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RESEARCH ARTICLE

Contribution to the knowledge of Heteroptera (Hemiptera) fauna of Turkey

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Abstract: This study is based on material of the suborder Heteroptera collected and photographed from different provinces of Turkey between 2011 and 2015. In this study, 15 species belonging to 9 families are recorded from various provinces of Turkey. All of the species listed include remarks on their known distribution either in Turkey or in worldwide. Among them 12 species are new for the Heteroptera fauna of Turkey. In addition it is found out that *Pasira marinadolina* Putshkov & Moulet, 2003 could also have bicolored connexivum.

Key words: Hemiptera, Heteroptera, faunistic, new records, Turkey.

Introduction

Heteroptera Latreille, 1810 is a suborder of Hemiptera Linnaeus, 1758 which contains, according to the latest review of Henry (2009), 42.347 described species. This estimation is mainly based on the regional catalogs for North America (Henry & Froeschner 1988), Australia (Cassis & Gross 1995, 2002) and the Palearctic (Aukema & Rieger 1995-2006). Most of the true bugs are strictly herbivorous, carnivorous or hematophagous (feeding on blood). Some of them also adapted to different types of habitats such as spider webs (as a part of commensal life), water surface, interior of water and intertidal zones (Schuh & Slater 1995).

The number of heteropteran species recorded from Turkey is more than 1500 (Puton & Noualhier 1895; Horváth 1901; Seidenstücker 1957, 1960; Kıyak 1990, 2000; Awad 2000; Kıyak & Özsaraç 2001; Önder *et al.* 2006; Kıyak *et al.* 2008; Dursun 2009, 2011, 2012; Dursun & Fent 2009, 2011, 2015; Dursun & Kartal 2008a, 2008b; Fent *et al.* 2010a, 2010b;

Fent & Japoshvili 2012; Kıyak & Akar 2010; Gözüaçık *et al.* 2011; Kıyak 2016). This number was suggested by the major work listing all the recorded species from Turkey (Önder *et al.* 2006). But in this work which is always used as a base for the fauna of Turkey by most authors, some species which have been either already recorded from Turkey or described originally from Turkey [e.g., *Taurocalocoris samai* Carapezza, 1998], are missing. Also some synonymies which were already synonymized before the publication of the work were considered as valid species. That's the reason why authors should be careful while using this source.

Material and methods

The material of the Heteroptera was collected from different localities (mostly from İstanbul, İzmir and Karaman provinces) of Turkey from 2011 to 2015. The specimens were mostly collected by searching them on plants, sweeping the low grasses and light trapping. The photos were taken with a Canon SX150 and Canon EOS 7D. For the identification of the species mainly the volumes of "Fauna de France" (Wagner & Weber 1964; Péricart 1972, 1983, 1984, 1987, 1998; Putshkov & Moulet 2009) and Rabitsch (2005) were used. For the specimens belonging to the families Miridae, Cydnidae and Reduviidae examination of the male genitalia was necessary and this was performed by using a Celestron 44125 Microscope. The specimens are preserved in the private collections of the authors.

Results

Hydrometridae Billberg, 1820

***Hydrometra gracilenta* Horváth, 1899**

Material examined: İstanbul: Terkos Gölü, 08.VII.2014, 1♂, B. Çerçi leg.

Morphological diagnosis: Length 8.00 mm. Mat and light brownish. Head long and narrow, broader at the apex. Eyes located at the 0.4 of the head, closer to the base. Clypeus as in the comments. Pronotum is also light brownish, 5× as long as wide, with a light longitudinal stripe along its length and a deep and horizontal groove in the middle. Abdomen of the same colour with the head and the pronotum, a light longitudinal stripe in the middle broad and interrupted in the border of each abdominal segment and hard to recognize in the last three segments. Seventh abdominal segment of the male without tooth. Legs are yellowish, very long and narrow.

Comments: Up to now only one species of the family Hydrometridae was known from Turkey, *Hydrometra stagnorum* (Linnaeus, 1758) which is much longer (9.00–13.00 mm) than *H. gracilenta* Horváth, 1899 (7.50–9.00 mm). The clypeus of *H. stagnorum* is truncated and its anterior margin rounded; this of *H. gracilenta* is clearly conical. *H. gracilenta* generally reddish brown or yellowish brown but *H. stagnorum* blackish brown. We collected the only specimen from *Nymphaea* sp. leaves in the Lake Terkos.

Distribution: Central and Northern Europe, extending southwards to France (absent in the Iberian Peninsula), Northern Italy, the Balkan Peninsula, Bulgaria and Greece. Its eastern distribution spreads over Russia, Azerbaijan, Iran and across Central Asia (Kazakhstan, Turkmenistan, Tajikistan), reaching Northwestern China and Mongolia; whilst northwards,

through Russia, the species reaches the Far East and Japan. In North Africa the species has been recorded in Morocco (Cianferoni *et al.* 2015).

Distribution in Turkey: İstanbul (European part) (New record for the fauna of Turkey).

Saldidae Amyot & Serville, 1843

***Halosalda lateralis* (Fallén, 1807) (Fig. 1A)**

Material examined: İzmir: Kuş Cenneti (Gediz Deltası), 24.IV.2015, 1♂, 1♀, B. Çerçi leg.

Morphological diagnosis: Length 3.5 mm. Head white in the front view and black in the vertex with 4 white tubercules, two of them carrying a black erected hair. First two antennal segments whitish, with brown stripes in the outer side, last two segments obscured, light brown. Rostrum reaching to the posterior coxae. Pronotum shiny black, more or less white laterally. Scutellum black. Elytra black, covered with small depressed brown hairs, subparallel sided; clavus, corium (except the anterior part of the border with the exocorium), basal half of the apical one third of the exocorium black, basal two thirds and the tip of the exocorium and the abovementioned part of the corium white. Membran brown with two little white spots (sometimes barely seen) in the outer sides. Legs yellowish with an upper brown stripe on each femora. Abdomen in ♂ totally black with long white hairs, in ♀ the posterior margin of each sternite and last segment totally white.

Comments: This species was listed from Turkey by Horváth (1901) and Oshanin (1910) based on one specimen collected by Horváth in Aydın (Horváth 1901) but somewhat the collected specimen has gone lost in Horváth's collection in Hungarian Natural History Museum, Budapest (Fent *et al.* 2011) so its presence in Turkey could not be confirmed. That is the reason why the occurrence of this species in Turkey was considered by some authors as doubtful in more recent works (Lindskog 1995; Fent *et al.* 2011). The specimens were collected in the shore of the salt lake near Kuş Cenneti in İzmir. The first exact and doubtless record is now given from Turkey.

Distribution in Turkey: İzmir (New record for the fauna of Turkey).

Tingidae Laporte, 1832

***Corythucha arcuata* (Say, 1832)**

Material examined: İstanbul: Esenyurt, 25.VIII.2012, 1♂; 1.IX.2012, 1♀; 10.IX.2012, 1♀; 11.VIII.2014, 1♂; 24.VI.2015, 2♂♂, 1♀; Atatürk Arboretumu, 21.VIII.2014, 1♂; Artvin: Borçka, 12.VIII.2015, 8♀♀, 6 ♂♂, B. Çerçi leg.

Comments: This North American species was reported in 2000 from Italy for the first time in Europe (Bernardinelli & Zandigiacomo 2000) and firstly recorded from Turkey in 2003 from Bolu (Mutun 2003). Since then it has been found from various provinces in Turkey (Mutun *et al.* 2009; Coşkuncu & Büyükgüzel 2012; Küçükasmacı 2014). As reported by Mutun *et al.* (2009) 28.000 km² area was invaded by this species. We collected several specimens from oak trees in Borçka (Artvin) and this is the easternmost record of this species in the Palaearctic Region. It can be easily distinguished from the common *Stephanitis pyri* (Fabricius, 1775) by the series of teeth on the external border of the hemelytra and pronotum.

Distribution in Turkey: Bolu (Mutun 2003); Düzce, Zonguldak, Sakarya, Kocaeli, Eskişehir, Ankara, Çankırı, Bilecik (Mutun *et al.* 2009); Kastomonu (Küçükbasmacı 2014); Artvin, İstanbul (this work).

Miridae Hahn, 1833

***Deraeocoris flavilinea* (A. Costa, 1862) (Fig. 1B–C)**

Material examined: İstanbul: Esenyurt, 09.VI.2011, 1♂, L. Çerçi leg.; 28-30.V.2015, 2♂♂, 1♀; 04.VI.2015, 1♂, 1♀, B. Çerçi leg.

Morphological diagnosis: Length 7.0–8.0 mm. Head shiny, orange; ocular index 1.58–1.71; paraclypei and sides of the clypeus black in ♂. Antennae light coloured, apex of the second segment black, third and fourth segments obscured in ♀; middle of the second segment light and the rest darkened or all the segments dark in ♂. Rostrum reaching to the anterior coxae. Pronotum as in the comments. Scutellum black with narrow white borders in ♂ and yellowish brown with whitish borders in ♀. Elytra yellowish brown with black punctuation, a little bit obscured before the cuneus, broader in the middle than the front. Cuneus orange coloured, apex black. Legs yellowish to brownish with thick darkened rings on each tibiae and femora (lighter in ♀). Membran grayish, veins black. Abdomen in ♀ orange, black in the bottom; totally black in ♂.

Comments: It was originally described from Sicily (Costa 1862). The first record outside Italy has been made in Corsica by Péricart (1965) and afterwards quickly reported from various countries in Europe. A very useful map of the known distribution of this species in Europe was provided by Varga *et al.* (2014) which shows that Bulgaria is its eastern boundary in Europe. It was also reported from Azerbaijan by Aukema & Rieger (1999). The specimens were mostly collected from a *Salix sp.* tree but also from *Fraxinus excelsior* L., *Rosa* sp. and *Pyrus* sp. Our caughts are the first records of *D. flavilinea* in Turkey. It can be distinguished from other *Deraeocoris* species present in Turkey by the sexual variation of the scutellum which is totally black with the white posterior margin in ♂ (cf. Fig. 1B) and light brown with a transverse black line on the calli in ♀ (cf. Fig. 1C).

Distribution in Turkey: İstanbul (New record for the fauna of Turkey).

Mirinae Hahn, 1833

Deraeocorinae Douglas and Scott, 1865

***Eurystylus bellevoyei* (Reuter, 1879) (Fig. 1D)**

Material examined: Muğla: Fethiye, 31.VIII.2015, 1♂, B. Çerçi leg.

Morphological diagnosis: Length 3.0 mm. Head light yellow, covered with small shiny white hairs, ocular index 1.37; two black patterns on the posterior margin of the head. First antennal segment black, as long as the vertex or a little bit longer, second antennal segment white in the very base, reddish in the middle and broadly black at the top, 2.43× as long as the first segment, extended at the top, base of the third antennal segment white, rest of the antennae red. Pronotum yellow with depressed white hairs, two little black points in the posterior half. Scutellum lighter yellow. Elytra yellow with depressed white and brown hairs, two narrow brownish stripes along the corium and exocorium, obscured before the cuneus. Cuneus yellow, brown in the inner and outer corner and tip. Membran smooth and grayish, veins dark brown. Legs yellow with two brown rings in each femora and tibiae. Abdomen light yellow.

Comments: This species was described originally from Egypt. Its known distribution is now so: East and West Africa, Algeria, Ceylon, Egypt, Katanga, Iran, Togo, Transcaspia (Carvalho 1957-60), Canary Islands (Wagner 1954 as *E. occidentalis*), Cape Verde Islands

(Lindberg 1958 as *E. occidentalis*), Mauritania (Villiers 1956 as *E. gallouedeci*), Uganda (Odhiambo 1958 as *E. argenticeps*), South Africa (Carvalho *et al.* 1960), Israel (Linnavuori 1960), Maderia (Lindberg 1961 as *E. occidentalis*), Sicily (Servadei 1967) North of Sudan (Linnavuori 1975), Pantelleria (Carapezza 1981), Saudi Arabia (Linnavuori 1986), Yemen (Linnavuori 1989), Spain (Ribes 1990), Cyprus (Stonedahl 1995) and Malta (Carapezza & Mifsud 2015). Ribes (1990) mistakenly reported this species from "Asia Minor" based on the following papers: [(Carvalho 1957-60); (Wagner 1974-78); (Linnavuori 1986)] but it was not cited from Anatolia in any of these publications. The only specimen was captured by a light trap.

Distribution in Turkey: Muğla (New record for the fauna of Turkey).

Orthotylinae Van Duzee, 1916

***Orthotylus (Parapachylops) caprai* Wagner, 1955 (Fig. 1E)**

Material examined: İzmir: Urla, 04.IX.2015, 1♂, 2♀, B. Çerçi leg.

Morphological diagnosis: Length 3.2 mm. Head greenish, covered with lying white and brown hairs, ocular index 2.8 (♀) – 2.0 (♂), head 2.1× as wide as long, 1.2× as wide as its height in the front view. Antennae pale, yellowish green, covered with very short black setae, antennal ratio 8:35:15:11. Rostrum reaching to posterior coxae. Pronotum greenish, trapezoidal, 2.46× as wide as long, covered with pale and brown hairs. Scutellum same colored. Elytra parallel sided, unicolor green, covered with pale and dark hairs. Membran smooth, same colored as elytra. Abdomen also greenish. Legs greenish, without any black spines, covered with very short pale setae. Tarsi greenish, last segment dark in the apex.

Comments: It was firstly described by Wagner from Sardinia (Wagner 1955b) and recorded from Sicily by Carapezza (1997). But very recently it was reported from various countries in Europe such as Croatia, Germany, Switzerland (Simon 2007); Great Britain (Nau 2007a; 2007b), Spain (Goula & Mata 2011), Principality of Monaco (Ponel *et al.* 2013) and the mainland Italy (Carapezza & Cusimano 2014). All of our specimens were collected from a light trap but according to Carapezza & Cusimano (2014) this species feeds on *Juniperus*, *Chamaecyparis*, *Cupressus* and *Sequoiadendron giganteum* (Lindley). Our record extends much eastern the distribution of the species which formerly was Croatia.

Distribution in Turkey: İzmir (New record for the fauna of Turkey).

Phylinae Douglas & Scott, 1865

***Chlorillus pictus* (Fieber, 1864) (Fig. 1F)**

Material examined: Karaman: Merkez, 23.VI.2015, 2♂♂, 2♀♀, Ö. Koçak leg., B. Çerçi det.

Comments: The presence of this species in Turkey was firstly mentioned by Wagner (1955a) based on some specimens in the collection of Seidenstücker without any certain location. The specimens collected by the second author in Karaman differ from the typical form by the lack of cephalic marking. According to Wagner (1955a) this species can be collected from *Astragalus onobrychis* in Hungary and Austria, from *Salvia* sp. in Turkey. The examined the specimens were collected by a light trap.

Distribution in Turkey: Turkey (Wagner 1955a); Karaman (New documented record for the fauna of Turkey).

***Damioscea komaroffii* (Jakovlev, 1879) (Fig. 1G)**

Material examined: Aksaray: Ihlara Valley, 07.VII.2015, 6♂♂, 6♀♀, B. Çerçi leg. Karaman: Merkez, 24.VI.2015, 2♂♂, 1♀, Ö. Koçak leg., B. Çerçi det.

Morphological diagnosis: Length 5.0–5.2 mm. Head shiny, yellowish, a little bit darker in ♂, ocular index 1.7 (♂) – 2.1 (♀), covered with semi-erected brown setae, 1.89× as wide as long, 0.66× (♂) – 0.56× (♀) as wide as the basal width of the pronotum. Antennae long, first two segments thicker than the last two segments, in ♂ first two segments dark brown, last two segments lighter, yellowish brown, in ♀ first segment and basal half of the second segment dark brown, a little bit lighter than the ♂, apical half of the second segment and third and fourth segments light, yelllowish brown as in ♂. Antennal ratio of ♂, 8:27:18:10, ♀, 10:31:25:15, first antennal segment 0.41× as long as the diatone. Rostrum reaching to the posterior coxae. Pronotum yellowish, trapezoidal, 2,4x as wide as long, densely covered with semi-erected brown setae, darkened a little bit around the calli. Scutellum yellowish, covered with dark hairs. Elytra brownish yellow, parallel sided, immaculate, exceeding the abdomen clearly, covered with semi-erected simple setae, only brown hairs. Membran gray, veins a little bit paler. Legs long and gracile, 1.91× as long as the basal width of the pronotum, yellow, immaculate. Tibiae obscuring through the apical half, occupied with black spines. Tarsi black, long, posterior tarsi 0.39× (♂) – 0.33× (♀) as long as the posterior tibia.

Comments: It is originally a caspian species distributing in Caucasus, Georgia and South Russia (Jakovlev 1879; Carvalho 1957-60). It was redescribed and illustrated by Linnavuori (1993), a paper we used to identify our material. They were very common in either Aksaray or Karaman and easily catched by sweeping grasses (Poaceae). In the first sight *D. komaroffii* can be confused with *Tinicephalus picticornis* Wagner, 1966 which was firstly recorded from Turkey by Matocq *et al.* (2014). But the latter species has characteristic dark markings on the vertex unlike *D. komaroffii*. Also the apex of the vesica of *D. komaroffii* has a single tip while that of *T. picticornis* has two.

Distribution in Turkey: Aksaray, Karaman (New record for the fauna of Turkey).

Anthocoridae Fieber, 1836

Lyctocorinae Reuter, 1884

***Amphiareus obscuriceps* (Poppius, 1909) (Fig. 1H)**

Material examined: Ordu: Altınordu, 13. VIII. 2015, 1♀, B. Çerçi leg.

Morphological diagnosis: Length 3 mm. Head shiny, brownish, as long as wide. Antennae pale, apex of the second segment extended and obscured, 0.56× as long as the basal width of the pronotum, covered with semi-erected pale setae, first two segments thicker than the last two. Pronotum orange, 1.97× as wide as its length, with two big calli, a transverse groove behind the calli and a longitudinal groove in the middle of the posterior half behind the calli. Scutellum orange. Elytra orange, transparent, immaculate, obscured on the sides of the membran, covered with long brownish erected setae. Membran smooth, grayish brown. Legs thin, pale, covered with pale setae, posterior tibia as long as the basal width of the pronotum. Tarsi long, pale, posterior tarsus 0.44× as long as the posterior tibia.

Comments: The only female specimen was collected from a light trap in a hazelnut orchard in Ordu. After it had been collected by us, the very same species was captured by M. Coşkun Sancar, a nature photographer, in Bursa one week later. It distributes in Europe in Austria, Belgium, Bulgaria, Czech Republic, Estonia, Finland, Germany, Italy, Lithuania,

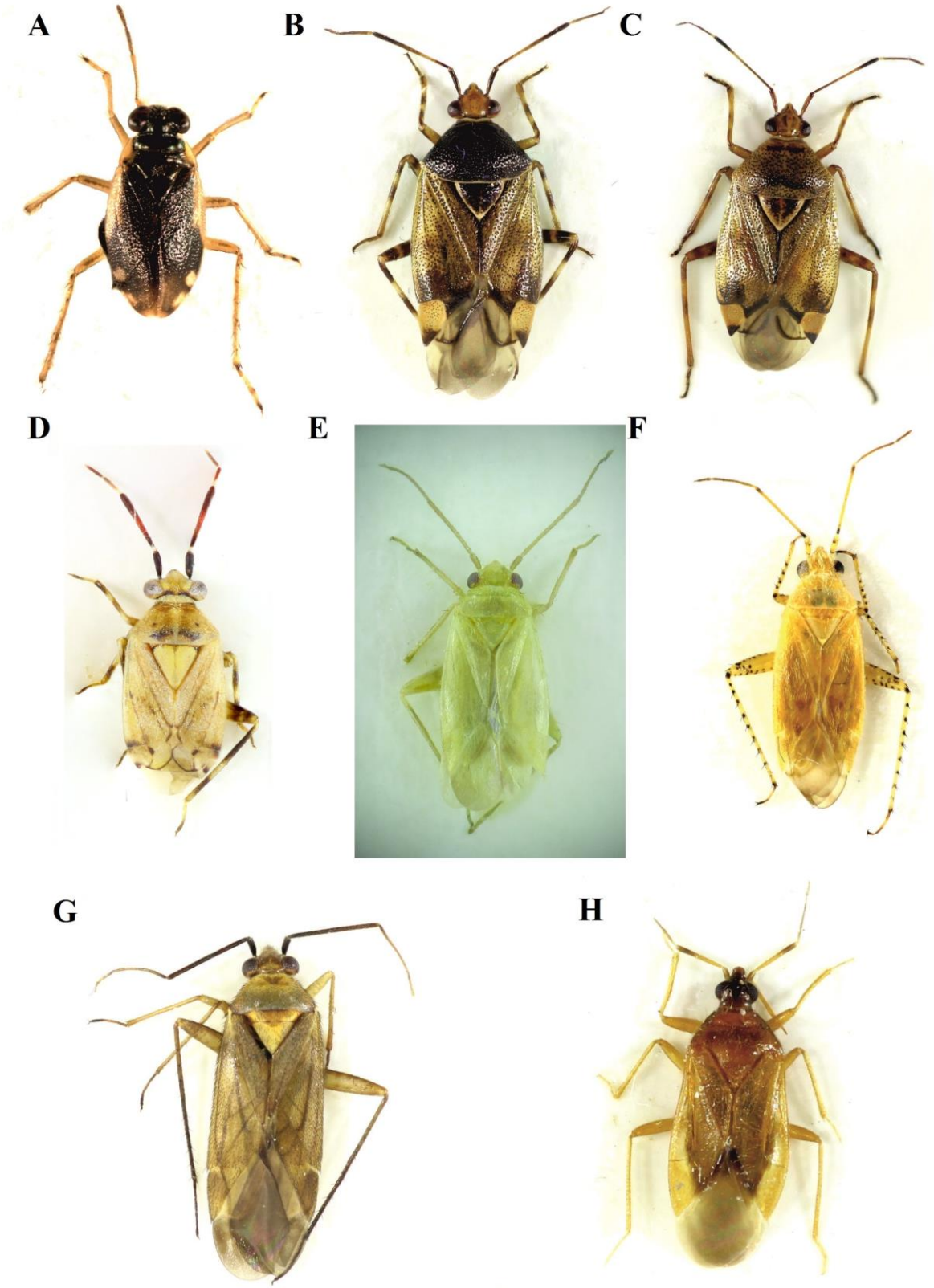

Figure 1. General habitus of Heteroptera species. **A,** *Halosalda lateralis* (Fallen, 1807), İzmir, ♂; **B,** *Deraeocoris flavilinea* (Costa, 1862), İstanbul, ♂; **C,** *id.*,♀; **D,** *Eurystylus bellevoyei* (Reuter, 1879), Muğla, ♀; **E,** *Orthotylus (Parapachylops) caprai* Wagner, 1955, İzmir,♀; **F,** *Chlorillus pictus* (Fieber, 1864), Karaman, ♀; **G,** *Damioscea komaroffii* (Jakovlev, 1879), Nevşehir, ♂; **H,** *Amphiareus obscuriceps* (Poppius, 1909), Ordu,♀.

Netherlands, Poland, Serbia, Slovakia (Aukema *et al. 2013*), in Eastern Asia, Nepal, Kazakhstan, Kyrgyzstan, Iran and Georgia and is recently spreading as an alien species in North America (Ghahari *et al.* 2009).

Distribution in Turkey: Ordu, Bursa (New records for the fauna of Turkey).

Reduviidae Latreille, 1807

Harpactorinae Amyot & Serville, 1843

***Zelus renardii* (Kolenati, 1857) (Fig. 2A–B)**

Material examined: İstanbul: Esenyurt, 13.VII.2016, 3♂♂, B. Çerçi leg.; İzmir: Urla, 04.IX.2015, 1♂, 1♀, 1 nymph, B. Çerçi leg.

Morphological diagnosis: Length 12 mm. Head yellow, dark markings behind the eyes and in some cases dark marking reaching to the apex of tylus, unarmed, 2.44× as long as the diatone and 1.2× as long as the pronotum. Antennae long and thin, reddish brown, second segment 0.8× as long as the head and the pronotum combined. Pronotum yellow, covered with small pale setae, one little tooth on each humeral angle, a keel along the posterior margin, 1.16× as wide as long. Scutellum dirty yellow, white at the tip. Elytra parallel sided, pink, only clavus dark brown, covered with small pale setae, very distinct veins on the endocorium and the margin of the membran. Membran colourless, transparent. Femora long, green with reddish rings, joints reddish. Tibiae greenish. Abdomen greenish.

Comments: It is a Nearctic species commonly known as "Leafhopper Assasin Bug". It has been firstly mentionned in Europe from Greece (Davranoğlu 2011; Petrakis & Moulet 2011) later from Spain (Vivas 2012) and Italy (Dioli 2013) recently found in Crete by Heyden (2015). Their preys are leafhoppers. One specimen was found on a *Ficus* sp. and one on a *Paulownia* sp. Also one *Z. renardii* nymph was found together with a nymph of *Nagusta goedelii* on a *Ficus* sp. The specimens collected from Istanbul were gathered by sweeping *Vitis sp.* branches and *Daucus sp.* flowers. Its occurrence in Turkey, especially in İzmir, is not surprising because it has already been recorded from neighbour country, Greece (Davranoğlu 2011; Petrakis & Moulet 2011). The most similar species to *Z. renardii* is *Nagusta goedelii* (Kolenati, 1857) which is collected both in Izmir and Istanbul together with *Zelus renardii* specimens can be distinguished from *Z. renardii* by the presence of two post-antennal thorns.

Distribution in Turkey: İstanbul, İzmir (New record for the fauna of Turkey).

Reduviinae Latreille, 1807

***Pasira marinadolina* Putshkov & Moulet, 2003 (Fig. 2C)**

Materiale examined: İstanbul: Esenyurt, 01-12.VI.2015, 4♀♀, 2♂♂ (all micropterous), B. Çerçi leg., B. Çerçi and P. Moulet det.

Comments: This species differs from the widespread *P. basiptera* mainly by being always micropterous. Other differences between *P. marinadolina* and *P. basiptera* are the color of the first and second joints of antennae (yellow in *P. basiptera*; black brown in *P. marinadolina*), the patterns of the anterior lobe of pronotum (smooth in *P. basiptera*; with impresses in *P. marinadolina*), color of the connexivum (bicolored in *P. basiptera*; unicolored in *P. marinadolina*), the structure of the apophyse of pygophore [broad, spatuled and apex thicker (in the lateral view) in *P. basiptera*; like a narrow small-tongue and the apex flat (in the lateral view) in *P. marinadolina*] (Puthskov & Moulet 2009). Male and female

specimens fit all the criteria expect the coloration of the connexivum which is bicolored in all specimens as in *P. basiptera*. In our opinion the coloration of the connexivum is not valuable to distinguish these two species. The specimens were caught by the first author under some rocks in a barren and dry area. Our caughts confirm the feeling of Putshkov & Moulet (2003) who thought that the micropterous specimens collected from the European part of Turkey might refer to *P. marinadolina.*

Distribution in Turkey: İstanbul (New record for the fauna of Turkey).

Lygaeidae Schilling, 1829

Rhyparochrominae Amyot & Serville, 1843

***Liolobus walkeri* (Saunders, 1876) (Fig. 2D)**

Material examined: İzmir: Urla, 05.IX.2014, 1♂, B. Çerçi leg.

Morphological diagnosis: Length 5 mm. Head reddish brown. Small, shiny and lying white hairs on the vertex and paracylpei. Antennae yellowish, unicolor, last segment a little bit obscured, covered with very small yellow setae. Rostrum reaching to the metacoxae. Pronotum bicolored, reddish brown in the anterior half and whitish in the posterior half. Two comma like reddish brown patterns on the rear corners, separetaly punctuated, each punctuation reddish brown with small white hair. Scutellum reddish brown, two narrow white stripes in the tip separated by the brownish ground colour. Elytra dominantly whitish, reddish brown in the posterior third, brownish punctuated and each punctuation with a white hair as in the pronotum, 4 lines of punctuation in the clavus, 4 lines in the corium and 3 to 4 lines in the exocorium. Cuneus whitish, reddish brown in the inner angle and tip. Membran brownish, a white spot at the apex. Anterior femora reddish brown except the apex, apex is yellowish, other femora yellowish. Tibiae and tarsi yellowish.

Comments: The examined specimen of this mediterranean lygaeid species was found in a light trap in almost westernmost province of Turkey. Its known distribution in the Mediterranean Region is Greece (including Rhodes), Cyprus, Italia, Malta and also Croatia and Bosnia and Herzegovina. The discovery of this species in İzmir is not surprising.

Distribution in Turkey: İzmir (New record for the fauna of Turkey).

Coreidae Leach, 1815

Coreinae Leach, 1815

***Leptoglossus occidentalis* (Heidemann, 1910) (Fig. 2E)**

Material examined: Edirne: Mecidiye, 02.IX.2011, 1♀, B. Çerçi leg. İstanbul: Esenyurt, 25.X.2011, 1♂; 25.XI.2012, 1♂, B. Çerçi leg. İzmir: Urla, 02.IX.2015, 1♀, B. Çerçi leg.

Comments: This is originally a North American *Leptoglossus* species and it was firstly introduced to Europe from Italy in 1999 (Tescari 2001). Now it is very common and widespread throughout Europe and an useful map showing its distribution in Europe can be found in Fent & Kment (2011). *Leptoglossus occidentalis* had been reported from İstanbul for the first time in Turkey by Arslangündoğdu & Hızal (2010). But one year later Fent & Kment (2011) published an article in which they reported this species from Edirne based on material collected between 2009 and 2011, and claimed that these were the first records of this species from Turkey. The known distribution of this species in Turkey is Edirne, Kırklareli (Fent & Kment 2011); İstanbul (Arslangündoğdu & Hızal 2010; Hızal 2012) and İzmir (Hızal & İnan

2012). It seems, from these records, that this species shows a western distribution in Turkey. But this is only because of the lack of the field researches. As it can be seen from the records of this species on the website of "Doğal Hayat", it has already been started to spread to Anatolia. According to those records, easternmost record of this species in Turkey is Tokat. This species can be found on Pine trees.

Distribution in Turkey: İstanbul (Arslangündoğdu & Hızal 2010); Edirne, Kırklareli (Fent & Kment 2011); İzmir (Hızal & İnan 2012); Antalya, Bursa, Çorum, Kastomonu, Kayseri, Samsun, Sakarya, Tokat (this work).

Cydnidae Billberg, 1820

Amnestinae Hart, 1919

***Amnestus pusillus* Uhler, 1876 (Fig. 2F)**

Material examined: İzmir: Urla, 02.IX.2015, 1♀, B. Çerçi leg., J. Lis det.

Morphological diagnosis: Length 3 mm. Head orange, front edge occupied with spines, 4 spines on each paraclypeus and 4 on the clypeus. Antennae pale orange, second segment extended apically. Pronotum orange, deep and densely punctuated even in the humeral angles, a distinct transverse groove in the middle. Scutellum a little bit darker than pronotum, deep and rough punctuated. Elytra pale orange, deeply punctuated, outer edge arched in the posterior two third. Membran exceeding the abdomen, smooth and transparent. Abdomen dark orange. Legs pale orange, posterior femur without any spine in ♀.

Comments: This species is a representive of the New World cydnid genus, *Amnestus* which distributes from Canada to Guatemala (Froeschner 1960). A new species of this genus, *A. raunoi* Lis, 1998 had been described from Iran several years ago which was later synonymized with *A. pusillus* (Mayorga *et al.* 2012). They are easily attracted by light traps (Mayorga *et al.* 2012) and we also found the only specimen in a ligh trap. According to Dr. J. Lis (Opole University, Poland; personal comment) this record from İzmir may be an independent introduction from America by the agency of man. It is easily recognizable by its small size (3 mm) and pale, orange and shiny coloration.

Distribution in Turkey: İzmir (New record for the fauna of Turkey).

Cydninae Billberg, 1820

***Fromundus pygmaeus* (Dallas, 1851) (Fig. 2G)**

Material examined: Mersin: Anamur, 28.VIII.2015, 1♂, Ö. Koçak leg., P. Magnien det.

Morphological diagnosis: Length 4.3 mm. Head black, shiny, some long erected light brown setae on the vertex and paraclypei, clypeus hairless, ocular index 2.63 in male. Antennae missing. Pronotum shiny, black, punctuated, smooth on the calli, wider than its length, a very shallow groove behind the calli. Scutellum black, non-punctuated in the base, punctuation getting denser at the tip. Elytra shiny black, almost paralel sided and narrowing at the apex. Two rows of punctuation on the inner edge and one row of punctuation in the outer edge of the endocorium, evenly punctuated in the middle, one row of punctuation in the clavus, evenly punctuated in the exocorium. Membran smooth, yellowish, with two round brown spots. Abdomen brownish. Legs dark brown. Tarsi lighter.

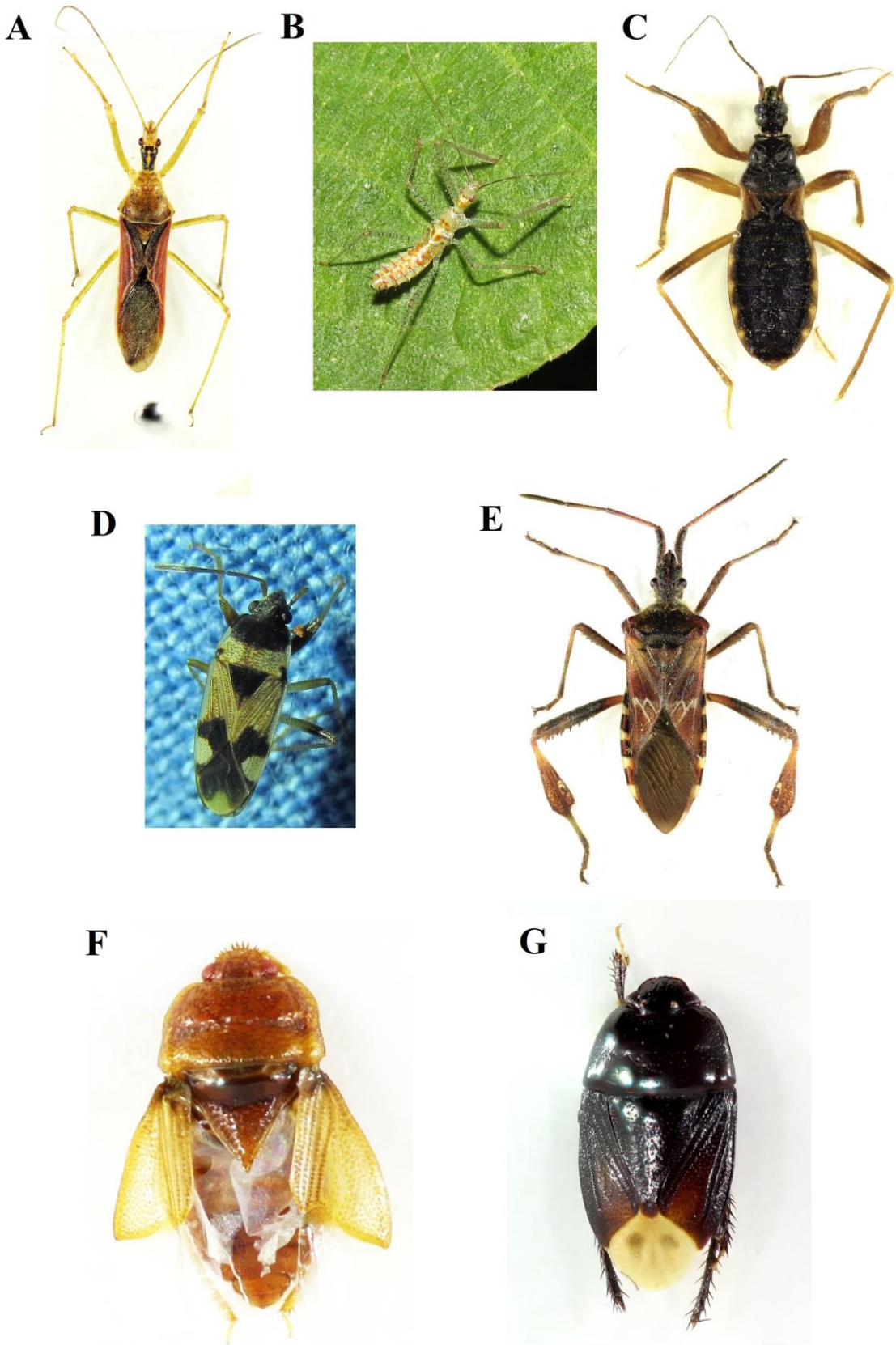

Figure 2. General habitus of Heteroptera species. Habitus. **A,** *Zelus renardii* (Kolenati, 1857), İzmir, ♂; **B,** *id.*, (nymph); **C,** *Pasira marinadolina* Putshkov & Moulet, 2003, İstanbul, ♀; **D,** *Liolobus walkeri* (Saunders, 1876), İzmir, ♂; **E,** *Leptoglossus occidentalis* (Heidemann, 1910), İstanbul, ♀; **F,** *Amnestus pusillus* Uhler, 1876, İzmir, ♀; **G,** *Fromundus pygmaeus* (Dallas, 1851), Mersin, ♂.

Comments: This species is very widespread in the Oriental area (Lis 1999) and the westernmost record of this species was given by Carapezza (1998) from Cyprus. So its discovery in Mersin is not surprising. This species can be distinguished from the species of the closest genus *Geotomus* by the unique shape of the evaporatoria and the big eyes (ocular index 2.63 in male). Lis (1999) gives its global distribution.

Distribution in Turkey: Mersin (New record for the fauna of Turkey).

Discussion

A total of 15 species of 15 genera belonging to 9 families are reported from Turkey (mostly from the provinces İstanbul, İzmir and Karaman). Among them *Halosalda lateralis* (Fallen, 1807), *Amphiareus obscuriceps* (Poppius, 1909), *Amnestus pusillus* Uhler, 1876, *Fromundus pygmaeus* (Dallas, 1851), *Hydrometra gracilenta* Horváth, 1899, *Liolobus walkeri* (Saunders, 1876), *Damioscea komaroffii* (Jakovlev, 1879), *Deraeocoris flavilinea* (Costa, 1862), *Eurystylus bellevoyei* (Reuter, 1879), *Orthotylus (Parapachylops) caprai* Wagner, 1955, *Pasira marinadolina* Putshkov & Moulet, 2003 and *Zelus renardi* (Kolenati, 1846) are new records for the turkish fauna. The collect data are interesting for national or regional distribution of the species (some new localities are added to known distribution) and they allowed the discovery of 12 new abovementioned taxa for Turkey. Species such as *Eurystylus bellevoyei* (Reuter, 1879), *Halosalda lateralis* (Fallen, 1807), *Amphiareus obscuriceps* (Poppius, 1909), *Hydrometra gracilenta* Horváth, 1899, *Fromundus pygmaeus* (Dallas, 1851), *Liolobus walkeri* (Saunders, 1876) and *Zelus renardi* (Kolenati, 1846) are already widely distributed around Turkey e.g. in Greece, Cyprus, Georgia and Iran. Thus their discovery in Turkey is not suprising. But the species such as *Amnestus pusillus* Uhler, 1876, *Damioscea komaroffii* (Jakovlev, 1879), *Deraeocoris flavilinea* (Costa, 1862), *Orthotylus (Parapachylops) caprai* Wagner, 1955 and *Pasira marinadolina* Putshkov & Moulet, 2003 are not common around Turkey and distributed in Ukraine, South Iran, Caspian Region, Croatia. Consequently their discovery in Turkey are quite interesting. These data also give indications on the biology of the species (dates of the first or the last caught) and contribute to a better knowledge of the turkish fauna.

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