



Alticini (Coleoptera: Chrysomelidae) species occurring on Akşehir extensions (Konya) of the Sultan Mountains, Turkey

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Abstract

Alticini (Chrysomelidae, Galerucinae) species were determined from the Akşehir extensions of the Sultan Mountains which is known as one of the most important mountains of Turkey with respect to its zoogeographical mission. Totally, 25 species belonging to 6 genera were listed from the region. Among the species 13 are new records for Konya province.

Key words: Sultan Mountains, Akşehir, Chrysomelidae, flea beetles, fauna

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Sultan Dağları'nın (Türkiye) Akşehir uzantılarındaki (Konya) Alticini (Coleoptera: Chrysomelidae) türleri

Özet

Çalışmada, üstlendiği zoocoğrafik misyonu nedeniyle Türkiye'nin en önemli dağlarından biri olarak bilinen Sultan Dağları'nın Akşehir uzantılarının Alticini (Chrysomelidae, Galerucinae) türleri belirlenmiştir. Toplamda 6 cinse ait 25 tür bölgeden listelenmiştir. Bunlardan 13 tanesi Konya ili için yeni kayıt niteliğindedir.

Anahtar kelimeler: Sultan Dağları, Akşehir, Chrysomelidae, yaprak pire böcekleri, fauna

1. Introduction

Alticini comprises one of the most species rich groups of Chrysomelidae, with its closely related tribe Galerucini (Bouchard et al., 2011). They are generally the smallest sized chrysomelids with swollen metafemora, and called as “flea beetles” because of their locomotory ability of jumping (Furth, 1988). The adult and larvae feed on foliage of herbaceous plants, bushes, and trees in a wide spectrum of angiosperms with few exceptions (Jolivet and Verma, 2002). The remarkable diversity of the group is well correlated with their distinct phytophagous diet. It is probably the largest tribe of Chrysomelidae represented by 8.000 to 11.000 species and ca. 600 genera worldwide, but is aggregated in a few large, cosmopolitan genera in the Palaearctic with nearly 3000 species and approximately 90 genera (Nadein and Bezdek, 2014; Korotyaev et al., 2017). Currently, Turkish Alticini fauna includes about 350 species classified in 23 genera (Aslan and Başar, 2016; Özdikmen et al., 2017).

Within Chrysomelidae, Alticini is a widely studied group by using different collecting methods in different regions of the world. In many biomes, they represent a big part of the herbivorous insect fauna. In Turkey, the flea beetle fauna is comparatively poorly studied and relatively much higher actual diversity should be assumed than that recorded in the current literature. Knowledge of species numbers on local scale is important for not only determining biodiversity but also providing reference to estimate actual biodiversity loss. The aim of this study is; to present Alticini species occurring in Akşehir extensions of Sultan Mountains which is known as one of the most important highlands of Turkey in terms of its zoogeographical location, and to contribute local fauna with new locality records.

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2. Materials and methods

2.1. Study area

The study was conducted in the Akşehir extensions of the Sultan Mountains which is located as a natural corridor between the Lakes District and Central Anatolia, separating Isparta from Konya. Akşehir is a favorable region for the species that prefer Central Anatolian steppe climate and the Mediterranean climate. This position accompanied with various habitats has positive effects on the floristic composition, an important factor for the occurrence of Alticini species. Field surveys were carried out in the eastern slopes of the mountain. Different vegetation types, including forest, shrubby vegetation, steppe and meadow exist in the area. The dominant vegetation includes populations of *Quercus* spp., *Cedrus* spp., *Juniperus* spp., *Pinus* spp., *Corylus* spp., *Cistus* spp., *Astragalus* spp., and *Verbascum* spp.

2.2. Sampling and identification

Surveys were performed at 15-day intervals from March to October in 2015 and 2016. Adult flea beetles were collected by using an entomological sweep-net and mouth aspirator from various plants. Specimens were collected extensively from the widest possible area and all kinds of vegetation. Collected beetles were taken to the laboratory for the mounting, labelling and preserving processes. All the specimens were identified to species level under an Olympus SZ61 stereomicroscope with the help of the taxonomic keys and figures given by Čížek & Doguet (2008), Warchałowski (2010) and Konstantinov et al. (2011). Voucher specimens are deposited at the Systematic Entomology Laboratory in Biology Department of Süleyman Demirel University, Isparta..

3. Results

Based on the material collected from Akşehir extensions of the Sultan Mountains in 2015 and 2016, a total of 25 Alticini species and 717 individuals belonging to 6 genera were identified (Table 1). *Longitarsus picicollis* Weise, *L. nigrofasciatus* (Goeze), *L. albineus* (Foudras), *L. luridus* (Scopoli) and *Chaetocnema tibialis* Illiger were determined as the most abundant species in the area, respectively. Species numbers according to genera are as following; *Altica* 2, *Aphthona* 3, *Chaetocnema* 3, *Longitarsus* 7, *Phyllotreta* 6 and *Psylliodes* 4.

Table 1. List of Alticini species gathered from Akşehir extensions of the Sultan Mountains (Konya) with individual numbers and distributional data; (*) means first record for Konya province

Alticini species	Number of individuals	Distribution records in Turkey**
<i>Altica</i> Geoffroy		
<i>A. carduorum</i> Guérin-Méneville, 1858	5	Ankara, Aksaray, Artvin, Çankırı, Çorum, Erzurum, Eskişehir, Kayseri, Kırıkkale, Kırşehir, Konya, Nevşehir, Ordu, Sivas, Yozgat
<i>A. oleracea</i> (Linnaeus, 1758)	4	Ankara, Antalya, Aydın, Bayburt, Burdur, Edirne, Erzurum, Eskişehir, Isparta, Kayseri, Konya, Kars, Nevşehir, Rize, Samsun, Sivas, Zonguldak
<i>Aphthona</i> Chevrolat		
* <i>A. franzi</i> Heikertinger, 1944	3	Amasya, Ankara, Artvin, Erzincan, Erzurum, Kayseri, Kars
* <i>A. nigriceps</i> Redtenbacher, 1842	2	Ankara, Antalya, Edirne, Erzurum, Isparta
* <i>A. warchalowskii</i> Fritzlar, 2001	4	Antalya, Aydın, Isparta
<i>Chaetocnema</i> Stephens		
* <i>C. conducta</i> (Motschulsky, 1838)	3	Adana, Aksaray, Ankara, Burdur, Edirne, Erzurum, Eskişehir, Isparta, İstanbul, İzmir, Kırklareli
<i>C. hortensis</i> (Geoffroy, 1785)	7	Adana, Aksaray, Ankara, Bayburt, Burdur, Edirne, Erzurum, Isparta, İstanbul, İzmir, Kayseri, Konya, Mersin, Sivas
<i>C. tibialis</i> Illiger, 1807	78	Aksaray, Amasya, Ankara, Antalya, Aydın, Balıkesir, Burdur, Çanakkale, Düzcce, Erzincan, Erzurum, Eskişehir, Isparta, İzmir, Kocaeli, Konya, Kars, Malatya, Samsun
<i>Longitarsus</i> Latreille		
<i>L. albineus</i> (Foudras, 1860)	97	Antalya, Aydın, Burdur, Erzurum, Isparta, İzmir, Kayseri, Konya, Mersin, Niğde
<i>L. alfieri</i> (Pic, 1923)	9	Antalya, Erzurum, Isparta, Konya

Table 1. Continued

* <i>L. luridus</i> (Scopoli, 1763)	84	Ankara, Antalya, Artvin, Aydın, Bayburt, Burdur, Erzurum, Eskişehir, Isparta, İstanbul, Kırşehir, Sivas, Yozgat
* <i>L. nigrofasciatus</i> (Goeze, 1777)	103	Ankara, Antalya, Aydın, Bursa, Burdur, Düzce, Edirne, Erzurum, Eskişehir, Isparta, Mersin
* <i>L. pellucidus</i> (Foudras, 1860)	27	Adana, Amasya, Ankara, Antalya, Artvin, Aydın, Bayburt, Erzincan, Erzurum, Gümüşhane, Iğdır, Isparta, İzmir, Kars, Sivas, Tokat
* <i>L. picicollis</i> Weise, 1900	122	Ankara, Antalya, Burdur, Erzurum, Isparta, İzmir, Kahramanmaraş
* <i>L. succineus</i> (Foudras, 1860)	34	Antalya, Aydın, Burdur, Denizli, Erzurum, Eskişehir, Isparta, İstanbul, Mersin
<i>Phyllotreta</i> Chevrolat		
* <i>P. atra</i> (Fabricius, 1775)	16	Afyon, Ankara, Antalya, Aydın, Bartın, Bayburt, Bolu, Burdur, Çankırı, Edirne, Erzurum, Eskişehir, Gümüşhane, Isparta, Karaman, Kayseri, Kocaeli, Niğde, Rize, Samsun, Sivas, Trabzon, Zonguldak
<i>P. corrugata</i> Reiche, 1858	31	Adana, Afyon, Ankara, Antalya, Aydın, Burdur, Çankırı, Hatay, Isparta, İzmir, Kayseri, Konya, Sivas, Şanlıurfa, Yozgat
<i>P. cruciferae</i> (Goeze, 1777)	28	Adana, Amasya, Ankara, Bilecik, Bartın, Bursa, Burdur, Çanakkale, Çankırı, Çorum, Edirne, Erzurum, Eskişehir, Isparta, İzmir, Kayseri, Konya, Manisa, Niğde, Tokat, Trabzon, Zonguldak
<i>P. erysimi</i> Weise, 1900	2	Ankara, Antalya, Aydın, Bartın, Bayburt, Burdur, Çankırı, Erzurum, Isparta, Kayseri, Konya, Manisa, Samsun, Trabzon
<i>P. nigripes</i> (Fabricius, 1775)	23	Adana, Afyon, Ankara, Antalya, Aydın, Bartın, Bayburt, Bilecik, Bolu, Burdur, Çankırı, Edirne, Erzincan, Erzurum, Eskişehir, Hatay, Iğdır, Isparta, Kayseri, Konya, Kars, Manisa, Mersin, Sivas, Yozgat
* <i>P. vittula</i> (Redtenbacher, 1849)	4	Ankara, Antalya, Aydın, Burdur, Edirne, Erzurum, Isparta, İzmir
<i>Psylliodes</i> Latreille		
* <i>P. anatolica</i> Gök and Cilbiroglu, 2004	8	Antalya, Aydın, Isparta
<i>P. chalconera</i> (Illiger, 1807)	3	Adana, Ankara, Antalya, Bayburt, Burdur, Edirne, Erzurum, Eskişehir, Hatay, Isparta, İstanbul, İzmir, Konya, Kırşehir, Nevşehir, Osmaniye, Sivas, Yozgat
* <i>P. isatidis</i> Heikertinger, 1912	15	Amasya, Antalya, Aydın, Burdur, Erzincan, Erzurum, Isparta
<i>P. tricolor</i> Weise, 1888	5	Aksaray, Ankara, Antalya, Artvin, Bayburt, Burdur, Diyarbakır, Erzincan, Erzurum, Eskişehir, Hatay, Isparta, Konya, Kayseri, Kırşehir, Nevşehir, Niğde, Osmaniye, Samsun

** Distribution records were arranged based on the following literature: Ekiz et al., 2013; Aslan et al., 2015; Bayram and Aslan, 2015; Aslan and Başar, 2016; Özdikmen et al., 2017).

Longitarsus Latreille was evidently dominant among the genera in terms of individuals comprising about 66% of the total specimens collected during study. Among the determined species 13 (52%) were recorded first time from Konya province, namely; *Aphthona franzi*, *A. nigriceps*, *A. warchalowskii*, *Chaetocnema conducta*, *Longitarsus luridus*, *L. nigrofasciatus*, *L. pellucidus*, *L. picicollis*, *L. succineus*, *Phyllotreta atra*, *P. vittula*, *Psylliodes anatolica*, and *P. isatidis*. Konya has been added to the local distributional data of these species. Also, this study represents the fourth locality record as Konya (after Antalya, Aydın and Isparta) for the two species *Psylliodes anatolica* and *Aphthona warchalowskii*, which are endemic to South Anatolia.

4. Conclusions and discussion

Studies on Alticini fauna of Turkey are still limited, or focused around some particular regions. This study adds Konya province to the local distribution area of 13 flea beetle species. Members of Alticini are well specialized

phytophagous insects; therefore the Alticini diversity is closely related with the herbaceous vegetation types. High plant diversity and less anthropogenic impacts are important determinants on the occurrence of this group (Aslan and Gök, 2006; Aslan and Ayvaz, 2009; Aslan, 2010). In the study region, the herbaceous cover was mainly dominated by plants from the families Lamiaceae, Brassicaceae and Scrophulariaceae. *Longitarsus* represented the majority of the specimens, indicating its wide range of host plant and habitat preference compared to most other genera (Furth, 1980).

Turkey has great diversity in topography, climate, and vegetation because of its significant geographical location. However, for many insect groups, faunistic data is actually inadequate throughout the country. Determining the species numbers, from local to global scale, is important for serving as a reference point to estimate diversity of all organisms. Unfortunately, natural habitats have been destroyed rapidly, indicating alarming consequences for biodiversity loss. Human activities have contributed much on this decline, reducing animals' ability to adapt different conditions (Alao, 2009). Therefore, faunistic surveys and taxonomic efforts should be encouraged for all groups in order to display the biodiversity before it is too late. The potential species numbers are probably much more than the estimated. This is important not only for making certain zoogeographical generalizations, but also for using the obtained data in conservation activities.

Acknowledgements

Scientific Research Project Management of Süleyman Demirel University (SDUBAP) supported this study with the project number 4477-M1-15. I would like to thank Sema Yeter for her helps in collecting specimens.

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(Received for publication 03 April 2018; The date of publication 15 December 2018)