

NEW AND INTERESTING RECORDS OF *ORTHOPS* FIEBER 1858 (HEMIPTERA: HETEROPTERA: MIRIDAE) IN TURKEY

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Abstract

This study is based on material of the genus *Orthops* Fieber 1858 collected from different localities in Turkey between 1983 and 2014, mostly 2006-2014. In the genus *Orthops* Fieber, 1858, six species are known from Turkey, including *Orthops* (*Montanorthops*) *forelii* Fieber, 1858, *O. (M.) montanus* (Schilling, 1838), *O. (Orthops) basalis* (A. Costa, 1853), *Orthops* (*O.*) *campestris* (Linnaeus, 1758), *O. (O.) frenatus* Horváth, 1894 and *O. (O.) kalmii* (Linnaeus, 1758). *Orthops* (*Orthops*) *frenatus* Horváth, 1894, is a new record for Turkish fauna. In this paper, diagnoses, distribution data and illustrated keys to the genera and species are provided. In addition, new localities are added for some species previously reported for Turkey.

KEY WORDS: Heteroptera, Miridae, Mirinae, Orthops, Turkey, faunistics

Introduction

Miridae (or plant bugs) is a group of Miroidea, which comprises eight subfamilies worldwide. They are represented by nearly 10040 species belonging to 1507 genera (Cassis & Schuh, 2006). This family comprises the subfamilies Isometopinae, Psallopinae, Cylapinae, Orthotylinae, Bryocorinae, Deraeocorinae, Mirinae and Phylinae (Cassis & Schuh, 2012). The *Orthops* genus belongs to the Mirini tribe. So far, 35 species have been recognized in this genus, belonging to two subgenera *Orthops* and *Montanorthops* (Schuh, 2016). Their body length is 3-6 mm. The vertex provides a margin. Genitalia of the males and females are distinctly small. Body color variable, but very seldom green; in this case, the rostrum does not exceed the intermediate coxae (Hosseini, 2014). In this genus, six species are known from Turkey, including, *O. (Montanorthops) forelii* Fieber, 1858, *O. (M.) montanus* (Schilling, 1838), *O. (Orthops) basalis* (A. Costa, 1853), *Orthops* (*O.*) *campestris* (Linnaeus, 1758), *O. (O.) frenatus* Horváth, 1894 and *O. (O.) kalmii*

(Linnaeus, 1758). *Orthops (Orthops) frenatus* Horváth, 1894, is reported here for the first time. Turkey is biogeographically one of the most interesting countries in the West Palaearctic region. Faunistic studies of this family in Turkey have been made by Hoberlandt (1955), Önder (1976), Bingöl (1978), Lodos *et al.* (1978), Altınayar (1981), Önder *et al.* (1981), Yayla (1983), Özkan (1984), Karaat (1986), Önder & Lodos (1987), Özbek & Alaoğlu (1987), Çam (1988), Lodos *et al.* (1989), Önder *et al.* (1990; 1998), Yıldırım & Özbek (1992), Güçlü *et al.* (1995 a, b), Çevik (1996), Yaşarakıncı & Hıncal (1997; 2000), Tezcan & Önder (1999; 2003), Yıldırım *et al.* (1999), Atakan (2000), Beyaz (2000), Özsarac & Kıyak (2001), Lodos *et al.* (2003), Kıyak *et al.* (2004), Çetin & Alaoğlu (2005), Ayyıldız & Atlıhan (2006) and Önder *et al.* (2006).

The aim of this paper is to present new collection and biological data on the *Orthops* genus in Turkey.

Materials and Methods

The material of the *Orthops* genus was collected from different localities in Turkey between 1983 and 2014. Collections from 1983 to 2005 are now part of the collections of the Entomological Museum, Erzurum, while specimens from 2005 to 2014 onwards are in the authors' private collections. Material was obtained by sweeping in meadow and pasture lands containing a variety of flowering plants. The provinces of the collected specimens are given in the Results section in alphabetical order in a list of species. The material is deposited in the Entomology Museum, Erzurum, Turkey (EMET). The species were identified by Dr. Rauno Linnavuori (Finland).

Important morphological characters were examined in species of the *Orthops* genus. *Orthops (Orthops) frenatus* Horváth, 1894, was dissected for examination and the abdomen was removed and placed in a cold 10% KOH solution for 10-20 min. Then the important genitalia parts showing the taxonomic characters of the specimens were removed from the abdomen. Digital photographs of species were captured on a Leica DFC290 camera mounted on a Leica Z16APO stereo zoom microscope, using the Leica application suite (version 2.7.0). Illustrations were done using CorelDRAW graphics software (version 12.0).

Results

In this study, six species from two subgenera of *Orthops* are recorded from Turkey. The key to subgenera and species present in Turkish fauna is given below.

Genus *Orthops* Fieber, 1858

Key to subgenera of genus *Orthops* Fieber, 1858

- 1- Middle of edge behind vertex thick (Fig. 1A)..... *Montanorthops* Ghauri
- Middle of edge behind vertex thin (Fig. 1B) *Orthops* Fieber

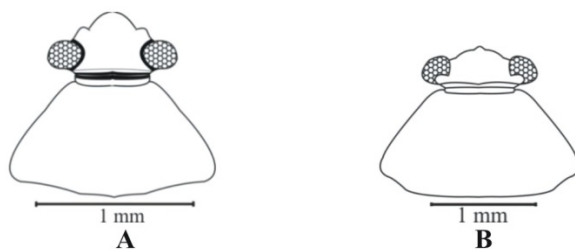


Figure 1. Diagnostic characters to subgenus of *Orthops* Fieber: A – vertex in *Montanorthops* Ghauri; B – vertex in *Orthops* Fieber.

Subgenus *Montanorthops* Ghauri, 1978

Key to species of subgenus *Montanorthops* Ghauri, 1978

- 1- All femora banded brown; pronotum black (Fig. 2A).....*Orthops (Montanorthops) forelii* Fieber
 - End of all the femora spotted reddish; side edge of pronotum banded dark (Fig 2B).....
*Orthops (Montanorthops) montanus* (Schilling)

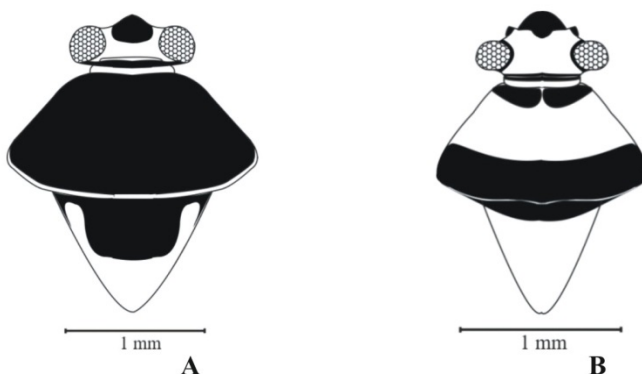


Figure 2. Diagnostic characters of species of *Montanorthops* Ghauri, 1978: A – pronotum in *Orthops (Montanorthops) forelii* Fieber; B – pronotum in *Orthops (Montanorthops) montanus* (Schilling).

Subgenus *Montanorthops* Ghauri, 1978

Orthops (Montanorthops) forelii Fieber, 1858 (Fig. 5B).

Material examined: Erzurum: Palandöken, Taşlıgüney, N 39°47'47", E 041°6'41", 1968 m, 09.08.2011, ♂; Yakutiye, University field, 1800 m, 20.07.2010, ♂, 18.08.2010, ♀, 08.09.2009, ♂; İspir, Çayırözü, N 40°33'13", E 040°54'44", 1947 m, 04.08.2012, ♂, Zeyrek, N 40°18'30", E 040°59'24", 2073 m, 22.06.2011, ♀; Oltu, Başbağlar, N 40°28'1", E 041°40'28", 1925 m, 13.07.2011, ♀; Şenkaya, Turnalı, 1750 m, 25.07.1996, 3 ♂♂; Uzundere, Yedigöller, N 39°18'17", E 041°55'19", 855 m, 07.06.2012, ♂.

Published Turkish records: Kayseri (Önder, 1976; Önder *et al.*, 2006).

Distribution: Palearctic Region (Önder *et al.*, 2006).

Orthops (Montanorthops) montanus (Schilling, 1838) (Fig. 5C).

Material examined: Erzurum: İspir, Zeyrek, N 40°18'30", E 040°59'24", 2073 m, 22.06.2011, ♀; Tortum, Arılı, N 40°22'12", E 041°28'51", 1428 m, 30.08.2012, ♀, ♂; Yakutiye, University field, 1800 m, 20.08.2010, ♂.

Published Turkish records: İzmir (Önder, 1970; Tezcan *et al.*, 2010); İzmir, Kütahya (Önder, 1976; Önder *et al.*, 2006); Adana, Antalya, Kahramanmaraş (Lodos *et al.*, 2003).

Distribution: Palearctic Region (Önder *et al.*, 2006).

Subgenus *Orthops* Fieber, 1858

Key to species of *Orthops* Fieber, 1858.

- 1- In posterior legs, 1st tarsus segment equal to 2nd (Fig. 2A); scutellum spotted black as U (Fig. 2C).....2
 - In posterior legs, 1st tarsus segment longer than 2nd (Fig. 3B); the bottom scutellum spotted small black.....
 *Orthops (Orthops) campestris* (Linnaeus)
- 2- Costal vein at the corium dark (ventral view) (Fig. 3C)3
 - Costal vein at the corium light (ventral view) (Fig. 3D)..... *Orthops (Orthops) frenatus* Horváth
- 3- Frons spotted one black; 3rd antennal segment shorter than width of the head (Fig. 5F).....
 *Orthops (Orthops) kalmii* (Linnaeus)
- Frons spotted two black; 3rd antennal segment longer than width of the head (Fig. 5D).....
 *Orthops (Orthops) basalis* (A. Costa)

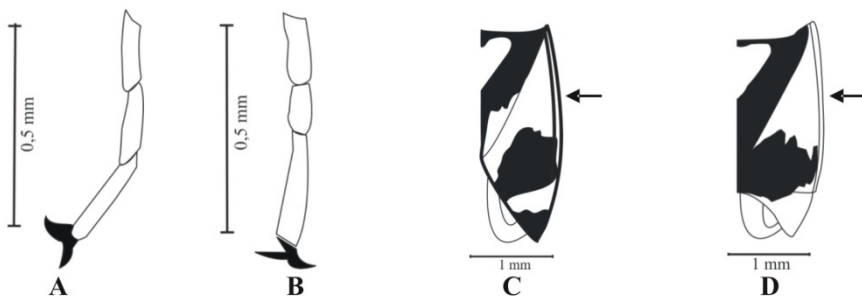


Figure 3. Diagnostic characters of species of *Orthops* Fieber: A - tarsus in *Orthops (Orthops) frenatus* Horváth; B - tarsus in *Orthops (Orthops) campestris* (Linnaeus); C - costal vein in *Orthops (Orthops) kalmii* (Linnaeus); D - costal vein in *Orthops (Orthops) frenatus* Horváth.

Orthops (Orthops) basalis (A. Costa, 1853) (Fig. 5D)

Material examined: Artvin: Ardanuç, Ferhatlı, 573 m, 15.06.2010, ♂; Bayburt: 1550 m, 12.08.2010, ♂, Çaldere, 1700 m, 13.08.2009, 3 ♀♀, Kop Mountain Pass, 2344 m, 12.08.2009, 2 ♀♀, ♂; Erzurum: Aşkale, Abdalcık, 1756 m, 01.08.2010, ♀, Çayköy, 1600 m, 03.06.2010, ♀, Dereköy, N 39°47'33", E 040°43'58", 1929 m, 05.07.2012, ♂, Kandilli, 1707 m, 01.08.2010, ♂, Kop Mountain, N 40°01'57", E 040°31'1", 2380 m, 05.09.2012, 2 ♂♂; Aziziye, Eğerti, N 40°0,6'14", E 040°58'45", 1906 m, 22.06.2011, ♂, Toprakkale, 2157 m, 30.07.2010, 2 ♂♂, Yoncalık, 1900 m, 16.08.2014, 5 ♂♂; Çat, Güzelyurt, N 39°46'5", E 041°2'43", 2009 m, 05.08.2011, ♂, N 39°46'1", E 041°02'21", 2117 m, 09.08.2011, ♂, Hınıs, 1742 m, 02.07.2010, ♂; Horasan, Kırkgözeler, 1599 m, 29.07.2010, ♂; İspir, 1259 m, 30.07.2010, 2 ♂♂, 1300 m, 07.08.2009, ♀, ♂, Çapanas, 2150 m, 20.08.2009, 3 ♀♀, ♂, İspir Pass, 1950 m, 20.08.2009, ♂, İncesu, 2100 m, 20.08.2009, 3 ♀♀, ♂, Kân, N 40°28'11", E 040°59'5", 1316 m, 22.06.2011, ♂, Madenköprübaşı, 1200 m, 20.08.2009, ♀; Köprüköy, Örentaş, 2038 m, 29.07.2010, ♀, Soğuksu, N 39°53'17", E 041°57'35", 1756 m, 17.07.2012, ♂; Narman, 1565 m, 21.07.2010, ♂, 1557 m, 04.08.2009, ♂, Mahmutçavuş, N 40°20'16", E 041°56'01", 1546 m, 13.08.2012, ♂; Oltu, Çamlıbel, N 40°28'31", E 041°46'27", 1661 m, 30.06.2012, ♀, ♂, N 40°29'06", E 041°45'47", 1635 m, 14.07.2014 m, ♀, Özdere, N 40°27'58", E 041°44'12", 1927 m, 16.07.2012, ♂, Sarısaz, N 40°31'56", E 041°54'37", 1388 m, 05.08.2012, 3 ♂♂; Olur, Kaban, N 40°46'41", E 042°12'01", 1215 m, 19.07.2012, ♀, ♂, Ormanağzı, N 40°46'12", E 042°05'29", 960 m, 05.08.2012, ♂, Taşlıköy, 870 m, 04.08.2009, ♀, ♂, 885 m, 04.08.2009, ♀, 2 ♂♂, Yeşilbağlar, 987 m, N 40°46'39", E 042°07'35", 19.07.2011, ♀, ♂; Palandöken, Palandöken Mountain, 2300 m, 21.07.2010, ♂, N 39°51'56", E 041°16'20", 2155 m, 22.07.2012, ♀, 2000 m, 08.08.2009, ♂; Pasinler, 05.09.1987, ♀, Aşıtlar, N 40°00'17", E 041°38'46", 1709 m, 12.08.2012, ♀, Büyüktuy, 1800 m, 02.07.2010, ♂, Yiğitpinarı, N 40°02'16", E 041°35'51", 1815 m, 22.07.2012, ♀, 2 ♂♂; Pazaryolu, N 40°25'12", E 040°47'08", 1495 m, 24.07.2011, 2 ♀♀, 1010 m, 07.08.2009, ♀, 2 ♂♂; Şenkaya, İkipınar, N 40°36'57", E 042°21'39", 1589 m, 31.07.2011, ♂, Paşalı, 1173 m, 31.07.2010, 3 ♂♂, Penek, N 40°39'17", E 042°17'13", 1145 m, 19.07.2011, ♀, ♂, Sındıran, 1491 m, 31.07.2010, 2 ♀♀, ♂, Taht, N 40°38'29", E 042°20'0", 1232 m, 14.07.2014, ♀, N 40°37'59", E 042°20'40", 1283 m, 31.07.2011, ♀, Turnalı, 1750 m, 25.07.1996, ♂, 1461 m, 31.07.2010, ♀, ♂, 1700 m, 31.07.2010, ♂; Tortum, N 40°18'35", E 041°31'33", 1518 m, 14.07.2014, 2 ♂♂, Aksukapı, N 40°23'59", E 041°32'46", 1648 m, 10.06.2012, ♀, 1750 m, 06.08.2010, ♂, Arılı, 05.08.2010, ♂, N 40°22'12", E 041°28'51", 1428 m, 30.08.2012, 3 ♂♂, Aşağı Sivri, N 40°19'34", E 041°31'47", 1546 m, 16.07.2012, ♂, Bağbaşı, N 40°29'36", E 041°29'06", 1191 m, 14.08.2012, ♀, Derekapı, 1285 m, 05.08.2010, ♀, ♂, Dikmen, N 40°29'09", E 041°25'00", 1304 m, 14.08.2012, ♂, Suyatağı, N 40°27'20", E 041°30'14", 1236 m, 21.07.2012, ♀, 2 ♂♂; Uzundere, 2000 m, 27.05.2010, ♀, Çamlıyamaç, N 40°36'43", E 041°32'41", 1290 m, 07.08.2011, 6 ♀♀, Yedigöller, N 39°18'17", E 041°55'19", 855 m, 07.06.2012, 2 ♂♂; Yakutiye, Akdağ, 1820 m, 01.07.2010, ♂, Dadaşköy, N 39°55'40", E 041°15'23", 1806 m, 04.08.2011, ♀, Dumlubaba, 2400 m, 01.07.2010, 2 ♀♀, ♂, Güzelyayla, 2000 m, 19.08.2009, ♀, ♂, Karagöbek, N 40°10'15", E 041°26'15", 2033 m, 09.06.2012, ♀, 1977 m, 31.07.2010, ♂, University field, 1850 m, 22.07.2009, ♂, 1850 m, 23.07.2007, ♀, 1850 m, 29.07.2009, ♂, 1850 m, 05.08.2010, ♂, 1800 m, 20.08.2010, ♂, Yeşilyayla, 1950 m, 01.07.2010, ♂; İğdir: Tuzluca, 900 m, 19.06.2009, ♂; Kars: Sarıkamış, 1900 m, 13.08.2009, 2 ♀♀, 3 ♂♂, Akkurt, 1650 m, 13.08.2009, 2 ♀♀, Karakurt, 1470 m, 29.07.2010, ♀, 1500 m, 13.08.2009, ♀, ♂; Ordu: Perşembe, Çaka, 31.07.1991, ♀.

Published Turkish records: Ankara, Artvin, Samsun (Önder, 1976; Önder *et al.*, 2006).

Distribution: Palearctic Region (Önder *et al.*, 2006); Canary Islands (Aukema *et al.*, 2006; Luis, 2013).

Orthops (Orthops) campestris (Linnaeus, 1758) (Fig. 5A).

Material examined: Erzurum: Çat, 2250 m, 06.08.2010, ♀, Güzelyurt, N 39°46'5", E 041°2'43", 2009 m, 05.08.2011, ♀; Hınıs, 1742 m, 02.07.2010, ♂; Horasan, Aşağı Çamlıkale, N 40°15'32", E 042°05'13", 2242 m, 13.08.2012, 4 ♀♀, ♂, Hacıahmet, N 40°10'37", E 042°08'18", 1823 m, 13.08.2012, 3 ♀♀; İspir,

Madenköprübaşı, N 40°26'34", E 040°50'42", 1245 m, 04.08.2012, ♂; Narman, 1900 m, 24.07.2009, ♀, Oltu, Sarımsaz, N 40°32'01", E 041°54'27", 1421 m, 30.08.2012, 4 ♀♀, ♂; Palandöken, 2000 m, 08.08.2009, 5 ♀♀, ♂; Pasinler, 1900 m, 31.07.2014, ♀, Büyükdere, N 40°02'22", E 041°37'31", 1759 m, 12.08.2012, ♀, Kevenlik, N 40°01'10", E 041°31'20", 1843 m, 22.06.2012, ♀, Kurbaçayırı, N 40°01'59", E 041°37'38", 1762 m, 12.08.2012, ♀, Yiğitpınarı, N 40°02'16", E 041°35'51", 1815 m, 22.07.2012, ♀; Şenkaya, Sındıran, 1491 m, 31.07.2010, ♀, Turnalı, 1700 m, 31.07.2010, ♂; Tortum, 22.07.1987, ♀, Arılı, 1450 m, 05.08.2010, ♀; Yakutiye, Dadaşköy, 1806 m, 04.08.2011, 17 ♀♀, 10 ♂♂, Dumlubaba, Güngörmez, 2200 m, 19.08.2009, 3 ♀♀, ♂, Karagöbek, 1977 m, 31.07.2010, 2 ♂♂, University field, 30.07.1986, ♂, 06.08.1986, ♀, 1850 m, 17.08.2010, ♀, 08.09.2009, ♀, 21.09.2012, 2 ♂♂, Yeşilyayla, 1950 m, 01.07.2010, 7 ♀♀, ♂.

Published Turkish records: İzmir (Önder, 1970; Tezcan *et al.*, 2010); Amasya, Aydın, Balıkesir, Bilecik, Bursa, Çanakkale, Eskişehir, Giresun, Kastamonu, Kütahya, Manisa, Samsun, Tokat, Uşak, Zonguldak (Önder, 1976); Burdur, Denizli (Giray, 1980); Bolu, İstanbul, Kocaeli, Sakarya (Önder *et al.* 1981); Erzurum (Özbek & Alaoğlu, 1987; Güçlü *et al.*, 1995a); Adana, Aksaray, Ankara, Antalya, Çorum, Hatay, İçel, Kahramanmaraş, Karabük, Kayseri, Konya, Nevşehir, Niğde, Yozgat (Lodos *et al.*, 2003); Almost all regions (Önder *et al.*, 2006).

Distribution: Nearctic and Palearctic Regions (Önder *et al.*, 2006); Canary Islands (Vivas, 2013).

Orthops (Orthops) frenatus Horváth, 1894 (Fig. 4, 5E)

Material examined: Erzurum: Aşkale, Dereköy, N 39°47'33", E 040°43'58", 1929 m, 05.07.2012, ♀; Aziziye, Eğerti, N 40°0'6'14", E 040°58'45", 1906 m, 22.06.2011, ♀, Yoncalık, N 40°0'37", E 040°55'35", 1800 m, 22.06.2011, ♂; Çat, Tuzlataşı, N 39°37'17", E 040°57'02", 1926 m, 21.06.2011, ♀, Yaylasuyu, N 39°42'30", E 040°58'40", 2331 m, 09.08.2011, ♀; Horasan, Çayırüzü, N 40°8'35", E 042°3'24", 1794 m, 21.08.2011, ♀, Dönertaş, N 40°13'33", E 042°06'59", 2009 m, 13.08.2012, ♂, Hacıahmet, N 40°10'37", E 042°08'18", 1823 m, 13.08.2012, ♀, ♂, Muratbağı, N 40°09'12", E 042°03'02", 1859 m, 21.08.2011, ♀; İspir, Çayırüzü, N 40°33'13", E 040°54'44", 1947 m, 04.08.2012, ♂, Madenköprübaşı, N 40°25'58", E 040°50'11", 1307 m, 20.07.2011, ♀, Yukarı Özbağ, N 40°26'45", E 040°54'25", 1190 m, 20.07.2011, ♂; Narman, Toygarlı, N 40°12'43", E 041°53'18", 2123 m, 19.07.2011, 4 ♀♀, ♂; Palandöken, Taşlıgüney, N 39°47'47", E 041°6'41", 1968 m, 09.08.2011, ♀, ♂, Pasinler, Sansar Deresi, N 40°04'22", E 041°43'29", 1877 m, 17.07.2011, 3 ♀♀, ♂, Yayla, N 40°05'43", E 041°44'04", 1990 m, 17.07.2011, ♂; Pazaryolu, Gülçimen, N 40°24'36", E 040°47'29", 1663 m, 20.07.2011, ♀; Şenkaya, Esenyurt, N 40°25'40", E 042°18'15", 1622 m, 14.07.2012, ♀; Tekman, ÇiçekMountain, N 39°34'41", E 041°44'27", 1846 m, 26.06.2011, ♂; Tortum, N 40°16'37", E 041°33'30", 1661 m, 23.06.2011, ♀, Arılı, N 40°22'12", E 041°28'51", 1428 m, 30.08.2012, ♀, ♂; Yakutiye, Dadaşköy, N 39°55'40", E 041°15'23", 1806 m, 04.08.2011, 3 ♂♂, University field, N 39°48'60", E 041°04'33", 1880 m, 05.08.2011, ♂, Yeşilyayla, 1950 m, 01.07.2010, ♀.

This species is a new record for Turkish fauna.

Distribution: Iran (Linnavuori & Modarres, 1999; Linnavuori, 2009; Havaskary *et al.*, 2015); Afghanistan, Ermenistan, Middle Asia (Linnavuori, 2007; Hosseini, 2014).

Description of the studied specimens: body medium size and oval, yellowish red or reddish brown; head reddish and the width 1.7 times the width between the eyes; frons wide and round; ♂ the width of the vertex 1.1 times the diameter of the eye, ♀ 1.3 times vertex; eyes brown and big; tylus yellow, genae and lora brown; antennae yellowish-brown, 1st antennal segment yellow and 1.1 times the diameter of the eye, 2nd antennal segment yellow, base and apical brown and 4 times the length of 1st antennal segment, 3rd antennal segment brown and 1.1 times the width of the vertex, 4th antennal segment brown; relative lengths of the respective antennal segments (mm): I: II: III: IV: 10: 33: 24:18, collar yellow, same thickness as the bottom of the 2nd antennal segment; pronotum yellowish-brown, bottom corners spotted dark, callus reddish

and side edges of pronotum reaches; scutellum yellow, base reddish; hemelytra reddish yellow, the end corium and clavus spotted red, costal vein light, cuneus yellow, membrane brown, veins and sides of cell yellowish; 1st rostrum segment yellow, others reddish brown and rostrum reaches middle coxae; legs yellowish, the end hind femora spotted brown, tibiae yellow, dorsal brown, over brown spines, 1st and 2nd tarsus segments yellow, 3rd tarsus segment reddish brown and long; sternum yellow, connexivum reddish yellow, tergum yellowish brown, ventral of genitalia segments and parameres brown (Fig. 4A). In the left paramere, the sensory lobe very large and the apophysis in the form a sharp curved hook (Fig. 4B). Right paramere small, hypophysis long, in the form of a hook and slightly curved (Fig. 4C). Vesical spine, slim and slightly curved (Fig. 4D). Length: female 4.2-5.1; male 5-5.3 mm.

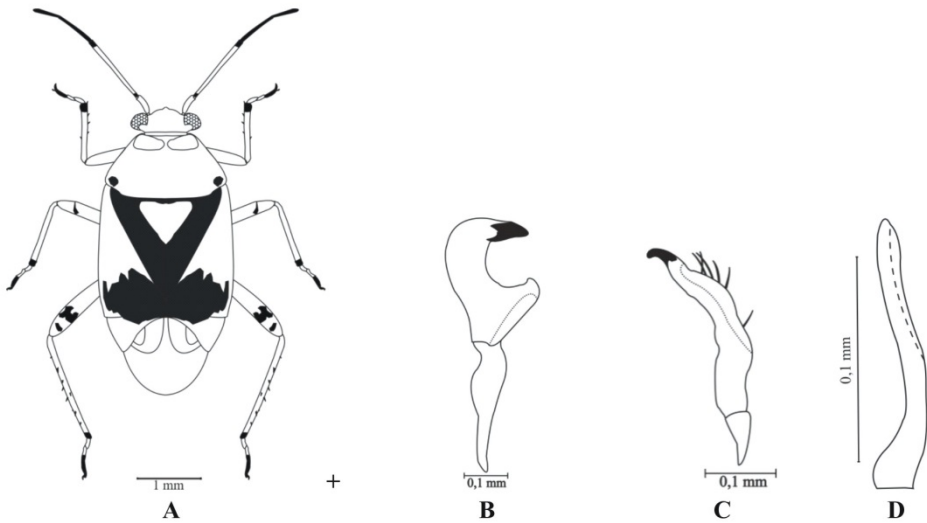


Figure 4. *Orthops (Orthops) frenatus* Horváth; A - adult, B - left paramere, C - right paramere, D - male vesica spines. *Orthops (Orthops) kalmii* (Linnaeus) (Fig. 5F).

Material examined: Artvin: Ardanuç, Ferhatlı, 573 m, 15.06.2010, ♂, Esentepe, Ormaniçi, 227 m, 03.08.2009, ♂, Yusufeli, İshan, 108 m, 04.08.2009, 2 ♀♀, Morkaya, 700 m, 15.07.2010, ♂, Pamukçular, 700 m, 16.06.2010, ♂; Bayburt: 1550 m, 12.08.2009, 4 ♀♀, Demirözü, 1650 m, 17.06.2010, ♀, ♂, Örence, 2400 m, 12.08.2009, 9 ♀♀, 2 ♂♂, Kop Mountain Pass, 2400 m, 17.06.2010, 2 ♂♂, 2344 m, 12.08.2009, ♀; Erzincan: Mercan, 1381 m, 10.06.2010, ♀, 3 ♂♂, Refahiye, 1500 m, 20.06.2009, 6 ♀♀, 3 ♂♂, Tercan, 1408 m, 10.06.2010, ♀; Erzurum: Aşkale, 1600 m, 12.08.2009, 2 ♀♀, Abdalcık, 1756 m, 01.08.2010, 3 ♂♂, Atlıkönak, N 39°55'36.5", E 040°56'16.9", 1757 m, 05.07.2012, 2 ♂♂, Çayköy, 1600 m, 03.06.2010, ♀, N 39°58'36", E 040°55'50", 1876 m, 23.07.2011, ♀, Demirkıran, N 39°56'30", E 040°41'19", 1699 m, 11.08.2012, ♂, Dereköy, N 39°47'33", E 040°43'58", 1929 m, 05.07.2012, ♀, 3 ♂♂, Gökçebük, N 39°56'56", E 040°48'23", 1699 m, 23.07.2011, ♂, Kandilli, 1737 m, 01.08.2010, 3 ♀♀, Karahasan, N 39°57'49", E 040°42'22", 1758 m, 11.08.2012, ♀, ♂, Kop Mountain, N 40°01'57", E 040°31'11", 2380 m, 05.09.2012, 4 ♀♀, 4 ♂♂, Küçükgeçit, N 39°56'16.2", E 040°45'34.1", 1751 m, 09.08.2011, 3 ♀♀, Merdiven, 1710 m, 01.08.2010, 3 ♀♀; Aziziye, Dallıkavak Pass, 2349 m, 30.07.2010, 3 ♀♀, 2 ♂♂, Eğerti, N 40°0,6'14", E 040°58'45", 1906 m, 22.06.2011, 7 ♀♀, ♂, Eskipolat, N 40°4'10", E 040°56'8", 1748 m, 20.07.2011, ♀, ♂, 1857 m, 30.07.2010, 3 ♀♀, ♂,

Özbek, N 39°48'57", E 041°04'40", 1930 m, 05.08.2011, ♀, Rizekent, 2070 m, 30.07.2010, 2 ♀♀, Sorkunlu, N 40°5'3", E 040°57'42", 1865 m, 24.07.2011, ♀, 1900 m, 16.08.2014, ♂, Toprakkale, N 40°14'28", E 040°59'01", 2151 m, 22.06.2011, ♀, 2157 m, 30.07.2010, ♀, Yoncalık, 1900 m, 16.08.2014, 2 ♀♀, ♂; Çat, N 39°35'42", E 040°57'60", 1913 m, 23.07.2011, ♂, 2250 m, 06.08.2010, 2 ♀♀, 2 ♂♂, N 39°46'07", E 041°02'13", 2028 m, 10.08.2014, ♀, Bayındır, N 39°27'66", E 040°2.992", 1978 m, 18.06.2012, ♂, Güzelyurt, N 39°46'5", E 041°24'3", 2099 m, 05.08.2011, ♀, ♂, Tuzlataşı, N 39°37'17", E 040°57'02", 1926 m, 21.06.2011, ♀, ♂, 1910 m, 06.08.2010, 4 ♀♀; Hınıs, 1742 m, 02.07.2010, ♀, 5 ♂♂, Horasan, 1580 m, 22.06.2014, 4 ♀♀, 2 ♂♂, N 40°00'53", E 041°59'06", 1588 m; 22.07.2014, ♂, Aşağı Çamlıkale, N 40°15'32", E 042°05'13", 2242 m, 13.08.2012, 2 ♀♀, ♂, Çayırdüzü, N 40°8'35", E 042°3'24", 1794 m, 21.08.2011, ♀, Dalbaşı, N 40°3'2", E 042°7'48", 1601 m, 17.07.2011, 2 ♀♀, ♂, Dönertaş, N 40°12'55", E 042°08'08", 1907 m, 13.08.2012, ♀, 6 ♂♂, N 40°13'33", E 042°06'59", 2009 m, 13.08.2012, 2 ♀♀, Hacıahmet, N 40°10'37", E 042°08'18", 1823 m, 13.08.2012, ♀, ♂, Kırkgözeler, 1599 m, 29.07.2010 m, ♂, Muratbağı, N 40°09'12", E 042°03'02", 1859 m, 21.08.2011, 6 ♀♀, ♂, Yörükatlı, 1854 m, 29.07.2010, 2 ♀♀; İspir, 1259 m, 30.07.2010, ♂, 1300 m, 07.08.2009, 2 ♀♀, ♂, Çapans, 2150 m, 20.08.2009, 4 ♀♀, İspir Pass, 1950 m, 20.08.2009, 2 ♀♀, Çayırözü, N 40°33'13", E 040°54'44", 1947 m, 04.08.2012, ♀, ♂, İncesu, 2100 m, 20.08.2009, ♀, Kirazlı, N 40°26'43", E 040°53'19", 1206 m, 20.07.2011, ♀, ♂, N 40°26'48", E 040°53'09", 1207 m, 24.07.2011, 2 ♂♂, Madenköprübaşı, 1292 m, 30.07.2010, 3 ♀♀, ♂, N 40°26'34", E 040°50'42", 1245 m, 04.08.2012, ♂, 1200 m, 20.08.2009, ♀, Yukarı Özbağ, 1175 m, 30.07.2010, ♀, ♂, Zeyrek, N 40°18'30", E 040°59'24", 2073 m, 22.06.2011, 2 ♀♀; Köprüköy, 1720 m, 02.07.2010, ♀, Güzelhisar, 1930 m, 02.07.2010, ♀, İlicasu, 2380 m, 17.07.2010, 3 ♀♀, ♂, Örentaş, 2038 m, 29.VII.2010, ♀; Narman, 1565 m, 21.07.2010, 2 ♀♀, 2 ♂♂, 1900 m, 24.07.2009, ♀, 2 ♂♂, Çimenli, N 40°8'47", E 041°53'22.5", 2311 m, 19.07.2011, ♀, 2308 m, 04.08.2009, ♀, Göllü, N 40°14'7.9", E 041°51'57.2", 1083 m, 30.07.2011, ♂, Kışlaköy, N 40°19'20.7", E 042°02'08.3", 1892 m, 13.08.2012, ♂, Kilimli, N 40°46'48.6", E 042°07'56.8", 989 m, 05.08.2012, ♀, N 40°19'52.3", E 041°58'53.8", 1716 m, 13.08.2012, 3 ♀♀, ♂, Mahmutçavuş, N 40°20'18.8", E 041°55'36.3", 1560 m, 16.07.2012, ♀, ♂, Şehitler, N 40°19'54.9", E 041°46'39.2", 1884 m, 16.07.2012, ♂, Toygarlı, N 40°12'18.9", E 041°53'16.6", 2071 m, 30.06.2012, ♀, 2 ♂♂; Oltu, N 40°50.4", E 041°56'57", 1455 m, 14.07.2014, 3 ♀♀, 2 ♂♂, 1180 m, 24.07.2009, 2 ♂♂, 1750 m, 03.08.2009, ♀, 2 ♂♂, 1236 m, 04.08.2009, ♀, ♂, 23.08.1987, ♂, Başbağlar, N 40°28'1.1", E 041°40'27.6", 1925 m, 13.07.2011, 2 ♀♀, ♂, Çamlıbel, N 40°28'31.3", E 041°46'26.9", 1661 m, 30.06.2012, ♀, 2 ♂♂, Demirtaş, N 40°24'58.6", E 041°44'14.4", 1888 m, 06.07.2012, 3 ♂♂, Duralar, N 40°28'31.5", E 041°58'42.4", 1421 m, 30.07.2011, ♀, İğdeli, N 40°32'44.8", E 041°50'27.6", 1660 m, 30.06.2012, ♀, İnanmış, N 40°27'44.4", E 041°42'42", 1812 m, 31.07.2011, ♀, Özdere, N 40°27'57.7", E 041°44'11.9", 1927 m, 16.07.2012, ♂, Sarı saz, N 40°31'56.1", E 041°54'36.9", 1388 m, 05.08.2012, 6 ♀♀, N 40°32'00.9", E 041°54'27.2", 1421 m, 30.08.2012, 6 ♂♂, Yolboyu, N 40°38'55", E 042°08'50", 1135 m, 14.07.2014, ♀; Olur, Coşkunlar, N 40°44'32.7", E 042°11'11.4", 1054 m, 30.07.2011, 2 ♀♀, 2 ♂♂, Ormanağzı, N 40°46'07.9", E 042°05'15.1", 935 m, 5.08.2012, ♀, 3 ♂♂, Süngübayır, 20.08.1994, ♂, Taşlıköy, N 40°45'53.3", E 041°58'13.8", 885 m, 06.07.2012, 2 ♀♀, ♂, N 40°45'59.6", E 042°01'35.6", 860 m, 19.07.2011, 2 ♀♀, Yeşilbağlar, 1000 m, 16.06.2010, ♀, N 40°46'48.6", E 042°07'56.8", 989 m, 05.08.2012, ♂, Yukarı Karacasu, N 40°49'47.5", E 042°16'09.5", 1521 m, 19.07.2012, 2 ♀♀; Palandöken, Kümbet, N 39°48'59.7", E 041°4'32.8", 1832 m, 05.08.2011, ♂, 2300 m, 21.07.2010, 2 ♂♂, 2400 m, 21.07.2010, ♀, N 39°51'56.4", E 041°16'19.7", 2155 m, 22.07.2012, ♀, ♂, 2300 m, 01.08.2010, 3 ♂♂, Palandöken Mountain, Taşlıgüney, N 39°47'46.7", E 041°6'41.1", 1968 m, 09.08.2011, ♀, ♂, Tekederesi, 2009 m, 18.06.2010, ♀, Pasinler, 10.VI.1983, ♀, 1800 m, 02.07.2010, ♂, 1900 m, 31.07.2014, ♀, 29.08.1987, ♂, Acı, N 40°02'56.0", E 041°35'21.7", 1905 m, 22.07.2012, 2 ♀♀, 2 ♂♂, Ağcalar, 1850 m, 22.08.2007, ♂, 1850 m, 25.08.2007, ♀, 29.08.1987, ♀, Aşıtlat, N 40°00'16.6", E 041°38'46.0", 1709 m, 12.08.2012, ♂, Büyükdere, N 40°02'21.8", E 041°37'30.5", 1759 m, 12.08.2012, 3 ♀♀, 3 ♂♂, Büyüktuy, 1800 m, 2.VII.2010, ♂, Çöğender, 1737 m, 29.07.2010, 2 ♂♂, Demirdöven, 1727 m, 29.07.2010, 2 ♀♀, 2 ♂♂, Kevenlik, N 40°01'10.2", E 041°31'19.7", 1843 m, 22.VI.2012, ♀, ♂, Korucuk, 1792 m, 29.07.2010, ♀, Kurbançayırı, N 40°01'59.3", E 041°37'38.1", 1762 m, 12.08.2012, ♂, Övenler, N 39°59'17", E 041°34'44", 1710 m, 21.08.2011, ♂, Sansar Deresi, N 40°04'22", E 041°43'29", 1877

m, 17.07.2011, ♀, Ügümü, N 40°00'40", E 041°43'57", 1724 m, 17.07.2011, ♀, 2 ♂♂, Yiğitpınarı, N 40°02'16", E 041°35'51", 1815 m, 22.07.2012, 2 ♂♂; Pazaryolu, N 40°25'13", E 040°46'14", 1450 m, 24.07.2011, ♀, 2 ♂♂, Gülçimen, N 40°24'36", E 040°47'29", 1663 m, 20.07.2011, ♂, Kümbettepe, N 40°25'38", E 040°45'56", 1427 m, 24.07.2011, ♀, ♂; Şenkaya, Başaklı, N 40°29'19", E 041°48'19", 1586 m, 13.07.2011, 3 ♂♂, İkizpınar, N 40°36'57", E 042°21'31", 1589 m, 31.07.2011, ♂, Paşalı, N 40°40'09", E 042°12'18", 1106 m, 19.07.2011, 2 ♀♀, ♂, 1173 m, 31.07.2010, 2 ♀♀, Sındıran, N 40°37'20", E 042°21'34", 1409 m, 14.07.2014, ♂, N 40°37'14", E 042°22'09", 1497 m, 19.07.2011, 2 ♀♀, ♂, 1491 m, 31.07.2010, 3 ♀♀, ♂, Taht, N 40°38'29", E 042°20'0", 1232 m, 14.07.2014, 3 ♂♂, N 40°37'59", E 042°20'40", 1283 m, 31.07.2011, 2 ♀♀, ♂, Turnalı, 1750 m, 23.07.1996, ♂, 1757 m, 25.07.1996, ♀, 3 ♂♂, 1461 m, 31.07.2010, ♂, 1700 m, 31.07.2010, ♀, ♂; Tekman, Çiçekdağı, N 39°34'41", E 041°44'27", 1846 m, 26.06.2011, ♀, Geyikli, N 39°47'49", E 042°4'31", 2185 m, 16.07.2011, ♀, 2 ♂♂, Körsu, N 39°34'8", E 041°44'30", 1901 m, 16.07.2011, ♂; Tortum, N 40°27'21", E 041°30'09", 1245 m, 27.05.2011, 3 ♀♀, ♂, 1400 m, 28.05.2009, 13 ♀♀, ♂, 1653 m, 15.06.2010, ♀, 1573 m, N 40°18'35", E 041°31'33", 1518 m, 14.07.2014, ♀, 21.07.2010, 2 ♀♀, 2 ♂♂, 12.08.1987, ♀, Aksukapı, N 40°23'59", E 041°32'46", 1648 m, 10.06.2012, 4 ♀♀, N 40°23'59", E 041°32'46", 1648 m, 13.07.2011, ♂, N 40°25'59", E 041°35'30", 1750 m, 14.07.2014, 2 ♀♀, 1750 m, 06.08.2010, ♀, ♂, Aktaş, N 40°15'41", E 041°32'39", 1765 m, 31.07.2011, 2 ♀♀, Arılı, 1450 m, 05.08.2010, 3 ♀♀, 3 ♂♂, N 40°22'11.6", E 041°28'51", 1428 m, 30.08.2012, 3 ♀♀, ♂, Aşağı Sivri, N 40°19'34", E 041°31'47", 1546 m, 16.07.2012, ♂, Bağbaşı, N 40°29'36", E 041°29'06", 1191 m, 14.08.2012, ♀, ♂, Derekapı, N 40°37'60", E 041°42'57", 1010 m, 07.06.2012, ♂, 1300 m, 05.07.2010, 2 ♀♀, N 40°24'47", E 041°29'19", 1247 m, 13.07.2011, ♀, 1285 m, 05.08.2010, ♀, 4 ♂♂, Dikmen, N 40°29'09", E 041°25'00", 1304 m, 14.08.2012, 2 ♀♀, Pehlivanlı, N 40°29'37", E 041°30'18", 1158 m, 21.07.2012, ♀, Suyatağı, N 40°28'05", E 041°30'09", 1184 m, 21.07.2012, 2 ♀♀, 2 ♂♂, Şenyurt, 27.06.1996, ♀; Uzundere, Dikyar, N 40°30'48", E 041°31'10", 1133 m, 14.08.2012, ♀, Gölbaşı, N 40°36'04", E 041°33'43", 1260 m, 07.08.2011, ♂, N 40°35'59", E 041°33'57", 1150 m, 14.08.2012, ♀, Yayla, N 40°27'49", E 041°39'32", 2005 m, 13.07.2011, ♀, ♂; Yakutiye, Akdağ, 1820 m, 01.07.2010, 2 ♀♀, ♂, Dadaşköy, N 39°55'40", E 041°15'23", 1806 m, 04.08.2011, 8 ♂♂, Dumlubaba, 2400 m, 01.07.2010, 5 ♀♀, 2500 m, 01.07.2010, ♂, 1950 m, 04.07.2010, 2 ♂♂, 2400 m, 04.07.2010, ♂, Güngörmez, 1950 m, 01.07.2010, ♀, 2400 m, 01.07.2010, 2 ♀♀, 2200 m, 19.08.2009, ♀, ♂, Güzelyayla, 2000 m, 19.08.2009, 2 ♀♀, 3 ♂♂, Karagöbek, N 40°10'15", E 041°26'15", 2033 m, 09.06.2012, ♀, ♂, 1977 m, 31.07.2010, 2 ♀♀, N 40°09'58", E 041°26'8", 1993 m, 31.07.2011, 3 ♀♀, ♂, 1998 m, 3.08.2009, 2 ♀♀, 1998 m, 30.08.2009, ♂, Yeşildere, 2000 m, 17.08.2009, 2 ♀♀, 19.08.2009, ♀, 4 ♂♂, University field, 1850 m, 29.05.1996, ♂, 24.06.1997, ♀, 10.07.1996, 2 ♂♂, 16.07.1996, ♀, 5 ♂♂, 22.07.1997, ♂, 23.07.2007, ♂, 24.07.1997, ♂, 26.07.1996, 2 ♂♂, 26.07.1997, ♂, 27.07.1996, 2 ♂♂, 27.07.2010, 3 ♀♀, 2 ♂♂, 28.07.1997, 2 ♂♂, 30.07.1997, ♂, 30.07.2008, ♀, 31.07.1998, ♂, 02.08.1998, ♂, 05.08.1996, ♂, 05.08.2010, ♀, 1880 m, N 39°48'60", E 041°04'33", 05.08.2011, ♂, 06.08.1996, ♂, 07.08.1996, ♂, 08.08.2008, ♀, 3 ♂♂, 09.08.1990, ♀, 1800 m, 10.08.2010, ♀, 1850 m, 15.08.1997, ♂, 15.08.1998, ♂, 17.08.2010, 4 ♀♀, 1850 m, 18.08.1997, 2 ♂♂, 1800 m, 18.08.2010, 3 ♀♀, 6 ♂♂, 19.08.1997, ♀, 19.08.2010, 2 ♀♀, ♂, 20.08.2010, ♀, 4 ♂♂, 1850 m, 21.08.1998, 2 ♀♀, 23.08.1996, ♂, 1800 m, 23.08.2010, ♀, 1850 m, 24.08.1998, ♂, 30.08.1996, 2 ♂♂, 03.09.1987, ♂, 05.09.2009, 2 ♂♂, Yeşilyayla, 1950 m, 01.07.2010, 2 ♀♀, 5 ♂♂; Iğdır: 830 m, 23.06.2010, 2 ♀♀, Bayraktar, 850 m, 23.06.2010, ♀, Çalpala, 950 m, 23.06.2010, ♀, Melekli, 850 m, 23.06.2010, ♀, Karakoyunlu, Taşburun, 830 m, 23.06.2010, 2 ♀♀, ♂, Tuzluca, 900 m, 18.06.2009, ♂, 24.08.1997, ♀; Kars: Kağızman, 1750 m, 22.06.2010, ♂, Sarıkamış, 1900 m, 13.08.2009, 5 ♀♀; Akkurt, 1650 m, 13.08.2009, 2 ♀♀, Karakurt, 1500 m, 22.06.2010, 4 ♀♀, 3 ♂♂, 1470 m, 29.07.2010, ♀, 1500 m, 13.08.2009, 9 ♀♀, ♂; Konya: Beyşehir, Gökçimen, 21.07.1997, ♀, 26.07.1997, ♂.

Published Turkish records: İzmir (Önder, 1970; Tezcan *et al.*, 2010); Adana, Afyonkarahisar, Aydın, Artvin, Bilecik, Bursa, Edirne, İstanbul, Sakarya, Tekirdağ, Trabzon, Uşak (Önder, 1976); Burdur, Denizli (Giray, 1980); Bolu, Kocaeli (Önder *et al.*, 1981); Diyarbakır, Gaziantep, Mardin (Önder *et al.*, 1995); Erzurum

(Yıldırım *et al.*, 1999); Ankara, Antalya, Çankırı, Çorum, Eskişehir, Hatay, İçel, Kahramanmaraş, Karabük, Kastamonu, Kayseri, Nevşehir, Osmaniye, Sinop, Yozgat, Zonguldak (Lodos *et al.*, 2003); Almost all regions (Önder *et al.*, 2006).

Distribution: Indo-Pacific, Palearctic Regions (Önder *et al.*, 2006); Canary Islands (Vivas, 2013).

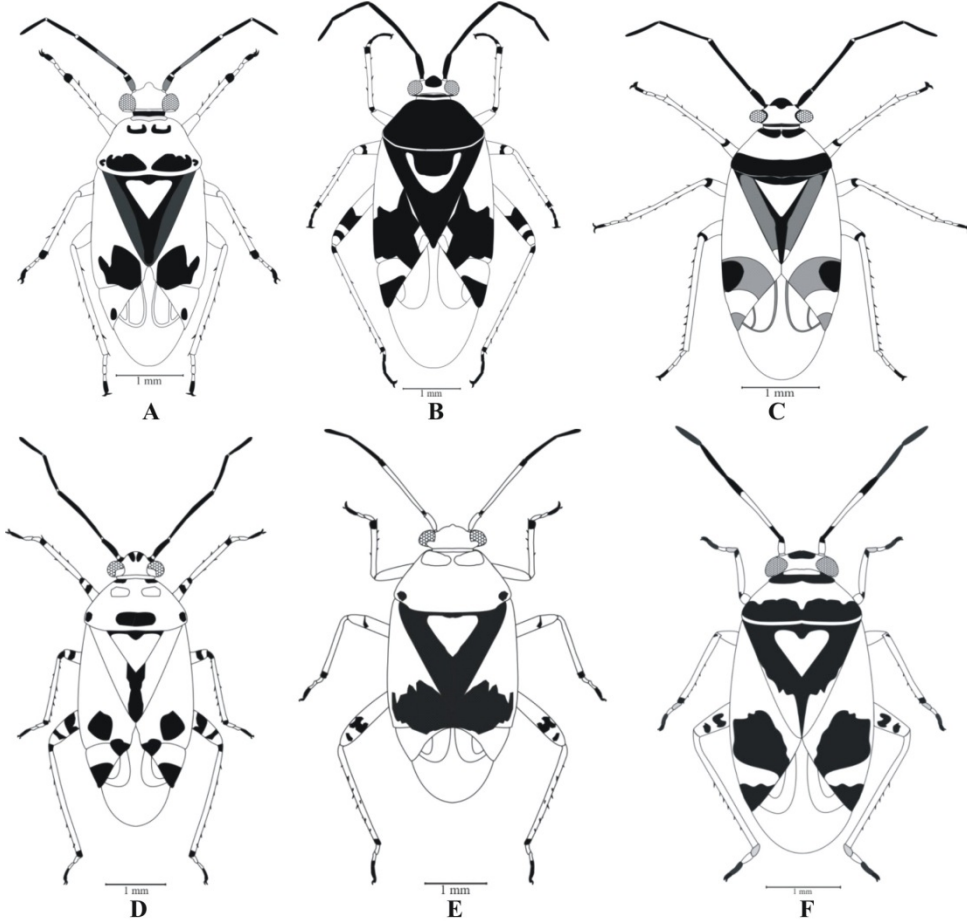


Figure 5. A - *Orthops (Montanorthops) campestris* (Linnaeus); B - *Orthops (Montanorthops) forelii* Fieber; C - *Orthops (Montanorthops) montanus* (Schilling); D - *Orthops (Orthops) basalis* (A. Costa); E - *Orthops (Orthops) frenatus* Horváth; F - *Orthops (Orthops) kalmii* (Linnaeus).

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НОВИ И ИНТЕРЕСАНТНИ НАЛАЗИ РОДА *ORTHOPS* FIEBER 1858 (HEMIPTERA: HETEROPTERA: MIRIDAE) У ТУРСКОЈ

ГУЛТЕН ЈАЗИЦИ И ЕРОЛ ЈИЛДРИМ

Извод

Истраживање је базирано на материјалу рода *Orthops* Fieber 1858 који је сакупљан на различитим локалитетима у Турској у периоду између 1983 и 2014, углавном од 2006 до 2014. У оквиру рода *Orthops* Fieber, 1858 у Турској је познато шест врста: *Orthops (Montanorthops) forellii* Fieber, 1858, *O. (M.) montanus* (Schilling, 1838), *O. (Orthops) basalis* (A. Costa, 1853), *Orthops (O.) campestris* (Linnaeus, 1758), *O. (O.) frenatus* Horváth, 1894 и *O. (O.) kalmii* (Linnaeus, 1758). *Orthops (Orthops) frenatus* Horváth, 1894 је нови налаз за фауну Турске. У овом раду су дати подаци о дијагностичким карактерима, распрострањењу као и илустровани кључ за родове и врсте. Такође, дати су нови локалитети за неке врсте које су претходно регистроване у Турској.

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