

**Diversity and host associations of aphid parasitoids
(Hymenoptera: Braconidae: Aphidiinae)
in the farmlands of western Iran**

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Abstract. This study presents the results of a survey of aphid parasitoids of the subfamily Aphidiinae (Hymenoptera: Braconidae) in western Iran. Thirty nine species of aphid parasitoids belonging to nine genera were collected and identified in association with 54 aphid species occurring on 77 host plants. In all, 129 parasitoid-aphid associations were recorded, 49 of which are new to Iran. *Praon pubescens* Starý, 1961 is newly recorded for the fauna of Iran in association with *Nasonovia ribisnigri* (Mosley, 1841) on *Lactuca sativa*. The possible existence of endemic subspecies for *Praon necans* Mackauer, 1959, member of which attack a wider range of host aphids, is discussed. An illustrated key for identification of the genera and species of Aphidiinae in western Iran is presented.

Key words. Hymenoptera, Braconidae, Aphidiinae, Hemiptera, Sternorrhyncha, Aphidoidea, parasitoid, tritrophic association, biological control, host plant, Iran

Introduction

The subfamily Aphidiinae includes about 60 genera and subgenera and more than 400 species worldwide (STARÝ 1988). All of them are solitary endoparasitoids of aphids (STARÝ 1970). Certain members of the subfamily are important biological control agents for many pest aphid species (BLUMEL 2004, CHAU & HEINZ 2004, DEDRYVER et al. 2010).

Research on and knowledge of local faunas based on plant-aphid-parasitoid associations are of the primary importance as sources of significant ecological information on both native and imported biocontrol agents. Such evidence is also important for the knowledge of food web interactions in biodiversity studies and nature conservation. Tritrophic interactions of the parasitoids, with aphids and their host plants have been studied in the western Palaearctic Region (including southeastern Europe) (KAVALLIERATOS et al. 2004, 2005, 2008, 2010; TOMANOVIĆ et al. 2003a,b, 2006). Also among the neighboring countries, at western part of Iran, the aphid parasitoid fauna has been studied in Iraq (STARÝ & KADDOU 1971) and in different parts of Turkey (ASLAN et al. 2004; UYSAL et al. 2004; GÜZ & KILINCER 2005; TOMANOVIĆ et al. 2008). In the recent years, the biosystematics of Aphidiinae parasitoids, including tritrophic associations (parasitoid-aphid-plant host) has been investigated in many areas of Iran (BARAHOEI et al. 2010; STARÝ et al. 2000; RAKHSHANI et al. 2005, 2006a,b, 2007a,b, 2008a,b; TALEBI et al. 2009; KAZEMZADEH et al. 2009; MOSSADEGH et al. 2011). However in western parts of the country, where the climatic conditions differ from that elsewhere in Iran, very little information has been documented concerning the faunal complexity and biodiversity of Aphidiinae. Iran's western provinces are bordered by the Zagros Mountains which extend from northwestern to the south of the country. Because of its varied, but specific climatic conditions, this region has diverse vegetation and is a flourishing agricultural center. For this reason the focus of our study was a preliminary survey conducted to identify the Aphidiinae parasitoids occurring in important aphid crop pests in agricultural setting, as well as in neighboring natural ecosystems. We included an identification key for all recorded species that were collected in the course of this study and those had been recorded in earlier literature (STARÝ et al. 2000, MOSSADEGH et al. 2011, BAGHERI-MATIN et al. 2010).

Materials and methods

Aphid parasitoids were surveyed in different localities of the western provinces of Iran during 2004–2011. Samples were collected from various host plants. The plants sampled included agricultural crops, orchards, medicinal and ornamental plants, as well as the neighboring wild herbs and shrubs. The plants bearing the aphid colonies were collected and placed separately in mesh-covered semi-transparent plastic boxes. The organisms were reared in the laboratory at room temperature. The samples were reared of 1–2 weeks until the adult parasitoids emerged from their host aphids. The emerged wasps were carefully collected and transferred into 96% ethanol for later identification. Few specimens from each sample were dissected and directly slide mounted in Hoyer's medium. Several aphid specimens from the same boxes were collected using tiny brush and dropped into the 75% ethanol, in order to prepare slides for identification. The external morphology of parasitoids was studied using a

NIKON SMZ645 stereomicroscope and illustrated using a Leitz microscope equipped with a drawing tube attachment. The morphological terminology used in this paper follows SHARKEY & WHARTON (1997) for parasitoids and BLACKMAN & EASTOP (2006) for aphids. The specimens are deposited in the collection of University of Zabol, Iran.

Host associations are listed as follows: host aphid, host plant, locality, date and number of specimens. New records of parasitoid species, host aphid and host plant for Iran are indicated with asterisk (*) a dagger (†) and double dagger (‡), respectively. Abbreviations of the names of provinces are as follows: **HA** – Hamadan, **IL** – Ilam, **KD** – Kordiatan, **KE** – Kermanshah, **KH** – Khuzestan, **LR** – Lorestan.

Results

We identified a total of 39 species of Aphidiinae parasitoids, reared from 54 host aphids and collected from 77 host plants in the all studied area. In all, 129 aphid-plant associations are reported, 49 of which are new to Iran.

Parasitoid-aphid-plant associations

Genus *Adialytus* Förster, 1862

Adialytus ambiguus (Haliday, 1834)

(Figs. 1, 26, 64, 96)

Material examined. *Sipha flava* (Forbes, 1884) on *Agropyron repens*, **KE** – Kermanshah (34°19'33"N 47°05'53"E, 1322 m), 25.vi.2011, 22 ♂♂ 55 ♀♀; *Sipha maydis* Passerini, 1860 on ‡*Avena fatua*, **KE** – Kermanshah (34°19'33"N 47°05'53"E, 1322 m), 11.vi.2011, 2 ♂♂; on ‡*Sorghum halepense*, **KE** – Kermanshah (34°19'35"N 47°06'00"E, 1320 m), 11.vi.2011, 2 ♂♂ 3 ♀♀; on *Bromus tectorum*, **KD** – Sanandaj (35°17'52"N 46°59'59"E, 1517 m), 16.v.2005, 1 ♂.

Adialytus salicaphis (Fitch, 1855)

(Figs. 27, 76, 97)

Material examined. *Chaitophorus remaudierei* Pintera, 1987 on *Salix alba*, **KD** – Marivan (35°32'07"N 46°08'43"E, 1299 m), 08.x.2004, 3 ♂♂ 4 ♀♀; *Chaitophorus salijaponicus niger* Mordvilkov, 1929 on *Salix alba*, **KE** – Ghazanchi (34°26'56"N 47°00'43"E, 1300 m), 07.x.2010, 6 ♂♂ 8 ♀♀.

Adialytus thelaxis (Starý, 1961)

(Figs. 28, 77, 98)

Published record. *Thelaxes suberi* (del Guercio, 1911) on *Quercus* sp. **KE** – Kermanshah (STARÝ et al. 2000).

Genus *Aphidius* Nees, 1818

Aphidius arvensis (Starý, 1960)

(Figs. 29, 65, 78, 99)

Material examined. *Coloradoa achillea* Hille Ris Lambers, 1939 on *Achillea millefolium*, **HA** – Hamadan (34°46'21"N 48°35'55"E, 1931 m), 22.vi.2004, 1 ♂ 2 ♀♀; **KD** – Sanandaj (35°19'07"N 46°58'55"E, 1567 m), 16.v.2005, 7 ♂♂ 5 ♀♀.

***Aphidius colemani* Viereck, 1912**

(Figs. 2, 30, 92)

Material examined. †*Amegosiphon platicaudum* (Narzikulov, 1953) on ‡*Berberis thunbergii*, **KE** – Kermanshah (34°23'41"N 47°07'34"E, 1420 m), 30.x.2010, 1 ♂ 2 ♀♀; *Aphis gossypii* Glover, 1877 on *Hibiscus syriacus*, **KE** – Bistun (34°23'49"N 47°26'39"E, 1289 m), 04.xii.2010, 1 ♂ 1 ♀; *Aphis umbrella* (Börner, 1950) on *Malva neglecta*, **KH** – Ahvaz (31°14'19"N 48°40'59"E, 15 m), 06.iii.2005, 9 ♂♂ 12 ♀♀; *Rhopalosiphum padi* (Linnaeus, 1785) on *Zea mays*, **KD** – Marivan (35°31'39"N 46°12'24"E, 1333 m), 06.ix.2004, 2 ♂♂ 5 ♀♀.

***Aphidius eadyi* Starý, Gonzalez & Hall, 1980**

(Figs. 3, 17, 31)

Material examined. *Acyrtosiphon pisum* (Harris, 1776) on *Medicago sativa*, **KE** – Bistun (34°28'58"N 47°24'26"E, 1295 m), 26.x.2010, 2 ♂♂ 3 ♀♀; **HA** – Hamadan (34°48'05"N 48°28'48"E 1832 m), 14.ix.2004, 12 ♂♂ 9 ♀♀.

***Aphidius ervi* Haliday, 1834**

(Figs. 32, 93)

Material examined. *Acyrtosiphon kondoi* Shinji, 1938 on *Medicago sativa*, **HA** – Hamadan (34°48'05"N 48°28'48"E, 1832 m), 15.ix.2004, 7 ♂♂ 3 ♀♀; *Acyrtosiphon pisum* on *Medicago sativa*, **HA** – Hamadan (34°48'05"N 48°28'48"E, 1832 m), 14.ix.2004, 26 ♂♂ 38 ♀♀; **KD** – Marivan (35°31'47"N 46°13'31"E, 1335 m), 11.ix.2004, 14 ♂♂ 9 ♀♀; **KD** – Kamyaran (34°48'14"N 46°54'43"E, 1451 m), 13.ix.2004, 2 ♂♂ 8 ♀♀; **KE** – Sahneh (34°28'29"N 47°39'44"E, 1341 m), 13.ix.2004, 12 ♂♂ 16 ♀♀; **KD** – Sanandaj (35°16'34"N 47°01'18"E, 1390 m), 12.ix.2004, 4 ♂♂ 11 ♀♀.

***Aphidius funebris* Mackauer, 1961**

(Figs. 4, 33, 94, 100)

Material examined. *Uroleucon compositae* (Theobald, 1915) on *Carthamus oxyacanthus*, **KE** – Kermanshah (34°19'25"N 47°06'02"E, 1324 m), 28.v.2011, 2 ♀♀; *Uroleucon jaceae* (Linnaeus, 1758) on ‡*Centaurea solstitialis*, **KE** – Kermanshah (34°19'18"N 47°06'13"E, 1325 m), 04.vi.2011, 4 ♂♂ 7 ♀♀.

***Aphidius hieraciorum* Starý, 1962**

(Figs. 34, 101)

Published record. *Nasonovia ribisnigri* (Mosley, 1814) on *Lactuca sativa*, Khuzestan (MOSSADEGH et al. 2011)

***Aphidius matricariae* Haliday, 1834**

(Figs. 5, 35, 102)

Material examined. †*Amegosiphon platicaudum* on ‡*Berberis thunbergii*, **KE** – Kermanshah (34°19'28"N 47°05'52"E, 1326 m), 17.v.2011, 1 ♂ 1 ♀; *Aphis affinis* del Guercio, 1911 on *Mentha longifolia*, **KE** – Eslamabad (34°13'50"N 46°41'01"E, 1554 m), 08.x.2010, 1 ♀; *Aphis craccivora* Koch, 1854 on *Robinia pseudacacia*, **KE** – Siloo (34°19'17"N 47°04'49"E, 1350 m), 29.iv.2010, 1 ♀; *Aphis fabae cirsiacanthoidis* Scopoli, 1763 on *Cirsium arvense*, **KE** – Dalahoo (34°16'37"N 46°14'05"E, 1524 m), 05.xi.2010, 2 ♀♀; *Aphis gossypii* on *Abelmoschus esculentus*, **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m) (08.x.2010, 4 ♂♂ 7 ♀♀; †*Aphis nasturtii* Kaltenbach, 1843 on *Plantago lanceolata*, **KE** – Bistun (34°26'41"N 47°25'26"E, 1291 m), 19.xi.2010, 1 ♀; *Aphis punicae* Passerini, 1863 on *Punica granatum*, **KE** – Kermanshah (34°19'12"N 47°05'56"E, 1330 m), 03.x.2010, 1 ♀; *Aphis umbrella* on *Malva neglecta*, **KH** – Ahvaz (31°14'19"N 48°40'59"E, 15 m), 06.iii.2005, 17 ♀♀ 15 ♂♂; *Braconchycadus amygdalinus* (Schuteden, 1905) on *Prunus dulcis*, **KE** – Kermanshah (34°19'30"N 47°05'53"E, 1325m),

18.v.2011, 1 ♂ 7 ♀♀; *Brachycaudus helichrysi* (Kaltenbach, 1843) on †*Carthamus oxyacanthus*, **KE** – Kermanshah (34°19'29"N 47°06'01"E, 1324 m), 04.vi.2011, 1 ♂ 1 ♀; *Hyalopterus amygdali* (Blanchard, 1840) on *Prunus dulcis*, **KE** – Kermanshah (34°18'16"N 47°01'03"E, 1515 m), 08.v.2010, 1 ♀; *Metopolophium dirhodum* (Walker, 1849) on *Triticum aestivum*, **KE** – Kermanshah (34°19'40"N 47°06'18"E, 1316 m), 10.v.2011, 1 ♂ 3 ♀♀; *Myzus persicae* (Sulzer, 1776) on *Prunus dulcis* (34°19'30"N 47°05'53"E, 1325 m), **KE** – Kermanshah, 18.v.2011, 9 ♂♂ 3 ♀♀; on †*Cardaria draba*, **KE** – Kermanshah (34°19'30"N 47°05'53"E, 1325 m), 02.v.2011, 1 ♀; on *Capsicum anuum*, **KE** – Ravansar (34°42'23"N 46°40'25"E, 1348 m), 01.x.2010, 1 ♂; **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 07.xi.2010, 1 ♀; on †*Celosia cristata*, **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 08.x.2010, 2 ♀♀; on *Convolvulus arvensis*, **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 08.x.2010, 4 ♂♂ 15 ♀♀; on *Malva neglecta*, **KE** – Kermanshah (34°19'35"N 47°05'51"E, 1323 m) (03.iii.2010, 2 ♂♂ 1 ♀; on *Malva sylvestris*, **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 08.x.2010, 2 ♀♀; on †*Medicago orbicularis*, **KE** – Kermanshah, (34°19'30"N 47°05'53"E, 1325 m), 18.v.2011, 5 ♂♂ 6 ♀♀; on *Mentha longifolia*, **KE** – Paveh (35°32'17"N 46°21'41"E, 1504 m), 01.x.2010, 2 ♀♀; on *Raphanus sativus*, **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 07.xi.2010, 3 ♀♀; on †*Sinapis arvensis*, **KE** – Keshmir park (34°21'25"N 47°07'54"E, 1312 m), 25.iv.2011, 1 ♂; on *Solanum melongena*, **KE** – Ravansar (34°42'23"N 46°40'25"E, 1348 m), 01.x.2010, 3 ♀♀; **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 07.xi.2010, 6 ♂♂ 10 ♀♀; *Rhopalosiphum maidis* (Fitch, 1856) on †*Hordeum spontaneum*, **KE** – Kermanshah (34°19'30"N 47°05'52"E, 1326 m), 26.iv.2011, 2 ♂♂ 3 ♀♀; *Rhopalosiphum padi* on †*Bromus tectorum*, **KE** – Keshmir park (34°21'25"N 47°07'54"E, 1312 m), 25.iv.2011, 2 ♂♂ 5 ♀♀; on *Hordeum vulgare*, **KE** – Kermanshah (34°19'27"N 47°05'53"E, 1326 m), 27.iv.2011, 5 ♂♂ 7 ♀♀; on *Triticum aestivum*, **KE** – Kermanshah (34°19'40"N 47°06'24"E, 1315 m), 27.iv.2011, 4 ♂♂ 5 ♀♀; **KE** – Bistun (34°29'46"N 47°23'32"E, 1310 m), 23.v.2011, 3 ♂♂ 4 ♀♀; on *Zea mays*, **KE** – Sarpolzahab (34°25'28"N 45°50'58"E, 576 m), 05.xi.2010, 1 ♂ 5 ♀♀; *Schizaphis graminum* (Rondani, 1852) on *Bromus tectorum*, **KE** – Keshmir park (34°21'25"N 47°07'54"E, 1312 m), 25.iv.2011, 1 ♂ 4 ♀♀; on *Hordeum vulgare*, **KE** – Kermanshah (34°19'27"N 47°05'53"E, 1326 m), 27.iv.2011, 2 ♂♂ 1 ♀; on *Triticum aestivum*, **HA** – Dekhan (34°51'16"N 48°26'16"E, 1757 m), 15.v.2005, 16 ♂♂ 12 ♀♀.

Aphidius persicus Rakhshani & Starý, 2006

(Figs. 36, 103)

Material examined. *Uroleucon chondrilla* (Nevsky, 1929) on *Chondrilla juncea*, **HA** – Nobaran (35°07'36"N 49°42'33"E, 1774 m), 05.v.2005, 2 ♂♂ 3 ♀♀.

Aphidius popovi Starý, 1978

(Figs. 6, 37)

Material examined. *Amphorophora catharinae* (Nevsky, 1928) on *Rosa damascena*, **KE** – Kermanshah (34°19'24"N 47°06'02"E, 1324 m), 25.v.2011, 11 ♂♂ 3 ♀♀.

Aphidius rhopalosiphi De Stefani-Perez, 1902

(Fig. 38)

Material examined. *Metopolophium dirhodum* on †*Hordeum spontaneum*, **KE** – Kermanshah (34°19'30"N 47°05'52"E, 1326 m), 26.iv.2011, 1 ♀; on *Triticum aestivum*, **KE** – Mianrahan (34°32'25"N 47°22'47"E, 1322 m), 16.v.2005, 1 ♂ 5 ♀♀; *Rhopalosiphum maidis* on †*Hordeum spontaneum*, **KE** – Kermanshah (34°19'30"N 47°05'52"E, 1326 m), 26.iv.2011, 2 ♀♀; *Rhopalosiphum padi* on *Triticum aestivum*, **KE** – Bistun (34°29'46"N 47°23'32"E, 1310 m), 23.v.2011, 2 ♂♂; **KE** – Songhor (34°45'53"N 47°35'37"E, 1675 m), 13.iv.2005, 2 ♀♀; **HA** – Asadabad (34°44'32"N 48°06'03"E, 1546), 15.v.2005, 3 ♀♀; *Schizaphis graminum* on *Triticum aestivum*, **KE** – Kermanshah (34°19'39"N 47°06'22"E, 1317 m), 26.iv.2010, 1 ♀; **KE** – Mianrahan (34°34'42"N 47°26'09"E, 1341 m), 15.v.2005, 25 ♂♂ 39 ♀♀; *Sitobion avenae* (Fabricius, 1775) on †*Hordeum spontaneum*, **KE** – Kermanshah (34°19'30"N 47°05'52"E, 1326 m), 26.iv.2010, 1 ♀; on *Triticum aestivum*, **KE** – Mianrahan (34°34'42"N 47°26'09"E, 1341 m), 15.v.2005, 2 ♂♂ 4 ♀♀.

***Aphidius rosae* Haliday, 1834**

(Fig. 39)

Material examined. *Macrosiphum rosae* (Linnaeus, 1758) on *Rosa damascena*, **HA** – Hamadan (34°46'21"N 48°35'55"E, 1931 m), 06.vi.2006, 1 ♂ 3 ♀♀.

***Aphidius* cf. *salicis* Haliday, 1834**

(Fig. 40)

Material examined. †*Capitophorus elaeagni* (del Guercio, 1894) on ‡*Elaeagnus angustifolia*, **KE** – Keshmir park (34°21'27"N 47°07'45"E, 1310 m), 16.xii.2011, 27 ♂♂ 19 ♀♀.

***Aphidius setiger* (Mackauer, 1961)**

(Figs. 7, 41, 104)

Published record. *Peryphillus* sp., on *Acer cinerascens*, **LR** – Khoramabad (STARÝ 1979).

***Aphidius smithi* Sharma & Subba Rao, 1959**

(Fig. 42)

Material examined. *Acyrtosiphon pisum* on *Medicago sativa*, **KE** – Bistun (34°30'54"N 47°22'17"E, 1312 m), 27.v.2010, 9 ♂♂ 16 ♀♀; **KD** – Sanandaj (35°16'34"N 47°01'18"E, 1390 m), 12.ix.2004, 3 ♂♂ 7 ♀♀; **KD** – Kamyaran (34°48'14"N 46°54'43"E, 1451 m), 13.ix.2004, 2 ♀♀; **HA** – Hamadan (34°48'05"N 48°28'48"E, 1832 m), 15.ix.2004, 1 ♂ 4 ♀♀.

***Aphidius transcaspicus* Telenga, 1958**

(Figs. 8, 43, 95)

Material examined. *Hyalopterus pruni* (Geoffroy, 1762) on *Prunus armeniaca*, **KE** – Bistun (34°23'56"N 47°26'46"E, 1285 m), 10.x.2010, 6 ♂♂ 8 ♀♀; on *Prunus persica*, **IL** – Chardavol (33°41'04"N 46°43'25"E, 1249 m), 02.vii.2004, 3 ♂♂ 6 ♀♀.

***Aphidius uzbekistanicus* Luzhetskii, 1960**

(Fig. 44)

Material examined. *Rhopalosiphum padi* on *Triticum aestivum*, **KE** – Songhor (34°45'53"N 47°35'37"E, 1675 m), 13.iv.2005, 1 ♂♂ 3 ♀♀.

Genus *Binodoxys* Mackauer, 1960***Binodoxys acalephae* (Marshall, 1896)**

(Figs. 45, 79, 105)

Material examined. *Aphis craccivora* on *Matricaria chamomilla*, **HA** – Hamadan (34°46'20"N 48°35'54"E, 1931 m), 09.x.2004, 6 ♂♂ 5 ♀♀; on *Vicia fabae*, **KH** – Dezful (32°24'25"N 48°25'13"E, 144 m), 07.iii.2005, 19 ♂♂ 24 ♀♀; *Aphis euphorbiae* Kaltenbach, 1843 on *Euphorbia* sp., **KD** – Sanandaj (35°19'07"N 46°58'55"E, 1567 m), 16.v.2005, 6 ♂♂ 14 ♀♀; *Aphis umbrella* on *Malva sylvestris*, **KH** – Shushtar (32°02'11"N 48°50'39"E, 50 m), 07.iii.2004, 3 ♂♂ 2 ♀♀; *Aphis fabae* Scopoli, 1763 on *Vicia fabae*, **KH** – Dezful (32°24'25"N 48°25'13"E, 144 m), 07.iii.2005, 15 ♂♂ 11 ♀♀.

***Binodoxys angelicae* (Haliday, 1833)**

(Figs. 46, 80, 106)

Material examined. *Aphis craccivora* on *Medicago sativa*, **KE** – Kermanshah (34°19'27"N 47°05'58"E, 1324 m), 21.v.2011, 1 ♀; on *Vicia fabae*, **KH** – Dezful (32°24'25"N 48°25'13"E, 144 m), 07.iii.2005, 2 ♂♂ 6 ♀♀; *Aphis euphorbiae* on *Euphorbia* sp., **KE** – Bistun (34°21'35"N 47°22'55"E, 1310 m), 10.xii.2010, 11 ♂♂ 1 ♀; *Aphis*

fabae on †*Cestrum parqui*, **KE** – Bistun (34°21'35"N 47°22'55"E, 1310 m), 10.xii.2010, 93 ♂♂ 309 ♀♀; on *Solanum nigrum*, **KE** – Ghasreshirin (34°30'43"N 45°34'24"E, 362 m), 24.xii.2010, 18 ♂♂ 20 ♀♀; *Aphis gossypii* on *Catalpa bignonioides*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 09.x.2010, 1 ♀; on *Hibiscus syriacus*, **KE** – Bistun (34°23'49"N 47°26'39"E, 1289 m), 04.xii.2010, 2 ♂♂ 9 ♀♀; on *Cucurbita pepo*, **KH** – Masjedsoleiman (31°56'00"N 49°18'39"E, 262 m), 06.iii.2005, 3 ♂♂ 1 ♀; *Aphis umbrella* on *Malva neglecta*, **KH** – Ahvaz (31°14'19"N 48°40'59"E, 15 m), 07.iii.2004, 4 ♂♂ 9 ♀♀.

Binodoxys heraclei (Haliday, 1833)

(Figs. 18, 81, 107)

Material examined. *Cavariella aspidaphoides* Hille Ris Lambers, 1969 on †*Salix babylonica*, **KE** – Kermanshah (34°19'33"N 47°05'54"E, 1323 m), 25.iv.2011, 2 ♂♂ 13 ♀♀.

Genus *Diaeretiella* Starý, 1960

Diaeretiella rapae (M^rIntosh, 1855)

(Figs. 9, 47, 66, 108)

Material examined. †*Amegosiphon platicaudum* on †*Berberis thunbergii*, **KE** – Kermanshah (34°23'41"N 47°07'34"E, 1420 m), 29.xi.2010, 1 ♀; **KE** – Kermanshah (34°19'28"N 47°05'52"E, 1326 m), 15.v.2011, 6 ♂♂ 40 ♀♀; *Aphis craccivora* on *Glycyrrhiza glabra*, **KE** – Kermanshah (34°19'27"N 47°05'52"E, 1325 m), 15.v.2009, 3 ♀♀; *Aphis punicae* on *Punica granatum*, **KE** – Kermanshah (34°19'12"N 47°05'56"E, 1330 m), 02.vi.2011, 1 ♂ 4 ♀♀; *Brevicoryne brassicae* (Linnaeus, 1758) on *Brassica napus*, **KE** – Kermanshah (34°19'46"N 47°06'21"E, 1313 m), 10.v.2009, 12 ♂♂ 46 ♀♀; **KE** – Kermanshah (34°19'18"N 47°06'13"E, 1326 m), 28.v.2011, 79 ♂♂ 156 ♀♀; on *Brassica oleracea*, **KE** – Kermanshah (34°19'33"N 47°05'57"E, 1322 m), 18.i.2009, 6 ♂♂ 8 ♀♀; 13.viii.2010, 7 ♂♂ 13 ♀♀; *Diuraphis noxia* (Kurdjumov, 1913) on †*Bromus tectorum*, **KE** – Keshmir park (34°21'25"N 47°07'54"E, 1312 m), 19.iv.2011, 1 ♂ 2 ♀♀; on *Hordeum vulgare*, **KE** – Kermanshah (34°19'27"N 47°05'53"E, 1326 m), 18.v.2011, 1 ♀; on *Triticum aestivum*, **KE** – Kermanshah (34°19'40"N 47°06'24"E, 1315 m), 11.v.2011, 1 ♀; *Hayhurstia atriplicis* (Linnaeus, 1761) on *Chenopodium album*, **KE** – Harsin (34°16'13"N 47°34'13"E, 1554 m), 24.x.2010, 35 ♂♂ 141 ♀♀; **KE** – Kermanshah (34°19'40"N 47°06'24"E, 1315 m), 12.x.2010, 6 ♂♂ 13 ♀♀; *Lipaphis lepidii* (Nevsky, 1929) on *Cardaria draba*, **KE** – Kermanshah (34°19'25"N 47°06'03"E, 1324 m), 21.iv.2010, 21 ♂♂ 36 ♀♀; *Myzus persicae* on *Capsella bursa-pastoris*, **KE** – Kermanshah (34°19'30"N 47°05'53"E, 1325 m), 18.v.2011, 1 ♀; on *Raphanus sativus*, **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 08.x.2010, 3 ♂♂ 1 ♀; on *Solanum melongena*, **KE** – Gahvareh (34°20'35"N 46°25'20"E, 1432 m), 08.x.2010, 2 ♀♀.

Genus *Ephedrus* Haliday, 1833

Ephedrus niger Gautier, Bonnamour & Gaumont, 1929

(Figs. 48, 82, 109)

Material examined. *Macrosiphoniella sanborni* (Gillette, 1908) on *Chrysanthemum morifolium*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 20.xii.2010, 13 ♂♂; *Uroleucon compositae* on †*Carthamus oxyacanthus*, **KE** – Kermanshah (34°19'25"N 47°06'02"E, 1324 m), 08.vi.2011, 7 ♂♂ 11 ♀♀; *Uroleucon erigeronense* (Thomas, 1878) on *Conyza canadensis*, **KE** – Bistun (34°26'41"N 47°25'25"E, 1292 m), 19.xi.2010, 1 ♀; *Uroleucon jaceae* on †*Centaurea solstitialis*, **KE** – Kermanshah (34°19'18"N 47°06'13"E, 1325 m), 28.v.2011, 7 ♂♂ 1 ♀; *Uroleucon sonchi* (Linnaeus, 1767) on *Lactuca serriola*, **KE** – Mahidasht (34°17'15"N 46°52'26"E, 1383 m), 13.x.2010, 1 ♂ 2 ♀♀; on *Sonchus oleraceus*, **KE** – Kermanshah (34°19'40"N 47°06'10"E, 1319 m), 05.x.2010, 3 ♀♀.

Ephedrus persicae Froggatt, 1904

(Figs. 49, 83, 110)

Material examined. *Aphis craccivora* on *Glycyrrhiza glabra*, **KE** – Kermanshah (34°19'27"N 47°05'52"E, 1325 m), 16.v.2009, 2 ♀♀; on †*Kochia scoparia*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 29.x.2010, 1 ♀; *Brachycaudus amygdalinus* on *Prunus dulcis*, **KE** – Kermanshah (34°19'24"N 47°06'21"E, 1321 m), 16.v.2009,

5 ♂♂ 12 ♀♀; **KE** – Kermanshah (34°19'30"N 47°05'53"E, 1325 m), 04.v.2011, 15 ♂♂ 24 ♀♀; †*Brachycaudus helichrysi* on †*Chrysanthemum morifolium*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 10.xii.2010, 7 ♂♂ 11 ♀♀; *Dysaphis plantaginea* (Passerini, 1860) on *Malus domestica*, **KE** – Kermanshah (34°19'25"N 47°06'01"E, 1324 m), 08.v.2010, 1 ♀; **KE** – Bistun (34°29'46"N 47°23'32"E, 1310 m), 23.v.2011, 2 ♀♀; *Myzus persicae* on *Prunus dulcis*, **KE** – Kermanshah (34°19'30"N 47°05'53"E, 1325 m), 04.v.2011, 1 ♂ 4 ♀♀.

Ephedrus plagiator (Nees, 1811)

(Fig. 50, 111)

Material examined. *Sitobion avenae* on *Triticum aestivum*, **KH** – Ramhormoz (31°14'33"N 49°39'44"E, 207 m), 07.iii.2005, 2 ♂♂ 2 ♀♀.

Genus *Lysiphlebus* Förster 1862

Lysiphlebus confusus Tremblay & Eady, 1978

(Figs. 51, 67)

Material examined. *Aphis craccivora* on *Kochia scoparia*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 29.x.2010, 1 ♀; *Aphis fabae* on †*Carduus arabicus*, **KE** – Harsin (34°09'03"N 47°23'30"E, 1240 m), 30.iv.2010, 7 ♂♂ 33 ♀♀; *Aphis farinosa* Gmelin, 1790 on *Salix alba*, **HA** – Hamadan (34°46'21"N 48°35'55"E 1931 m), 09.x.2004, 12 ♀♀; *Aphis gossypii* on *Cucumis sativus*, **KE** – Pardis (34°18'16"N 47°01'03"E, 1515 m), 27.viii.2010, 3 ♀♀; †*Brachycaudus helichrysi* on †*Chrysanthemum morifolium*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 10.xii.2010, 1 ♀.

Lysiphlebus desertorum Starý, 1965

(Figs. 52, 112)

Material examined. *Protaphis* sp. on *Achillea millefolium*, **KD** – Sanandaj (35°19'07"N 46°58'55"E, 1567 m), 16.v.2005, 3 ♂♂ 16 ♀♀.

Lysiphlebus fabarum (Marshall, 1896)

(Figs. 10, 53)

Material examined. *Aphis affinis* on *Mentha longifolia*, **KE** – Sahneh (34°28'27"N 47°41'41"E, 1351 m), 15.x.2010, 12 ♀♀; **KE** – Harsin (34°19'46"N 47°26'04"E, 1289 m), 24.x.2010, 1 ♂ 5 ♀♀; **KE** – Bistun (34°26'41"N 47°25'25"E, 1292 m), 19.xi.2010, 30 ♀♀; *Aphis anthemidis* Börner, 1940 on *Anthemis nobilis*, **KD** – Sanandaj (35°19'07"N 46°58'55"E, 1567 m), 16.v.2005, 12 ♀♀; *Aphis craccivora* on †*Amaranthus blitoides*, **KE** – Pardis (34°18'16"N 47°01'03"E, 1515 m), 04.ix.2010, 9 ♂♂ 26 ♀♀; on †*Celosia cristata*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 14.xi.2010, 3 ♂♂ 3 ♀♀; on *Kochia scoparia*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 29.x.2010, 1 ♀; on *Glycyrrhiza glabra*, **KE** – Kermanshah, 13.iv.2010, 40 ♂♂ 122 ♀♀; **KE** – Kermanshah (34°19'25"N 47°06'02"E, 1322 m), 20.iv.2010, 57 ♂♂ 266 ♀♀; **HA** – Hamadan (34°46'21"N 48°35'55"E 1931m), 15.v.2005, 32 ♂♂ 38 ♀♀; **KE** – Bistun (34°30'08"N 47°27'06"E, 1315 m), 25.iv.2010, 24 ♂♂ 43 ♀♀; on *Malva althea*, **KH** – Behbahan (30°35'17"N 50°15'19"E, 328 m), 07.iv.2009, 11 ♂♂ 17 ♀♀; on *Medicago sativa*, **KE** – Sahneh (34°28'45"N 47°41'02"E, 1347 m), 15.x.2010, 16 ♀♀; **KE** – Kermanshah (34°19'40"N 47°06'10"E, 1319 m), 17.x.2010, 5 ♂♂ 23 ♀♀; **KD** – Sanandaj (335°19'04"N 46°58'58"E, 1567 m), 16.v.2005, 21 ♂♂ 26 ♀♀; on *Melilotus officinalis*, **KE** – Kermanshah (34°19'29"N 47°05'52"E, 1326 m), 21.iv.2009, 30 ♀♀; **KH** – Ahvaz (31°14'19"N 48°40'59"E, 15 m), 06.iii.2005, 4 ♂♂ 12 ♀♀; on *Robinia pseudacacia*, **KE** – Baghe Abrisham (35°23'16"N 47°06'48"E, 1332 m), 21.iv.2010, 52 ♂♂ 115 ♀♀; **KE** – Besat (34°18'08"N 47°04'14"E, 1428 m), 27.iv.2010, 83 ♂♂ 153 ♀♀; **KE** – Motaie (34°19'33"N 47°03'40"E, 1352 m), 02.v.2010, 39 ♂♂ 146 ♀♀; on *Sophora* sp., **HA** – Asadabad (34°44'32"N 48°06'03"E, 1546), 15.v.2005, 18 ♀♀; on *Vicia villosa*, **KE** – Kermanshah (34°19'29"N 47°05'52"E, 1326 m), 22.v.2009, 10 ♂♂ 23 ♀♀; *Aphis epilobii* Kaltenbach, 1843 on †*Epilobium angustifolium*, **KE** – Bistun (34°26'41"N 47°25'25"E, 1292 m), 19.xi.2010, 29 ♀♀; *Aphis fabae* on *Amaranthus retroflexus*, **KE** – Hafezieh (34°19'59"N 47°06'22"E, 1310 m), 30.x.2010, 13 ♂♂ 36 ♀♀; on *Rosa damascena*, **HA** – Hamadan (34°46'21"N 48°35'55"E 1931m), 24.iv.2006, 3 ♂♂ 4 ♀♀; on †*Rumex acetosella*, **KE** – Sahneh

(34°28'45"N 47°41'02"E, 1347 m), 15.x.2010, 5 ♂♂ 29 ♀♀; on *Rumex acetosa*, **HA** – Hamadan (34°46'21"N 48°35'55"E 1931 m), 20.v.2006, 7 ♂♂ 6 ♀♀; on *Sinapis arvensis*, **KH** – Behbahan (30°35'02"N 50°16'03"E, 325 m), 29.iii.2009, 4 ♂♂ 11 ♀♀; on *Vicia faba*, **KE** – Kermanshah (34°19'29"N 47°06'02"E, 1323 m), 21.v.2011, 4 ♂♂ 26 ♀♀; **KH** – Dezful (32°24'25"N 48°25'13"E, 144 m), 07.iii.2005, 2 ♂♂ 16 ♀♀; **Aphis fabae cirsiacanthoidis** on ‡*Carduus arabicus*, **KE** – Pardis (34°18'16"N 47°01'03"E, 1515 m), 25.iv.2010, 4 ♂♂ 15 ♀♀; **KE** – Kermanshah (34°19'26"N 47°06'00"E, 1323 m), 28.iv.2010, 18 ♂♂ 17 ♀♀; **KE** – Harsin (34°09'03"N 47°23'30"E, 1240 m), 30.iv.2010, 1 ♂ 18 ♀♀; **KE** – Baghe Ferdos (34°19'02"N 47°05'16"E, 1351 m), 01.v.2010, 35 ♂♂ 90 ♀♀; **KE** – Keshmir park (34°21'27"N 47°07'31"E, 1312 m), 05.v.2010, 50 ♀♀; on *Cirsium arvense*, **KE** – Kermanshah (34°19'38"N 47°06'02"E, 1322 m), 19.x.2010, 18 ♀♀; **Aphis fabae solanella** Theobald, 1914 on *Solanum nigrum*, **KE** – Mahidasht (34°16'11"N 46°48'22"E, 1362 m), 13.x.2010, 1 ♂ 12 ♀♀; **KE** – Harsin (34°19'46"N 47°26'04"E, 1289 m), 24.x.2010, 5 ♂♂ 39 ♀♀; **Aphis gossypii** on *Cucumis sativus*, **KE** – Pardis (34°18'16"N 47°01'03"E, 1515 m), 27.viii.2010, 35 ♂♂ 65 ♀♀; on *Mirabilis jalapa*, **KE** – Pardis (34°18'16"N 47°01'03"E, 1515 m), 14.viii.2010, 4 ♂♂; on *Zinia elegans*, **KE** – Kermanshah (34°19'30"N 47°05'56"E, 1322 m), 13.viii.2010, 8 ♀♀; **Aphis nasturtii** on *Plantago lanceolata*, **KE** – Bistun (34°26'41"N 47°25'25"E, 1292 m), 19.xi.2010, 4 ♂♂ 22 ♀♀; **Aphis punicae** on *Punica granatum*, **KE** – Kermanshah (34°19'12"N 47°05'56"E, 1330 m), 28.x.2010, 1 ♀; **Aphis rumicis** Linnaeus, 1758 on *Rumex crispus*, **KE** – Kermanshah (34°19'24"N 47°06'23"E, 1322 m), 12.v.2009, 59 ♀♀; **Aphis umbrellae** on *Malva neglecta*, **KE** – Kermanshah (34°19'32"N 47°05'52"E, 1323 m), 13.viii.2010, 3 ♂♂ 20 ♀♀; on *Malva sylvestris*, **HA** – Hamadan (34°46'21"N 48°35'55"E 1931m), 06.vi.2006, 7 ♂♂ 4 ♀♀; on *Malva althea*, **KH** – Behbahan (30°35'17"N 50°15'19"E, 328 m), 29.iii.2009, 29 ♂♂ 59 ♀♀; **Aphis** sp. on ‡*Angelica* sp., **KE** – Kermanshah (34°19'36"N 47°05'49"E, 1323 m), 01.vi.2011, 9 ♂♂ 13 ♀♀; **Brachycaudus cardui** (Linnaeus, 1758) on *Carduus arabicus*, **KE** – Kermanshah (34°19'30"N 47°06'01"E, 1324 m), 28.v.2011, 2 ♀♀; **Brachycaudus helichrysi** on ‡*Tanacetum vulgare*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m), 1 ♂ 35 ♀♀; on *Chrysanthemum morifolium* (34°17'36"N 47°02'59"E, 1446 m), 14.xi.2010, 2 ♂♂ 10 ♀♀; on ‡*Centaurea* sp., **KE** – Kermanshah (34°19'18"N 47°06'13"E, 1325 m), 04.vi.2011, 1 ♂ 1 ♀; **Brachycaudus amygdalinus** on *Prunus dulcis*, **KE** – Kermanshah (34°19'29"N 47°06'09"E, 1320 m), 18.v.2011, 1 ♂ 2 ♀♀; **Hayhurstia atriplicis** on *Chenopodium album*, **KE** – Harsin (34°19'46"N 47°26'04"E, 1289 m), 25.ix.2010, 2 ♀♀; **Rhopalosiphum padi** on *Triticum aestivum*, **KE** – Kermanshah (34°19'39"N 47°06'24"E, 1315 m), 27.iv.2011, 1 ♂ 2 ♀♀.

Genus *Pauesia* Quilis, 1931

Pauesia antennata (Mukerji, 1950)

(Figs. 54, 68, 113)

Material examined. *Pterochloroides persicae* (Cholodovsky, 1899) on *Prunus dulcis*, **KE** – Bistun (34°29'46"N 47°23'32"E, 1310 m), 23.v.2011, 22 ♂♂ 40 ♀♀; on *Prunus persica*, **KE** – Harsin (34°19'46"N 47°26'04"E, 1289 m), 22.x.2010, 7 ♂♂ 17 ♀♀; **KE** – Bistun (34°29'46"N 47°23'32"E, 1310 m), 23.v.2011, 7 ♂♂ 14 ♀♀.

Genus *Praon* Haliday, 1833

Praon barbatum Mackauer, 1959

(Figs. 11, 19, 55, 69, 84, 114)

Material examined. *Acyrtosiphon pisum* on *Medicago sativa*, **KE** – Marivan (35°31'47"N 46°13'31"E, 1335 m), 11.ix.2004, 1 ♂ 3 ♀♀.

Praon exsoletum (Nees, 1811)

(Figs. 12, 20, 56, 70, 85, 115)

Material examined. *Therioaphis trifolii* (Monell, 1882) on *Medicago sativa*, **KE** – Bistun (34°26'29"N 47°32'20"E, 1285 m), 14.xi.2010, 1 ♀; **KE** – Sarpolzahab (54°25'41"N 45°50'44"E, 571 m), 24.xii.2010, 1 ♀; **KD** – Sanandaj (35°16'34"N 47°01'18"E, 1390 m), 10.ix.2004, 7 ♂♂ 16 ♀♀; **KD** – Marivan (35°31'47"N 46°13'31"E, 1335 m), 11.ix.2004, 2 ♂♂ 5 ♀♀; **KE** – Bistun (34°23'49"N 47°26'39"E, 1289 m), 13.ix.2004, 9 ♂♂ 6 ♀♀; **HA** – Hamadan (34°48'05"N 48°28'48"E, 1832 m), 14.ix.2004, 19 ♂♂ 14 ♀♀.

***Praon gallicum* Starý, 1971**

(Figs. 13, 21, 57, 71, 86, 116)

Published record. *Rhopalosiphum padi* on *Triticum aestivum*, **KE** – various localities (BAGHERI-MATIN et al. 2010)***Praon cf. necans* Mackauer, 1959**

(Figs. 14, 22, 58, 72, 87, 117)

Material examined. †*Aphis craccivora* on †*Robinia pseudacacia*, **KE** – Siloo (34°19'17"N 47°04'49"E, 1350 m), 29.iv.2010, 1 ♂ 4 ♀♀; †*Aphis punicea* on †*Punica granatum*, **KE** – Kermanshah (34°19'12"N 47°05'56"E, 1330 m), 02.v.2011, 1 ♂; †*Macrosiphoniella sanborni* on †*Chrysanthemum morifolium*, **KE** – Kasra (34°17'36"N 47°02'59"E, 1446 m) 20.xii.2011, 1 ♀; *Rhopalosiphum nymphaeae* (Linnaeus, 1761) on †*Ranunculus repens*, **KE** – Sahneh (34°26'58"N 47°46'45"E, 1483 m), 15.x.2010, 1 ♀; *Rhopalosiphum padi* on *Hordeum vulgare*, **KE** – Kermanshah (34°19'27"N 47°05'53"E, 1326 m), 04.v.2011, 5 ♂♂ 6 ♀♀; on *Triticum aestivum*, **KE** – Kermanshah (34°19'40"N 47°06'24"E, 1315 m), 04.v.2011, 7 ♂♂ 11 ♀♀; **KE** – Bistun (34°29'46"N 47°23'32"E, 1310 m), 23.v.2011, 2 ♂♂ 1 ♀; on †*Zea mays*, **KE** – Sarpolzahab (34°25'28"N 45°50'58"E, 576 m), 05.xi.2010, 13 ♂♂ 13 ♀♀.

****Praon pubescens* Starý, 1961**

(Figs. 15, 23, 59, 73, 88, 118)

Material examined. *Nasonovia ribisnigri* on *Lactuca sativa*, **KH** – Dezful (32°20'56"N 48°24'16"E, 116 m), 05.iii.2005, 1 ♂.

***Praon volucre* (Haliday, 1833)**

(Figs. 16, 24, 60, 74, 89, 119)

Material examined. *Aphis fabae* on *Solanum nigrum*, **KE** – Kermanshah (34°19'57"N 47°06'44"E, 1309 m), 25.ix.2010, 1 ♀; **KE** – Ghazanchi (34°26'54"N 47°00'58"E, 1303 m), 07.x.2011, 1 ♂ 2 ♀♀; on *Vicia fabae*, **KH** – Dezful (32°24'25"N 48°25'13"E, 144 m), 05.iii.2005, 2 ♂♂ 5 ♀♀; *Hyalopterus amygdali* on *Prunus dulcis*, **KE** – Pardis (34°18'16"N 47°01'03"E, 1515 m), 08.v.2011, 2 ♂♂ 2 ♀♀; *Macrosiphum rosae* on *Rosa damascena*, **KE** – Kermanshah (34°19'24"N 47°06'02"E, 1324 m), 25.v.2011, 3 ♂♂ 9 ♀♀; *Myzus persicae* on *Capsicum anuum*, **KE** – Ravansar (34°42'23"N 46°40'25"E, 1348 m), 01.x.2010, 1 ♀; on *Euphorbia helioscopia*, **KE** – Kermanshah (34°19'50"N 47°06'22"E, 1311 m), 30.ix.2010, 1 ♀; on *Mentha longifolia*, **KE** – Paveh (35°32'17"N 46°21'41"E, 1504 m), 01.x.2010, 1 ♀; *Rhopalosiphum maidis* on *Zea mays*, **HA** – Noharan (35°07'13"N 49°41'58"E, 1641 m), 15.v.2005, 2 ♀♀; *Schizaphis graminum* on *Triticum aestivum*, **KE** – Kermanshah (34°19'18"N 47°06'13"E, 1326 m), 25.iv.2010, 2 ♂♂ 2 ♀♀; **KH** – Ramhormoz, (31°14'33"N 49°39'44"E, 207 m), 07.iii.2005, 12 ♂♂ 19 ♀♀; *Uroleucon sonchi* on *Sonchus oleraceus*, **KE** – Mahidasht (34°17'15"N 46°52'26"E, 1383 m), 12.xi.2010, 2 ♂♂ 1 ♀; **KE** – Kermanshah (34°19'40"N 47°06'10"E, 1319 m), 17.x.2010, 2 ♀♀.

***Praon yomenae* Takada, 1968**

(Figs. 25, 61, 75, 90, 120)

Material examined. *Uroleucon chondrillae* on *Chondrilla juncea*, **HA** – Noharan (35°07'36"N 49°42'33"E, 1774 m), 05.v.2005, 1 ♂ 2 ♀♀.

Genus *Trioxys* Haliday, 1833***Trioxys complanatus* Quilis, 1931**

(Figs. 62, 121)

Material examined. *Therioaphis trifolii* on *Medicago sativa*, **KE** – Bistun (34°23'49"N 47°26'39"E, 1289 m), 13.ix.2004, 1 ♂ 5 ♀♀; **HA** – Hamadan (34°48'05"N 48°28'48"E, 1832 m), 16.ix.2004, 7 ♂♂ 11 ♀♀; **KD** – Kamyaran (34°48'14"N 46°54'43"E, 1451 m), 13.ix.2004, 2 ♂♂ 3 ♀♀; **KE** – Kermanshah (34°19'30"N 47°06'00"E, 1323 m), 13.ix.2004, 1 ♂ 2 ♀♀; **KD** – Marivan (35°31'47"N 46°13'31"E, 1335 m), 11.ix.2004, 12 ♂♂ 9 ♀♀; **KE** – Sahneh

(34°28'29"N 47°39'44"E, 1341 m), 13.ix.2004, 12 ♂♂ 21 ♀♀; **KD** – Sanandaj (35°16'34"N 47°01'18"E, 1390 m), 13.ix.2004, 10 ♂♂ 14 ♀♀.

Trioxys pallidus (Haliday, 1833)

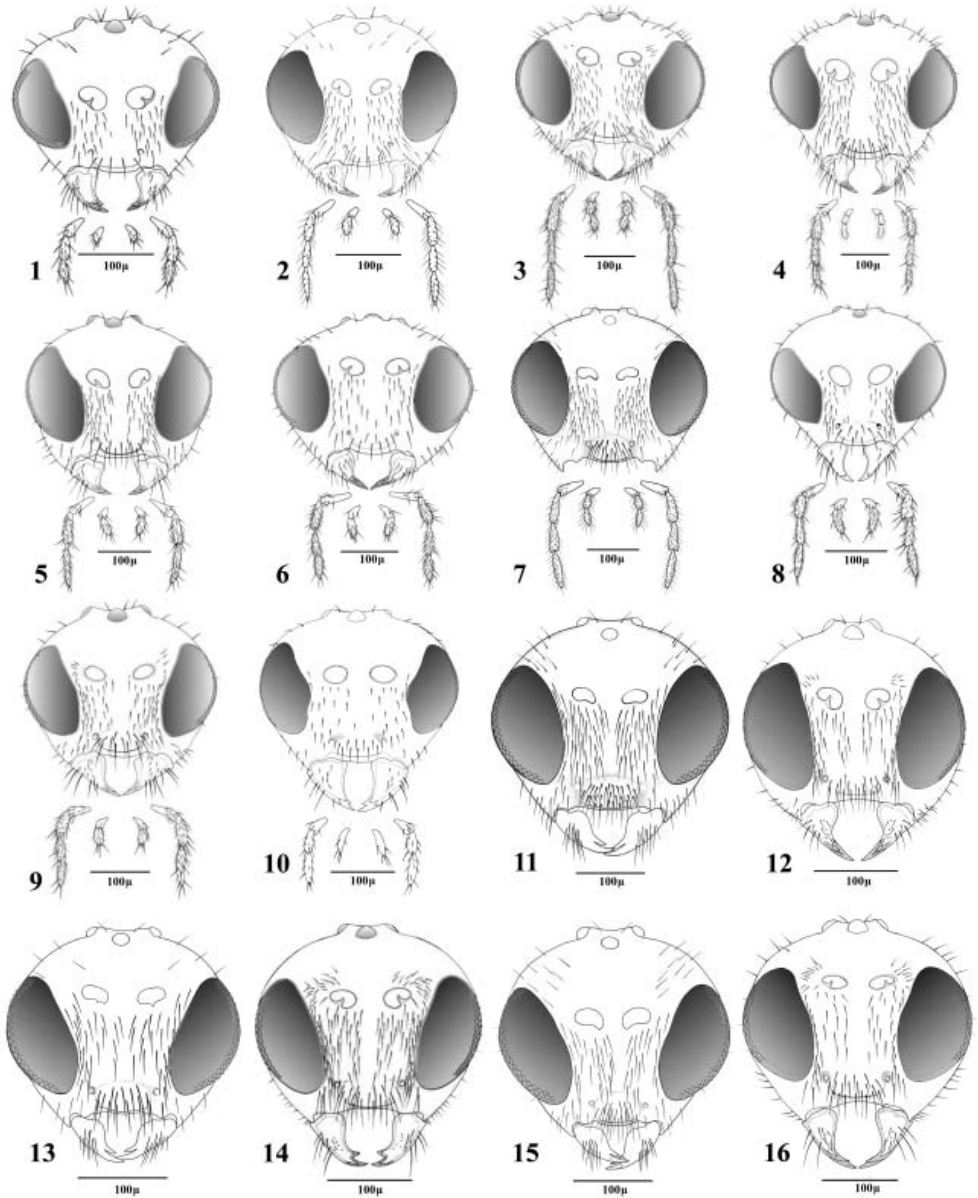
(Figs. 63, 91, 122)

Material examined. *Chromaphis juglandicola* (Kaltenbach, 1843) on *Juglans regia*, **KE** – Kermanshah (34°19'30"N 47°06'00"E, 1323 m), 27.iv.2011, 9 ♂♂ 12 ♀♀.

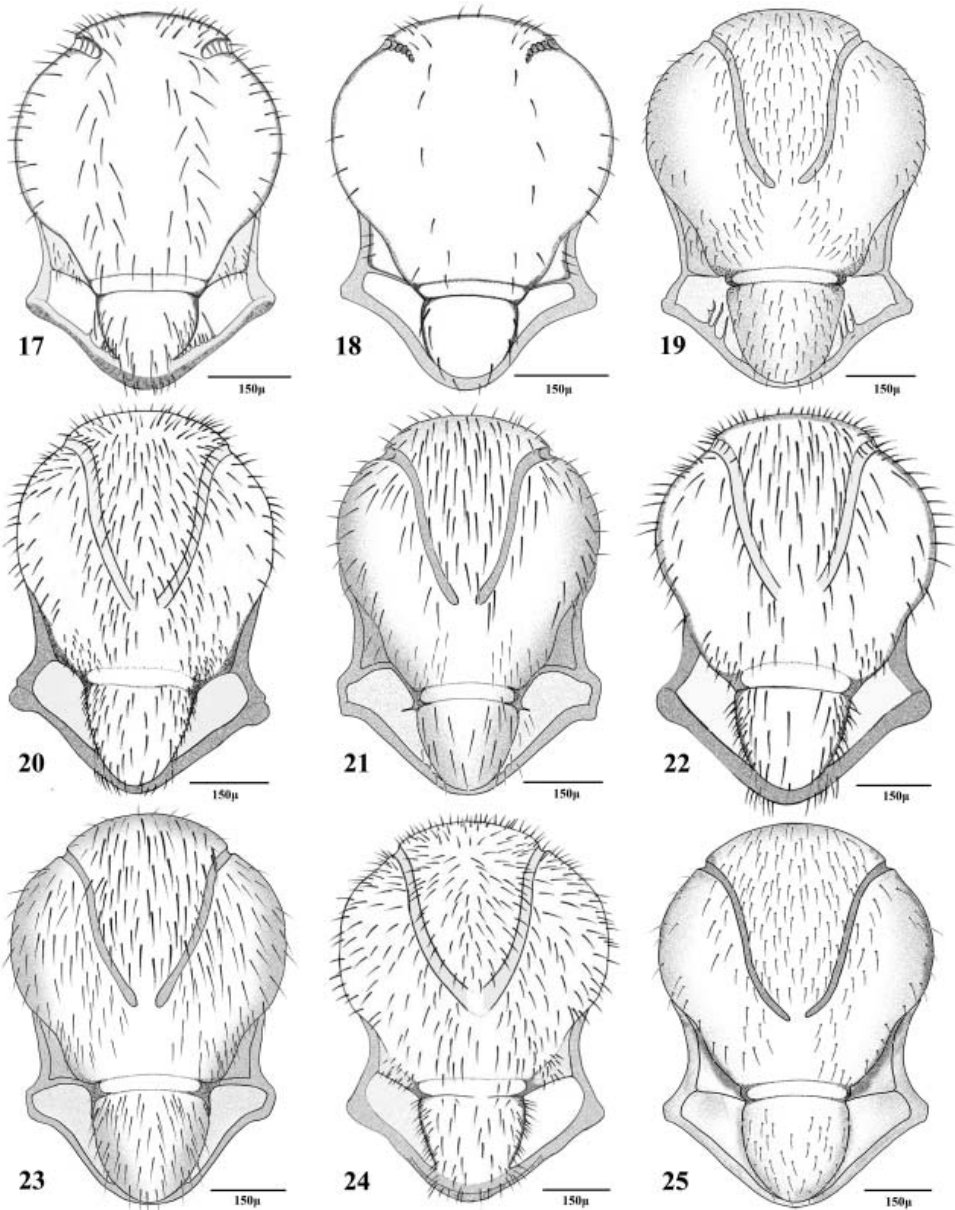
Key to the species of Aphidiinae (females) of western Iran

1. Notaulus complete and well developed (Figs. 19–25). 2
 - Notaulus incomplete or absent (Figs. 17, 18). 8
2. Lateral lobes of mesonotum pubescent or with few hairless areas (Figs. 23, 24). Fore wing m-cu vein developed and coloured (Figs. 59, 60). 3
 - Lateral lobes of mesonotum with large hairless areas (Figs. 19–22, 25). Fore wing m-cu weakly developed, coloured only in distal segment (Fig. 56), colourless throughout (Figs. 55, 61) or not developed (Figs. 57, 58). 4
3. Ovipositor sheath with almost straight dorsal outline, rounded at apex (Fig. 118). The upper part of propodeum with long and sparse hairs (Fig. 73). Antennae 16–17-segmented. ...
 - *Praon pubescens* Starý, 1961
 - Ovipositor sheath concave at dorsal outline, sharply pointed at apex (Fig. 119). The upper part of propodeum with moderately short and dense hairs (Fig. 74). Antennae (17)18–19-segmented. *Praon volucre* (Haliday, 1833)
4. Face (Fig. 11) and propodeum (Fig. 69) very densely pubescent. Antennae 20–21-segmented. Ovipositor sheath considerably elongated (Fig. 114).
 - *Praon barbatum* Mackauer, 1959
 - Face (Figs. 12–14) and propodeum (Figs. 70–72) sparsely pubescent. Antennae with less number of segments. Ovipositor sheath of different length (Figs. 115–117). 5
5. Fore wing m-cu vein developed, but colourless in part (Fig. 56) or thoroughly (Fig. 61). 6
 - Fore wing m-cu vein not developed (Figs. 57, 58). 7
6. Fore wing m-cu vein coloured in the first third proximal and remaining part effaced (Fig. 56). Dorsal aspect of petiole with 3–4 short setae at each side (Fig. 85). Dorsal aspect of propodeum almost hairless or with very few hairs (Fig. 70). Ovipositor sheath stout (Fig. 115). *Praon exsoletum* (Nees, 1811)
 - Fore wing m-cu colourless throughout (Fig. 61). Dorsal aspect of petiole with more than 10 short setae at each side (Fig. 90). Dorsal aspect of propodeum densely pubescent (Fig. 75). Ovipositor sheath elongated (Fig. 120). *Praon yomenae* Takada, 1968
7. Flagellomeres 1 and 2 yellow. Dorsal aspect of propodeum covered with normal hairs (Fig. 71). Fore wing R1 (= metacarpus) as half as stigma length (Fig. 57).
 - *Praon gallicum* Starý, 1971
 - Flagellomere 1 yellow with brown apice, flagellomere 2 brown. Dorsal aspect of propodeum covered with very long hairs (Fig. 72). Fore wing R1 (= metacarpus) as long as stigma (Fig. 58). *Praon cf. necans* Mackauer, 1959

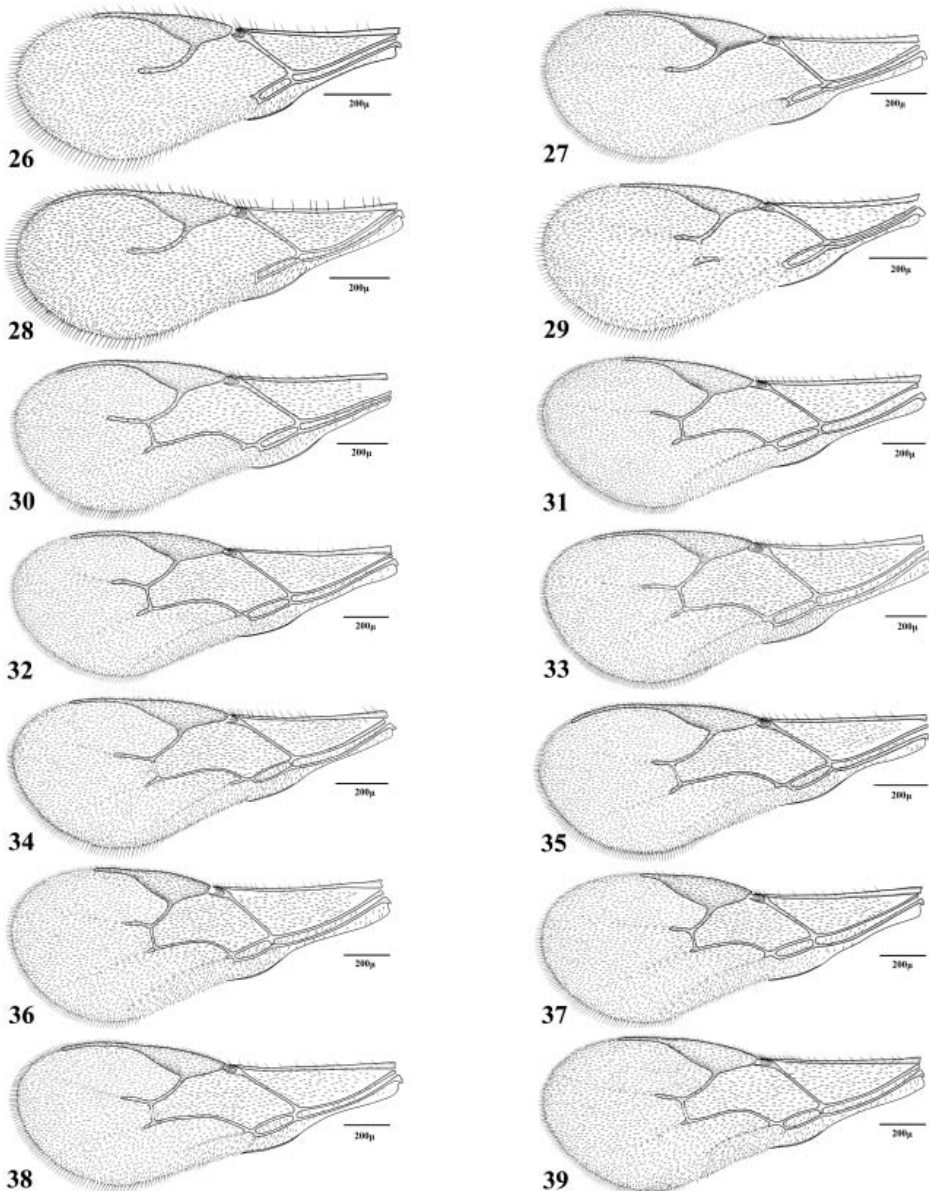
8. Fore wing venation with seven closed cells. Fore wing 3RSb vein reaching the wing margin (Figs. 48–50). 9
- Fore wing venation with four closed cells or fewer. Fore wing 3RSb (Figs. 29–44, 51–54) or r&RS vein (Figs. 26–28, 45–47, 62, 63) not reaching the wing margin. 11
9. Fore wing 3RSa vein distinctly shorter than 2RS vein (Fig. 49). Length of petiole less than 1.5× as long as its width (Fig. 83). Ovipositor sheath stout (Fig. 110).
..... *Ephedrus persicae* Froggatt, 1904
- Fore wing 3RSa vein sub-equal (Fig. 48) or distinctly longer (Fig. 50) than 2RS vein. Length of petiole more than 1.8× as long as its width (Fig. 82). Ovipositor sheath elongated (Figs. 109, 111). 10
10. Fore wing 3RSa vein sub-equal to 2RS vein (Fig. 48). Ovipositor sheath considerably elongated with pre-apical depression (Fig. 109). Flagellomere 1 with distinct constriction in basal third with presence of short longitudinal placodes.
..... *Ephedrus niger* Gautier, Bonnamour & Gaumont, 1929
- Fore wing 3RSa vein distinctly longer than 2RS vein (Fig. 50). Ovipositor sheath moderately elongated, without pre-apical depression (Fig. 111). Flagellomere 1 almost cylindrical with long longitudinal placodes. *Ephedrus plagiator* (Nees, 1811)
11. Terminal metasomal sternum without prongs (Figs. 96–104, 108, 112, 113). 12
- Terminal metasomal sternum with two prongs (Figs. 105–107, 121, 122). 35
12. Fore wing M+m-cu vein complete (Figs. 30–44, 54). 13
- Fore wing M+m-cu vein incomplete (Fig. 29, 51–53) or absent (Figs. 26–28). 28
13. Propodeum with wide central pentagonal areola (Fig. 68). Ovipositor sheath with long and strongly curved setae (Fig. 113). *Pauesia antennata* (Mukerji, 1950)
- Propodeum with small central pentagonal areola. Ovipositor sheath with short and straight or slightly curved setae (Figs. 100–104). 14
14. Tentorial index 0.60–0.80 (Fig. 7). *Aphidius setiger* (Mackauer, 1961)
- Tentorial index less than 0.6 (Figs. 2–6, 8). 15
15. Anterolateral area of petiole rugose (Fig. 93). *Aphidius ervi* Haliday, 1834
- Anterolateral area of petiole costate (Figs. 92, 95) or costulate (Fig. 94). 16
16. Anterolateral area of petiole costate (Figs. 92, 95). 17
- Anterolateral area of petiole costulate (Fig. 94). 18
17. Antenna 14–15-segmented. Labial palpomeres 2-segmented. Maxillary palpomeres 3–4-segmented (Fig. 2). R1 vein equal or slightly shorter than stigma (Fig. 30).
..... *Aphidius colemani* Viereck, 1912
- Antenna 16–17-segmented. Labial palpomeres 2- or 3-segmented. Maxillary palpomeres 4-segmented (Fig. 8). R1 vein as half as stigma (Fig. 43).
..... *Aphidius transcaspicus* Telenga, 1958
18. Labial palpus with two palpomeres (Figs. 5, 6). 19
- Labial palpus with three palpomeres (Figs. 3, 4). 22
19. R1 vein (= metacarpus) very short, 0.15–0.2× as long as stigma length (Fig. 37).
..... *Aphidius popovi* Starý, 1978
- R1 vein longer, 0.45–1.10× as long as stigma (Figs. 34–36). 20



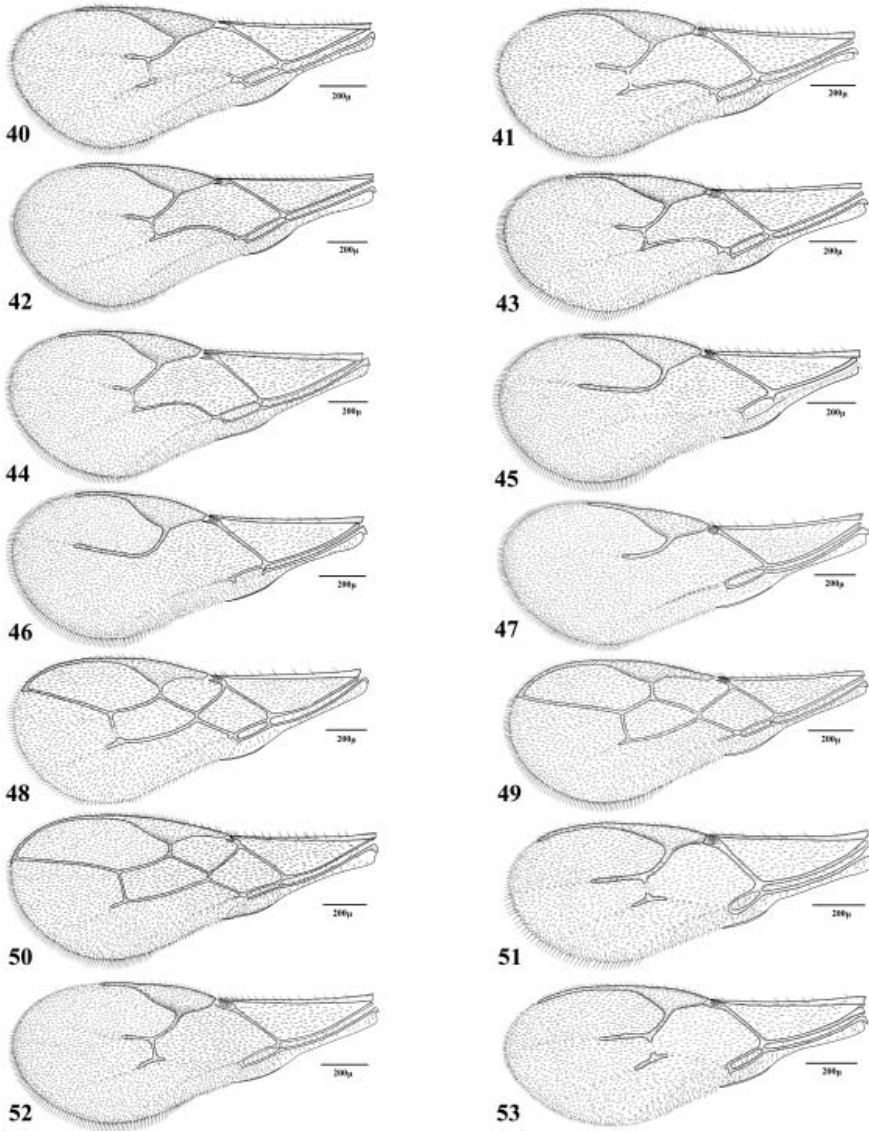
Figs. 1–16. Head and mouthparts (females). 1 – *Adialytus ambiguus* (Haliday, 1834); 2 – *Aphidius colemani* Viereck, 1912; 3 – *Aphidius eadyi* Stary, Gonzalez & Hall, 1980; 4 – *Aphidius funebris* Mackauer, 1961; 5 – *Aphidius matricariae* Haliday, 1834; 6 – *Aphidius popovi* Stary, 1978; 7 – *Aphidius setiger* (Mackauer, 1961); 8 – *Aphidius transcaspicus* Telenga, 1958; 9 – *Diaeretiella rapae* (M'Intosh, 1855); 10 – *Lysiphlebus fabarum* (Marshall, 1896); 11 – *Praon barbatum* Mackauer, 1959; 12 – *Praon exsoletum* (Nees, 1811); 13 – *Praon gallicum* Stary, 1971; 14 – *Praon cf. necans* Mackauer, 1959; 15 – *Praon pubescens* Stary, 1961; 16 – *Praon volucre* (Haliday, 1833).



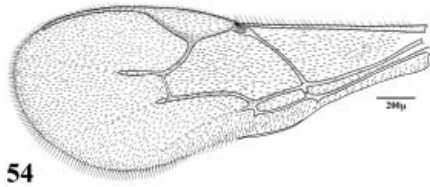
Figs. 17–25. Mesoscutum (females). 17 – *Aphidius eadyi* Starý, Gonzalez & Hall, 1980; 18 – *Binodoxys heraclei* (Haliday, 1833); 19 – *Praon barbatum* Mackauer, 1959; 20 – *Praon exsoletum* (Nees, 1811); 21 – *Praon gallicum* Starý, 1971; 22 – *Praon cf. necans* Mackauer, 1959; 23 – *Praon pubescens* Starý, 1961; 24 – *Praon volucre* (Haliday, 1833); 25 – *Praon yomenae* Takada, 1968.



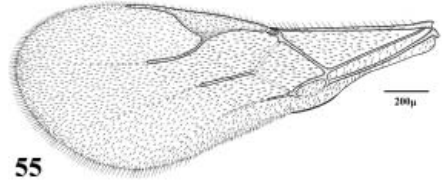
Figs. 26–39. Fore wings (females). 26 – *Adalytus ambiguus* (Haliday, 1834); 27 – *Adalytus salicaphis* (Fitch, 1855); 28 – *Adalytus thelaxis* (Stárý, 1961); 29 – *Aphidius arvensis* (Stárý, 1960); 30 – *Aphidius colemani* Viereck, 1912; 31 – *Aphidius eadyi* Stárý, Gonzalez & Hall, 1980; 32 – *Aphidius ervi* Haliday, 1834; 33 – *Aphidius funebris* Mackauer, 1961; 34 – *Aphidius hieraciorum* Stárý, 1962; 35 – *Aphidius matricariae* Haliday, 1834; 36 – *Aphidius persicus* Rakhshani & Stárý, 2006; 37 – *Aphidius popovi* Stárý, 1978; 38 – *Aphidius rhopalosiphii* De Stefani-Perez, 1902; 39 – *Aphidius rosae* Haliday, 1834.



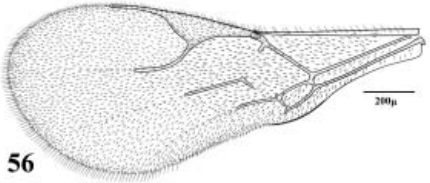
Figs. 40–53. Fore wings (females). 40 – *Aphidius* cf. *salicis* Haliday, 1834; 41 – *Aphidius setiger* (Mackauer, 1961); 42 – *Aphidius smithi* Sharma & Subba Rao, 1959; 43 – *Aphidius transcaspicus* Telenga, 1958; 44 – *Aphidius uzbekistanicus* Luzhetzki, 1960; 45 – *Binodoxys acalephae* (Marshall, 1896); 46 – *Binodoxys angelicae* (Haliday, 1833); 47 – *Diaeretiella rapae* (M’Intosh, 1855); 48 – *Ephedrus niger* Gautier, Bonnamour & Gaumont, 1929; 49 – *Ephedrus persicae* Froggatt, 1904; 50 – *Ephedrus plagiator* (Nees, 1811); 51 – *Lysiphlebus confusus* Tremblay & Eady, 1978; 52 – *Lysiphlebus desertorum* Starý, 1965; 53 – *Lysiphlebus fabarum* (Marshall, 1896).



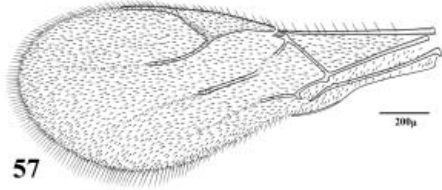
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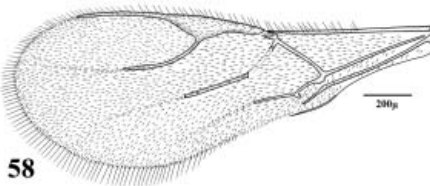
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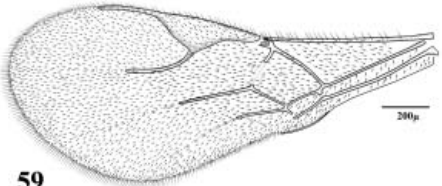
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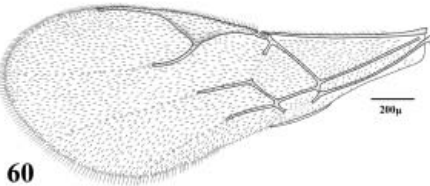
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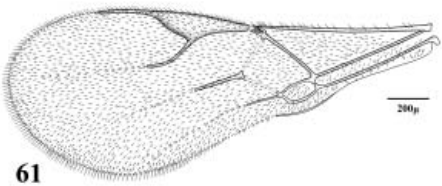
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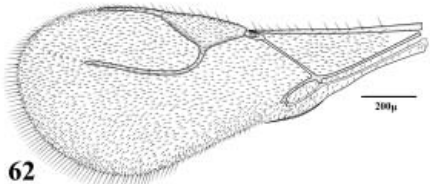
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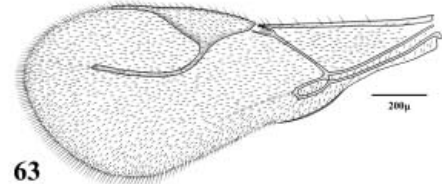
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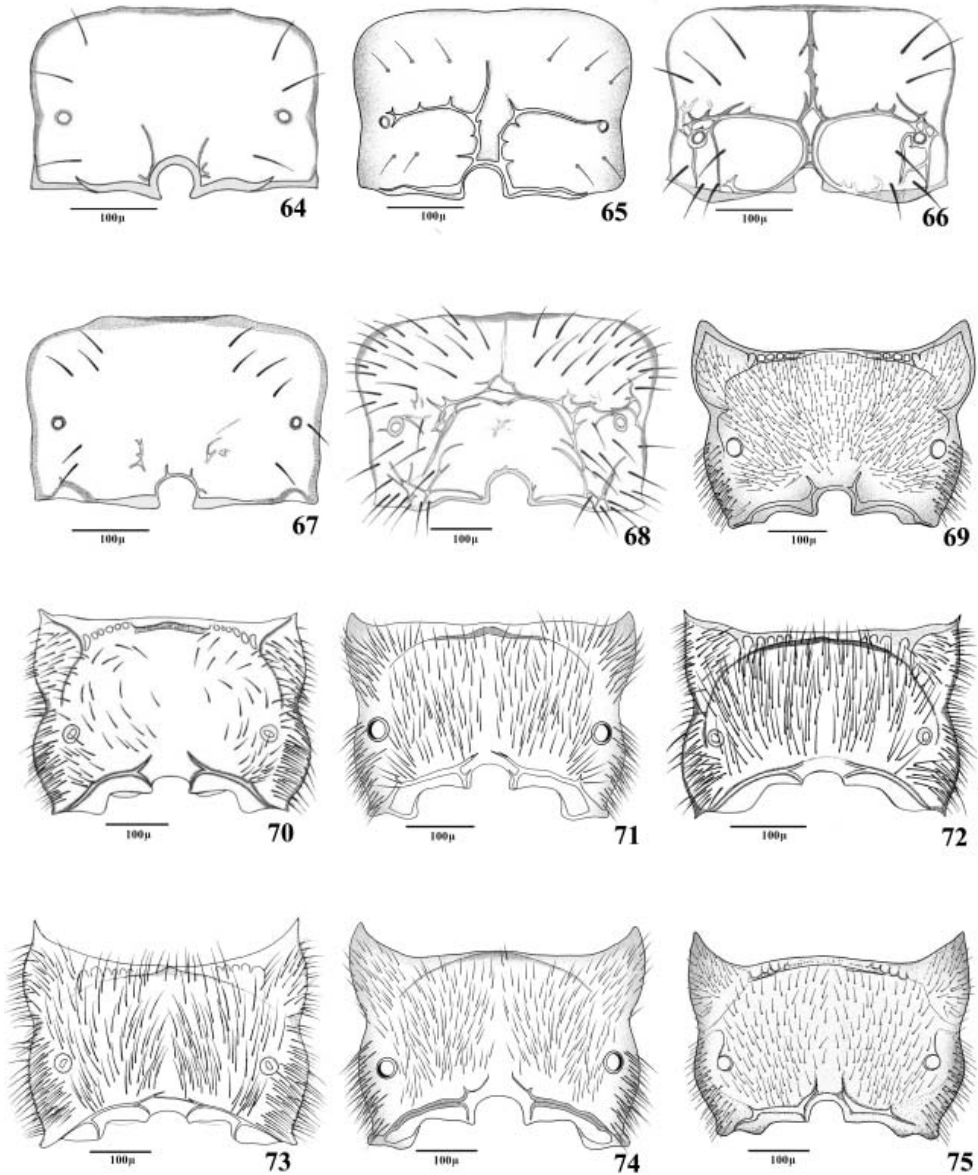


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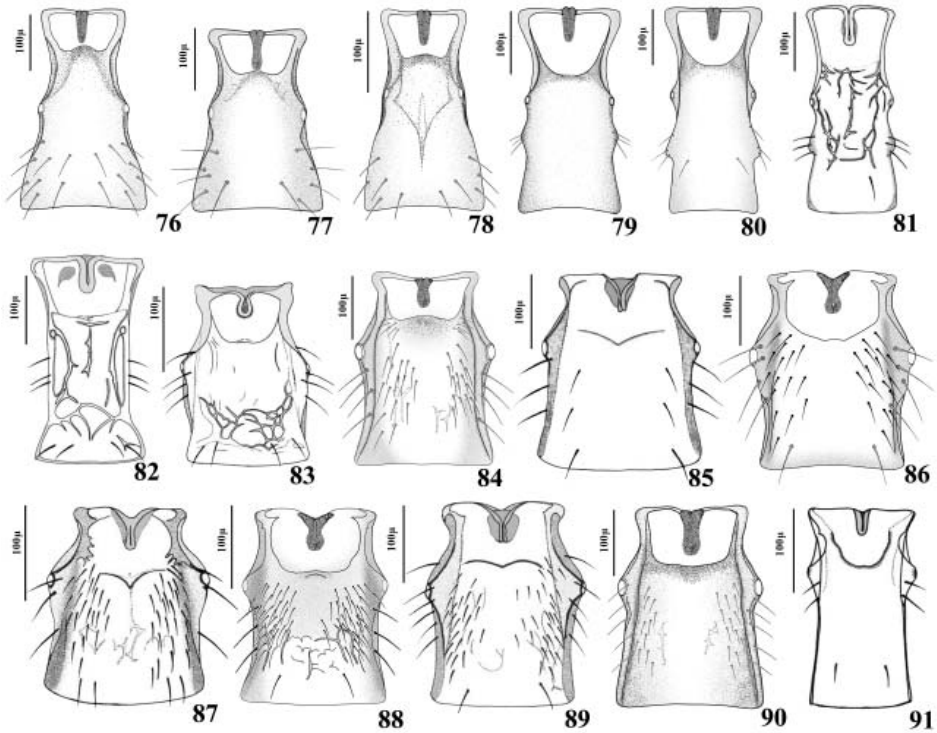


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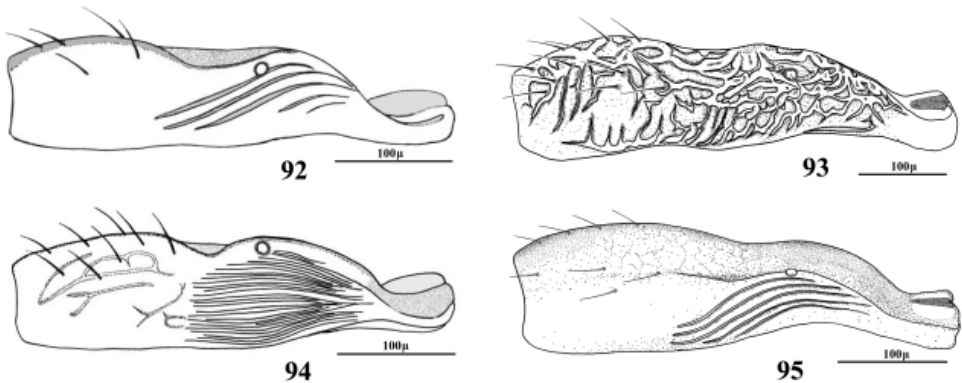
Figs. 54–63. Fore wings (females). 54 – *Pauesia antennata* (Mukerji, 1950); 55 – *Praon barbatum* Mackauer, 1959; 56 – *Praon exsoletum* (Nees, 1811); 57 – *Praon gallicum* Starý, 1971; 58 – *Praon* cf. *necans* Mackauer, 1959; 59 – *Praon pubescens* Starý, 1961; 60 – *Praon volucre* (Haliday, 1833); 61 – *Praon yomenae* Takada, 1968; 62 – *Trioxyx complanatus* Quilis, 1931; 63 – *Trioxyx pallidus* (Haliday, 1833).



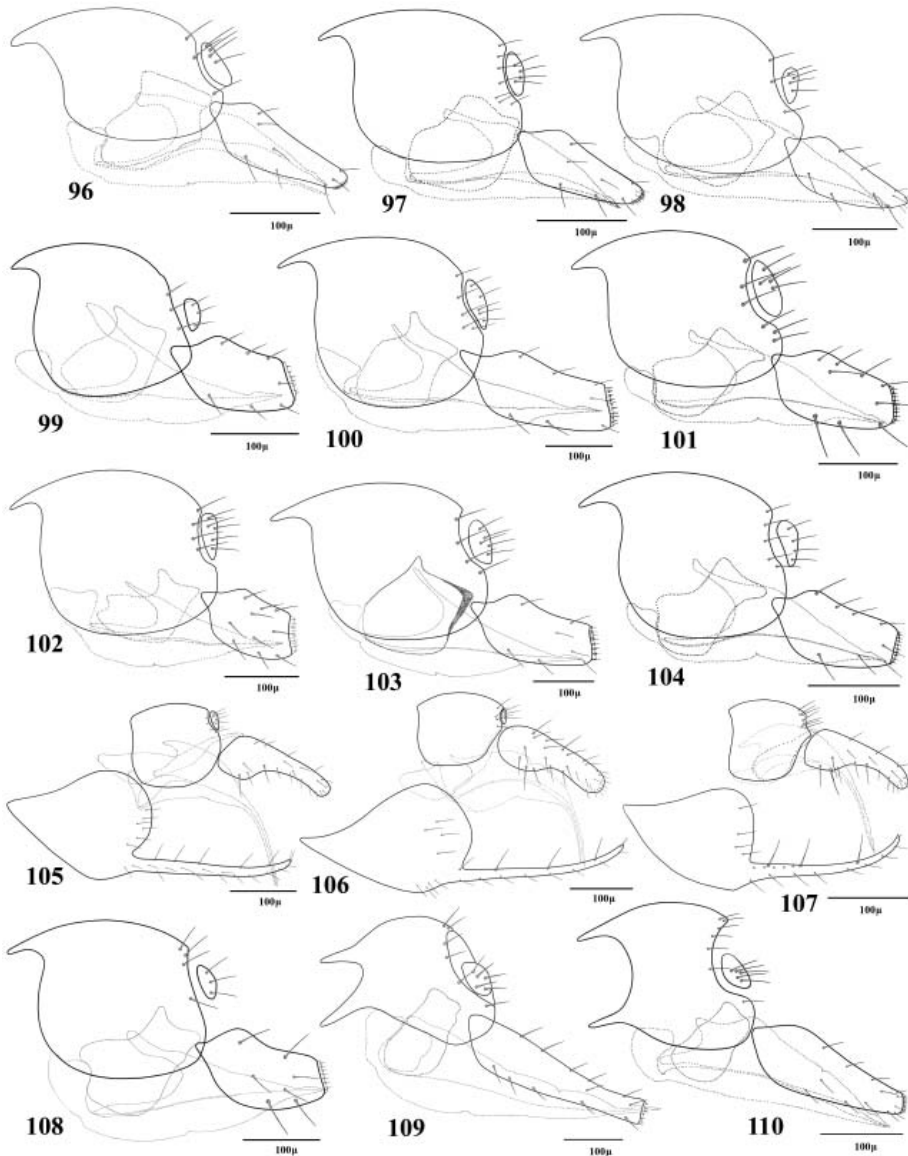
Figs. 64–75. Propodeum (females). 64 – *Adialytus ambiguus* (Haliday, 1834); 65 – *Aphidius arvensis* (Stary, 1960); 66 – *Diaeretiella rapae* (M'Intosh, 1855); 67 – *Lysiphlebus confusus* Tremblay & Eady, 1978; 68 – *Pauesia antennata* (Mukerji, 1950); 69 – *Praon barbatum* Mackauer, 1959; 70 – *Praon exsoletum* (Nees, 1811) 71 – *Praon gallicum* Stary, 1971; 72 – *Praon cf. necans* Mackauer, 1959; 73 – *Praon pubescens* Stary, 1961; 74 – *Praon volucre* (Haliday, 1833); 75 – *Praon yomenae* Takada, 1968.



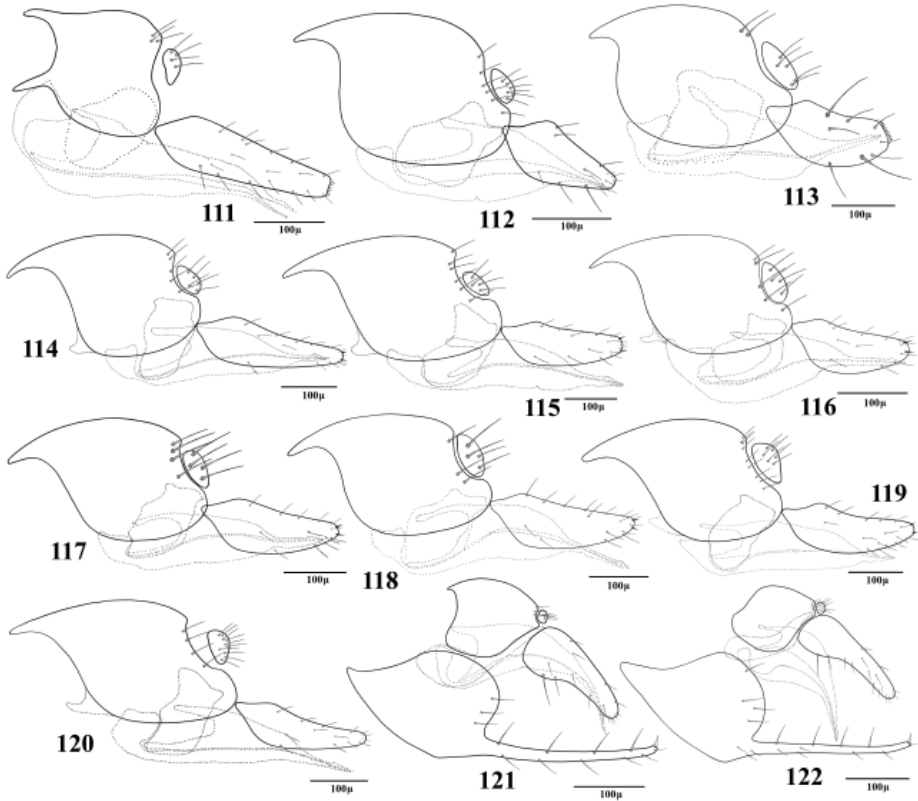
Figs. 76–91. Dorsal aspect of petiole. 76 – *Adialytus salicaphis* (Fitch, 1855); 77 – *Adialytus thelaxis* (Stary, 1961); 78 – *Aphidius arvensis* (Stary, 1960); 79 – *Binodoxys acalephae* (Marshall, 1896); 80 – *Binodoxys angelicae* (Haliday, 1833); 81 – *Binodoxys heraclei* (Haliday, 1833); 82 – *Ephedrus niger* Gautier, Bonnamour & Gaumont, 1929; 83 – *Ephedrus persicae* Froggatt, 1904; 84 – *Praon barbatum* Mackauer, 1959; 85 – *Praon exsoletum* (Nees, 1811); 86 – *Praon gallicum* Stary, 1971; 87 – *Praon* cf. *necans* Mackauer, 1959; 88 – *Praon pubescens* Stary, 1961; 89 – *Praon volucre* (Haliday, 1833); 90 – *Praon yomenae* Takada, 1968; 91 – *Trioxyx pallidus* (Haliday, 1833).



Figs. 92–95. Lateral aspect of petiole. 92 – *Aphidius colemani* Viereck, 1912; 93 – *Aphidius ervi* Haliday, 1834; 94 – *Aphidius funebris* Mackauer, 1961; 95 – *Aphidius transcaspicus* Telenga, 1958.



Figs. 96–110. Lateral aspect of genitalia (females). 96 – *Adialytus ambiguus* (Haliday, 1834); 97 – *Adialytus salicaphis* (Fitch, 1855); 98 – *Adialytus thelaxis* (Stary, 1961); 99 – *Aphidius arvensis* (Stary, 1960); 100 – *Aphidius funebris* Mackauer, 1961; 101 – *Aphidius hieraciorum* Stary, 1962; 102 – *Aphidius matricariae* Haliday, 1834; 103 – *Aphidius persicus* Rakhshani & Stary, 2006; 104 – *Aphidius setiger* (Mackauer, 1961); 105 – *Binodoxys acalephae* (Marshall, 1896); 106 – *Binodoxys angelicae* (Haliday, 1833); 107 – *Binodoxys heraclei* (Haliday, 1833); 108 – *Diaeretiella rapae* (M'Intosh, 1855); 109 – *Ephedrus niger* Gautier, Bonnamour & Gaumont, 1929; 110 – *Ephedrus persicae* Froggatt, 1904.



Figs. 111–122. Lateral aspect of genitalia (females). 111 – *Ephedrus plagiator* (Nees, 1811); 112 – *Lysiphlebus desertorum* Starý, 1965; 113 – *Pauesia antennata* (Mukerji, 1950); 114 – *Praon barbatum* Mackauer, 1959; 115 – *Praon exsoletum* (Nees, 1811); 116 – *Praon gallicum* Starý, 1971; 117 – *Praon* cf. *necans* Mackauer, 1959; 118 – *Praon pubescens* Starý, 1961; 119 – *Praon volucre* (Haliday, 1833); 120 – *Praon yomenae* Takada, 1968; 121 – *Trioxys complanatus* Quilis, 1931; 122 – *Trioxys pallidus* (Haliday, 1833).

20. R1 vein short, $0.45\text{--}0.55\times$ as long as stigma length. Fore wing stigma widely triangular (Fig. 36). Ovipositor sheath elongated (Fig. 103). Antenna (16)–17-segmented.
 *Aphidius persicus* Rakhshani & Starý, 2006
- R1 vein elongated, $0.70\text{--}1.105\times$ as long as stigma length. Fore wing stigma elongately triangular, as long as R1 vein (Fig. 34, 35). Ovipositor sheath short (Fig. 101, 102). Antennae 14–15(16)-segmented. 21
21. Maxillary palpus 3-segmented (Fig. 5), ovipositor sheath stout, $1.70\text{--}1.90\times$ as long as its maximum width at base (Fig. 102). R1 vein $1.00\text{--}1.10\times$ as long as stigma (Fig. 35).
 *Aphidius matricariae* Haliday, 1834
- Maxillary palpus 4-segmented, ovipositor sheath elongated, $2.00\text{--}2.20\times$ as long as its maximum width at base (Fig. 101). R1 vein $0.70\text{--}0.75\times$ as long as stigma (Fig. 34).
 *Aphidius hieraciorum* Starý, 1962

22. Antennae 13–14-segmented. *Aphidius cf. salicis* Haliday, 1834
 – Antennae with more than 15-segments. 23
23. Ovipositor sheath elongate and strongly prominent (Fig. 100).
 *Aphidius funebris* Mackauer, 1961
 – Ovipositor sheath stout and broad. 24
24. Antennae 16–18-segmented. 25
 – Antennae 19–21-segmented. 27
25. R1 vein short, 0.50–0.56× as long as stigma length (Fig. 39). Flagellomere 1 with 4–6 longitudinal placodes. *Aphidius rosae* Haliday, 1834
 – R1 vein long, 0.75–1.00× as long as stigma length (Figs. 38, 44). Flagellomere 1 with 0–2 longitudinal placodes. 26
26. Fore wing stigma widely triangular, 2.80–3.10× as long as its width (Fig. 44).
 *Aphidius uzbekistanicus* Luzhetskii, 1960
 – Fore wing stigma elongately triangular, 3.30–3.90× as long as its width (Fig. 38).
 *Aphidius rhopalosiphi* De Stefani-Perez, 1902
27. Fore wing stigma 1.80–2.10× as long as R1 vein (Fig. 31).
 *Aphidius eadyi* Starý, Gonzalez & Hall, 1980
 – Fore wing stigma 1.30–1.50× as long as R1 vein (Fig. 42).
 *Aphidius smithi* Sharma & Subba Rao, 1959
28. Ovipositor sheath apically truncated (Figs. 99, 108). Dorsal aspect of propodeum carinated (Figs. 65, 66). 29
 – Ovipositor sheath apically pointed (Fig. 96–98). Dorsal aspect of propodeum smooth or with two short divergent carinae at lower part (Fig. 64, 67). 30
29. Dorsal aspect of propodeum with complete central areola (Fig. 66). Fore wing M+m-cu vein absent (Fig. 47). Dorsal aspect of petiole smooth.
 *Diaeretiella rapae* (M'Intosh, 1855)
 – Dorsal aspect of propodeum with incomplete central areola (Fig. 65). Fore wing M+m-cu vein present but incomplete (Fig. 29). Dorsal aspect of petiole with a pair of convergent grooves (Fig. 78). *Aphidius arvensis* (Starý, 1960)
30. Fore wing M+m-cu vein absent (Figs. 26–28). 31
 – Fore wing M+m-cu vein present, but incomplete (Figs. 51–53). 33
31. Ovipositor sheath considerably elongated, length/width ratio of 2.80–3.10 (Fig. 96). R1 vein (= metacarpus) 0.70–0.80× as long as fore wing stigma (Fig. 26).
 *Adialytus ambiguus* (Haliday, 1834)
 – Ovipositor sheath stout, length/width ratio less than 2.20–2.70 (Figs. 97, 98). R1 vein (= metacarpus) 0.90–1.00× as long as fore wing stigma (Figs. 27, 28). 32
32. Flagellar segments (1–4) sub-quadrate, slightly longer than their maximum width l/w ratio of 1.50–1.60, covered with long and prevalently erected setae. Ovipositor sheath sharply angular (Fig. 98). Petiole 1.80–2.00× as long as wide at spiracles (Fig. 77).
 *Adialytus thelaxis* (Starý, 1961)
 – Flagellar segments (1–4) cylindrical, considerably longer than their maximum width, l/w ratio of 2.30–2.90, covered with semi-erected setae. Ovipositor sheath roundly angular (Fig. 97). Petiole 2.20–2.40× as long as wide at spiracles (Fig. 76).
 *Adialytus salicaphis* (Fitch, 1855)

33. R1 vein distinctly shorter than fore wing stigma (Fig. 52). Labial palps 2-segmented. ...
 *Lysiphlebus desertorum* Starý, 1965
 – R1 vein distinctly longer than fore wing stigma (Figs. 51, 53). Labial palps 1-segmented
 (Fig. 10). 34
34. Fore wing marginal setae longer than those on the surface (Fig. 51).
 *Lysiphlebus confusus* Tremblay & Eady, 1978
 – Fore wing marginal setae as long as those on the surface (Fig. 53).
 *Lysiphlebus fabarum* (Marshall, 1896)
35. Petiole with primary and secondary tubercles (Figs. 79–81). 36
 – Petiole with only primary tubercles (Fig. 91). 38
36. Prongs strongly curved upward (Fig. 107). *Binodoxys heraclei* (Haliday, 1833)
 – Prongs slightly curved upward (Figs. 105, 106). 37
37. Distance between primary and secondary tubercles less than width at spiracles (Fig.
 79). *Binodoxys acalephae* (Marshall, 1896)
 – Distance between primary and secondary tubercles more than width at spiracles (Fig.
 80). *Binodoxys angelicae* (Haliday, 1833)
38. Ovipositor sheath short, 2.10–2.20× as long as its maximum width at base (Fig. 121).
 R1 vein 0.60–0.80× as long as stigma length (Fig. 62).
 *Trioxys complanatus* Quilis, 1931
 – Ovipositor sheath elongated, 2.90–3.10× as long as its maximum width at base (Fig. 122).
 R1 vein as half as stigma length (Fig. 63).
 *Trioxys pallidus* (Haliday, 1833)

Discussion

The majority of parasitoid species were found in association with 1–2 host aphid species, but a few species were involved in various habitats in association with many aphid species. Species in both groups associated with aphids on cultivated host plants, excluding few species which were associated with economically indifferent aphids. A complete assemblage of the specific aphid parasitoids was found in alfalfa (*Aphidius smithi*, *Aphidius eadyi*, *Praon barbatum*, *Praon exsoletum*, *Trioxys complanatus*) and cereal fields (*Aphidius rhopalosiphii*, *Aphidius uzbekistanicus*). The similar assemblages had already been indicated by RAKHSHANI et al. (2006a, 2008b). Two other broadly oligophagous species, *Praon volucre* and *Aphidius matricariae*, as well as *Praon* cf. *necans* were quite common in cereal fields. Since the western and southwestern foothills as well as neighboring lowlands are the main places for cultivation of cereals and the forage crops like alfalfa, it is important to emphasize the significance of aphid biocontrol programs instead of usage of the pesticide chemicals.

While, the altitudinal zonations were not considered for analyses of the species diversity, it seems the broadly oligophagous species (*Lysiphlebus fabarum*, *Aphidius matricariae*, *Praon volucre*) were distributed in a wide altitudinal range including the lowlands at Khuzestan province (less than 50 m a.s.l.) to the highlands at Kermanshah province (more than 1500 m a.s.l.). In contrast, the western highlands were the area in which many host-specific aphid parasitoids occurred (*Aphidius rosae*, *Aphidius popovi*, *Aphidius transcaspicus*, *Aphidius arvensis*, *Trioxys pallidus*). *Diaeretiella rapae* as a common parasitoid of various aphids

was found quite abundant in highlands. It seldom occurred on cereal aphids, but was found commonly on other species and exceptionally, on *Amegosiphon platicaudum* as new host record for this species. *Amegosiphon platicaudum* is an important pest of barberry (*Berberis thunbergii*) in Iran and neighboring countries (REZWANI 2001). Two other species, *Aphidius matricariae* and *Aphidius colemani*, exploit this aphid as a host. However, *Diaeretiella rapae* showed the highest rate of parasitism. The few specimens of *A. colemani* reared from this aphid species differed morphologically, from the specimens reared from other aphid species. These differences may be a product of different host aphid species but may also be a result of the geographical isolation of the highlands where the wild barberry grows.

Aphidius salicis belongs to a specific parasitoid complex whose members are specialists on *Cavariella* spp. aphids on *Salix* spp. in Iran and elsewhere (RAKSHANI et al. 2007b, 2008a; TOMANOVIĆ et al. 2003b, 2006), although questionable information that several other aphids serve as its hosts has been reported from Central Asia (STARÝ 1979). We found a non-specific association of *Aphidius* cf. *salicis* on *Capitophorus elaeagni* on *Elaeagnus angustifolia*. This finding should be confirmed by on-going studies in the near future. *Binodoxys heraclei* is another member of specific parasitoid complex of *Cavariella* spp. that was previously recorded only from East of Iran (RAKSHANI et al. 2007b).

In view of the specific unique environment of the study region, significant intraspecific morphological variability was expected. Such variation was frequently found in the diagnostic characters of many species, including *Adialytus ambiguus*, *Aphidius colemani*, *Binodoxys angelicae*, *Lysiphlebus fabarum*, and *Praon* cf. *necans*. Generally, *Praon necans* considered as a species associated strictly with wetlands, attacking a broad range of host aphids on different aquatic and semi-aquatic plants (TOMANOVIĆ et al. 2012). We reared this species from *Rhopalosiphum nymphaeae* on *Ranunculus repens*, but it is noteworthy that we also reared it from various other aphids on both cereals and ornamental plants. However, we found several morphological differences between our specimens and the original description and between our specimens and European specimens (TOMANOVIĆ et al. 2012). These differences suggested the existence of an endemic subspecies or even an isolated species. Further investigations using molecular markers should confirm identity of these specimens. *Praon gallicum*, a closely related species to *Praon necans*, has recently been recorded from almost the same regions in which we found specimens of *P. cf. necans* (BAGHERI-MATIN et al. 2010). Both species are members of 'Parapraon' group (KAVALLIERATOS et al. 2005). These species share the groups unique of fore wing and petiole characters, but can readily be differentiated by the coloration of flagellomeres 1 and 2. Surprisingly, *P. cf. necans* was known as one of the principal parasitoids of cereal aphids, primarily *Rhopalosiphum padi*. However, *Praon gallicum* was also reared from the same aphids (BAGHERI-MATIN et al. 2010). *Praon pubescens* is newly recorded from Iran in association with *Nasonovia ribisnigri* on *Lactuca sativa*. It is a specific parasitoid of *Nasonovia* species (STARÝ 1961), as well as *Aphidius hieraciorum* which has recently been recorded from the same area (MOSSADEGH et al. 2011).

In general the western part of Iran, as a highland area, is the home of a very diverse fauna of Aphidiinae. Many of the aphid parasitoid species are associated with economically important aphids. Further long term studies, are needed to investigate the isolated areas of the western Zagros Mountains, as well as to find the refugia of the rare aphids and their parasitoids.

Acknowledgments

We thank the Department of Plant Protection, Razi University of Kermanshah for financial supporting of this project. The contribution of Ehsan Rakhshani is partially supported by the grant No. 89-9198, University of Zabol, Iran. Contribution of OPO, ŽT and ST was supported by grant III43001 and OI173006, respectively (The Ministry of Education and Science of the Republic of Serbia), and that of PS was partially funded by the Entomology Institute project AV0Z50070508 (Academy of Sciences of the Czech Republic).

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