

Ground beetle (Carabidae: Coleoptera) records from Kaz dağları (Ida mountain)

Ebru Ceren KÜÇÜKKAYKI ^{*1}, Ümit ŞİRİN ¹, Hakan ÇALIŞKAN ¹, Yakup ŞENYÜZ ²

¹ Eskişehir Osmangazi University, Faculty of Arts and Science, Department of Biology, Eskişehir, Turkey

² Dumlupınar University, Faculty of Arts and Science, Department of Biology, Kütahya, Turkey

Abstract

This study presents 9 ground beetle species belonging to 4 different tribes of Carabidae including, Carabini, Harpalini, Zabrinini and Cicindelini from Kaz Dağları and its surroundings. All species are firstly recorded from Kaz Dağları [and also from Balıkesir province]. Notes on Turkey and world distributions of the species are given.

Key words: Carabidae, ground beetles, Kaz dağları, Ida mountain, fauna

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Kaz dağları bölgesinden (Ida dağı) yer böceği (Carabidae: Coleoptera) kayıtları

Özet

Bu çalışmada Kaz Dağları ve yakın çevresinden Carabidae'nin Carabini, Harpalini, Zabrinini, Cicindelini tribuslarına ait 9 yer böceği kaydı sunulmaktadır. Tespit edilen türler Kaz Dağları'ndan ve Balıkesir ilinden ilk kez kaydedilmiştir. Türlerin Türkiye ve Dünya yayılışları ile ilgili bilgiler verilmiştir.

Anahtar kelimeler: Carabidae, yer böcekleri, Kaz dağları, Ida dağı, fauna

1. Introduction

Carabidae, named as ground beetles is the third largest family of Coleoptera and one of the best-known taxa in all insects. Currently, more than 38 600 valid names occur worldwide and estimate of approximately 100 additional new species every year. These beetles have been studied intensively by generations of coleopterists, who have clarified the taxonomy and phylogeny, geographic distribution, habitat associations and ecological requirements (Hurka, 1996; Casale and Taglianti, 1999; Avgın, 2006-b; Kotze et al. 2011). These insects are generally considered polyphagous predators. However, in line with their enormous species richness and diversity in body shapes and biotopes they inhabit, a whole range of tropic specializations occurs in the Carabidae (Kotze et al. 2011). Carabids can be considered economically important. While a few species are nuisance pest, they are significant predators of agricultural pests and they have an important role in ecological balance with conversion of energy and substance cycle (Rainio and Niemela, 2003). So, they are excellent model organisms for research on ecological and conservation theories (Lövei and Sunderland, 1996; Rainio and Niemela, 2003).

There are many studies on Turkish Carabidae fauna and the prominent ones can be listed as Lodos, 1983, Yücel and Şahin, 1988; Casale and Taglianti, 1999; Kesdek and Yıldırım, 2003; 2010 Kocatepe and Mergen, 2004; Avgın, 2006-a; 2006-b; Avgın and Özdikmen, 2007; Anlaş and Tezcan, 2010; Tezcan et al., 2011; Avgın and Cavazutti, 2011; Surgut and Varlı, 2012. On the other hand, there is no current checklist about ground beetles of Turkey but according to Casale and Taglianti (1999) 1100 Carabidae species in 170 genera have been found in Turkey until now and 41% of them are endemic.

Kaz Dağları (Mount Ida in Greek mythology) are situated in north-western Anatolia and form a natural border between the Marmara and Aegean Regions of Turkey and the Canakkale and Balıkesir provinces (Uysal et al. 2011). South-western part of Kaz Dağları was reserved as a national park because of its biological diversity, geomorphologic

* Corresponding author / Haberleşmeden sorumlu yazar: Tel.: +902222393750; Fax.: +902222393750; E-mail: ; cerenkkayki@gmail.com

characteristics, endemic species, abundant water resources, archeological, and cultural resources (Arı, 2004). This region supports diverse and distinct flora and fauna, consisting mainly of forests at elevations higher than 1000 m and pine forests at lower elevations. There are about 800 natural plant taxa in Kaz Dağları National Park and 68 of them are endemic to Turkey (Özhatay and Özhatay, 2005). Furthermore, the knowledge of animal diversity especially for insects in this special area is still limited.

In previous works, the only information about Carabidae in Kaz Dağları was written by Neri et al. (2006). They investigated the synonym relationship between *Ocydromus asiaminoris* (Netolitzky, 1935) and *Ocydromus sevanensis* (Belousov, 1990), by means of the samples collected from Kaz Dağları and compared with other samples. So this paper can be considered as a first faunistic report about ground beetles occurring in Kaz Dağları and its surrounding area.

2. Materials and methods

The study material is based on Carabidae specimens collected from various habitats in Kaz Dağları and its surroundings around between May-September in 2006-2008. Coordination and altitude data of study areas are given on Table 1 and also pointed in a map on Figure 1.

Table 1. Location and local names of study areas, coordinate and altitude

Tablo 1. Araştırma alanlarının yerel isimleri, koordinatları ve yükseklikleri

Site Number	Location and Local names of Study areas	Latitude	Longitude	Altitude (m)
Site 1	Yayla; Kaz Dağları National park, South side of mountain	39° 39'	26° 56'	784
Site 2	Elmalı; Kaz Dağları National park, North side of mountain	39° 45'	26° 50'	1019
Site 3	Cevizli Tarla; Kaz Dağları National park, North side of mountain	39° 44'	26° 47'	699
Site 4	Tuzlu; Kaz Dağları National park, South side of mountain	39° 38'	26° 45'	631
Site 5	Küçük Düden Kaz Dağları National park, North side of mountain	39° 42'	26° 54'	734
Site 6	Şahin Deresi; South side of mountain	39° 35'	26° 45'	80
Site 7	Çeyiz Deresi; Kaz Dağları National park, North side of mountain	39° 42'	26° 48'	1257
Site 8	Ayvack; West side of mountain	39° 41'	26° 39'	97
Site 9	Edremit; South side of mountain	39° 36'	27° 00'	100
Site 10	Kocadüden; Kaz Dağları National park, North side of mountain	39° 42'	26° 52'	1635
Site 11	Evciler; North side of mountain	39° 46'	26° 41'	154



Figure 1. Map of study area

Şekil 1. Çalışma alanının haritası

Ground beetles were collected by using hand and aspirator. The caught material were sieved according to sites, and stored in vials with 70% ethyl alcohol until sorting and identification process in the laboratory. For identification, keys of Lindroth (1985); Trautner and Geigenmüller (1987); Hurka (1996); Avgın (2006-b) were used, species has listed alphabetically. Specimens are deposited at the Department of Biology at Eskişehir Osmangazi University, Eskişehir.

3. Results and discussion

Totally 30 Carabidae specimen were examined and 9 species (Figure 2) from four tribes are firstly recorded from the area. The alphabetic list of the recorded species given below together with Turkey and World distributions.

Tribus: **Carabini**
Genus: **Carabus**
Subgenus: **Procerus**
Carabus (Procerus) scabrosus scabrosus Oliver, 1790

Material examined: Site 11, 12.IV.2008, 1♀; 15.V.2007, 1♂; Site 2, 15.V.2007, 1♂; Site 5, 15.V.2007, 1♀

Records in World: Bulgaria, Turkey (Löbl and Smetana, 2003).

Records in Turkey: No locality (Löbl and Smetana, 2003).

Remarks: New record for the local fauna of the province Balıkesir.

Tribus: **Cicindelini**
Genus: **Cicindela**
Cicindela campestris campestris Linnaeus, 1758

Material examined: Site 8, 13.IV.2006, 2♀♀ 1♂; Site 9, 28.IV.2007, 2♂♂; Site 4, 03.V.2008, 2♂♂, 2♀♀; Site 2, 04.V.2008, 2♀♀; 15.IV.2007, 1♀, 1♂

Records in World: Albania, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Belorussia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Macedonia, Moldavia, Netherlands, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Yugoslavia, Iran, Kyrgyzstan, Kazakhstan, Uzbekistan (Löbl and Smetana, 2003; Avgın and Özdikmen, 2007).

Records in Turkey: No locality (Avgın and Özdikmen, 2007).

Remarks: New record for the local fauna of the province Balıkesir.

Tribus: **Harpalinii**
Genus: **Dixus**
Dixus eremita (Dejean, 1825)

Material examined: Site 1, 12.IV.2006, 2♀♀; 20.VII.2007, 1♂; 13.IV.2007, 1♂; Site 3, 22.VI.2007, 1♂

Records in World: Albania, Armenia, Azerbaijan, Bulgaria, Caucasus, Crimea, Cyprus, Greece, Iraq, Iran, Israel, Jordan, Kazakhstan, Kyrgyzstan, Macedonia, Moldavia, Rumania, Russia, Syria Tajikistan, Turkmenistan, Turkey, Ukraine, Uzbekistan (Trautner and Geigenmüller, 1987; Gueorguiev and Gueorguiev, 1995; Löbl and Smetana, 2003).

Records in Turkey: Kahramanmaraş (Avgın, 2006-b).

Remarks: New record for the local fauna of the province Balıkesir.

Genus: **Harpalus**
Subgenus: **Harpalus**
Harpalus (Harpalus) metallinus Ménériés, 1836

Material examined: Site 7, 10.VIII.2008, 1♂

Records in World: Armenia, Azerbaijan, Balkan Peninsula, Bulgaria, Caucasia, Cyprus, Georgia, Greece, Iraq, Iran, Lebanon, Russia, Syria, Turkey (Gueorguiev and Gueorguiev, 1995; Löbl and Smetana, 2003).

Records in Turkey: Kahramanmaraş (Casale and Taglianti, 1999; Avgin, 2006-b).

Remarks: New record for the local fauna of the province Balıkesir.

***Harpalus (Harpalus) distinguendus distinguendus* (Duftschmid, 1812)**

Material examined: Site 7, 15.IV.2006, 1♀, 1♂

Records in World: Afghanistan, Albania, Algeria, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Canary Islands, Caucasia, China, Crimea, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Holland, Hungary, Iran, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Macedonia, Malay Archipelago, Moldavia, Mongolia, Montenegro, Morocco, Norway, Poland, Portugal, Romania, Russia, Serbia, Siberia, Sicily, Slovakia, Slovenia, Spain Sweden, Switzerland, Syria, Tajikistan, The Azores, Transcaucasia, Turkey, Turkmenistan, Ukraine, Ural Mountains, Uzbekistan, (Gueorguiev and Gueorguiev, 1995; Hurka, 1996; Löbl and Smetana, 2003).

Records in Turkey: Ankara, Antalya, Erzurum, Trabzon Gaziantep, Kahramanmaraş, Sivas (Kesdek and Yıldırım, 2003; Kocatepe and Mergen, 2004; Avgin, 2006-b).

Remarks: New record for the local fauna of the province Balıkesir.

Tribus: **Zabrini**

Genus: **Amara**

Subgenus: **Amara**

***Amara (Amara) aenea* (De Geer, 1774)**

Material examined: Site 11, 12.IV.2008, 1♀.

Records in World: Afghanistan, Albania, Algeria, Andorra, Armenia, Austria, Azerbaijan, Azores, Belarus, Belgium, Bosnia and Herzegovina, Britain, Bulgaria, China, Crimea, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Georgia, Greece, Himalaya, Hungary, India, Iran, Iraq, Ireland, Israel, Italy, Jordan, Kazakhstan, Kyrgyzstan, Lake Baikal, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madeira Archipelago, Malta, Moldova, Mongolia, Montenegro, Morocco, Nepal, Netherlands, Norway, North America, Pakistan, Poland, Portugal, Romania, Russia, Serbia, Siberia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Tajikistan, the Canary Islands, the Caucasus, the Urals, Transcaucasia, Tunisia, Turkmenistan, Turkey, Uzbekistan, Ukraine (Gueorguiev and Gueorguiev, 1995; Hurka, 1996; Löbl and Smetana, 2003).

Records in Turkey: Adana, Ardahan, Artvin, Erzincan, Erzurum, , Iğdır, Kahramanmaraş, Kars, Konya, Malatya (Avgin, 2006-b; Kesdek and Yıldırım, 2010).

Remarks: New record for the local fauna of the province Balıkesir.

***Amara (Amara) eurynota* (Panzer, 1796)**

Material examined: Site 10, 15.IV.2007, 1♀; 29.IV.2007, 1♂.

Records in World: Albania, Algeria, Altai, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Britain, Bulgaria, Caucasia, China, Crimea, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Germany, Georgia, Hungary, Holland, Iran, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Montenegro, Morocco, North America, Norway, Poland, Portugal, Romania, Russia, Serbia, Siberia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Tajikistan, Transcaucasia, Tunisia, Turkey, Ukraine (Gueorguiev and Gueorguiev, 1995; Hurka, 1996; Löbl and Smetana, 2003).

Records in Turkey: Gaziantep, Kahramanmaraş, Kayseri (Avgin, 2006-b).

Remarks: New record for the local fauna of the province Balıkesir.

Genus: *Zabrus*
Subgenus: *Pelor*
Zabrus (Pelor) corpulentus Schaum, 1864

Material examined: Site 1, 13.IV.2007, 1♀

Records in World: Armenia, Bulgaria, Turkey (Gueorguiev and Gueorguiev, 1995; Löbl and Smetana, 2003).

Records in Turkey: Ankara, Balıkesir, Eskişehir, Uşak (Altınayar, 1981; Kıvan and Özder, 1998; Casale and Taglianti, 1999; Kocatepe and Mergen, 2004).

Remarks: New record for the local fauna of the Kaz Dağları.

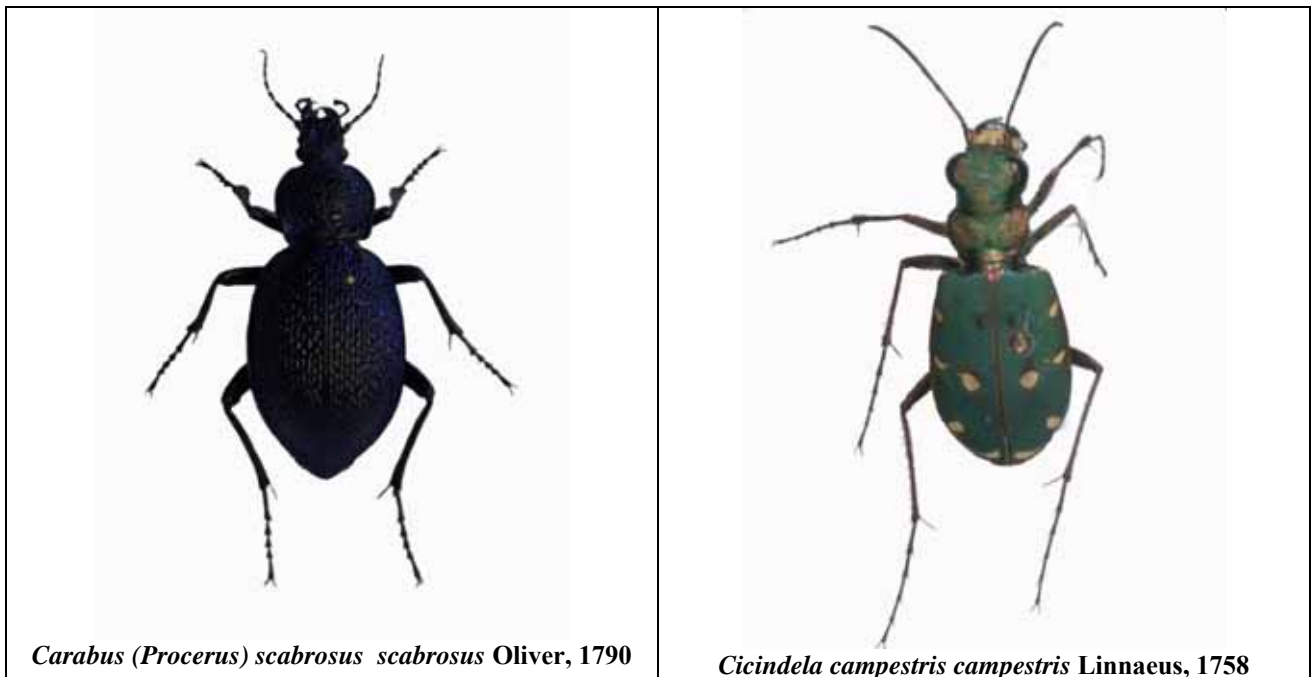
Subgenus: *Zabrus*
Zabrus (Zabrus) tenebrioides Goeze, 1777

Material examined: Site 6, 28. IV.2007, 1♀.

Records in World: Europe, Siberia, Caucasia, Crimea, Moldavia, Turkey, Ukraine (Gueorguiev and Gueorguiev, 1995; Casale and Taglianti, 1999).

Records in Turkey: Adıyaman, Artvin, Bingöl, Edirne, Erzurum, Eskişehir, Diyarbakır, İstanbul, Kars, Kırklareli, Kocaeli, Muş, Sakarya (Lodos, 1983; Kesdek and Yıldırım, 2010).

Remarks: New record for the local fauna of the province Balıkesir.





Dixus eremita (Dejean, 1825)



Harpalus (Harpalus) metallinus Ménétriés, 1836



Harpalus (Harpalus) distinguendus distinguendus
(Duftschmid, 1812)



Amara (Amara) aenea (De Geer, 1774)



Amara (Amara) eurynota (Panzer, 1796)



Zabrus (Pelor) corpulentus Schaum, 1864



Figure 2. Habitus of the species recorded
Şekil 2. Tespit edilen örnekleri habitus görüntüleri

All of the species, except for *Zabrus corpulentus*, are new record for the local fauna of the province Balıkesir. The specialists stated that pitfall trap is the most useful and common method for collecting Carabidae samples. Pitfall trap provide to get more specimen and species, especially the nocturnal ones. In our study the samples were collected with aspirator and hand in the daytime, because of that we could collected some of the daily active (=diurnal) species. So we think that low number of species in our study depends on sampling method. However, our results constitute a preliminary information about Carabidae fauna of the region. We hope that this preliminary work would be useful for further studies that will be performed on ground beetle fauna of this area.

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(Received for publication 25 March 2013; The date of publication 15 August 2013)