The Crab Spiders (Araneae, Thomisidae) of Uludağ Mountain

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ABSTRACT
The crab spiders, Family Thomisidae, were collected between the years of 2006-2008 from the Uludağ Mountain, North-West Turkey. A total of 72 adult specimens belong to Thomisidae family were examined and identified. The Thomisidae family was represented by 15 species in 8 genera. Synema globosum (Fabricius, 1775) and Thomisus onustus Walckenaer, 1805 were the most dominant species among collected thomisids.

Key Words: Araneae, Thomisidae, Bursa, Turkey, Uludağ Mountain.

INTRODUCTION
Typical thomisid spiders are commonly called crab-spiders as they extend their legs in a crab-like fashion and are able to move forwards, backwards as well as sideways (Levy 1985). They commonly inhabit the flowers of the grasses and shrubs and the body coloration can adapt its living environment (Yang et al. 2005). Crab spiders do not spin webs to trap prey, but hunt on the open ground or on vegetation or flowers.

The Thomisidae is one of the largest spider families including 2093 species in 173 genera in the world (Platnick 2009). Of these, 79 species in 14 genera are distributed in Turkey (Topçu et al. 2005, Bayram et al. 2008, Demir 2008). Eight species of Thomisids are endemic for Turkey and most of which are known from a single or just a few localities.

Some thomisid spider records from Uludağ area can be found in the papers of Karol (1966, 1967), but there is no scientific report on the crab-spider fauna of the region. The aim of this study is to determine the crab spider fauna of Uludağ Mountain (Bursa).

Study Area
Uludağ is the highest mountain in the Marmara region. The range of Uludağ in the northwest-southeast direction, extending the length of 40 km and width is 15-20 km. It has a stately appearance and bulk of the mountain slopes gradually to Bursa, south part is straight and Orhaneli is more upright. The highest point of Uludağ is Uludağ Hill (2,543 m) and there are some plateaus (Saralalan, Kirazliyayla and Kadiyayla) in the northern side of the mountain (Figure 1).

The climate of the mountain changes from the base to top, whereas on lower slopes which are face to Bursa city was a subtype of Mediterranean climate, on upper parts of Uludağ the climate is very cold and icy (Akman 1990). Due to these changes in the climate and its geomorphologic structure, six vegetation belts can be distinguished in the mount. General vegetation shows the change from Mediterranean to Euro-Siberian and Alpine type. This change can be seen very clearly step by step from bottom to top in the northern side (Kaynak et al. 2005, Güleryüz 2000).

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MATERIALS AND METHODS

The specimens were collected from 36 localities of Uludağ mountain area in the spring and summer months of 2006-2008. They were collected under the stones, ground levels and on the plants by hand sampling, aspirator, sweeping and beating bushes and trees. In this study, only adult spiders (38♂, 34♀) were identified, and specimens were preserved in 5% glycerin alcohol and deposited in the Department of Biology, Zoology Museum, Uludağ University, Bursa, Turkey. The localities where the spiders have been collected are shown in Figure 1 and the list of localities with altitudes is given in Table 1. Also, the distribution of each species in study area is given in Figure 2.

Heriaeus simoni (➊), Heriaeus spinipalpus (➋), Misumena vatia (➌), Ozyptila praticola (➍), Runcinia grammica (➎), Synema globosum (➏), Thomisus onustus (➐), Tmarus stellio (➑), Xysticus abditus (➒), Xysticus cristatus (➓), Xysticus kochi (.localized)}, Xysticus laetus (.localized}, Xysticus lactuosus (.localized}, Xysticus ninnii (.localized}, Xysticus tristrami (.localized)

Figure 2. Distribution map of determined Thomisid species in the study area.
Table 1. The list of localities where the spiders have been collected in the study area.

<table>
<thead>
<tr>
<th>No</th>
<th>Locality</th>
<th>Town</th>
<th>Altitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alaçam</td>
<td>Kestel</td>
<td>770 m</td>
</tr>
<tr>
<td>2</td>
<td>Alpin zone</td>
<td>Uludağ</td>
<td>7700 m</td>
</tr>
<tr>
<td>3</td>
<td>Avdan</td>
<td>Keles</td>
<td>620 m</td>
</tr>
<tr>
<td>4</td>
<td>Başak</td>
<td>Keles</td>
<td>970 m</td>
</tr>
<tr>
<td>5</td>
<td>Belenoluk</td>
<td>Orhaneli</td>
<td>770 m</td>
</tr>
<tr>
<td>6</td>
<td>Cerrah</td>
<td>İnegöl</td>
<td>300 m</td>
</tr>
<tr>
<td>7</td>
<td>Camaliçık</td>
<td>Yıldırım</td>
<td>272 m</td>
</tr>
<tr>
<td>8</td>
<td>Çeki</td>
<td>Orhaneli</td>
<td>840 m</td>
</tr>
<tr>
<td>9</td>
<td>Çınarlı dam</td>
<td>Orhaneli</td>
<td>240 m</td>
</tr>
<tr>
<td>10</td>
<td>Dağakça</td>
<td>Osmangazi</td>
<td>485 m</td>
</tr>
<tr>
<td>11</td>
<td>Epeler</td>
<td>Keles</td>
<td>1300 m</td>
</tr>
<tr>
<td>12</td>
<td>Fevziye</td>
<td>İnegöl</td>
<td>790 m</td>
</tr>
<tr>
<td>13</td>
<td>Gözede</td>
<td>Kestel</td>
<td>696 m</td>
</tr>
<tr>
<td>14</td>
<td>Gümüştepe</td>
<td>Nilüfer</td>
<td>327 m</td>
</tr>
<tr>
<td>15</td>
<td>Güneybayırı</td>
<td>Osmangazi</td>
<td>800 m</td>
</tr>
<tr>
<td>16</td>
<td>Harmanalan</td>
<td>Keles</td>
<td>1120 m</td>
</tr>
<tr>
<td>17</td>
<td>Hüseyinalan</td>
<td>Osmangazi</td>
<td>1080 m</td>
</tr>
<tr>
<td>18</td>
<td>Işıktiyar</td>
<td>Büyükorhan</td>
<td>760 m</td>
</tr>
<tr>
<td>19</td>
<td>Kadıyayla</td>
<td>Uludağ</td>
<td>1252 m</td>
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<tr>
<td>20</td>
<td>Kirazhıyayla</td>
<td>Uludağ</td>
<td>1505 m</td>
</tr>
<tr>
<td>21</td>
<td>Küçükçeliler</td>
<td>Osmangazi</td>
<td>1050 m</td>
</tr>
<tr>
<td>22</td>
<td>Mesuruyel</td>
<td>İnegöl</td>
<td>660 m</td>
</tr>
<tr>
<td>23</td>
<td>Millipark</td>
<td>Uludağ</td>
<td>860 m</td>
</tr>
<tr>
<td>24</td>
<td>Osmaniye</td>
<td>Kestel</td>
<td>520 m</td>
</tr>
<tr>
<td>25</td>
<td>Saadet</td>
<td>İnegöl</td>
<td>590 m</td>
</tr>
<tr>
<td>26</td>
<td>Sadağ Canyon</td>
<td>Orhaneli</td>
<td>480 m</td>
</tr>
<tr>
<td>27</td>
<td>Sarıyar</td>
<td>Keles</td>
<td>1100 m</td>
</tr>
<tr>
<td>28</td>
<td>Sorgun</td>
<td>Keles</td>
<td>1110 m</td>
</tr>
<tr>
<td>29</td>
<td>Sale</td>
<td>İnegöl</td>
<td>650 m</td>
</tr>
<tr>
<td>30</td>
<td>Sultaniye</td>
<td>Osmangazi</td>
<td>835 m</td>
</tr>
<tr>
<td>31</td>
<td>Şarkaniye</td>
<td>Kestel</td>
<td>550 m</td>
</tr>
<tr>
<td>32</td>
<td>Tahtaköprü</td>
<td>İnegöl</td>
<td>490 m</td>
</tr>
<tr>
<td>33</td>
<td>Turguadalp</td>
<td>İnegöl</td>
<td>650 m</td>
</tr>
<tr>
<td>34</td>
<td>Yazibaşı</td>
<td>Keles</td>
<td>660 m</td>
</tr>
<tr>
<td>35</td>
<td>Venice</td>
<td>Büyükorhan</td>
<td>350 m</td>
</tr>
<tr>
<td>36</td>
<td>Yığıntali</td>
<td>Osmangazi</td>
<td>660 m</td>
</tr>
</tbody>
</table>


RESULTS

In this study, crab-spiders were collected between 2006 and 2008 from Uludağ Mountain. A total of 15 crab spider species in 8 genera were identified from Uludağ.

These species are as follow:

**FAMILY THOMISIDAE** Sundevall, 1833

*Genus Heriaeus* Simon, 1875

*Heriaeus simoni* Kulczyński, 1903
Specimens examined: Şükraniye, 16.07.2006, 1♂; Gümüştepe, 10.05.2007, 1♂; Tahtaköprü, 02.07.2007, 1♂; Sadağı Canyon, 02.06.2008, 1♂; Turgutalp, 13.07.2008, 1♂.

World Distribution: Palearctic.

_Heriaeus spinipalpus_ Loerbroks, 1983

Specimens examined: Cumalıkızık, 11.07.2006, 1♀; Gözede, 08.07.2007, 1♀.

World Distribution: Eastern Mediterranean.

**Genus Misumena** Latreille, 1804

*Misumena vatia* (Clerck, 1757)

Specimens examined: around Güneybayırı, 18.07.2006, 1♀; Sorgun, 18.07.2006, 1♀; Osmaniye, 08.07.2007, 1♀; Epçeler, 07.08.2007, 1♀; around Küçükdeliller, 07.08.2007, 1♀; Sadağı Canyon, 02.06.2008, 1♀; Kirazlıyayla, 06.07.2008, 1♀; Fevziye, 13.07.2008, 1♂.

World Distribution: Holarctic.

**Genus Ozyptila** Simon, 1864

*Ozyptila praticola* (C. L. Koch, 1837)

Specimens examined: Alaçam, 17.09.2006, 1♀; Dağakça, 07.05.2007, 1♀.

World Distribution: Holarctic.

**Genus Runcinia** Simon, 1875

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

Specimens examined: Uludağ, 2006, 1♀; Kadiyayla, 20.06.2007, 1♀, 1♂; Kadiyayla, 15.07.2007, 1♂; İsmetiyé, 02.08.2007, 1♀; Saryar, 07.08.2007, 1♀; Başak, 07.08.2007, 1♀; around Dağakça, 31.08.2007, 1♀; Hüseyinalan, 29.07.2008, 1♀.

World Distribution: Palearctic, St. Helena, South Africa.

**Genus Synema** Simon, 1864

*Synema globosum* (Fabricius, 1775)

Specimens examined: Sultaniye, 03.06.2006, 1♂; Harmanalan, 18.07.2006, 1♂; 14 km to Çınarlık dam, 13.07.2006, 1♂; Kadiyayla, 23.07.2006, 1♀, 2♂♂; Kadiyayla, 27.07.2006, 1♂; Kadiyayla, 20.06.2007, 2♂♂; Hüseyinalan, 27.06.2007, 1♀; Kadiyayla, 15.07.2007, 3♀♀, 1♂.

World Distribution: Palearctic.

**Genus Thomisus** Walckenaer, 1805

_Thomisus onustus_ Walckenaer, 1805

Specimens examined: Osmaniye, 08.07.2007, 1♂; Kadiyayla, 15.07.2007, 2♂♂; Belenoluk, 31.07.2007, 1♀; Yenice, 02.08.2007, 1♂; Çeki, 02.08.2007, 1♀; Yazbaşlı, 07.08.2007, 1♂; Avdan, 07.08.2007, 1♂; Küçükdeliller, 07.08.2007, 1♂; around Dağakça, 31.08.2007, 1♂, 1♀; Sadağı Canyon, 02.06.2008, 1♀; Mesruyirı, 02.07.2008, 1♀; Çerah, 13.07.2008, 1♀; Sule, 13.07.2008, 1♂; 5 km to Millipark, 29.07.2008, 1♀.

World Distribution: Palearctic.

**Genus Tmarus** Simon, 1875

_Tmarus stellio_ Simon, 1875

Specimens examined: Saadet, 02.07.2007, 2♂♂; Mesruyirı, 02.07.2007, 1♂.

World Distribution: Palearctic.

**Genus Xysticus** C. L. Koch, 1835

_Xysticus abditus_ Logunov, 2006

Specimens examined: Sadağı Canyon, 08.03.2007, 1♂.

World Distribution: Bulgaria, Turkey.

_Xysticus cristatus_ (Clerck, 1757)

Specimens examined: Alpin zone, 08.07.2006, 1♀; Kadiyayla, 23.07.2006, 1♀; Turgutalp, 13.07.2006, 1♀.
World Distribution: Palearctic.

*Xysticus kochi* Thorell, 1872
Specimens examined: Yiğitalı, 23.04.2006, 2♂, 1♀.
World Distribution: Europe, Mediterranean to Central Asia.

*Xysticus laetus* Thorell, 1875
Specimens examined: Cumalıkızık, 11.07.2006, 1♀; Sadağı Canyon, 08.03.2007, 1♀.
World Distribution: Italy to Central Asia.

*Xysticus luctuosus* (Blackwall, 1836)
Specimens examined: Sadağı Canyon, 08.03.2007, 1♂.
World Distribution: Holarctic.

*Xysticus ninnii* Thorell, 1872
Specimens examined: Alpin zone, 08.07.2006, 1♂; Alpin zone, 21.06.2008, 1♀.
World Distribution: Palearctic.

*Xysticus tristrami* (O. P.-Cambridge, 1872)
Specimens examined: Sadağı canyon, 08.03.2007, 1♀.
World Distribution: Saudi Arabia to Central Asia.

DISCUSSION

The entire spider fauna of the Uludağ Mountain region has not been examined in detail. The authors have been studying on the spider fauna of this region in recent years. This region is of great significance in terms of faunistical viewpoint because of the geographical and zoogeographical features of the mountain. Up to now, very few spider species of the family Thomisidae have been recorded from the Uludağ Mountain region.

In this study, a total of 72 adult crab-spider specimens belonging to 15 species in 8 genera were collected. *Synema globosum* (Fabricius, 1775) and *Thomisus onustus* Walckenaer, 1805 are the most dominant species among thomisids. *Xysticus abditus* Logunov, 2006, *Xysticus tristrami* (O. P.-Cambridge, 1872) and *Xysticus luctuosus* (Blackwall, 1836) are rare spiders.

The zoogeographic character of the Thomisidae family of the Uludağ Mountain is determined mainly by the Palearctic species (46.6%), followed by Holarctic (20%) species.

One aspect of the importance of this study lies in the discovery of *Xysticus abditus* Logunov, 2006 in the study area. This species is very similar to *X. kempeleni* Thorell, 1872 and *X. laetus* Thorell, 1875, but differs by the position of the tegular ridge (Logunov 2006). The species is known from Bulgaria and Turkey (Logunov 2006). The holotype of this species was collected from Niğde (Turkey) and paratypes were collected from Bulgaria. According to the present data, this species is known only from two localities until now. In the present study, a new locality was added to the currently known distribution range of *Xysticus abditus* Logunov, 2006. This finding indicates that the distribution range of this species is more widespread in Turkey.

ACKNOWLEDGMENTS

We would like to thank Dr. Dmitry V. Logunov for examining the *Xysticus abditus* Logunov, 2006, *X. laetus* Thorell, 1875 and *X. tristrami* (O. P.-Cambridge, 1872) specimens.

REFERENCES


