnathidae (Longjawed orb-weavers), *Tetragnatha extensa* (Linneaus 1758) was remarkable (% 5.66, Fig. 3e). This species likes damp and woody places. Some specimens were collected from buldings.

In Linyphiidae (Dwarf spiders), *Frontinella frutetorum* (C.L.Koch 1834) was most encountered (% 8.8, Fig. 3f). Like *Araneus diadematus* this species was recorded from all of the cities. It prefers vegetation near the ground.



Figure 3b. *Araneus diadematus*

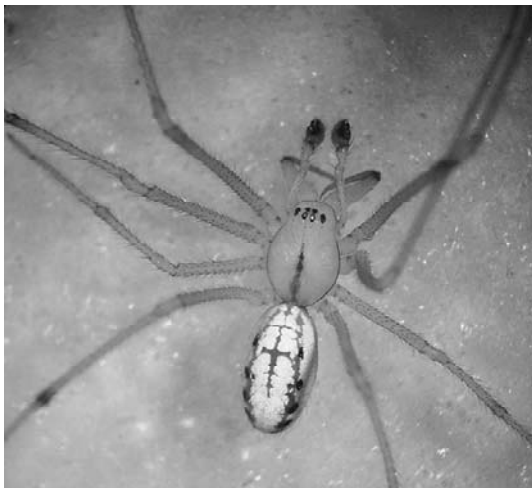


Figure 3c. *Enoplognatha ovata*

DISCUSSION

Only adult specimens were evaluated in this research. Because the genital organs are not improved in immature specimens.

The immatures were identified only on genus level. Also, *Argiope bruennichi*, *Araneus diadematus*, *Achaearanea tepidariorum*, *Enoplognatha ovata*, *Tetragnatha extensa* and *Frontinella frutetorum* were the most encountered species in

the research area. This finding is in accordance with density of species that collected, type of the habitat, the collection time and method. To be objective in criterion of presence, abundance, frequency, diversity, dominance in habitat and structure of community, the collection methods and habitat type that chosen must be appropriate with the species [8, 19].



Figure 3d. *Achaearanea tepidariorum*



Figure 3e. *Tetragnatha extensa*



Figure 3f. *Frontinella frutetorum*

Field works of this research were performed only in the daytime. Whereas, most of the orb-weavers are nocturnal. Although, the nocturnal species hide themselves under leaves

or barks in the daytime, so we could find them easily and it is possible that collect many orb-weavers in the daytime.

Still this research is far to give the spider fauna of the research area. More collections should be done in different habitats.

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