

Contribution to Pentatomoidea (Heteroptera) Fauna of Iğdır and Istanbul with Three New Records for Turkish Fauna

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ABSTRACT: In this study, 34 species of Pentatomidae and 3 species of Scutelleridae are recorded from Iğdır and 1 species of Scutelleridae is recorded from Istanbul. Among these species, *Tarisa elevata* Reuter, 1901, *Brachynema signatum* Jakovlev, 1879 and *Phimodera amblygonia* Fieber, 1863 are recorded from Turkey for the first time.

KEYWORDS: Pentatomidae, Scutelleridae, Iğdır, Istanbul, new records, Turkey.

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INTRODUCTION

The superfamily Pentatomoidea (Heteroptera) consists of 16 families worldwide (Henry, 2017), of which only Acanthosomatidae, Cydnidae, Dinidoridae, Pentatomidae, Plataspidae, Scutelleridae and Thyreocoridae are present in Turkey (Önder et al., 2006).

Pentatomidae Leach, 1815 is a diverse family with over 4700 species known worldwide and 953 of which are present in Palaearctic region (Rider, 2006; Aukema et al., 2013). Most species of Pentatomidae are phyto-phagous and several are considered serious economic pest (e.g. *Nezara viridula*, *Aelia* spp., *Halyomorpha halys*) (Rider, 2006).

Up to now, 166 species of Pentatomidae are recorded from Turkey (Belousova,

1999; Önder et al., 2006; Rider, 2006; Fent & Aktaş, 2007; Memon & Ahmad, 2008; Fent et al., 2010a; 2010b; Fent et al., 2013; Dursun & Fent, 2013; Yazıcı et al., 2014; Çerçi & Koçak, 2017).

Scutelleridae Leach, 1815 is a less diverse family with about 450 species known worldwide and 180 species in Palaearctic region. They are strictly plant-feeding and some of them are economically important pests, especially some species of *Eurygaster* (Göllner-Scheiding, 2006). This family is represented by 40 species in Turkish fauna (Lodos, 1963; Önder et al., 2006; Göllner-Scheiding, 2006; Carapezza, 2009; Yıldırım et al., 2014).

The Pentatomoidea fauna of Iğdır is poorly investigated. The first investigations

were done by Horváth (1894) and Kiritshenko (1918) who had recorded only 6 species from this province. Later, Lodos & Önder (1978) described a new *Tarisa* species, *T. igdirensis*, and recorded another species, *Tarisa subspinosa subspinosa* (Germar, 1839) from Iğdır.

Most recently, several authors have put some attention to the Pentatomoidea fauna of Iğdır and recorded additional 30 species (Önder et al., 2006; Külekçi et al., 2009; Yazıcı et al., 2014; Yıldırım et al., 2014; Yazıcı et al., 2015; Dursun & Fent, 2015).

As a result, a total of 32 Pentatomidae, 4 Scutelleridae and 2 Cynidae species are known from Iğdır. Pentatomoidea fauna of Istanbul is also very poorly studied with 38 Pentatomidae, 8 Scutelleridae, 8 Cydnidae, 3 Acanthosomatidae, 1 Plataspidae and 1 Thyreocoridae species recorded up to now (Horváth, 1917; 1918; Fahringer, 1922; Linnavuori, 1965; Lodos & Önder, 1979; Önder et al., 1981; Lodos & Önder, 1982; Önder et al., 2006; Fent & Aktaç, 2007; 2009; Yazıcı et al., 2014).

MATERIAL AND METHODS

The study was conducted in 29 different locations in Center, Aralık, Karakoyunlu and Tuzluca counties of Iğdır province between 2014 and 2019 and a single species was collected in 2016 from Esenyurt, Istanbul.

The specimens were collected with hand, sweeping net and light traps between April and November, killed with ethylacetate and etiquette informations were added. Later on, specimens were pinned with insect pins and deposited for identification. Photographs were taken by Nikon D 3300 DSLR Camera combined with Tokina 100mm F2.8 AT-X PRO Macro Lens and 68mm extension tubes. Stacking of images was done by Combine ZM stacking program. Genital examination was done under Celestron Micro 360 Dual Purpose Microscope. The

specimens are preserved in the private collection of the first author.

RESULTS

Among the 38 species of Pentatomoidea recorded from Iğdır and İstanbul in this study, 20 species are new for the fauna of Iğdır and 1 is new for the fauna of İstanbul.

Consequently, total number of Pentatomoidea species recorded from Iğdır and İstanbul rises to 58 and 60, respectively.

Among them, three species are new for the fauna of Turkey, therefore total number of Pentatomoidea species recorded from Turkey rises to 269.

Species marked with single asterisk (*) are new records for the province they have been collected from, those marked with double asterisks (**) are new records for the fauna of Turkey.

PENTATOMIDAE Leach, 1815

ASOPINAE Amyot & Serville, 1843

Zicrona caerulea (Linnaeus, 1758)

Material examined: Iğdır: 3 males 5 females, 01.05.2019 (Aralık), C. Gözüaçık leg., B. Çerçi det.

PODOPINAE Amyot & Serville, 1843

**Derula flavoguttata* Mulsant & Rey, 1856

Material examined: Iğdır: 1 female, 21.06.2014 (Tuzluca). C. Gözüaçık leg., B. Çerçi det.

Graphosoma (Graphosoma) italicum italicum (O.F. Müller, 1876)

Material examined: Iğdır: 5 males 7 females, 05.10.2018 (Melekli). C. Gözüaçık leg., B. Çerçi det.

**Graphosoma (Graphosoma) semipunctatum* (Fabricius, 1775)

Material examined: Iğdır: 5 males 3 females, 08.06.2015 (Tuzluca). C. Gözüaçık leg., B. Çerçi det.

*****Tarisa elevata* Reuter, 1901 (Fig. 1)**

Material examined: Iğdır: 1 male 1 female, 02.07.2014 (Kent Ormanı). C. Gözüaçık leg., B. Çerçi det.

Comments: The genus *Tarisa* Amyot & Serville, 1843 consists of 17 species and 1 subspecies distributing in Africa, south of Europe, Anatolia, Middle East and Middle Asia (Rider, 2006). It is represented by following 3 species in Turkey: *T. subspinosa subspinosa* (Germar, 1839), *T. virescens* Herrich-Schaeffer, 1851 and *T. igdirensis* Lodos & Önder, 1978, while the latter is endemic to Turkey (Önder et al., 2006). Şerban (2010) recorded *Tarisa flavescens* Amyot & Serville, 1843 from Turkey. But it should be noted that the specimen, illustrated in the black and white photograph given by Şerban (2010), lacks the characteristic tubercles of *T. flavescens* on the pronotum and scutellum and that specimen infact very probably refers to *T. virescens* which is common in Anatolia. All of these species are known from Iğdır (Lodos & Önder, 1978; Yazıcı et al., 2014).

Tarisa elevata Reuter, 1901 is known from most Middle Asian countries, south of Russia and Iran (Rider, 2006). *T. elevata* (Fig. 1A) differs from *T. virescens* by the very small and almost indistinct callous elevations of the basal angles of the scutellum. It also differs from *T. igdirensis* (Fig. 1B) and *T. subspinosa subspinosa*, which also lack such callous elevations, by the middle tubercule of the scutellum exceeding the level of pronotum in height (Fig. 1C). *T. elevata* can also be distinguished from *T. virescens* by the hooks of the aedeagus being short and broad (Fig. 1E) which are long and thin in the latter (Fig. 1F) (Kerzhner, 1964).

****Tholagmus flavolineatus* (Fabricius, 1798)**

Material examined: Iğdır: 1 female, 08.06.2015 (Tuzluca). C. Gözüaçık leg., B. Çerçi det.

****Ventocoris (Astirocoris) oblongus* (Horváth, 1889)**

Material examined: Iğdır: 1 male 4 females, 25.05–02.07.2014 (Aralık). C. Gözüaçık leg., B. Çerçi det.

****Ventocoris (Astirocoris) bulbifer* Seidenstücker, 1964**

Material examined: Iğdır: 1 male, 23.05.2015 (Tuzluca). C. Gözüaçık leg., B. Çerçi det.

PENTATOMINAE Leach, 1815

****Acrosternum heegeri* Fieber, 1861**

Material examined: Iğdır: 1 female, 22.06.2018 (Aralık), 1 male, 31.05.2014 (Melekli). C. Gözüaçık leg., B. Çerçi det.

***Aelia acuminata* Linnaeus, 1758**

Material examined: Iğdır: 1 male, 24.05.2014 (Kılıçlar), 1 male, 25.05.2014 (Aralık), 1 female, 22.06.2019 (Aralık), 1 female, 08.05. 2014 (Center), 1 male 1 female, 11.07.2014 (Karakoyunlu), 1 female, 29.06.2015 (Hakmehmet), 1 female, 23.05.2015 (Üçkaya). C. Gözüaçık leg., B. Çerçi det.

****Aelia melanota* Fieber, 1868**

Material examined: Iğdır: 1 male 1 female, 18.05.2015 (Aralık), 1 male, 22.05.2015 (Kasımcan), 1 female, 23.05.2015 (Üçkaya), 1 female, 12.06.2015 (Kağızman), 1 female, 23.07.2018 (Suveren), 1 female, 15.07.2018 (Suveren), 3 females, 03.10.2018 (Suveren). C. Gözüaçık leg., B. Çerçi det.

***Aelia rostrata* Boheman, 1852**

Material examined: Iğdır: 1 male, 25.05.2015 (Hakmehmet), 1 male 1 female, 05.06.2016 (Üçkaya). C. Gözüaçık leg., B. Çerçi det.

***Aelia virgata* (Herrich-Schaeffer, 1841)**

Material examined: Iğdır: 1 male, 23.05.2015 (Karabulak), 1 male, 03.10.2018 (Suveren), 3 males 1 female, 09.07.2019 (Donaltı). C. Gözüaçık leg., B. Çerçi det.

***Apodiphus amygdali* (Germar, 1817)**

Material examined: İğdır: 2 females, 15.09.2018 (Karaağaç). C. Gözüaçık leg., B. Çerçi det.

***Anthemina pusio* (Kolenati, 1846)**

Material examined: İğdır: 2 males, 1 female, 22.06.2019 (Aralık), 2 males, 1 female, 19.06.2019 (Gödekli). C. Gözüaçık leg., B. Çerçi det.

***Bagrada (Nitilia) abeillei* Puton, 1881**

Material examined: İğdır: 1 female, 16.05.2014 (Ü. Çiftliği), 1 female, 25.05.2014 (Emince). C. Gözüaçık leg., B. Çerçi det.

***Brachynema germarii* (Kolenati, 1846)**

Material examined: İğdır: 1 male, 28.05.2019 (Aralık); 1 female, 09.07.2019 (Donaltı). C. Gözüaçık leg., B. Çerçi det.

*****Brachynema signatum* Jakovlev, 1879 (Fig. 2A)**

Material examined: İğdır: 2 males, 3 females, 22.06.2019 (Aralık). C. Gözüaçık leg., B. Çerçi det.

Comments: The genus *Brachynema* Mulsant & Rey, 1852 has of 4 species and 3 subspecies in the Palearctic region (Rider, 2006; Ribes & Pagola-Carte, 2007). In Turkey, only *B. germarii* (Kolenati, 1846) and *B. cinctum* (Fabricius, 1775) are known (Önder et al., 2006). While the first one is widely distributed in Anatolia, latter is only known from Amasya and Erzurum (Önder et al., 2006; Dursun & Kartal, 2008; Yazıcı et al., 2014). *Brachynema signatum* Jakovlev, 1879 is a unique species among its congenres with the presence of a whitish-yellow spot at the middle of anterior margin of the pronotum and very large spots at the base of the scutellum (Fig.2A) (Ribes & Schmitz, 1992). It is known from Armenia, Azerbaijan, Georgia and Iran which are all close neighbours of İğdır province.

***Carpocoris (Carpocoris) coreanus* Distant, 1899**

Material examined: İğdır: 1 female, 23.05.2015 (Pirli), 1 male, 08.05.2015 (Çamurlu), 2 males, 25.05.2015 (Melekli).

C. Gözüaçık leg., B. Çerçi det.

***Carpocoris (Carpocoris) pudicus* (Poda, 1761)**

Material examined: İğdır: 1 female, 23.05.2015 (Pirli), 1 female, 23.05.2015 (Aliköse); 1 male, 05.06.2016 (Küçükova), 1 male, 15.07.2018 (Suveren). C. Gözüaçık leg., B. Çerçi det.

****Chroantha ornatula* (Herrich-Schaeffer, 1842)**

Material examined: İğdır: 1 female, 08.09.2018 (Suveren). C. Gözüaçık leg., B. Çerçi det.

****Codophila varia* (Fabricius, 1787)**

Material examined: İğdır: 4 males, 10 females, 03.10.2018 (Suveren). C. Gözüaçık leg., B. Çerçi det.

***Dolycoris baccarum* (Linnaeus, 1758)**

Material examined: İğdır: 1 male, 16.05.2014 (Center). C. Gözüaçık leg. & det.

****Eurydema (Rubrodorsalium) blanda* Horváth, 1903**

Material examined: İğdır: 1 male, 09.06.2016 (Üçkaya). C. Gözüaçık leg., B. Çerçi det.

***Eurydema (Eurydema) oleracea* (Linnaeus, 1758)**

Material examined: İğdır: 1 male, 17.06.2014 (Hamurkesen). C. Gözüaçık leg., B. Çerçi det.

***Eurydema (Eurydema) ornata* (Linnaeus, 1758)**

Material examined: İğdır: 2 males, 2 females, 01.07.2014 (Tuzluca), 3 males, 4 females, 30.06.2014 (Bayraktutan). C. Gözüaçık leg., B. Çerçi det.

****Eysarcoris ventralis* (Westwood, 1837)**

Material examined: İğdır: 1 male 2 females, 22.06.2019 (Aralık). C. Gözüaçık leg., B. Çerçi det.

****Mustha spinosula* (Lefebvre, 1831)**

Material examined: İğdır: 1 female, 19.09.2018 (Aralık). C. Gözüaçık leg., B. Çerçi det.

****Palomena prasina* (Linnaeus, 1761)**

Material examined: İğdır: 1 female,

05.06.2016 (Üçkuyu). C. Gözüaçık leg., B. Çerçi det.

***Pausias (Pausias) martini (Puton, 1890)**

Material examined: Iğdır: 4 males, 8 females, 11.10.2018 (Melekli). C. Gözüaçık leg., B. Çerçi det.

Peribalus (Peribalus) strictus strictus (Fabricius, 1803)

Material examined: Iğdır: 1 female, 23.05.2015 (Yaycı), 1 female, 01.05.2019 (Center), C. Gözüaçık leg., B. Çerçi det.

***Piezodorus lituratus (Fabricius, 1794)**

Material examined: Iğdır: 1 female, 08.05.2015 (Aralık). C. Gözüaçık leg., B. Çerçi det.

Rhaphigaster nebulosa (Poda, 1761)

Material examined: Iğdır: 1 male, 23.10.2014 (Suveren). C. Gözüaçık leg. & det.

***Sciocoris (Sciocoris) sulcatus Fieber, 1851**

Material examined: Iğdır: 2 males, 12 females, 17.05.2015 (A. Çiftlik) (on *Medicago* sp.). C. Gözüaçık leg., B. Çerçi det.

SCUTELLERIDAE Leach, 1815

EURYGASTERINAE Amyot & Serville, 1843

Eurygaster integriceps Puton, 1881

Material examined: Iğdır: 1 female, 22.05.2015 (Karakoyunlu). C. Gözüaçık leg., B. Çerçi det.

ODONTOTARSINAE Mulsant & Rey, 1865

Odontotarsus purpureolineatus (Rossi, 1790)

Material examined: Iğdır: 1 female, 15.07.2018 (Suveren), 1 female, 12.09.2018 (Suveren); 1 female, 27.05.2015 (Karakoyunlu); 1 female, 08.06.2015 (Pirli). C. Gözüaçık leg., B. Çerçi det.

****Phimodera amblygonia Fieber, 1863 (Fig. 2B)**

Material examined: İstanbul: 1 female, 01.10.2016 (Esenyurt). B. Çerçi leg. & det.

Comments: The genus *Phimodera* Germar, 1839 consists of 24 species in Pal-

earctic region, most of which distribute in Middle Asia and a few in Europe and Turkey (Göllner-Scheiding, 2006). The species of this genus prefer steppic habitats (Davidová-Vilimová & Král, 2003). There are 3 species of *Phimodera* recorded from Turkey up to now: *Phimodera fumosa* Fieber, 1863, *Phimodera tuberculata* Jakovlev, 1874 and *Phimodera flori* Fieber, 1863 (Önder et al., 2006; Dursun & Fent, 2010; Yıldırım et al., 2014). Among these 3 species, *P. tuberculata* is very distinctive with very prominent and strong tubercles on each connexival segment (Reuter, 1906). *P. amblygonia* is characterized by the presence of numerous large rounded pale coloured tubercles on the scutellum and pronotum, obliquely truncated apical margins of jugal and strongly elevated carina of clypeus which lies along all the length of the clypeus (Reuter, 1906). It can be easily distinguished from *P. fumosa* by the lateral margins of the pronotum being almost straight. It can also be easily distinguished from *P. flori* by the presence of numerous large rounded pale coloured tubercles on the scutellum and pronotum and strongly elevated carina of clypeus which lies along all the length of the clypeus (Reuter, 1906). It distributes in Middle Asia, western part of Russia and Ukraine (Göllner-Scheiding, 2006). This record from İstanbul expands the known distribution of this species about 500 km to the south.

***Phimodera fumosa Fieber, 1863**

Material examined: Iğdır: 1 female, 29.05.2015 (Hakmehmet). C. Gözüaçık leg., B. Çerçi det.

DISCUSSION

In this study, 37 species of Pentatomidae and Scutelleridae and 1 species of Scutelleridae are recorded from Iğdır and İstanbul, respectively. Among these species, 20 species were recorded from Iğdır province for the first time. The total number of Pentatomoidea species recorded from Iğdır was increased to 58 but this number possibly does not reflect the whole Pentatomoidea fauna of Iğdır and further

researches from this poorly studied area may even reveal new species for science. Following three species are recorded from Turkey for the first time: *Tarisa elevata* Reuter, 1901, *Brachynema signatum* Jakovlev, 1879 and *Phimodera amblygonia* Fieber, 1863. While the first two species were found in Iğdır and were known from neighbouring countries, the latter was found from İstanbul and its finding in İstanbul expands the known distribution of this species about 500 km south. Overall, these records contribute to a better knowledge of Pentatomoidea fauna of Turkey. But further researches are needed to understand the true diversity of Pentatomoidea fauna of Turkey.

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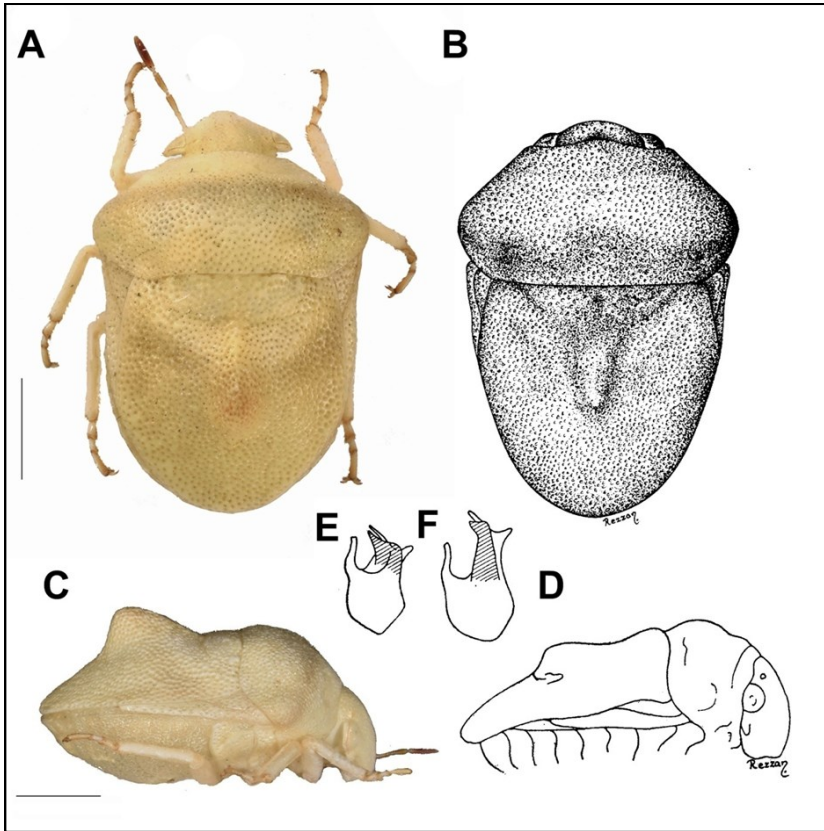


Fig. 1A-F. **A** – *Tarisa elevata* Reuter, 1901, female, dorsal view (Scale = 1 mm). **B** – *Tarisa igdirensis* Lodos & Önder, 1978, dorsal view. **C** – *Tarisa elevata* Reuter, 1901, female, lateral view (Scale = 1 mm). **D** – *Tarisa igdirensis* Lodos & Önder, 1978, lateral view. **E** – *Tarisa elevata* Reuter, 1901, aedeagus. **F** – *Tarisa virescens* Herrich-Schaeffer, 1851, aedeagus. [**B** and **D** originated from Lodos & Önder (1978), **E** and **F** originated from Kerzhner (1964)]

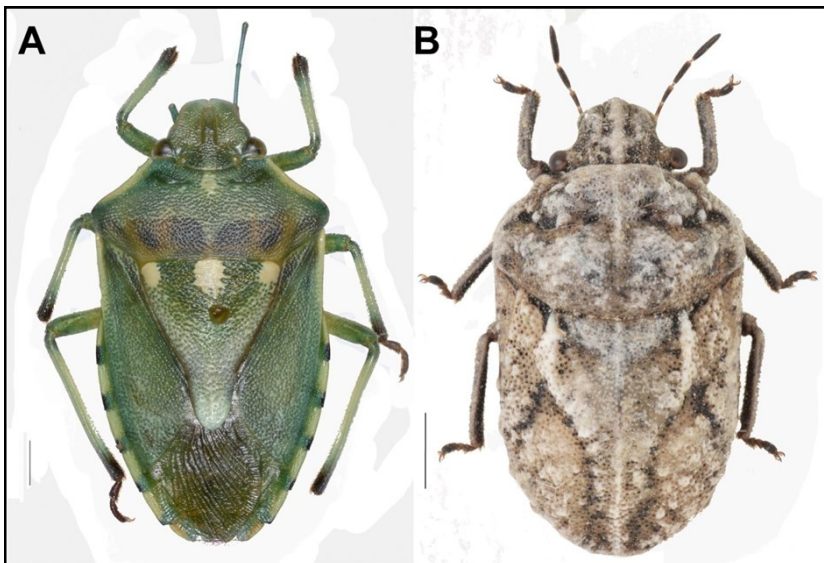


Fig. 2A-B. **A** – *Brachynema signatum* Jakovlev, 1879, female, dorsal view (Scale = 1 mm) **B** – *Phimodera amblygonia* Fieber, 1863, female, dorsal view (Scale = 1 mm).