Contributions to the leafhoppers (Auchenorrhyncha: Cicadellidae) of Khuzestan, southwest of Iran

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ABSTRACT. A faunal study of leafhoppers (Hemiptera: Auchenorrhyncha: Cicadellidae) was conducted in some parts of Khuzestan province (southwest of Iran) in 2014 and 2015. Totally, 90 species belonging to 49 genera and seven subfamilies were collected and identified. Most of samples were collected by using sweeping net and Malaise trap and a few by aspirator and sticky yellow trap. As a result of this study 47 species are recorded from Khuzestan province for the first time and eight species are new records for the fauna of Iran including Euscelidius schenckii (Kirschbaum, 1868); Hardya (Hardya) melanopsis (Hardy, 1850); Paradorydium (Paradorydium) lanceolatum (Burmeister, 1839); Hecalus prasinus (Matsumura, 1905); Psammotettix emarginatus Singh, 1969; Grammacephalus pallidus (Linnavuori, 1978); Helionidia punctulata (Ramakrishnan & Menon, 1974) and Eupteryx (Eupteryx) kaghanensis Ahmed, 1969. For each species geographical distribution in Iran are completely mentioned. In addition morphological data and illustration of adults and their male genitalia are given for the eight newly recorded species.

Key words: Leafhoppers, Fauna, Khuzestan, Distribution, new records, Iran.

Introduction

Based on the number of described species, Cicadellidae (commonly named leafhoppers) is the largest family of the suborder Auchenorrhyncha with more than 20,000 described species (Dietrich, 2008). This family may be distinguished from other Hemiptera by the following combination of characters: the presence of rows of spin-like setae on their hind tibiae; postclypeus enlarged; antennal pedicel small; flagellum aristiform, tegulae absent; forewing anal veins usually separate from base to wing margin; middle coxa small and narrowly separated (Anufriev and Emelianov 1988; Dietrich 2005). The most important character to identify and classify nearly all species and most genera is the male genitalia. Character of similar value are almost completely lacking in female (Dakhil et al. 2011). In fact, the aedeagus is the most
consistently used character in leafhoppers species differentiation (Ribaut 1936; 1952). Relatively, few species are economically important but there are some major pest, such as potato leafhopper, *Empoasca fabae* (Harris, 1841) and sugar beet leafhopper, *Neoaliturus* (*Circulifer*) *tenells* (Baker, 1896) (Dietrich, 2005). Leafhoppers injure plants either directly through feeding (Backus 1988; Backus et al. 2005) or indirectly through transmission of plant pathogen, such as phytoplasmas and viruses (Nielson 1968; Maramorosch and Harris 1979; Wientraub and Beenland 2006). The fauna of leafhoppers in Iran is very diverse, the famous Czechoslovakian entomologist Dr. Jiri Dlabola, who worked on the Iranian Auchenorrhyncha fauna in the 1960s and 1970s, and described more than 100 new leafhoppers species (Dlabola 1960, 1963, 1964, 1965, 1971, 1972, 1974, 1977, 1979, 1980, 1981, 1984, 1987, 1994; Dlabola and Heller, 1962; Dlabola and Jankovich, 1981). After Dlabola's publications, new data on the Iranian leafhoppers were scarce and consist a few faunistic studies concerning leafhoppers have been conducted that most of them published in Conference Proceedings (Karimzadeh et al. 1998; Haghshanas and Khajeali 2000; Nematollahi and Khajehali 2000; Khajeali et al. 2001; Darvish-Mojeni and Taghizadeh 2008; Mozaffarian and Taghizadeh 2010; Olyaei Torshiz et al. 2011; Pakarpour et al. 2011a, b, c; Pakarpour and Nozari 2011; Moosavi Mahvelati and Modarres Awal 2011; Taghizadeh 2012; Khorami 2013; Abdollahi et al. 2013; 2014a, b, c; 2015; Rezaei et al. 2014; Pakarpour and Nozari 2014a, b; Pakarpour et al. 2014a, b; Pakarpour Rayeni et al. 2015a, b, c. A checklist was provided for the subfamily Deltocephalinae by Pakarpour Rayeni et al. (2015a) and another one was published for all recorded species for the family Cicadellidae by Mozaffarian and Wilson (2016) which presented the occurrence of 390 species.

Khuzestan province is located in southwest of Iran and covers 64,057 km² (Mossadegh and Kocheili 2003). This province has border with Ilam and Lorestan province in north, Isafahan, Chaharmal and Bakhtiari and Kohgiluyeh and Boyerahmad provinces in east, Bushehr province and Persian Gulf in south and with Iraq in west (Fig. 1). Abundance of water and fertile soils in Khuzestan favored the condition for existence of the various vegetation (Mossadegh and Kocheili 2003). However, southwest of Iran contains high insect diversity (Mossadegh and Kocheili 2003; Ramezani et al. 2006) but there is inadequate knowledge relating to the Cicadellids from this region. The objective of the current study is to report new data about occurrence of leafhoppers in this region as well as new records for fauna of Iran.

**Material and methods**

Leafhopper specimens were mostly collected with standard sweeping net and Malaise trap and a few by using aspirator and sticky yellow trap from tree locations in Khuzestan province with different climate, during 2014-2015. Sampling localities were selected to cover different types of habitats for collecting maximum occurring species (Table 1). Materials were killed by dropping into standard killing jar containing ethyl acetate and then mounted on the points, labeled and put into collection boxes.

Table 1. Coordinates, altitudes, localities and date of sampling in Khuzestan province

<table>
<thead>
<tr>
<th>Localities</th>
<th>Coordinates</th>
<th>Altitude</th>
<th>Date of Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahvaz I (Shahid Chamran University)</td>
<td>31°18'13.5&quot;N, 48°39'40.3&quot;E</td>
<td>17 m</td>
<td>13.iii.2014</td>
</tr>
<tr>
<td>Ahvaz II (Om-el-Tamir)</td>
<td>31°15'18.2&quot;N, 48°32'38.3&quot;E</td>
<td>17 m</td>
<td>07.ix.2014</td>
</tr>
<tr>
<td>Ahvaz III (Kut-e-Abdollah)</td>
<td>31°13'00.2&quot;N, 48°41'42.3&quot;E</td>
<td>15 m</td>
<td>26.iv.2015</td>
</tr>
<tr>
<td>Ahvaz IV (Mollasani)</td>
<td>31°34'11.3&quot;N, 48°53'26.2&quot;E</td>
<td>18 m</td>
<td>25.vii.2015</td>
</tr>
<tr>
<td>Bagh-e Malek I (Manjanigh Park)</td>
<td>31°31'06.5&quot;N, 49°53'29.1&quot;E</td>
<td>920 m</td>
<td>16.iii.2014</td>
</tr>
<tr>
<td>Bagh-e Malek II (Ghale-Tal)</td>
<td>31°32'04.8&quot;N, 49°51'58.7&quot;E</td>
<td>950 m</td>
<td>09.ix.2014</td>
</tr>
<tr>
<td>Bagh-e Malek III (Laleb village)</td>
<td>31°32'35.8&quot;N, 49°58'26.7&quot;E</td>
<td>1000 m</td>
<td>15.v.2015</td>
</tr>
<tr>
<td>Bagh-e Malek IV (10km, road to Ramhormoz)</td>
<td>31°30'38.2&quot;N, 49°53'34.5&quot;E</td>
<td>910 m</td>
<td>28.vii.2015</td>
</tr>
<tr>
<td>Dezful I (Andimeshk, Dezful Road)</td>
<td>32°22'29.2&quot;N, 48°27'13.0&quot;E</td>
<td>140 m</td>
<td>14.iii.2014</td>
</tr>
<tr>
<td>Dezful II (Sanjar village)</td>
<td>32°23'22.7&quot;N, 48°21'13.9&quot;E</td>
<td>140 m</td>
<td>12.ix.2014</td>
</tr>
<tr>
<td>Dezful III (Zaviyeh Mashali village)</td>
<td>32°17'36.8&quot;N, 48°18'13.3&quot;E</td>
<td>120 m</td>
<td>27.iv.2015</td>
</tr>
<tr>
<td>Dezful IV (Zaviyeh Hamudi village)</td>
<td>32°17'38.0&quot;N, 48°19'12.3&quot;E</td>
<td>120 m</td>
<td>27.vii.2015</td>
</tr>
</tbody>
</table>

Final confirmation was done mostly by Dr. Michael R. Wilson (National Museum of Wales, Cardiff) and a few by Dr. Christopher H. Dietrich (Illinois Natural History Survey) and Dr. James N. Zahniser (USDA-APHIS-PPQ, San Diego, California). The specimens were deposited in Jalal Afshar Zoological Museum at University of Tehran (JAZMUT). The identified species are ordered based on subfamilies, tribes and genera alphabetically (Emeljanov 1999; Dmitriev 2016; Zahniser 2016). The species marked with an asterisk are recorded for the first time from Khuzestan province and those marked with two asterisks are newly recorded for Iran. Abbreviation for the collector as follow: F.P.R.: Farzad Pakarpour Rayeni.

Results

Family Cicadellidae

This family includes 390 valid species belonging to 13 subfamilies in Iran (Mozaffarian and Wilson 2016).

Subfamily Aphrodisinae

This subfamily includes three species in three genera in Iran (Mozaffarian and Wilson 2016).

Aphrodes bicincta (Schrank, 1776)*

Material examined: Bagh-e Malek, 1♂, 1♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Distribution in Iran: Azarbaijan-e Sharghi, Golestan, Guilan, Khorasan-e Razavi and Tehran provinces; north and northwest of Iran (Dlabola 1981; Mirzayans 1995; Abdollahi et al. 2015; Mozaffarian and Wilson 2016).

Subfamily Deltocephalinae

Deltocephalinae is the largest subfamily of Cicadellidae comprising more than 6700 valid species (Zahniser 2016) of which 232 extant species were recognized in Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Tribe Athysanini

45 species belonging to 15 genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Euscelidius schenckii (Kirschbaum, 1868)** (Fig. 2a)

Material examined: Dezful, 1♂, 3♀, swept on weeds in citrus orchards, 14.iii.2014, leg.:
Khuzestan leafhoppers

Euscelidius mundus (Haupt, 1927)


Distribution in Iran: This species is a new record for the Iranian leafhoppers fauna.

Remarks: Male: Length, 4.5 mm.; Robust; Base color greyish yellow, frontoclypeus with two longitudinal and series of transverse dark brown streaks, vertex with irregular spots, fore wings longer than abdomen, marked with fine irregular dark brown dots which can locally be more or less fused into small patches; in male shaft of aedeagus up to middle more or less straight and then curved, apically with appendages like outwards directed hook (Fig. 3a).

Euscelis incisus (Kirschbaum, 1858)*

Material examined: Dezful, 1♂, 3♀, swept on graminae, 12.ix.2014, leg.: F.P.R.; Ahvaz, 1♂, 2♀, swept on weeds in palm orchards, 26.iv.2015, leg.: F.P.R.

Distribution in Iran: Qom, Hormozgan, Isfahan, Kerman and Tehran provinces; north, center and south of Iran (Dlabola 1981, 1984; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Euscelis alsius Ribaut, 1952*

Material examined: Dezful, 3♂, 3♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.; Bagh-e Malek, 1♂, swept on grasslands, 16.iii.2014, leg.: F.P.R.; Ahvaz, 1♂, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Dezful, 1♂,
swept on weeds in citrus orchards, 12.ix.2014, leg.: F.P.R.

**Distribution in Iran:** Azarbaijan-e Sharghi, Guilan, Kerman, Kordestan, Qom, Tehran provinces; north, northwest and south of Iran (Dlabola 1981; Mirzayans 1995; Pakarpour et al. 2011a, 2011c; Abdollahi et al. 2015; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Hardya (Hardya) melanops* (Hardy, 1850)** (Fig. 2b)

**Material examined:** Dezful, 1♂, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.; Bagh-e Malek, 1♂, 1♀, swept on grasslands, 15.v.2015, leg.: F.P.R.

**Distribution in Iran:** This species is a new record for the Iranian leafhoppers fauna.

**Remarks:** Male: Length, 2.8-3 mm.; Base color dark brown, face black with interrupted transverse light brown bands on fronto-clypeus, vertex brownish with irregular black streak along anterior margin and back marking posteriorly in form of outline of clover-leaf with median lobe bisected; aedeagus hind margin of shaft only apically and basally curved (Fig. 3b).

*Platymetopius (Platymetopius) coronatus* Dlabola, 1974*

**Material examined:** Bagh-e Malek, 1♂, 1♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Alborz Mountains and north of Iran (Dlabola 1974, 1981; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Platymetopius (Platymetopius) cruentatus* Haupt, 1927

**Material examined:** Ahvaz, 2♂, 3♀, 2 nymph, swept on weeds in palm orchards in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Ahvaz, 1♂, 2♂, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Ahvaz, 2♂, 1 nymph, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Fars, Hormozgan, Kerman, Khuzeastan, Sistan-o Baluchestan provinces; north, southwest, south and southeast of Iran (Dlabola 1960, 1981; Nast 1972; Mirzayans et al. 1976; Kheyri 1989; Modarres Awal 1994; Mirzayans 1995; Abaii 2000; Pakarpour Rayeni et al. 2015a; Mozaffarin and Wilson 2016).

*Platymetopius (Platymetopius) exalbescens* Dlabola, 1974*

**Material examined:** Bagh-e Malek, 1♂, swept on *Medicago sativa*, 09.ix.2014, leg.: F.P.R.; Dezful, 1♂, 1♀, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.

**Distribution in Iran:** Fars, Kohgiluyeh and Boyerahmad; southwest of Iran (Dlabola 1974; Mirzayans 1995; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Platymetopius (Platymetopius) rostratus* (Herrich-Schäffer, 1834)*

**Material examined:** Ahvaz, 3♀, swept on weeds in palm orchards in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Dezful, 1♂, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.; Bagh-e Malek, 6♂, 5♀, swept on *Medicago sativa*, 09.ix.2014, leg.: F.P.R.; Ahvaz, 2♂, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.; Dezful, 1♂, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Chaharmahal-o Bakhtiari, Isfahan, Kerman and Tehran provinces; south of central region of Alborz mountains, southeast and south of Iran (Dlabola 1981; Mirzayans 1995; Haghshenas and Khajehali 2000; Khajehali et al. 2001; Pakarpour et al. 2011a, 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Platymetopius (Platymetopius) shirazicus* Dlabola, 1974*

**Material examined:** Bagh-e Malek, 1♂, swept on grasslands, 09.ix.2014, leg.: F.P.R.;
Dezful, 1♂, 1♀, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.


**Tribe Chiasmini**

15 species belonging to six genera have been recorded from Iran (Pakarpour Rayeni *et al.*, 2015a; Mozaffarian and Wilson 2016).

*Aconurella nuristana* (Dlabola, 1957)

**Material examined:** Dezful, 4♂, 3♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.

**Distribution in Iran:** Khuzestan province (Pakarpour Rayeni *et al.* 2015c).

*Aconurella prolixa* (Lethierry, 1855)

**Material examined:** Bagh-e Malek, 2♂, 11♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.


*Chiasmus* sp.

**Material examined:** Ahvaz, 2♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

*Exitianus indicus* (Distant, 1908)*


**Distribution in Iran:** Kerman province (Pakarpour and Nozari 2014a; Pakarpour *et al.* 2015a).

*Exitianus nanus* (Distant 1908)

**Material examined:** Dezful, 5♀, swept on weeds in palm orchards, 14.iii.2014, leg.: F.P.R.; Bagh-e Malek, 1♂, 3♀, swept on grasslands, 16.iii.2014, leg.: F.P.R.; Ahvaz, 1♀, swept on weeds in palm orchards, 07.iv.2014, leg.: F.P.R.; Dezful, 1♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.

Tribe Cicadulini
10 species belonging to six genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Cicadula (Cicadula) lineatopunctata* (Matsumura, 1908)*

**Material examined:** Dezful, 1♂, 1♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.

**Distribution in Iran:** Alborz, Azarbaijan-e Sharghi, Guilan, Hormozgan, Isfahan, Kerman, Sistan-o Baluchestan and Tehran provinces; north, center, southwest, south and southeast (Dlabola 1981; Mirzayans 1995; Karimzadeh et al. 1998; Khajehali et al. 2001; Pakarpour et al. 2011a, 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Elymana sulphurella* (Zetterstedt, 1828)*

**Material examined:** Ahvaz, 1♂, swept on *Medicago sativa*, 26.iv.2015, leg.: F.P.R.

**Distribution in Iran:** Kerman and Tehran provinces; south of central region of Alborz mountains and south of Iran (Mirzayans 1995; Pakarpour Rayeni et al. 2011a; 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Mocydiopsis parvicauda* Ribaut, 1939*

**Material examined:** Dezful, 1♂, 1♀, swept on graminae, 12.ix.2014, leg.: F.P.R.; Dezful, 2♀, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.; Ahvaz, 1♂, 1♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Kerman province; north and south (Dlabola 1981; Pakarpour et al. 2011a; 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Proceps acicularis* Mulsant and Rey, 1855*

**Material examined:** Bagh-e Malek, 2♂, swept on grasslands, 09.ix.2014, leg.: F.P.R.

**Distribution in Iran:** Hormozgan and Kerman provinces; south of Iran (Dlabola 1984; Mirzayans 1995; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Tribe Deltocephalini
Six species belonging to two genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Maiestas horvathi* (Then, 1896)

**Material examined:** Ahvaz, 1♂, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Bagh-e Malek, 1♂, 2♀, swept on grasslands, 15.v.2015, leg.: F.P.R.

**Distribution in Iran:** Guilan, Hormozgan, Khorasan-e Razavi and Khuzestan provinces; south, southwest and north (Dlabola 1981; Mirzayans 1995; Pakarpour Rayeni et al. 2011a; 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Maiestas trifasciata* (Lindberg, 1954)*

**Material examined:** Dezful, 1♂, 1♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.

**Distribution in Iran:** Hormozgan, Sistan-o Baluchestan provinces; south and southeast of Iran (Dlabola 1994; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Tribe Eupelicini
Four species belonging two genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Eupelix cuspidata* (Fabricius, 1775)*

**Material examined:** Bagh-e Malek, 2♂, 1♀, swept on grasslands, 16.iii.2014, leg.: F.P.R.; Bagh-e Malek, 1♂, swept on *Medicago sativa*, 09.ix.2014, leg.: F.P.R.; Dezful, 1♀, swept on graminae, 12.ix.2014, leg.: F.P.R.; Bagh-e Malek, 1♂, 1♀, swept on grasslands, 15.v.2015, leg.: F.P.R.
Distribution in Iran: Azarbaijan-e Sharqi, Golestan, Kerman, Khuzestan, Lorestan, Mazandaran and Tehran provinces; north, northwest, southwest, south and center of Iran (Dlabola 1981; Mirzayans 1995; Pakarpour et al. 2011a; Abdollahi et al. 2015; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Paradorydium breviceps (Melichar, 1902)*
Material examined: Dezful, 1♂, 3♀, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.

Distribution in Iran: Isfahan, Kerman, Sistan-o Baluchestan province; center, south and southeast of Iran (Dlabola 1960, 1972, 1981; Khajehali et al. 2001; Pakarpour et al. 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Paradorydium (Paradorydium) lanceolatum (Burmeister, 1839)** (Fig. 2c)
Material examined: Bagh-e Malek, 1♂, 2♀, swept on graminae, 09.ix.2014, leg.: F.P.R.

Distribution in Iran: This species is a new record for the Iranian leafhoppers fauna.
Remarks: Male: Length, 7.2 mm.; Base color brownish yellow, macropterous and forewings much longer than abdomen, the head extends forwards and is 3 time longer than wide, The vertex is strongly ridged and narrows gradually towards the apex which is flat, round, dorsally incurved and has a concave dorsal surface; in male the aedeagus has a pentagonal base which is long rounded near the origin of the shaft that stems from the ventral portion of the base. The shaft is swollen at the base and then narrows sharply becoming cylindrical (Fig. 3c).

Paradorydium (Paradorydium) paradoxum (Herrich-Schäffer, 1837)*
Material examined: Bagh-e Malek, 2♂, 1♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Distribution in Iran: Kerman province; southeast of Iran (Pakarpour et al. 2011b; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Tribe Fieberiellini
Five species belonging three genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Fieberiella florii (Stål, 1864)*
Material examined: Dezful, 1♂, 1♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.; Bagh-e Malek, 1♂, 3♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Distribution in Iran: Recorded from Iran without certain locality (Dlabola 1961; 1965; Nast 1972; Modarres Awal 1994; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Fieberiella macchiae Linnavauri, 1962*
Material examined: Dezful, 1♂, 1♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.

Distribution in Iran: Qom and Tehran provinces; north and center of Iran (Dlabola 1981, 1984; Rajabi 1991; Modarres Awal 1994; Mirzayans 1995; Abaii 2000; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Tribe Goniagnathini
10 species belonging three genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Goniagnathus (Goniagnathus) brevis (Herrich-Schäffer, 1835)*
Material examined: Dezful, 1♂, swept on grasslands, 12.ix.2014, leg.: F.P.R.

Distribution in Iran: Azarbaijan-e Sharghi, Kohgiluyeh and Boyerahmad provinces; northwest, west, and center of Iran (Nast 1972; Mirzayans et al. 1976; Dlabola 1981; Modarres Awal 1994; Mirzayans 1995;
Abdollahi et al. 2013, 2015; Pakarpour et al. 2015a; Mozaffarian and Wilson 2016).

**Goniagnathus (Epistagma) guttulinervis**
(Kirschbaum, 1868)

**Material examined:** Ahvaz, 9♂, 8♀, swept on weeds in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Dezful, 1♂, 1♀, swept on grasslands, 12.ix.2014, leg.: F.P.R.

**Distribution in Iran:** Hormozgan, Kerman, Khuzestan, Sistan-o Baluchestan and Tehran provinces; northwest, southwest, south, southeast and center of Iran (Dlabola 1972, 1981; Nast 1972; Mirzayans 1995; Pakarpour et al. 2011a; 2011c; Abdollahi et al. 2015; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Tribe Hecalini**

Two species from one genus have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Hecalus eximius**
(Kirschbaum, 1868)*

**Material examined:** Ahvaz, 5♂, 4♀, swept on weeds in palm orchards in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Ahvaz, 3♂, 3♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Dezful, 1♂, 2♀, swept on graminae, 12.ix.2014, leg.: F.P.R.

**Distribution in Iran:** Bushehr, Fars, Hormozgan, Kerman, Khorasan-e Jonubi, Khuzestan, Sistan-o Baluchestan provinces; north, southwest, south, southeast and east of Iran (Dlabola 1972, 1981; Nast 1972; Kheyri 1989; Modarres Awal 1994; Mirzayans et al. 1976; Modarres Awal 1994; Mirzayans 1995; Abdollahi et al. 2015; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Hecalus prasinus**
(Matsumura, 1905)**

(Fig. 2d)

**Material examined:** Ahvaz, 1♂, 5♀, swept on weeds in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Ahvaz, 3♂, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.

**Distribution in Iran:** This species is a new record for the Iranian leafhoppers fauna.

**Remarks:** Male: Length, 7.2 mm.; Base color yellowish brown, vertex parabolic with acute margin at apex, macropterous and forewings longer than abdomen; in male, aedeagus symmetrical, tubular, with one pair of processes at apex (Fig. 3d).

**Tribe Macrostelini**

24 species from six genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Balclutharhenana Wagner, 1939**

**Material examined:** Ahvaz, 2♂, 1♀, swept on weeds in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.

**Distribution in Iran:** North and northwest of Iran (Dlabola 1981; Abdollahi et al. 2015; Mozaffarian and Wilson 2016).
**Balclutharosea (Scott 1876)**

**Material examined:** Bagh-e Malek, 4♂, 5♀, swept on grasslands, 15.v.2015, leg.: F.P.R.

**Distribution in Iran:** Kerman, Khuzestan and Tehran provinces; center, southwest and southeast of Iran (Mirzayans 1995; Pakarpour et al. 2011b; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Cicadulina (Cicadulina) mbila (Naudé, 1924)**

**Material examined:** Ahvaz, 3♂, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Ahvaz, 1♂, 1♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Kerman, Sistan-o Baluchestan provinces; south and southeast of Iran (Dlabola 1960, 1981; Pakarpour et al. 2011a; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Macrosteles sp.**

**Material examined:** Dezful, 1♂, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.

**Distribution in Iran:** Ardebil, Azarbaijan-e Gharbi, Hormozgan, Kerman, Kermanshah, Khuzestan and Tehran provinces; northeast, north, northwest, west, southwest, south and center of Iran (Dlabola 1981; Kheyri 1989; Modarres Awal 1994; Mirzayans 1995; Moosavi Mahvelati and Modarres Awal 2011; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Tribe Opsiini**

31 species belonging nine genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Hishimonus phycitis (Distant, 1908)**

**Material examined:** Ahvaz, 1♂, 3♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Bagh-e Malek, 3♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Hormozgan, Fars, Kerman, Sistan-o Baluchestan provinces; south of Iran (Salehi et al. 2000; Bagheri et al. 2008; 2009; Faghihi et al. 2011; Zohdi et al. 2016).
Neoaliturus alboflavovittatus (Lindberg, 1954)*

Material examined: Ahvaz, 1♂, 2♀, swept on weeds in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Dezful, 3♂, 1♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.

Distribution in Iran: Kerman province; south of Iran (Pakarpour et al. 2011a; 2014a; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Neoaliturus pulcher (Haupt, 1927)*

Material examined: Ahvaz, 4♂, 5♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Dezful, 3♂, 7♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.


Neoaliturus (Neoaliturus) fenestratus (Herrich-Schäffer, 1834)*


Neoaliturus (Neoaliturus) guttulatus (Kirschbaum, 1868)*

Material examined: Dezful, 2♂, 5♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.


Neoaliturus (Circulifer) dubiosus (Matsumura, 1908)*

Material examined: Ahvaz, 1♂, 3♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Bagh-e Malek, 3♂, 5♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Distribution in Iran: Isfahan and Tehran provinces; center of Iran (Mirzayans, 1995; Karimzadeh et al. 1998; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Neoaliturus (Circulifer) haematoceps (Mulsant and Rey, 1855)

Material examined: Dezful, 1♂, 6♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.; Ahvaz, 3♂, 11♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Bagh-e Malek, 5♂, 6♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Distribution in Iran: Alborz, Azarbaijan-e Gharbi, Fars, Hormozgan, Isfahan, Kerman, Kermanshah, Khorasan-e Razavi, Khuzestan,

**Neoaliturus (Circulifer) opacipennis (Lethierry, 1876)**

**Material examined:** Dezful, 4♂, 10♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.


**Neoaliturus (Circulifer) tenellus (Baker, 1896)**

**Material examined:** Dezful, 1♂, 3♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.

**Orosius albicinctus Distant, 1918**

**Material examined:** Ahvaz, 1♂, swept on weeds in palm orchards at Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Ahvaz, 2♂, 8♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Bagh-e Malek, 1♀, swept on grasslands, 15.v.2015, leg.: F.P.R.; Bagh-e Malek, 4♂, 2♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Bushehr, Hormozgan, Isfahan, Kerman and Khuzestan provinces; center, southwest, south and southeast of Iran (Farahbakhsh 1961; Dlabola 1960; 1981; Modarres Awal 1994; Mirzayans 1995; Karimzadeh et al. 1998; Shamszadeh 2002; Esmaizadeh-Hosseini et al. 2007; Omidi et al. 2011; Pakarpour et al. 2011a; Nourbakhsh et al. 2012; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Orosius minuicus Dlabola, 1979**

**Material examined:** Ahvaz, 1♂, swept on *Medicago sativa* in palm orchards, 26.iv.2015, leg.: F.P.R.; Dezful, 09.v.2015, leg.: F.P.R.; Ahvaz, 5♂, 1♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Khuzestan province; southwest of Iran (Dlabola 1979; Pakarpour
Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Pseudophlepsius binotatus* (Signoret, 1880)

**Material examined:** Ahvaz, 1♂, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Azarbaijan-e Sharghi, Kerman, Khorasan-e Razavi, Khuzestan, Kohgiluyeh and Boyerahmad, Qom and Tehran provinces; northeast, center, northwest, southwest and south of Iran (Dlabola 1961; 1972; 1981; Mirzayans 1995; Olyaei Torshiz et al. 2011; Abdollahi et al. 2015; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Tribe Paralimmini**

30 species belonging to 19 genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Paralimnellus cingulatus* (Dlabola, 1960)

**Material examined:** Dezful, 2♂, 10♀♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.; Bagh-e Malek, 5♂, 11♀♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Kerman and Khuzestan provinces; south and southwest of Iran (Dlabola 1960; 1981; Mirzayans 1995; Pakarpour et al. 2011a; 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Psammotettix alienus* (Dahlbom, 1850)


*Psammotettix emarginatus* Singh, 1969**

(Fig. 2e)

**Material examined:** Ahvaz, 3♂, 7♀♀, swept on weeds in Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Bagh-e Malek, 2♂, 4♀♀, swept on grasslands and weeds, 27.vii.2015, leg.: F.P.R.

**Distribution in Iran:** This species is a new record for the Iranian leafhoppers fauna.

**Remarks:** Male: Length, 3.4 mm.; Base color light to dirty yellow, dark coloring partly distinct, vertex rectangular and as long as pronotum, fore wings with brownish spots and streaks; in male shaft of aedeagus mostly straight and evenly slender, aperture spoon-shaped, upper margin of aedagus rounded, aedeagus shaft has straight margins in lateral view (Fig. 3e).

**Tribe Penthimiini**

Two species belonging to one genus have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

*Penthimia nigra* (Goeze, 1778)*

**Material examined:** Bagh-e Malek, 1♂, swept on grasslands, 15.v.2015, leg.: F.P.R.
Khuzestan leafhoppers

Distribution in Iran: South and central region of Alborz mountains (Dlabola 1971; Mozaffarian and Wilson 2016).

**Penthimia sp.**

Material examined: Bagh-e Malek, 1♀, swept on grasslands, 09.ix.2014, leg.: F.P.R.

Tribe Phlepsiini

Seven species belonging to one genus have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Phlepsius intricatus** (Herrich-Schäffer, 1838)*


**Phlepsius kambysesi** Dlabola, 1984*

Material examined: Bagh-e Malek, 1♂, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Distribution in Iran: Fars and Kohgiluyeh and Boyerahmad provinces; southwest of Iran (Dlabola 1984; Pakarpur Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Tribe Scaphoideini

21 species belonging to nine genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Grammacephalus genoicus** Dlabola, 1984*

Material examined: Dezful, 1♂, 2♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.

Distribution in Iran: Hormozgan province; south and southeast of Iran (Dlabola 1984; Mirzayans 1995; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

**Grammacephalus pallidus** (Linnavuori, 1978)** (Fig. 2f)

Material examined: Ahvaz, 1♂, 1♀ collected with sticky yellow trap in Shahid Chamran University of Ahvaz, 26.iv.2015, leg.: F.P.R.

Distribution in Iran: This species is a new record for the Iranian leafhoppers fauna.

Remarks: Male: Length, 6.1 mm.; Base color light to dirty yellow, head strongly produced, vertex brown with a stripe along midline, vertex markings are similar to G. genoicus and G. minabicus, face creamy white with narrow brown band along anterior margin; in male, aedeagus simple, shaft slender, curved dorsally and rounded apically (Fig. 3f).

**Grammacephalus pugio** (Noualhier, 1895)*

Material examined: Dezful, 4♂, 3♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.; Ahvaz, 3♂, 2♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.; Dezful, 1♂, 3♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.
Distribution in Iran: Hormozgan and Kerman provinces; south and southeast of Iran (Dlabola 1960; 1965; 1977; 1981; Nast 1972; Mirzayans 1995; Pakarpour et al. 2011a; 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Neolimnus (Neolimnus) egyptiacus (Matsumura, 1908)*


Distribution in Iran: Hormozgan, Kerman and Sistan-o Baluchestan provinces; south of Iran (Dlabola 1994; Pakarpour et al. 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Tribe Stenometopiini

Six species belonging to two genera have been recorded from Iran (Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Doratulina lahorensis (Distant, 1918)*


Distribution in Iran: Sistan-o Baluchestan province; southeast of Iran (Pakarpour and Nozari 2011; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Doratulina (Doratulina) pallida Dlabola, 1994*

Material examined: Bagh-e Malek, 1♂, 2♀, swept on grasslands, 16.iii.2014, leg.: F.P.R.; Dezful, 5♂, 1♀, swept on graminaceae, 12.ix.2014, leg.: F.P.R.; Ahvaz, 1♂, 1♀, swept on weeds in palm orchards, 26.iv.2015, leg.: F.P.R.; Ahvaz, 1♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

Distribution in Iran: Hormozgan, Kerman and Sistan-o Baluchestan provinces; south of Iran (Dlabola 1994; Pakarpour et al. 2011c; Pakarpour Rayeni et al. 2015a; Mozaffarian and Wilson 2016).

Subfamily Iassinae

Four species belonging to two genera have been recorded from Iran (Mozaffarian and Wilson 2016).

Batracomorphus irroratus Lewis, 1834

Material examined: Ahvaz, 1♂, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

Distribution in Iran: Alborz, Azarbaijan-e Sharghi, Bushehr, Hormozgan, Khorasan-e Razavi, Khuzestan, Kohgiluyeh and Boyer-ahmad, Kordestan, Lorestan and Tehran provinces; northwest, west, southwest, south, southeast, east and center of Iran (Dlabola 1960; 1963; 1972; Mirzayans et al. 1976; Modarres Awal 1994; Moosavi Mahvelati and Modarres Awal 2011; Abdollahi et al. 2015; Mozaffarian and Wilson 2016).

Subfamily Idiocerinae

24 species belonging to 10 genera have been recorded from Iran (Mozaffarian and Wilson 2016).

Viridicerus sp.

Material examined: Dezful, 8♂, 16♀, swept on grasslands, 12.ix.2014, leg.: F.P.R.

Remark: These specimens have deep differences with other species of the genus Viridicerus, maybe a new species.
Subfamily Macropsinae
Nine species belonging to four genera have been recorded from Iran (Mozaffarian and Wilson 2016).

Macropsis graminea (Fabricius, 1798)*
Material examined: Dezful, 1♂, 1♀, swept on graminiae, 12.ix.2014, leg.: F.P.R.

Subfamily Megophthalminae
27 species belonging 10 genera have been recorded from Iran (Mozaffarian and Wilson 2016).

Tribe Agalliini
15 species belonging to four genera have been recorded from Iran (Mozaffarian and Wilson 2016).

Agallia harrarensis Melichar, 1911
Material examined: Ahvaz, 5♂, 8♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Ahvaz, 1♂, 3♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.; Bagh-e Malek, 3♂, 8♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Anaceratagallia aciculata (Horváth, 1894)*
Material examined: Ahvaz, 4♀, swept on weeds in palm orchards at Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Dezful, 1♂, 3♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.; Ahvaz, 2♂, 5♀, swept on Medicago sativa in palm orchards, 26.iv.2015, leg.: F.P.R.
Distribution in Iran: Fars, Kerman and Tehran provinces; north, southwest and southeast (Dlabola 1981; Mirzayans 1995; Babei and Izadpanah 2003; Pakarpour et al. 2011b; Mozaffarian and Wilson 2016).

Anaceratagallia laevis (Ribaut, 1935)*
Material examined: Bagh-e Malek, 2♂, 10♀, swept on grasslands, 16.iii.2014, leg.: F.P.R.; Bagh-e-Malek, 3♂, 8♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Anaceratagallia venosa (Fourcroy, 1785)*
Material examined: Ahvaz, 4♀, swept on weeds in palm orchards at Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Dezful, 1♂, 3♀, swept on weeds in citrus orchards, 14.iii.2014, leg.: F.P.R.; Ahvaz, 2♂, 5♀, swept on Medicago sativa in palm orchards, 26.iv.2015, leg.: F.P.R.
Distribution in Iran: North of Iran (Nast 1972; Dlabola 1981; Mozaffarian and Wilson 2016).

Austroagallia sinuata (Mulsant and Rey, 1855)
Material examined: Ahvaz, 3♂, 11♀, swept on weeds in palm orchards at Shahid Chamran University of Ahvaz, 13.iii.2014, leg.: F.P.R.; Bagh-e Malek, 1♂, 5♀, swept on grasslands, 16.iii.2014, leg.: F.P.R.; Ahvaz, 1♂, 3♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.; Bagh-e Malek, 1♂, 6♀, collected with Malaise trap, 28.Vii.2015, leg.: F.P.R.
Distribution in Iran: Alborz, Azarbaijan-e Sharghi, Bushehr, Chaharmahal-o Bakhtiari, Fars, Golestan, Hormozgan, Isfahan,

**Subfamily Typhlocybinae**

Typhlocybinae is the second largest subfamily of Cicadellidae comprising 84 valid species in Iran (Mozaffarian and Wilson 2016).

**Tribe Empoascini**

16 species belonging seven genera have been recorded from Iran (Mozaffarian and Wilson 2016).

*Asymmetrasca decedens* (Paoli, 1932)*


*Empoasca (Empoasca) decipiens* Paoli, 1930

**Material examined:** This species has a widespread distribution in Khuzestan province and has been collected from all the sampling areas with high population.


*Empoasca (Empoasca) punjabensis* Singh-Pruthi, 1940

**Material examined:** Bagh-e Malek, 5♂, 3♀, swept on grasslands, 15.v.2015, leg.: F.P.R.; Ahvaz, 1♂, 2♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.; Bagh-e Malek, 7♂, 11♀, collected with Malaise trap, 28.vii.2015, leg.: F.P.R.

Tribe Erythroneurini

33 species belonging to 14 genera have been recorded from Iran (Mozaffarian and Wilson 2016).

*Arboridia* (*Arboridia*) Kermanshah (Dlabola, 1963)*

**Material examined:** Dezful, 29♂♀, collected with aspirator from *Vitis vinifera*, 27.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Isfahan, Khorasan-e Razavi and Tehran provinces; northeast, center and west of Iran (Dlabola 1963; 1981; Nast 1972; Mirzayans 1995; Latifian et al. 2008; Olyaei Torshiz et al. 2011; Mozaffarian and Wilson 2016).

*Helionidia* biplagiata (Haupt, 1927)*

**Material examined:** Ahvaz, 3♂, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Fars, Kerman and Tehran provinces; south of central region of Alborz Mountains, southwest and south of Iran (Dlabola 1960; 1981; Mirzayans 1995; Mozaffarian and Wilson 2016).

*Helionidia* punctulata (Ramakrishnan & Menon, 1974)** (Fig. 2g)

**Material examined:** Bagh-e Malek, 6♂♀, 2♀, swept on grasslands, 09.ix.2014, leg.: F.P.R.

**Distribution in Iran:** This species is a new record for the Iranian leafhoppers fauna.

**Remarks:** Male: Length, 2.6 mm.; Base color yellowish green, vertex yellow with a pairof dark spots, pronotum greenish in anterior pale with 6 distinct dots, macropterous and forewings much longer than abdomen; in male, aedeagus distinct, apically branched with two pairs of short appendages (Fig. 3g).

*Negoneura* sp.

**Material examined:** Dezful, 1♀, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.

**Distribution in Iran:** Hormozgan province; south of Iran (Dlabola 1994; Mozaffarian and Wilson 2016).

**Remarks:** Dlabola (1994) described this genus as *Genoneura* in 1994 but McKamey (2006) changed this genus name to *Negoneura* comb.nov.

*Tamaricella* sp.

**Material examined:** Bagh-e Malek, 2♀, swept on grasslands and weeds, 09.ix.2014, leg.: F.P.R.

*Zygina* (*Zygina*) ordinaria (Ribaut, 1936)*

**Material examined:** Dezful, 2♂♀, swept on grasslands and weeds, 27.iv.2015, leg.: F.P.R.

**Distribution in Iran:** North of Iran (Mozaffarian and Wilson 2016).

Tribe Typhlocybini

27 species belonging to nine genera have been recorded from Iran (Mozaffarian and Wilson 2016).

*Edwardsiana* rosae (Linnaeus, 1758)

**Material examined:** Bagh-e Malek, 45♂♀, collected with aspirator from *Rosa* sp. 28.vii.2015, leg.: F.P.R.


*Eupteryx* (*Eupteryx*) pavlovskii Zachvatkin, 1947*

**Material examined:** Ahvaz, 2♂♀, 3♀, swept on weeds in palm orchards, 07.ix.2014, leg.: F.P.R.; Ahvaz, 1♀, collected with Malaise trap, 25.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Fars, Kohgiluyeh and Boyerahmad, Mazandaran and Tehran.

**Remarks:** Dlabola (1974) described a new species as Eupteryx tochalica; then he (1981) and Mirzayans (1995) reported E. tochalica from different parts of Iran but now E. tochalica is a synonym of Eupteryx (Eupteryx) pavlovskii.

**Eupteryx (Eupteryx) kaghanensis Ahmed, 1969 ** (Fig. 2h)

**Material examined:** Dezful, 5♂, 8♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.

**Distribution in Iran:** This species is a new record for the Iranian leafhoppers fauna.

**Remarks:** Male: Length, 3.2 mm.; Base color yellowish green, fore margin of vertex with two spots, hind margin with one variable spot, pronotum and scutellum with numerous spots, fore wings with yellowish green and partly with brown pattern; in male shaft of aedeagus more or less straight in lateral view, apex with two pairs of recurrent appendages (Fig. 3h).

**Zyginella pulchra Löw, 1885**

**Material examined:** Bagh-e Malek, 1♂, 2♀, swept on grasslands, 09.ix.2014, leg.: F.P.R.; Dezful, 2♂, 2♀, collected with Malaise trap, 27.vii.2015, leg.: F.P.R.

**Distribution in Iran:** Fars, Khorasan-e Razavi, Markazi, Qazvin, Semnan and Tehran provinces; northeast, center and southwest of Iran (Rajabi and Mirzayans 1989; Rajabi 1991; Mirzayans 1995; Taghizadeh and Salehi 2002; Moosavi Mahvelati and Modarres Awal 2011; Mozaffarian and Wilson 2016).

![Figure 1. Map of the study area; sampling sites consist of Ahvaz, Bagh-e Malek and Dezful in Khuzestan province (southwest of Iran)](image-url)
Figure 2. Habitus figures of new records to Iranian fauna (scale bar = 1mm), a. *Euscelidius schenckii* (Kirschbaum); b. *Hardya (Hardya) melanopsis* (Hardy); c. *Paradorydium (Paradorydium) lanceolatum* (Burmeister); d. *Hecalus prasinus* (Matsumura); e. *Psammothetix emarginatus* Singh; f. *Grammacephalus pallidus* (Linnavuori); g. *Helionidia punctulata* (Ramakrishnan & Menon); h. *Eupteryx (Eupteryx) kaghanensis* Ahmed.
Figure 3. Aedeagus in lateral and dorsal view, a. *Euscelidius schenckii* (Kirschbaum); b. *Hardya* (*Hardya*) *melanopsis* (Hardy); c. *Paradorydium* (*Paradorydium*) *lanceolatum* (Burmeister); d. *Hecalus prasinus* (Matsumura); e. *Psammotettix emarginatus* Singh; f. *Grammacephalus pallidus* (Linnavuori); g. *Helionidia punctulata* (Ramakrishnan & Menon); h. *Eupteryx* (*Eupteryx*) *kaghanensis* Ahmed.
Discussion

Insect fauna of Iran are affected by elements from Oriental, Africa, Mediterranean area and Palaearctic, so remarkable difficulties have risen in studying any single group (Minaei 2013). However, many species of the family Cicadellidae have economic importance but the knowledge of the leafhoppers fauna and their distribution in Iran is far from complete and extensive field work is needed for a reasonable evaluation of the leafhoppers biodiversity in this region. Pakarpour Rayeni (2011) investigated leafhoppers fauna in Kerman province and reported 57 species from 42 genera in six subfamilies.

A faunistic study on the leafhoppers of northwestern Iran was carried out by Abdollahi et al. (2015) and they reported 69 species which collected by themselves or other specimens deposited in Hayk Mirzayans Museum. In the course of this study 90 species belonging to 49 genera and seven subfamilies were found and identified on the fauna of Khuzestan province, of which 33 species are those also collected by Pakarpour Rayeni (2011) in Kerman province and 20 species are those collected with Abdollahi et al. (2015) in Ardebil, Azarbaijan-e Gharbi and Azarbaijan-e Sharghi provinces. The results revealed are more similar between Khuzestan and Kerman provinces probably due to similar climatic conditions (especially with south of Kerman province).

In addition 47 species are reported from Khuzestan province for the first time and eight species are newly recorded for Iranian leafhoppers fauna. The result of this study can be helpful for completing the checklist of leafhoppers in Iran and the data will help other researcher in ongoing faunistic works. Finally it is expected that a large number of leafhoppers species remain to be found out in different parts of this region and other parts of Iran, so future studies are highly recommended.

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مطالعه زنجارک‌های خانواده (Auchenorrhyncha) Cicadellidae استان خوزستان، جنوب غربی ایران

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چکیده: در پژوهش حاضر، ۴۰ نوع زنجارک‌های خانواده Cicadellidae در مناطقی از استان خوزستان (جنوب غربی ایران) طی سال‌های ۱۳۹۳ و ۱۳۹۴ مورد بررسی قرار گرفت. در مجموع ۹۰ گونه متعلق به ۴۹ جنس و ۲۷ زیرخانواده جمع‌آوری و شناسایی شد. اغلب نویسندگان با استفاده از تور حشره‌گیری و تنه مالیز انجام شد. در برخی موارد نمونه‌ها با استفاده از آسپرازور و تنه جسد حشره‌گیری انجام شد. در نتیجه این تحقیق مشخص شد که این تعداد نمونه ۳۷ گونه آن برای اولین بار از استان خوزستان گزارش شدند. گونه‌های جدیدی برای فهرس حشرات ایران هستند، که عبارتند از: Euscelidius (Hardy, schenckii (Kirschbaum, 1868)), Hardya (Hardya) melanopsis (Hardy, 1850), Paradorydium (Paradorydium) lanceolatum (Burmeister, 1839), Psamnotettix Hecalus prasinus (Matsumura, 1905), Grammacephalus pallidus (Linnavuori, emarginatus Singh, 1969) و Helionidia punctulata (Ramakrishnan & Menon, 1974), ۷ گونه در ایران به تفصیل ارائه شده و همچنین ۸ گونه نیز گزارش جدید، ویژگی‌های شکل شناسی به همراه تصویر اصلی افراد بالغ و ترسیم‌های اصلی اندام نرم‌شده ارائه شده است.

واژگان کلیدی: زنجارک‌ها، فون، خوزستان، پراکنش، گزارش‌های جدید، ایران.