

## Contributions to Curculionidae (Coleoptera) Fauna of Southeastern Anatolia Region of Türkiye with a new Record

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### ABSTRACT

In this study, individuals belonging to the Curculionidae family collected from the Southeastern Anatolia Region were examined. Samples were collected by namely the knocking and sweep net method between 1993-2019 dates. The collected specimens were identified by the second author after they were turned into standard museum material. As a result of the study, 11 genera belonging to 5 subfamilies of the Curculionidae (Coleoptera) family and 18 species belonging to these genera were determined. Among these species, 1 species (*Coniocleonus hollbergii* Fähræus, 1842) has been reported as a new record for the fauna of Türkiye. In addition, 9 species were reported as new records from the region. The distribution of the species in the world and Türkiye, as well as their regional distribution and hosts, are given.

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## Türkiye'nin Güneydoğu Anadolu Bölgesi Curculionidae (Coleoptera) Faunasına Katkılar ve Yeni Bir Kayıt

### ÖZET

Bu çalışmada, Güneydoğu Anadolu Bölgesi'nden toplanan Curculionidae familyasına ait bireyler incelenmiştir. Örnekler 1993-2019 tarihleri arasında atrap ve darbe yöntemiyle toplanmıştır. Toplanan örnekler standart müze materyali haline getirildikten sonra 2. yazar tarafından teşhis edilmiştir. Çalışma neticesinde Curculionidae (Coleoptera) familyasından 5 altfamilyaya ait 11 cins ve bu cinslere ait 18 tür tespit edilmiştir. Bu türler içerisinde 1 tür (*Coniocleonus hollbergii* Fähræus, 1842) Türkiye faunası için yeni kayıt olarak bildirilmiştir. Ayrıca 9 tür ise bölgeden yeni kayıt olarak bildirilmiştir. Türlerin dünya ve Türkiye dağılımları ile birlikte bölge yayılımları ve konukçuları verilmiştir.

### Bitki Koruma

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### INTRODUCTION

Curculionidae is the largest insect family in the superfamily Curculionoidea. The members of this family are most commonly found. Curculionidae shows considerable variation in size and shape. The rostrum is well developed in most species, with capitate antennae appearing in the middle. The Curculionidae species present a complete metamorphosis (egg, larva, pupa, and adult) (Fuentes

et al., 2017). All members are phytophagous and the group is important economically. There are many important agricultural and forest pests within the family. They can attack specific parts of the plant, from the roots to the aerial parts; usually, the larvae feed within plant tissues and adults make holes in the fruits, nuts, and other parts (Hoffmann, 1950; Mihajlova, 1978; Domínguez, 2006), except for myrmecophilous, saprophagous and predatory species (Muñiz, 1970).

The fauna of Curculionidae (Coleoptera) of Türkiye is richer, because of different climatic conditions. Both geographic position and climatic differentiations have some effects on fauna (Lodos et al., 2003). The Curculionidae fauna of Türkiye has been studied by many scientists (Lodos, 1960; Lodos et al., 1978, 2003; Sert, 1990, 1995; Gözüaçık and Özgen, 2005; Keskin, 2005; Pehlivan et al., 2005a, b; Gültekin, 2006; Bolu and Legalov, 2008; Bolu and Özgen, 2009; Erbey, 2010; Avgın and Colonnelli, 2011; Erbey and Gürler, 2014; Erbey, 2015). The current study aimed to review the collection material and to extend our knowledge on the fauna on Curculionidae (Coleoptera) in the Southeastern Anatolia Region of Türkiye.

## MATERIAL and METHOD

This study was carried out between 1993-2019 in the provinces of Diyarbakır and Şanlıurfa, located in the Southeastern Anatolia Region of Türkiye. The collection of samples in this study; namely knocking, sweeping net and the method of culturing by collecting together with the plants on which Curculionidae larvae feed were used. The samples were prepared as standard museum material. Specimens were collected and identified by the authors. While making diagnoses (Caldara, 1990; Alonso-Zarazaga, 1999; Colonnelli, 2004; Velázquez de Castro et al., 2010; Erbey, 2010; Skuhrovec et al., 2014; Alonso-Zarazaga et al., 2017; Arzanov and Grebennikov, 2017, etc.) resources such as in addition, diagnostic museum materials in the collection of the second author were taken into account.

## RESULTS

**Family:** Curculionidae Latreille, 1802 Subfamily: Ceutorhynchinae Gistel, 1848

**Genus:** *Coeliodes* Schönherr, 1837

***Coeliodes ruber* Marsham, 1802**

**Material examined:** 2♀♀4♂♂, 08.IV.1993, 5♀♀2♂♂, 15.IV.1993, 3♀♀5♂♂, 22.IV.1993, 4♀♀6♂♂, 29.IV.1993, 5♀♀5♂♂, 06.V.1993 Şanlıurfa (Multiple samples).

**Host plant:** *Pistacia vera* L.

**Record Host plants:** *Quercus* spp. (Colonnelli, 2004), *Rosa* (Lodos et al., 2003).

**Distribution in World:** Armenia, Austria, Belarus, Belgium, Bulgaria, Czech Republic, France, Georgia, Germany, Hungary, Italy, Moldova, Netherlands, Poland, Romania, Russia (Europe), Slovakia, Spain, Switzerland, Türkiye, Ukraine (Colonnelli, 2004).

**Distribution in Southeastern Anatolia Region of Türkiye:** *Coeliodes ruber* is the first record for the fauna of Şanlıurfa province. Moreover; this species is

also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

**Genus:** *Mogulones* Reitter, 1916

***Mogulones crucifer* (Pallas, 1771)**

**Material examined:** 1♀1♂, 01.V.2002, Diyarbakır (Dicle University Campus).

**Host plant:** Unknown

**Record Host plants:** *Cynoglossum* and *Solenanthus* (Colonnelli, 2004).

**Distribution in World:** Austria, Belarus, Belgium, Bulgaria, Canada, Denmark, Estonia, France, Georgia, Germany, Greece, Hungary, Italy, Netherlands, Spain, Sweden, Switzerland, Kazakhstan, Kyrgyzstan, Lithuania, Moldova, Norway, Poland, Portugal, Romania, Russia (European), Serbia, Siberia (western and central), Slovakia, Slovenia, Türkiye, Ukraine, (Colonnelli, 2004).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species is a first record for the fauna of Diyarbakır province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

**Genus:** *Stenocarus* Thomson, 1865

***Stenocarus ruficornis* (Stephens, 1831)**

**Material examined:** 1♂, 01.V.2007, Diyarbakır (Dicle University Campus).

**Host plant:** Unknown

**Record Host plants:** *Papaver*, *Glaucium* (Colonnelli, 2004).

**Distribution in World:** Austria, Belarus, Belgium, Bulgaria, Czech Republic, Denmark, England, France, Georgia, Germany, Ireland, Kazakhstan, Kyrgyzstan, Macedonia, Moldova, Netherlands, Poland, Portugal, Romania, Russia (Europe), Siberia (western and central), Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Türkiye, Ukraine (Colonnelli, 2004).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species is a first record for the fauna of Diyarbakır province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

**Subfamily:** Curculioninae Latreille, 1802

**Genus:** *Rhinusa* Stephens, 1829

***Rhinusa asellus* (Gravenhorst, 1807)**

**Material examined:** 5♀♀ 5♂♂, Diyarbakır (This species has been obtained from laboratory larval culture) (Larvae were collected from Ergani district on 1, 16 and 17 May 2019, and from Yenışehir district on 8 May 2019).

**Host plants:** *Verbascum* spp.

**Record Host plants:** *Althaea*, *Prunus*, *Verbascum*

(Lodos et al., 2003).

**Distribution in the World:** Austria, Bulgaria, Czech Republic, East Palaearctic, French mainland, Germany, Italian mainland, Near East, Poland, Sardinia, Sicily, Slovakia, Switzerland (Anonymous, 2019).

**Distribution in Türkiye:** Kayseri, Kırşehir, Konya, Yozgat (Sert, 1995); Adana, Mersin, Niğde, Tarsus (Erbey, 2010).

**Distribution in the Southeastern Anatolia Region of Türkiye:** *Rhinusa asellus* is a first record for the fauna of Diyarbakır province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

***Rhinusa tetra* (Fabricius, 1792)**

**Material examined:** 5♀♀ 5♂♂, Diyarbakır (This species has been obtained from laboratory larval culture) (Larvae were collected from Ergani district on 1, 16, and 17 May 2019, and from Yenişehir district on 8 May 2019).

**Host plants:** *Verbascum* spp.

**Record Host plants:** *Pinus*, *Prunus*, *Quercus*, *Sinapis*, *Styrax*, *Triticum*, *Vicia*, *Verbascum* (Lodos et al., 2003).

**Distribution in the World:** Albania, Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Central European Russia, Corsica, Croatia, Czech Republic, East European Russia, East Palaearctic, European Türkiye, French mainland, Germany, Greek mainland, Hungary, Italian mainland, Macedonia, the former Yugoslav Republic of, Near East, Nearctic region, North Africa, Poland, Portuguese mainland, Romania, Sardinia, Sicily, Slovakia, Slovenia, South European Russia, Spanish mainland, The Netherlands, Ukraine, Yugoslavia (Anonymous, 2019).

**Distribution in Türkiye:** Adana, Elazığ, Mersin, Niğde, Tarsus (Erbey, 2010; Özgen et al., 2016)

**Distribution in the Southeastern Anatolia Region of Türkiye:** *Rhinusa tetra* is the first record for the fauna of Diyarbakır province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

**Genus:** *Tychius* Germar, 1817

***Tychius aureolus* Kieswetter, 1851**

**Material examined:** 2♀♀1♂, 21.X.1998 Şanlıurfa (Tülmen Village).

**Host plant:** *Pistacia vera* L.

**Record Host plants:** *Amygdalus communis* L., *Avena sativa* L., *Medicago sativa* L., *Onobrychis sativa* Lam., *Vicia sativa* L. (Bingöl, 1978; Akkaya, 1995).

**Distribution in the World:** Central Asia, Europe, Türkiye (Hoffmann, 1954; Lodos et al., 1978).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species has been recorded for the provinces of Adıyaman, Batman, Diyarbakır, Gaziantep, Mardin, Siirt, Şanlıurfa and Şırnak in previous studies (Bingöl, 1978; Akkaya, 1995).

**Subfamily:** Entiminae Schoenherr, 1823

**Genus:** *Polydrusus* Germar, 1817

***Polydrusus corruscus* Germar, 1824**

**Material examined:** 8♀♀5♂♂, 15.IV.1993, Şanlıurfa.

**Host plant:** *Pistacia vera* L.

**Record Host plants:** *Salix*, *Populus* (Lodos et al., 2003).

**Distribution in the World:** Caucasus, Corsica, France, Russia (West), Switzerland, Türkiye, Yugoslavia (Dalla Torre et al., 1931 to 1939; Hoffmann, 1950).

**Distribution in the Southeastern Anatolia Region of Türkiye:** *Polydrusus corruscus* is a first record for the fauna of Şanlıurfa province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

**Genus:** *Sitona* Germar, 1824

***Sitona crinitus* (Herbst, 1795)**

**Material examined:** 2♀♀2♂♂, 22.IV.1993, Şanlıurfa.

**Host plant:** *Pistacia vera* L.

**Record Host plants:** *Salix*, *Astragalus*, *Malus*, *Medicago*, *Pyrus*, *Prunus*, *Vicia* (Lodos et al., 2003); *Avena sativa* L., *Lens culinaris* L., *Medicago sativa* L., *Onobrychis sativa* Lam., *Pistacia vera* L., *Vicia sativa* L. (Lodos et al., 1984; Bolu et al., 2005)

**Distribution in the World:** North Africa, North America, West and Central Asia, Türkiye (Dalla Torre et al., 1931-1939; Lodos et al., 1978; Dieckmann, 1980).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species has been recorded for the provinces of the Southeastern Anatolia Region of Türkiye (Adıyaman, Diyarbakır, Gaziantep, Mardin, Siirt, Şanlıurfa) (Lodos et al., 1984; Bolu et al., 2005).

**Genus:** *Tanymecus* Germar, 1817

***Tanymecus dilaticollis* Gyllenhal, 1834**

**Material examined:** 2♀♀2♂♂, 08.V.2007, Diyarbakır (Dicle University Campus).

**Host plant:** Unknown

**Record Host plants:** *Medicago*, *Pinus*, *Verbascum* (Lodos et al., 2003).

**Distribution in the World:** Armenia, Austria, Avusturya, Bulgaria, Cyprus, Georgia, Greece, Iran, Iraq, Moldova, Romania, Serbia, Türkiye, Ukraine (Alonso-Zarazaga et al., 2017).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species has been recorded for the provinces of the Southeastern Anatolia Region of

Türkiye (Adıyaman) (Bingöl, 1978; Lodos et al., 2003).

**Subfamily:** Lixinae Schoenherr, 1823

**Genus:** *Larinus* Germar, 1824

***Larinus latus* Herbst, 1874**

**Material examined:** 1♂, 08.V.2007, Diyarbakır (Dicle University Campus).

**Host plant:** Unknown

**Record Host plants:** *Gundelia tournefortii* L. (Karaat et al., 1986), *Onopordum* (Hoffmann, 1950; Lodos et al., 2003).

**Distribution in the World:** Caucasus, Crimea, Iran, Syria, Türkiye, Ukraine, (Ter-Minassian, 1978).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species has been recorded for the province of Diyarbakır in previous studies (Karaat et al., 1986).

***Larinus onopordi* Fabricius, 1787**

**Material examined:** 1♀, 08.V.2007, Diyarbakır (Dicle University Campus).

**Host plant:** Unknown

**Record Host plants:** *Centaurea*, *Cirsium*, *Onopordum*, *Pinus* (Lodos et al., 2003), *Echinops* (Ter-Minassian, 1967).

**Distribution in the World:** Caucasus, Central Europe, Greece, Hungary, Iran, Kazakhstan, North Africa, Russia, Southern Europe, Syria, Tajikistan, Türkiye, Turkmenistan, Ukraine, (Hoffmann, 1954; Ter-Minassian, 1978).

**Distribution in the Southeastern Anatolia Region of Türkiye:** *Larinus onopordi* has been recorded for the province of Gaziantep in previous studies (Lodos et al., 2003). This species is the first record for the fauna of Diyarbakır province.

***Larinus sturnus* Schaller, 1873**

**Material examined:** 2♀♀3♂♂, 22.V.2014 Diyarbakır (Dicle University Campus); 1♀1♂, 21.IV.2007 Diyarbakır (Köprüküy Village).

**Host plant:** Unknown

**Record Host plants:** *Onopordum* (Lodos et al., 2003), *Carduus*, *Centaurea*, *Cirsium* (Compositae) (Balalaikins and Bukejs, 2011).

**Distribution in the World:** Algeria, Caucasus, Central Asia, Europe, Former Soviet Union (European part), Iran, Türkiye (Hoffmann, 1954; Lodos et al., 1978; Ter-Minassian, 1978).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species is first record for the fauna of Diyarbakır province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

**Genus:** *Lixus* Fabricius, 1801

***Lixus cardui* Olivier, 1808**

**Material examined:** 2♀♀ 12.III.2007, 1♂ 26.III.2007, 1♀ 20.IV.2007, 1♂ 02.5.2007 Diyarbakır (Dicle University Campus).

**Host plant:** Unknown

**Record Host plants:** *Ammiaceae* (Dieckmann, 1983), *Centaurea*, *Onopordum* (Lodos et al., 2003), *Amygdalus communis* L., *Onopordum* sp., *Prunus avium* L. (Bolu et al., 2005; Çınar et al., 2005; Bolu & Legalov, 2007).

**Distribution in the World:** Caucasus, Central Europe, Hungary, Iran, Italy, Mediterranean Coast, Soviet Union (middle and south of the European part), Türkiye (Hoffmann, 1954; Ter-Minassian, 1978; Abazzi and Osella, 1992).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species has been recorded for the provinces of Diyarbakır and Mardin (Bolu et al., 2005; Çınar et al., 2005; Bolu & Legalov, 2007).

***Lixus elongatus* Goeze, 1777**

**Material examined:** 1♀ 2♂, 21.IV.2007 Diyarbakır (Köprüküy Village).

**Host plant:** Unknown

**Record Host plants:** *Centaurea*, *Cirsium*, *Onopordum*, *Tamarix*, *Verbascum* (Lodos et al., 2003); *Amygdalus communis* L. (Bolu et al., 2005; Bolu & Legalov, 2007).

**Distribution in the World:** Algeria, Caucasus, Central Asia, Europe, Soviet Union (the southern part of Europe), Türkiye (Hoffmann, 1954; Ter-Minassian, 1978; Abazzi and Osella, 1992).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species has been recorded for Diyarbakır and Mardin provinces of the Southeastern Anatolia Region of Türkiye (Bolu et al., 2005; Bolu & Legalov, 2007).

***Lixus recurvus* Olivier, 1807**

**Material examined:** 1♀, 10.IV.2007, Diyarbakır (Dicle University Campus).

**Host plant:** Unknown

**Record Host plants:** *Heracleum*, *Angelica*, *Falcaria* (Apiaceae) (Gültekin, 2006).

**Distribution in the World:** Armenia, Azerbaijan, Georgia, Iran, Russia, and Türkiye (Alonso-Zarazaga et al., 2017).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species is first record for the fauna of Diyarbakır province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

***Lixus scolopax* Bohemann, 1836**

**Material examined:** 1♀, 21.V.2006, 1♀, 15.V.2007, 1♂, 22.V.2007 Diyarbakır (Dicle University Campus); 2♂♂, 21.IV.2007 Diyarbakır (Köprüküy Village).

**Host plant:** Unknown

**Record Host plants:** *Centaurea*, *Onopordum* (Lodos et al., 2003).

**Distribution in the World:** Caucasus, Mediterranean Coast, Southern Europe, Soviet Union (the southern part of Europe), Türkiye (Ter-Minassian, 1978; Lodos et al., 1978).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species has been recorded for the province of Gaziantep in previous studies (Lodos et al., 2003). *Lixus scolopax* is the first record for the fauna of Diyarbakır

**Genus:** *Coniocleonus* Motschulsky, 1860

*Coniocleonus (Augustecleonus) hollbergii* (Fåhraeus, 1842)

**Material examined:** 1♂, 10.IV.2007, Diyarbakır (Dicle University Campus)

**Host plant:** Unknown

**Record Host plants:** *Rumex acetosella* (Polygonaceae), *Calluna* (Ericaceae) (Balalaikins and Bukejs, 2011).

**Distribution in the World:** Austria, Belarus, Czech Republic, France, Germany, Hungary, Italy, Latvia, Poland, Russia, Sweden, Siberia (Russia) (Alonso-Zarazaga et al., 2017).

**Distribution in Türkiye:** This species is the first record for insect fauna of Türkiye.

Subfamily: Otiorrhynchinae

**Genus:** *Otiorhynchus* Germar, 1822

*Otiorhynchus sulcatus* (Fabricius, 1775)

**Material examined:** 9♀♀, 26.I.2009 (This species has been obtained from laboratory larval culture).

**Host plant:** *Vitis vinifera* L.

**Record Host plants:** *Laurus*, *Myrtus*, *Rosa*, *Smilax* (Lodos et al., 2003).

**Distribution in the World:** Albania, Austria, Belarus, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, Ukraine (Lodos et al., 2003; Alonso-Zarazaga et al., 2017).

**Distribution in the Southeastern Anatolia Region of Türkiye:** This species is first record for the fauna of Diyarbakır province. Moreover; this species is also the first record for the fauna of the Southeastern Anatolia Region of Türkiye.

## DISCUSSION

When the literature is examined, there are not many studies in the Southeastern Anatolia region in Türkiye. Therefore, the fauna in this region is not very well known. For this reason, the faunistic

studies carried out here gain importance. In this study, one species, *Stephanocleonus hollbergii*, was recorded as a new record for Türkiye. In addition, 9 species were determined as new records for the region. As it is known, most of the members of the Curculionidae family are harmful because they are phytophagous. They cause significant damage to many agricultural and agricultural products (Hoffmann, 1950; Mihajlova, 1978). There are very large agricultural areas in the Southeastern Anatolia region. Therefore, the determination of the fauna in this region is important in terms of control agricultural pests. In this study, the Curculionidae family, which is distributed in the Southeastern Anatolia Region, was tried to be determined and the contribution of the obtained results to the fauna was evaluated.

## CONCLUSION

In this study, 11 genera belonging to 5 subfamilies of Curculionidae (Coleoptera) family and 18 species belonging to these genera were determined. Among these species, 1 species (*Coniocleonus hollbergii* Fåhraeus, 1842) was determined as a new record for the fauna of Türkiye. In addition, 9 species were determined as new records from the region. These species are; *Coeliodes ruber* Marsham, 1802, *Mogulones crucifer* (Pallas, 1771), *Stenocarus ruficornis* (Stephens, 1831), *Rhinusa asellus* (Gravenhorst, 1807), *R. tetra* (Fabricius, 1792), *Polydrusus corruscus* Germar, 1824, *Larinus sturnus* Schaller, *Lixus recurvus* Olivier, 1807 and *Otiorhynchus sulcatus* (Fabricius, 1775).

## Author's Contribution

The authors declare that they have contributed equally to the article.

## Statement of Conflict of Interest

Authors have no conflict of interest to declare.

## Statement of Research and Publication Ethics

The authors declare that this study has been performed in accordance with research and publication ethics.

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