

Determination of Chrysomelidae (Coleoptera) Species and Host Plants in Vegetable Areas of Burdur Province

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ABSTRACT

The study was carried out between the years 2019-2020 in order to determine the Chrysomelidae species and their host plants in the vegetable fields of greenhouses, gardens, and open fields located in the central district of Burdur province. As a result of 366 samples examined; 18 species belonging to 5 genera from Galerucinae subfamily, 2 species belonging to 2 genera from Chrysomelinae subfamily, and 1 species from Criocerinae subfamily were identified. Information about local distributions was added for each species. In addition, host plant relationships of the species that can be determined based on field observations, or previous literature information on host plants were given. Among the determined species *Chaetocnema delarouzei* (Brisout), *Epitrix hirtipennis* (Illiger), *Epitrix pubescens* (Koch), *Longitarsus pellucidus* (Foudras), *Phyllotreta ochripes* (Marsham), *Gastrophysa polygoni* (Linnaeus), *Oulema melanopus* (Linnaeus) and *Leptinotarsa decemlineata* (Say) were recorded for the first time from Burdur province with this study.

Keywords: Burdur, Chrysomelidae, Coleoptera, fauna, host plant, vegetable areas

Burdur İli Sebze Alanlarının Chrysomelidae (Coleoptera) Türleri ve Konak Bitkilerinin Belirlenmesi

ÖZ

Çalışma, 2019-2020 yılları arasında Burdur ili merkez ilçedeki seralar, bahçeler ve açık tarlalarda bulunan sebze alanlarındaki Chrysomelidae familyasına ait türlerin ve konak bitkilerinin belirlenmesi amacıyla yapılmıştır. Toplamda 366 örnek incelenmiş ve sonuçta; Galerucinae altfamilyasından 5 cinse ait 18 tür, Chrysomelinae altfamilyasından 2 cinse ait 2 tür ve Criocerinae altfamilyasından 1 tür tespit edilmiştir. Türlerin her birinin lokal dağılım bilgileri verilmiştir. Ayrıca arazi gözlemlerine dayalı olarak türlerin belirlenebilen konak bitki ilişkileri veya önceki konaklarına dair literatür bilgileri eklenmiştir. Belirlenen türler arasında *Chaetocnema delarouzei* (Brisout), *Epitrix hirtipennis* (Illiger), *Epitrix pubescens* (Koch), *Longitarsus pellucidus* (Foudras), *Phyllotreta ochripes* (Marsham), *Gastrophysa polygoni* (Linnaeus), *Oulema melanopus* (Linnaeus) ve *Leptinotarsa decemlineata* (Say) Burdur'dan ilk kez bu çalışmayla kaydedilmiştir.

Anahtar Kelimeler: Burdur, Chrysomelidae, Coleoptera, fauna, konak bitki, sebze alanları

INTRODUCTION

Chrysomelidae represents one of the most numerous and most studied families of Coleoptera. The actual

number of described species reaches about 40.000 throughout the world (Santiago-Blay, 2004; Biondi et al., 2013), while the estimated number probably ranges from 55.000 to 60.000 species (Jolivet, 2015).

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The Palaearctic fauna comprises more than 3.500 species (Konstantinov et al., 2009), and the Turkish Chrysomelidae fauna (excluding Bruchinae) includes over 900 taxa (Ekiz et al., 2013; Özdikmen et al., 2014; Aslan and Başar, 2016).

Chrysomelidae, or leaf beetles, are phytophagous insects adapted to feed on a wide range of plant groups. Both the adult and larvae feed on cultivated plants as well as some useful wild plants or shrubs (Jolivet et al., 1988). The close association between the group and plants is important both ecologically and economically due to their impact on agriculture. Many species are harmful and known as serious pests of food crops, tree and shrub plantations, medical herbs and fodder crops, although several are beneficial as biological control agents of weeds (Booth et al., 1990; Jolivet and Verma, 2002). Species belonging to the tribe Alticini (especially species from *Phyllotreta* and *Epitrix*) come first among the leaf beetles that damage vegetables (Aslan and Özbek, 1998; 2000; Aslan et al., 2003). They may cause significant crop loss when many species reach high populations in cultivated areas.

The aim of this study is to contribute the knowledge of Chrysomelidae species that occur in vegetable areas of Burdur province with their host plant information.

MATERIAL AND METHODS

The present study is based upon leaf beetle samples collected from the vegetables in greenhouses, gardens and open fields located in the central district of Burdur province (Figure 1). Field studies were carried out at regular intervals during the months of September-November 2019 and March-July 2020.

Specimens were collected by using sweep net and mouth aspirator, or by hand if necessary. Plants with leaves showing feeding marks were also carefully examined and searched for beetles. Plant species on which beetles were seen feeding constantly in the field observations were considered to be potential host plants. Collected beetles were taken to the laboratory to be mounted and labeled. Specimens were identified to species under an Olympus SZ61 stereomicroscope according to the taxonomic keys and figures given by Döberl (2000), Čížek and Doguet (2008), Warchalowski (2010) and Konstantinov et al. (2011).

Voucher specimens are deposited at the Systematic Entomology Laboratory in Biology Department of Süleyman Demirel University, Isparta, Turkey.



Figure 1. Photos from the surveyed fields

RESULTS

As a result of field studies conducted in vegetable areas of Burdur (central district) province, 366 leaf beetle samples belonging to 21 species were determined. The list of species is given below. Turkish distributions by province are given for each species with some notes about host plants.

Family Chrysomelidae Latreille, 1802
Subfamily Galerucinae Latreille, 1802
Tribe Alticini Spinola, 1844

Genus *Chaetocnema* Stephens, 1831

1. *Chaetocnema breviscula* (Faldermann, 1837)

Material examined: Bahçelievler, Körpınar, 22.09.2019, 2♀, 7♂; 11.04.2020, 2♀; 13.06.2020, 1♀; 11.07.2020, 1♂; 22.08.2020, 1♀; Bağlar, İnce saylar, 28.09.2019, 1♂; 12.04.2020, 2♀; Bahçelievler, Ilıca ayağı, 03.10.2019, 1♂; 14.03.2020, 1♀, 1♂; Bağlar, Topraklık, 29.03.2020, 1♀, 1♂; Kışla, Köyiçi, 25.04.2020, 1♂; Bahçelievler, 21.05.2020, 2♂; Kışla, Köyderesi, 27.06.2020, 1♂; Kurna, Karen, 08.08.2020, 1♀, 1♂; Bağlar, Akdere, 11.10.2020, 1♀, 3♂.

Distribution in Turkey: Adana, Aksaray, Ankara, Burdur, Erzurum, Eskişehir, İstanbul (Anatolian part), Mersin, Sakarya, Samsun, Sivas, Tokat (Ekiz et al., 2013; Özdikmen, 2014; Aslan et al., 2015).

Host plant information: The previous host plants for this species were reported as Chenopodiaceae (Čížek

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and Doguet, 2008), *Beta vulgaris*, *Salsola kali* and *Atriplex halimus* (Konstantinov et al., 2011). It was collected from the vegetables by sweeping, the exact host plant is not known.

2. *Chaetocnema delarouzei* (Brisout, 1884)

Material examined: Bağlar, İnce Saylar, 23.08.2020, 1♂; Bahçelievler, Ilıca Ayağı, 10.10.2020, 1♂.

Distribution in Turkey: Isparta (Gök and Aslan, 2005). Present study represents the first record for Burdur province.

Host plant information: It was collected from the vegetables by sweeping, so the host plant could not be determined. No host plant records were found in the literature.

3. *Chaetocnema scheffleri* (Kutschera, 1864)

Material examined: Bahçelievler, Körpınar, 22.09.2019, 1♂; 11.04.2020, 1♂; 22.08.2020, 1♀, 1♂; Bahçelievler, Kokarpınar, 28.03.2020, 2♂; Bahçelievler, Yazıbaşı, 09.05.2020, 1♂; Karasenir, Karaburun, 10.05.2020, 2♀; Bahçelievler, 21.05.2020, 1♂; Bahçelievler, Ilıca Ayağı, 10.10.2020, 1♀, 1♂.

Distribution in Turkey: Antalya, Ankara, Burdur, Erzurum, Isparta, İstanbul, İzmir, Konya (Ekiz et al., 2013; Özdikmen, 2014; Aslan et al., 2015).

Host plant information: *Rumex*, *Rumex pulcher*, *R. acetosella*, *R. angiocarpus*, *Polygonum patulum*, *Fagopyrum esculentum* were listed among the previous host plants of this species (Konstantinov et al., 2011). The exact host plant could not be determined in this study.

4. *Chaetocnema tibialis* (Illiger, 1807)

Material examined: Bahçelievler, Körpınar, 22.09.2019, 1♀; 13.06.2020, 1♀, 2♂; 11.07.2020, 1♀; 22.08.2020, 1♂; Bağlar, İnce Saylar, 12.04.2020, 1♀; Kışla, Köyiçi, 25.04.2020, 2♀; Karasenir, Karaburun, 10.05.2020, 2♀, 1♂; 27.09.2020, 2♀; Bahçelievler, Ilıca Ayağı, 20.05.2020, 2♀, 1♂; Bahçelievler, 21.05.2020, 1♀; Kışla, Köyderesi, 27.06.2020, 2♀; 13.09.2020, 3♀, 1♂; Bahçelievler, Yazıbaşı, 25.07.2020, 1♂; Bahçelievler, Kokarpınar, 26.09.2020, 1♀; Bağlar, Akdere, 11.10.2020, 1♀.

Distribution in Turkey: Aksaray, Amasya, Ankara, Antalya, Balıkesir, Burdur, Çanakkale, Düzce, Erzurum, Eskişehir, Isparta, İzmir, Kars, Kocaeli, Konya, Malatya, Samsun (Ekiz et al., 2013; Özdikmen, 2014; Aslan et al., 2015).

Host plant information: The species has a wide distribution, and causes low yield in production due to the damage it causes to sugar beet (Rashidov and

Khasanov, 2003; Yaman et al., 2008). There are other host plant records for this species from *Atriplex*, *Amaranthus*, *Chenopodium*, *Sinapis*, *Salicornia*, *Rumex*, *Portulaca*, *Ipomea*, *Spinacia*, *Beta* and *Polygonum* (Aslan et al., 2003; Çam and Atay, 2004; Konstantinov et al., 2011). The species was sampled from the sugar beet and purslane in the study area.

Genus *Epitrix* Foudras, 1860

5. *Epitrix hirtipennis* (Melsheimer, 1847)

Material examined: Bahçelievler, Körpınar, 22.09.2019, 2♀, 1♂; 22.08.2020, 2♀, 1♂; 24.10.2020, 2♂; Bahçelievler, Ilıca Ayağı, 03.10.2019, 1♀, 2♂; Bahçelievler, Kokarpınar, 13.10.2019, 2♀, 1♂; 26.09.2020, 1♀, 1♂; Kışla, Harmanyeri, 28.06.2020, 1♀, 1♂; 12.09.2020, 1♀, 1♂; Kışla, Köyderesi, 13.09.2020, 3♀, 1♂; Bağlar, Ünce Saylar, 25.10.2020, 2♀.

Distribution in Turkey: Ankara, İzmir, Mardin, Zonguldak (Ekiz et al., 2013; Özdikmen et al., 2017). Present study represents the first record for Burdur province.

Host plant information: *E. hirtipennis* is typically a tobacco pest. It is usually known as pest of tobacco, potato, tomato and eggplant throughout the world. It is also observed on peas, cabbage, pepper and radish (Capinera, 2001). Its host plant was determined as eggplant in the study area.

6. *Epitrix pubescens* (Koch, 1803)

Material examined: Bahçelievler, Körpınar, 11.04.2020, 1♀, 1♂; 13.06.2020, 1♂; Karasenir, Karaburun, 10.05.2020, 1♂; Bahçelievler, Ilıca Ayağı, 20.05.2020, 1♂; 26.07.2020, 1♀, 1♂; Bahçelievler, 21.05.2020, 1♀, 1♂; Bağlar, İnce Saylar, 14.06.2020, 2♀, 2♂; 23.08.2020, 1♂; Yeni Mahalle, Akdere, 09.08.2020, 1♀, 1♂.

Distribution in Turkey: Ankara, Balıkesir, Bartın, Bilecik, Çankırı, Denizli, Düzce, Erzurum, Eskişehir, İstanbul, Kırklareli, Ordu, Tokat, Zonguldak (Çam and Atay, 2008; Ekiz et al., 2013; Özdikmen et al., 2017). The species was recorded for the first time from Burdur province.

Host plant information: Its host plants were previously reported as radish (*Raphanus sativus*), maize (*Zea mays*), beans (*Phaseolus vulgaris*), cabbage (*Brassica oleracea*) and potato (*Solanum tuberosum*) (Özdikmen et al., 2017). It was collected by sweeping from the vegetables in the fields. The exact host plant could not be determined.

Genus *Longitarsus* Berthold, 1827**7. *Longitarsus pellucidus* (Foudras, 1860)**

Material examined: Karasenir, Karaburun, 27.09.2020, 1♀.

Distribution in Turkey: Adana, Amasya, Ankara, Antalya, Artvin, Bayburt, Erzincan, Erzurum, Gümüşhane, Iğdır, Isparta, İzmir, Kars, Sivas, Tokat (Ekiz et al., 2013). The species was recorded for the first time from Burdur province.

Host plant information: It was collected by sweeping from vegetables. *Convolvulus arvensis* L., known as the host plant of this species, is frequently seen in vegetable areas and fruit gardens (Aslan and Gök, 2006; Çiçek and Doguet, 2008). It is highly probable that the species came from this plant while sweeping.

Genus *Phyllotreta* Chevrolat, 1837**8. *Phyllotreta atra* (Fabricus, 1775)**

Material examined: Bağlar, İnce Saylar, 28.09.2019, 1♂; 23.11.2019, 5♀, 5♂; 12.04.2020, 2♀; 14.06.2020, 3♀, 2♂; 23.08.2020, 3♀; 25.10.2020, 14♀, 4♂; Bahçelievler, Kokarpınar, 13.10.2019, 2♀, 1♂; 12.07.2020, 5♀, 3♂; Bahçelievler, Yazıbaşı, 09.11.2019, 3♂; 25.07.2020, 2♀, 2♂; Bahçelievler, İlica Ayağı, 14.03.2020, 2♂; Bağlar, Topraklık, 29.03.2020, 4♀, 2♂; Kışla, Köyiçi, 25.04.2020, 1♀, 1♂; Bağlar, Akdere, 26.04.2020, 5♀, 1♂; 11.10.2020, 1♀; Karasenir, Karaburun, 10.05.2020, 3♀, 1♂; Bahçelievler, 21.05.2020, 1♂; Kışla, Köyderesi, 27.06.2020, 1♀, 1♂; Kışla, Harmanyeri, 28.06.2020, 3♀, 1♂; Bahçelievler, Körpınar, 11.07.2020, 1♀, 2♂; 22.08.2020, 1♂; 24.10.2020, 15♀, 3♂; Bahçelievler, İlica, 26.07.2020, 3♀; Yeni Mahalle, Akdere, 09.08.2020, 2♀.

Distribution in Turkey: Ankara, Antalya, Bayburt, Bolu, Burdur, Edirne, Eskişehir, Erzurum, Gümüşhane, Isparta, Kayseri, Kocaeli, Niğde, Rize, Samsun, Sivas, Trabzon (Ekiz et al., 2013; Aslan et al., 2015).

Host plant information: It causes damage to various plants from Brassicaceae, Resedaceae, and Cappariaceae (Capinera, 2008; Çiçek and Doguet, 2008). Samples were collected from the vegetables by sweeping, and the exact host plant could not be determined.

9. *Phyllotreta corrugata* Reiche & Saulcy, 1858

Material examined: Bahçelievler, Yazıbaşı, 09.05.2020, 1♀.

Distribution in Turkey: Adana, Afyon, Ankara, Antalya, Burdur, Hatay, Isparta, İzmir, Kayseri, Konya, Sivas, Tokat, Yozgat (Ekiz et al., 2013; Aslan et al., 2015).

Host plant information: The specimen was collected by sweeping from the vegetable areas, and the host plant could not be determined.

10. *Phyllotreta cruciferae* (Goeze, 1777)

Material examined: Bahçelievler, Yazıbaşı, 09.11.2019, 1♀, 1♂; 15.03.2020, 1♀, 1♂; Bahçelievler, Körpınar, 23.11.2019, 1♀, 1♂; 24.10.2020, 1♀, 6♂; Bağlar, Akdere, 26.04.2020, 2♂; Karasenir, Karaburun, 10.05.2020, 1♀, 1♂; Bağlar, İnce Saylar, 25.10.2020, 5♂.

Distribution in Turkey: Adana, Amasya, Ankara, Bilecik, Bursa, Burdur, Çankırı, Çorum, Edirne, Eskişehir, Erzurum, Isparta, İzmir, Kayseri, Konya, Manisa, Niğde, Tokat, Trabzon (Ekiz et al., 2013).

Host plant information: It is an oligophag species generally feeding on Brassicaceae including *Sinapis* spp., *Rorippa* spp., *Arabis* spp., *Alyssum* spp., *Sisymbrium* spp., *Brassica napus*, *Brassica oleracea* and *Cardamine amara* (Çiçek and Doguet, 2008), but also has been reported on *Ficaria verna* from Ranunculaceae (Gavrilović and Ćurčić, 2013). It is also one of the most serious pests of *Brassica rapa* and *B. napus* (canola) which are important cultivated plants used in industrial products (Gavloski et al., 2000). It was collected from cabbage in the present study.

11. *Phyllotreta erysimi* Weise, 1900

Material examined: Bağlar, İnce Saylar, 28.09.2019, 1♀; Bahçelievler, Körpınar, 22.09.2019, 2♀; 11.07.2020, 3♀; 22.08.2020, 2♀, 1♂; Bahçelievler, Kokarpınar, 13.10.2019, 2♀; Bahçelievler, Yazıbaşı, 25.07.2020, 1♀, 1♂; Kurna, Karen, 08.08.2020, 1♀; Bahçelievler, İlica Ayağı, 10.10.2020, 1♀.

Distribution in Turkey: Ankara, Antalya, Bayburt, Burdur, Erzurum, Isparta, Konya, Manisa, Samsun, Trabzon (Ekiz et al., 2013; Aslan et al., 2015).

Host plant information: The specimens were collected from sunflower and maize plants occurring in the study areas.

12. *Phyllotreta fornuseki* (Çiçek, 2003)

Material examined: Bağlar, İnce Saylar, 28.09.2019, 1♀, 2♂; 25.10.2020, 1♀, 3♂; Bahçelievler, İlica, 26.07.2020, 1♀, 2♂; Yeni Mahalle, Akdere, 09.08.2020, 1♀, 2♂.

Distribution in Turkey: Isparta, Burdur (Ekiz et al., 2013; Aslan et al., 2015).

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Host plant information: *Sisymbrium* spp. from Brassicaceae was reported as its host plant previously (Çiçek and Doguet, 2008). The host plant could not be determined in this study.

13. *Phyllotreta nigripes* (Fabricius, 1775)

Material examined: Bahçelievler, Körpınar, 11.07.2020, 2♀, 3♂; 22.08.2020, 1♀; Bahçelievler, Yazıbaşı, 25.07.2020, 1♀, 1♂; Kurna, Karen, 08.08.2020, 1♂.

Distribution in Turkey: Adana, Ankara, Antalya, Burdur, Bayburt, Bilecik, Edirne, Erzincan, Eskişehir, Erzurum, Hatay, Iğdır, Isparta, Kayseri, Konya, Kars, Manisa, Mersin, Sivas, Yozgat (Ekiz et al., 2013; Aslan et al., 2015).

Host plant information: Plants from Brassicaceae and Resedaceae were listed as host records for this species (Çiçek and Doguet, 2008). In the present study, specimens were sampled from maize.

14. *Phyllotreta ochripes* (Curtis, 1837)

Material examined: Bahçelievler, Körpınar, 22.09.2019, 1♀; 22.08.2020, 1♀; Bahçelievler, Ilica Ayağı, 20.05.2020, 2♀.

Distribution in Turkey: Giresun, Istanbul (Anatolian part), Niğde (Ekiz et al., 2013). The species was recorded for the first time from Burdur province.

Host plant information: Host plant could not be determined.

15. *Phyllotreta punctulata* (Marsham, 1802)

Material examined: Bahçelievler, Körpınar, 12.07.2020, 2♂; Kurna, Karen, 08.08.2020, 1♂.

Distribution in Turkey: Antalya, Bursa, Burdur, Eskişehir, Giresun, Isparta, Istanbul (Anatolian part), Kırklareli (Ekiz et al., 2013).

Host plant information: Previous host records for this species were given as *Brassica* spp., *Sinapis* spp., *Sisymbrium* spp., *Alliaria* spp., and *Erysimum* spp. (Çiçek and Doguet, 2008). Its host plant could not be determined in this study.

16. *Phyllotreta variipennis* (Boieldieu, 1859)

Material examined: Bahçelievler, Körpınar, 22.09.2019, 2♂; 11.07.2020, 2♀, 3♂; 22.08.2020, 2♀, 2♂; 24.10.2020, 1♀, 1♂; Bağlar, İnce Saylar, 28.09.2019, 1♀, 3♂; 23.08.2020, 4♀, 1♂; 25.10.2020, 1♂; Karasenir, Karaburun, 10.05.2020, 1♀, 2♂; Bahçelievler, Yazıbaşı, 25.07.2020, 1♀, 2♂; Kurna, Karen, 08.08.2020, 1♀, 2♂; Yeni Mahalle, Akdere, 09.08.2020, 2♀; Kışla, Harmanyeri, 12.09.2020, 1♀,

4♂; Kışla, Köyderesi, 13.09.2020, 2♀, 3♂; Bahçelievler, Kokarpınar, 26.09.2020, 2♀, 3♂; Bahçelievler, Ilica Ayağı, 10.10.2020, 1♂.

Distribution in Turkey: Ankara, Burdur, Eskişehir, Isparta, Istanbul (Anatolian part) Izmir (Ekiz et al., 2013; Aslan et al., 2015).

Host plant information: It was collected from cabbage. It has been observed that the specimens cause serious damage to the leaves while feeding.

17. *Phyllotreta vittula* (Redtenbacher, 1849)

Material examined: Bağlar, Akdere, 11.10.2020, 1♂.

Distribution in Turkey: Ankara, Antalya, Burdur, Edirne, Erzurum, Isparta, Izmir (Ekiz et al., 2013; Aslan et al., 2015).

Host plant information: It is known as a pest of cabbage, radish, turnip and rapeseed (Aslan and Özbek, 2000). There are host records on plants belonging to the families Brassicaceae, Poaceae and Asteraceae (Çiçek and Doguet, 2008). Host plant could not be determined.

Genus *Psylliodes* Berthold, 1827

18. *Psylliodes tricolor* Weise, 1888

Material examined: Bahçelievler, Ilica Ayağı, 03.10.2019, 1♀, 1♂.

Distribution in Turkey: Aksaray, Ankara, Antalya, Artvin, Bayburt, Burdur, Çankırı, Diyarbakır, Elazığ, Erzincan, Erzurum, Eskişehir, Hatay, Isparta, Kayseri, Kırşehir, Konya, Nevşehir, Niğde, Osmaniye, Samsun (Ekiz et al., 2013; Bal et al., 2018a; Aslan et al., 2020).

Host plant information: It was collected by sweeping from vegetables. Host plant could not be determined.

Subfamily Chrysomelinae Latreille, 1802

Genus *Gastrophysa* Chevrolat, 1837

19. *Gastrophysa polygoni* (Linnaeus, 1758)

Material examined: Bahçelievler, Körpınar, 11.04.2020, 1♀, 2♂; 11.07.2020, 1♀, 2♂.

Distribution in Turkey: Adana, Aksaray, Amasya, Ankara, Ardahan, Artvin, Bolu, Çankırı, Denizli, Diyarbakır, Düzce, Edirne, Erzincan, Eskişehir, Erzurum, Isparta, Istanbul, İzmir, Kahramanmaraş, Karaman, Karabük, Kars, Kastamonu, Kayseri, Konya, Mersin, Nevşehir, Niğde, Ordu, Samsun, Sinop, Trabzon, Tokat, Yozgat (Ekiz et al., 2013). The species was recorded for the first time from Burdur province.

Host plant information: According to Çam and Atay (2006) specimens of this species feed intensely on *Polygonum aviculare*, *P. cognatum*, *P. convolvulus*, *Rumex* spp. (Polygonaceae), *Chenopodium album* and *Beta vulgaris* (Chenopodiaceae). It was collected from poppy and cress in the present study.

Genus *Leptinotarsa* Chevrolat, 1837

20. *Leptinotarsa decemlineata* (Say, 1824)

Material examined: Bağlar, Akdere, 31.10.2019, 1♀, 1♂; Bahçelievler, 21.05.2020, 1♀, 1♂; Bahçelievler, Körpınar, 13.06.2020, 1♀, 1♂; Kışla, Köyderesi, 27.06.2020, 1♀, 1♂; Bahçelievler, Yazıbaşı, 25.07.2020, 1♀, 1♂.

Distribution in Turkey: Adana, Afyon, Aksaray, Ankara, Artvin, Bolu, Çanakkale, Çankırı, Düzce, Edirne, Erzincan, Eskişehir, Erzurum, Kahramanmaraş, Karaman, Kastamonu, Kayseri, Nevşehir, Niğde, Osmaniye, Sinop, Tekirdağ, Tokat, Zonguldak (Ekiz et al., 2013; Bal et al., 2018b). Present study represents its first record from Burdur province.

Host plant information: The main host plants of potato beetle in Turkey are potato and eggplant. Tomatoes and some wild Solanaceae species are also listed among its hosts (Erdoğan, 2006). Samples of this species were collected from tomato and potato plants in this study. It has been observed that adults and larvae fed heavily especially on potato leaves and caused serious damage.

Subfamily Criocerinae (Latreille, 1804)

Genus *Oulema* Gozis, 1886

21. *Oulema melanopus* (Linnaeus, 1758)

Material examined: Bahçelievler, Körpınar, 11.04.2020, 1♀, 2♂.

Distribution in Turkey: Adana, Afyon, Aksaray, Ankara, Antalya, Ardahan, Aydın, Çanakkale, Çorum, Diyarbakır, Edirne, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Iğdır, İzmir, Kahramanmaraş, Karabük, Karaman, Kars, Kastamonu, Kırıkkale, Kırklareli, Kütahya, Konya, Manisa, Mersin, Muğla, Osmaniye, Samsun, Siirt, Tekirdağ (Özdikmen et al., 2012; Ekiz et al.; 2013; Özdikmen and Özbek, 2014). The species was recorded for the first time from Burdur province.

Host plant information: *Oulema melanopus*, known as the cereal leaf beetle, is an invasive crop pest; especially on wheat and small grains (Olfert et al., 2004). The specimens were collected from poppy and cress plants in the study area.

DISCUSSION AND CONCLUSIONS

The present study was carried out in order to determine the Chrysomelidae species and their host plants occurring in vegetable areas of greenhouses, gardens and open fields in the central district of Burdur province. As a result; 18 species belonging to 5 genera from Galerucinae, 2 species belonging to 2 genera from Chrysomelinae, and 1 species from Criocerinae were determined. Distributions of the total 21 species according to the genera are *Phyllotreta* 10, *Chaetocnema* 4, *Epitrix* 2, *Longitarsus* 1, *Psylliodes* 1, *Gastrophysa* 1, *Oulema* 1 and *Leptinotarsa* 1, respectively. Eight of them are firstly recorded from Burdur province including *Chaetocnema delarouzei*, *Epitrix hirtipennis*, *E. pubescens*, *Longitarsus pellucidus*, *Phyllotreta ochripes*, *Gastrophysa polygona*, *Oulema melanopus* and *Leptinotarsa decemlineata*.

Among the leaf beetles gathered from vegetable areas, *Phyllotreta* was the most frequently sampled genus in terms of both species number and the density of individuals. *Phyllotreta* species are known as major insect pests of several crops and various common weeds (Lundin, 2020). The feeding preference of these beetles mostly includes the family Brassicaceae or the related genera from Amaranthaceae, Capparidaceae, Chenopodiaceae and Resedaceae (Furth, 1979; Nielsen, 1988; Aslan and Gök, 2006; Čížek and Doguet, 2008). Therefore, specimens of this genus were collected from almost all vegetables in large or little numbers during the field studies. However, it was observed that they were densely occur on radish, maize and cabbage, and they damaged radish and cabbage leaves by producing small, tiny holes (Figure 2).

Phyllotreta atra, *P. corrugata*, *P. cruciferae*, *P. fornuseki* and *P. punctulata* are similar to each other in terms of morphological features and it is difficult to distinguish them in field conditions. So, it could not be clearly determined which species actually damage on radish leaves. It was observed that *Phyllotreta variipennis* and *P. cruciferae* caused significant damage to cabbage. Additionally, *Phyllotreta erysimi* was collected from maize and sunflower leaves, and *P. nigripes* was sampled from maize leaves.

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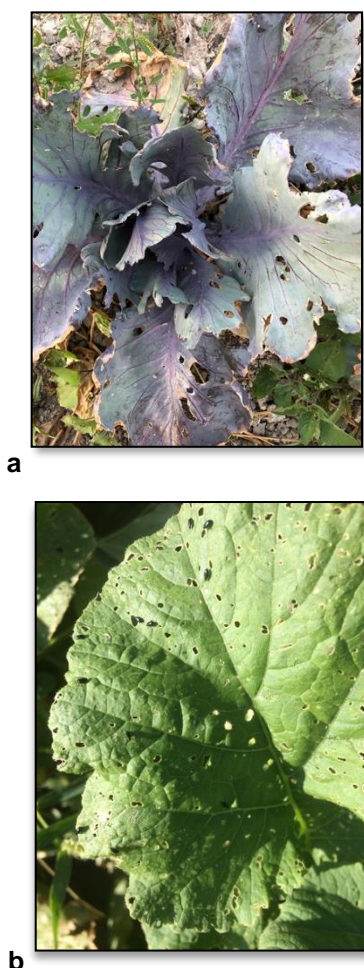


Figure 2. a. Damage of *Phyllotreta variipennis* on cabbage b. *Phyllotreta* spp. on radish leaf

Chaetocnema and *Epitrix* were the other common genera in the surveyed fields after *Phyllotreta*. Species belonging to *Chaetocnema* were mostly collected from sugar beet and purslane. It has been observed that they cause damage by opening holes in the leaves, especially on sugar beet. It is known that *Epitrix* species prefer to feed on solanaceous plants. *Epitrix hirtipennis* was sampled more frequently starting with the end of August, and its host plant was determined as eggplant (*Solanum melongena* L.) in the study area.

Specimens of *Leptinotarsa decemlineata*, a major pest of potato worldwide, were collected from potato and tomato leaves in the research area. It has been determined that the pest causes product losses up to 70-80% in potatoes (Oerke et al., 1994). Although the most suitable host of the potato beetle is potato, when

it cannot find this plant, it also feeds on tomato, eggplant, tobacco and pepper plants belonging to the family Solanaceae (Kekillioğlu and Yılmaz, 2018).

The rarest species of the study area were *Longitarsus pellucidus*, *Psylliodes tricolor*, and *Oulema melanopus*. The mentioned species were collected with one, two or three samples. It is thought that these species are associated with the plant diversity in the close vicinity of the study areas, and were sampled randomly during the transition between plants.

Consequently; every year, new Chrysomelidae species are described for the scientific world from Turkey, new host plant relationships of the group are determined, new pests or biological control agents are found. The Chrysomelidae is therefore a group with many interesting species to study, and more to discover. Considering that our country has regions that have never been studied in terms of Chrysomelidae fauna, it is a fact that the number of known species can be increased much higher. Studies on host plant relations of the group are as valuable as faunistic studies. The strong evolutionary link between plants and leaf beetles increases the importance of the group in agricultural terms.

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