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### Monograph

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## Review of Aphidiinae parasitoids (Hymenoptera: Braconidae) of the Middle East and North Africa: key to species and host associations

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**Abstract.** In this study, a total of 108 Aphidiinae species, belonging to 18 genera, associated with 240 aphid species in 16 countries of the Middle East and North Africa are reviewed. 743 host aphid-parasitoid associations are listed. New material was collected from various regions of Saudi Arabia during 2011–2013. Three species including *Aphidius avenae* Haliday, 1834, *Aphidius platensis* Brèthes, 1913 and *Praon barbatum* Mackauer, 1967 are first recorded for the fauna of this country. *Lysiphlebus marismortui* Mescheloff & Rosen, 1990 syn. nov. is classified as the junior synonym of *Lysiphlebus confusus* Tremblay & Eady, 1978. An illustrated up-to-date key to all known species of Aphidiinae that occur in the Middle East and North Africa is provided. The findings are discussed in relation to the overall parasitoid-aphid associations in the target investigated region.

**Keywords.** Aphids, parasitoids, fauna, Western Asia, North Africa, illustrated key.

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## Introduction

Members of the subfamily Aphidiinae (Hymenoptera: Braconidae) belong to an important group as natural enemies of aphids (Starý 1970). Aphidiinae consist of solitary koinobiont parasitoids, among which several species are considered highly efficient biological control agents (Hågvar & Hofsvang 1991; Boivin *et al.* 2012). This subfamily includes about 505 species belonging to 38 genera, around the world (Žikić *et al.* 2017). Aphidiinae are strictly associated to their host aphids, regarding local distribution and/or broader expansions (Starý 1981a). The complexity of biogeographical factors determines the area of distribution of parasitoid species and directly affects the host associations (Hawkins 1994). Consequently, each aphid parasitoid species is also expected to have a specific territory from which it can be distributed and reach the preferable host aphids (Charles & Paine 2016). Additionally, the host plants have a crucial impact concerning the diversity of the feeding insects, especially on aphids and their parasitoids (Starý 1981a; Žikić *et al.* 2017).

The Middle East is a region that encompasses Western Asia and a part of North Africa. The traditional definition of the Middle East includes counties in Western Asia (Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Saudi Arabia, Syria, United Arab Emirates and Yemen). Yet, the “greater” Middle East includes many other countries in central Asia (Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan, Turkey) and some northern African countries (Algeria, Egypt, Libya, Morocco, Somalia, Sudan and Tunisia). However, regardless of the geographical definition, a delimitation of the area is more biogeographically substantial with few additions of other countries including Turkey and Mediterranean North African countries. The countries of the Middle East generally have an arid and hot climate, relying on several major rivers to provide water for irrigation in order to support agriculture in moderately limited areas. The biotic history of Asia, as well as its complex topography and climatic diversity, led to the evolution of thousands of very specific plant species. The natural barrier of the Irano-Anatolian area, which is located between the Mediterranean Basin and the dry plateaus of Western Asia, serves as both a refuge and a corridor and



it has contributed to the creation of many isolated areas with various patches of local endemism (Starý *et al.* 2000; Ma *et al.* 2010).

Such a complicated diversity of plant species, which is affected partially by the agricultural intensification, needs to be highlighted in conservation programs. The analyses of the faunal diversity and the biological connectivity of the regions, in the case of aphid parasitoids, are the main topics of ecological and conservation studies (Powell *et al.* 1990; Vollhardt *et al.* 2008). The area of North African countries is biogeographically divided into the Mediterranean climate region in the north, and the arid Sahara in the south, albeit both of them can be subdivided into various ecozones (Houérou 2000). Numerous faunistic and biosystematical research studies on Aphidiinae have been conducted in this complex region, although many parts are still unexplored. Earlier studies on aphid parasitoids of Central Asia (Starý 1979) and the Mediterranean (Starý 1976) include also some parts of the Middle East. Furthermore, scattered information has been published, in which the occurrence of the aphid parasitoid species has been recorded in various countries in the Middle East and North Africa.

The few published identification keys of Aphidiinae are restricted to the local fauna of Aphidiinae (i.e., Iran) (Nazari *et al.* 2012; Rakhshani *et al.* 2012b; Barahoei *et al.* 2013), local generic keys (Mescheloff & Rosen 1988, 1990a, 1990b, 1993; Rakhshani *et al.* 2007a, 2008a, 2012a) or specific groups associated with economically important aphids (Rakhshani *et al.* 2005a, 2006a; Rakhshani 2012; Gadallah *et al.* 2017). However, these keys are associated with few countries in the Middle East, while numerous species have never been included. Here we review the Aphidiinae parasitoids of the Middle East and North Africa, aiming to compare their diversity in various countries and establish a background for future research, especially within the unexplored areas. New material, originating from Saudi Arabia, has been studied and new findings are presented. On the basis of line drawings of females, an original illustrated key to all known species in the Middle East and North Africa is provided.

## Material and methods

New material was collected during 2011–2013 from various regions of Saudi Arabia. Plant material with aphid colonies (both live and mummified individuals) was collected from the field and transferred to the laboratory. Then, it was cleaned and subdivided into properly pre-labeled plastic rearing jars covered with fine mesh for ventilation. The containers were kept in room temperature for a period of 1–2 weeks until emergence of adult parasitoids. As soon as the adult parasitoids emerged, they were immediately captured using an aspirator and transferred into vials containing 70% ethyl alcohol. Female parasitoids were dissected and slide mounted in Berlese medium (Tomanović *et al.* 2018). The external morphology of parasitoids was studied using an Olympus™ SZX9 (Olympus Corporation, Japan) or a Nikon™ SMZ645 (Nikon Corporation, Japan) stereo microscopes and a Nikon™ Eclipse E200 (Nikon Corporation, Japan) or a Leica™ DMLS phase-contrast (Leica Microsystems GmbH, Wetzlar, Germany) microscopes. Line drawings were traced in Adobe Illustrator CS5 on the digital photographs from the slides, captured using a Canon™ EOS 700D digital camera (Canon Inc., Japan) directly mounted on the microscope. The ratio measurements were based on the slide-mounted specimens using an ocular micrometer or using tpsDig software (Rohlf 2006) on the digital photographs. Specimens from the following depositories were examined and used to prepare the key and illustrations: Department of Plant Protection, University of Zabol, Iran; Institute of Entomology, Biology Centre, České Budějovice, Czech Republic; Institute of Zoology, Faculty of Biology, University of Belgrade, Serbia; Laboratory of Agricultural Zoology and Entomology, Department of Crop Science, Agricultural University of Athens, Greece, and Naturalis Biodiversity Centre, Leiden, The Netherlands. The new series of specimens from Saudi Arabia were deposited in the Collection of Department of Plant Protection, University of Zabol (DPPZ). The rest of the data have been extracted from literature that refers to taxonomy, faunal diversity and biology of Aphidiinae parasitoids in various countries of the Middle East and North African countries. The distribution of the listed species is also presented in this study. Terminology of morphological characters

for the parasitoids follows Gärdenfors (1986) (for the sculpture of propodeum) and Sharkey & Wharton (1997). Aphid nomenclature follows Remaudière & Remaudière (1997) and in few cases updated according to Nieto Nafria *et al.* (2011) and Favret (2019).

## Results

### *Aphid parasitoids - host aphids - distribution and Taxonomy*

A total of 108 Aphidiinae species, belonging to 18 genera, associated with 240 aphid species in 16 countries of the Middle East and North Africa are reviewed. 743 host aphid-parasitoid associations are listed in the target area. Doubtful records are marked with “?”, i.e., associations that fall out of parasitoids’ known host range. These records need to be verified but are kept in the present account, since they may be worthy as issues to look upon in future studies in the target region and elsewhere.

Class Insecta L., 1758  
Order Hymenoptera L., 1758  
Family Braconidae Nees, 1811  
Subfamily Aphidiinae Haliday, 1833

*Aclitus obscuripennis* Förster, 1862  
Figs 1, 73, 176, 272, 374, 510

#### Host records

Lacking host data (Farahani *et al.* 2017).

#### Distribution in the Middle East and North Africa

Iran (Farahani *et al.* 2017).

#### General distribution

Eastern (Iran) and Western Palaearctic (Europe).

*Adialytus ambiguus* Haliday, 1834  
Figs 2, 74, 177, 273, 375, 500, 511

#### Host records

*Sipha elegans* Del Guercio (Elmali 1997; Uysal *et al.* 2004; Rakhshani *et al.* 2008b, 2012a; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Sipha flava* (Forbes) (Nazari *et al.* 2012; Rakhshani *et al.* 2012a); *Sipha maydis* Passerini (Mescheloff & Rosen 1990a; Starý *et al.* 2000; Nazari *et al.* 2012; Rakhshani *et al.* 2012a, 2012b; Barahoei *et al.* 2013); *Sipha* sp. (Starý 1979).

#### Distribution in the Middle East and North Africa

Egypt (El-Ghiet *et al.* 2014 – as *Adialytus* cf. *ambiguus* (Haliday, 1834)); Iran (Starý 1979; Starý *et al.* 2000; Nazari *et al.* 2012; Rakhshani *et al.* 2012a, 2012b; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); Israel (Mescheloff & Rosen 1990a); Turkey (Starý 1976; Central part – Elmali 1997; Western part – Uysal *et al.* 2004).

#### General distribution

Holarctic, Oriental.

*Adialytus salicaphis* (Fitch, 1855)

Figs 3, 75, 178, 274, 376, 501, 512

**Host records**

*Chaitophorus euphraticus* Hodjat (Starý *et al.* 2000; Rakhshani *et al.* 2007b, 2012a; Talebi *et al.* 2009); *Chaitophorus leucomelas* Koch (Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Rakhshani *et al.* 2007b, 2012a; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Chaitophorus populeti* (Panzer) (Rakhshani *et al.* 2007b, 2012a); *Chaitophorus populialbae* (Boyer de Fonscolombe) (Starý *et al.* 2000; Rakhshani *et al.* 2007b, 2012a; Barahoei *et al.* 2013); *Chaitophorus remaudierei* Pintera (Starý *et al.* 2000; Rakhshani *et al.* 2007b, 2012a; Talebi *et al.* 2009; Nazari *et al.* 2012); *Chaitophorus salijaponicus* Essig & Kuwana (Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2007b, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Chaitophorus truncatus* (Hausmann) (Rakhshani *et al.* 2007b; Talebi *et al.* 2009); *Chaitophorus vitellinae* (Schrank) (Rakhshani *et al.* 2007b, 2012a; Talebi *et al.* 2009; Barahoei *et al.* 2013); *Chaitophorus* spp. (Starý & Kaddou 1971; Starý 1976, 1979; Starý *et al.* 2000; Barahoei *et al.* 2012, 2013; Rakhshani *et al.* 2012a, 2012b).

**Distribution in the Middle East and North Africa**

Iran (Starý 1979; Starý *et al.* 2000; Barahoei *et al.* 2012; Nazari *et al.* 2012; Rakhshani *et al.* 2007b, 2012a, 2012b; Taheri & Rakhshani 2013); Iraq (Starý & Kaddou 1971; Starý 1976); Turkey (Eastern part – Ölmez & Ulusoy 2003; Western part – Uysal *et al.* 2004; Erdoğan *et al.* 2008).

**General distribution**

Holarctic, Neotropical, Oriental.

*Adialytus thelaxis* Starý, 1961

Figs 4, 76, 179, 275, 377, 502, 513

**Host records**

*Thelaxes confertae* Börner (Mescheloff & Rosen 1990a); *Thelaxes suberi* (Del Guercio) (Starý 1969a, 1969b, 1976; Starý & Kaddou 1971; Starý 1979; Babaee *et al.* 2000; Starý *et al.* 2000; Nazari *et al.* 2012; Rakhshani *et al.* 2012a); *Thelaxes* sp. (Starý 1976).

**Distribution in the Middle East and North Africa**

Iran (Starý 1979; Babaee *et al.* 2000; Starý *et al.* 2000; Nazari *et al.* 2012; Rakhshani *et al.* 2012a); Iraq (Starý 1969a, 1969b, 1976; Starý & Kaddou 1971); Israel (Mescheloff & Rosen 1990a); Turkey (Starý 1976).

**General distribution**

Eastern (Iran) and Western Palearctic.

*Adialytus veronicaecola* (Starý, 1978)

Figs 5, 77, 180, 276, 378, 503, 514

**Host records**

*Aphis craccivora* Koch, *Aphis gossypii* Glover (Rakhshani *et al.* 2012a).

### Distribution in the Middle East and North Africa

Iran (Rakhshani *et al.* 2012a); Turkey – Western part (Erdoğan & Akar 2018).

### General distribution

Eastern (Iran, Kazakhstan) and Western Palaearctic (Turkey).

*Aphidius absinthii* Marshall, 1896

Figs 6, 78, 181, 277, 379, 476, 515

### Host records

*Macrosiphoniella abrotani* (Walker) (Starý *et al.* 2000; Rakhshani *et al.* 2008a, 2011; Talebi *et al.* 2009); *Macrosiphoniella artemisiae* (Boyer de Fonscolombe) (Starý 1976; Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2011; Talebi *et al.* 2009); *Macrosiphoniella helichrysi* Remaudière (Starý *et al.* 2000; Rakhshani *et al.* 2011); *Macrosiphoniella oblonga* (Mordvilko) (Starý *et al.* 2000; Rakhshani *et al.* 2008a, 2011; Talebi *et al.* 2009); *Macrosiphoniella pulvera* (Walker) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2011); *Macrosiphoniella riedeli* Szelegiewicz (Mescheloff & Rosen 1990b; Rakhshani *et al.* 2011); *Macrosiphoniella tuberculata* (Nevsky) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2011; Mescheloff & Rosen 1990b – as *Macrosiphoniella* nr. *macrura* Hille Ris Lambers); *Macrosiphoniella* sp. (Starý *et al.* 2000; Rakhshani *et al.* 2011).

### Distribution in the Middle East and North Africa

Iran (Starý 1979; Starý *et al.* 2000; Talebi *et al.* 2009; Rakhshani *et al.* 2008a, 2011); Israel (Mescheloff & Rosen 1990b); Turkey (Starý 1976; Central part – Aslan *et al.* 2004; Uysal *et al.* 2004; Western part – Erdoğan *et al.* 2008).

### General distribution

Holarctic, Oriental.

*Aphidius arvensis* (Starý, 1960)

Figs 7, 79, 182, 278, 380, 516

### Host records

*Coloradoa achilleae* Hille Ris Lambers (Starý 1979; Starý *et al.* 2000; Talebi *et al.* 2009; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013).

### Distribution in the Middle East and North Africa

Iran (Starý 1979; Starý *et al.* 2000; Talebi *et al.* 2009; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013).

### General distribution

Eastern (Iran) and Western Palaearctic (Europe).

*Aphidius asteris* Haliday, 1834

Figs 80, 183, 279, 381, 477, 517

### Host records

*Macrosiphoniella* spp. (Rakhshani *et al.* 2011).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2011); Egypt (El-Ghiet *et al.* 2014).

**General distribution**

Holarctic, Oriental.

**Remarks**

Record of *Aphidius asteris* in association with alfalfa fields (El-Ghiet *et al.* 2014) can be a reason of migration from adjacent plants infested with *Macrosiphoniella* aphids/or a misidentification.

*Aphidius avenae* Haliday, 1834  
Figs 81, 184, 280, 382, 478, 518

**Material examined**

SAUDI ARABIA • 1♀; Abha; May 2013; on *Jacaranda mimosifolia* • 1♀ 1♂; Abha; May 2013; *Myzus persicae* (Sulzer) on *Lectuca virosa* • 1♀ 1♂; Abha; Jun. 2012; *Acyrtosiphon pisum* (Harris) on *Trifolium alexandrinum*; Z. Ahmad, leg. (DPPZ).

**Host records**

*Acyrtosiphon pisum* (Harris) (Tremblay *et al.* 1985; Laamari *et al.* 2011); *Aphis* sp. (Uysal *et al.* 2004); *Hyperomyzus lactucae* (L.) (Laamari *et al.* 2011); *Myzus persicae* (Sulzer) (Uysal *et al.* 2004); *Rhopalosiphum maidis* (Fitch) (Taheri & Rakhshani 2013).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011); Iran (Taheri & Rakhshani 2013); Lebanon (Tremblay *et al.* 1985); Morocco (Bleton & Fieuzet 1939); Turkey (Central part – Erdoğan *et al.* 2008; Western part – Uysal *et al.* 2004; Erdoğan *et al.* 2008; Akar & Erdoğan 2017 – as *Aphidius picipes* (Nees 1811)); Saudi Arabia (new record).

**General distribution**

Holarctic, Oriental.

*Aphidius banksae* Kittel, 2016  
Figs 82, 185, 281, 383, 479, 519

**Host records**

*Acyrtosiphon pisum* (Harris) (Chen *et al.* 1991).

**Distribution in the Middle East and North Africa**

Israel, Turkey – Eastern part (Chen *et al.* 1991).

**General distribution**

Western Palaearctic, Nearctic (imported to USA, not recovered again).

**Remarks**

All records of *Aphidius staryi* Chen & Luhman, 1991 (*in* Chen *et al.* 1991) refer to *Aphidius banksae* Kittel, 2016.



*Aphidius cingulatus* Ruthe, 1859  
Figs 8, 83, 186, 282, 384, 480, 520

**Host records**

*Pterocomma pilosum* Buckton (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2007b, 2008a, 2012b; Talebi *et al.* 2009); *Pterocomma populeum* (Kaltenbach) (Starý 1979; Rakhshani *et al.* 2007b, 2008a, 2012b); *Pterocomma* sp. (Starý *et al.* 2000); Lacking host data (Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**Distribution in the Middle East and North Africa**

Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2007b, 2008a); Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**General distribution**

Holarctic, Neotropical, Oriental.

*Aphidius colemani* Viereck, 1912  
Figs 84, 187, 283, 385, 481, 521

**Host records**

*Acyrtosiphon gossypii* Mordvilko (?), *Acyrtosiphon pisum* (Harris) (?) (Starý & Erdelen 1982); *Aphis aurantii* Boyer de Fonscolombe (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Tremblay *et al.* 1985; Yumruktepe & Uygun 1994; Uysal *et al.* 2004; Yoldaş *et al.* 2011); *Aphis chloris* Koch (Mescheloff & Rosen 1990b); *Aphis craccivora* Koch (Starý & Erdelen 1982; Mescheloff & Rosen 1990b; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Yoldaş *et al.* 2011; Ahmad & Bakr 2013; Satar *et al.* 2014); *Aphis epilobiaria* Theobald (Mescheloff & Rosen 1990b); *Aphis fabae* Scopoli (Abou-Fakhr 1982; Starý & Erdelen 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b – as *Aphis citricola* van der Goot; Laamari *et al.* 2012); *Aphis gossypii* Glover (Mescheloff & Rosen 1990b; Yoldaş *et al.* 2002, 2011; Uysal *et al.* 2004; Boukhris-Bouhachem 2011; Irshaid & Hasan 2011; Laamari *et al.* 2012; Satar *et al.* 2014; Ayadi *et al.* 2017); *Aphis hederæ* Kaltenbach, *Aphis illinoisensis* Shimer (El-Gantiry *et al.* 2012; Havelka *et al.* 2011); *Aphis intybi* Koch (Abou-Fakhr 1982; Mescheloff & Rosen 1990b; Abou-Fakhr & Kawar 1998; Laamari *et al.* 2012); *Aphis nerii* Boyer de Fonscolombe (Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Abou-Fakhr & Kawar 1998; Laamari *et al.* 2012); *Aphis nasturtii* Kaltenbach (Starý & Kaddou 1971; Starý 1976; Mescheloff & Rosen 1990b – as *Aphis zizyphi* Theobald); *Aphis pomi* De Geer (Laamari *et al.* 2011, 2012); *Aphis punicae* Passerini (Starý 1976; Al-Azawi 1970; Mescheloff & Rosen 1990b; Laamari *et al.* 2012); *Aphis solanella* Theobald (Ayadi *et al.* 2017); *Aphis umbrella* (Börner) (Mescheloff & Rosen 1990b); *Aphis verbasci* Schrank (Mescheloff & Rosen 1990b); *Aphis* sp. (Starý 1975, 1976); *Brachycaudus amygdalinus* (Schouteden) (Mescheloff & Rosen 1990b); *Brachycaudus cardui* (L.) (Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); *Brachycaudus helichrysi* (Kaltenbach) (Abou-Fakhr 1982; Starý & Erdelen 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Abou-Fakhr & Kawar 1998; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Satar *et al.* 2014); *Capitophorus elaeagni* (Del Guercio) (Mescheloff & Rosen 1990b); *Diuraphis noxia* (Kurdjumov) (Starý & Erdelen 1982; Starý *et al.* 2013); *Hayhurstia atriplicis* (L.) (Mescheloff & Rosen 1990b); *Hyadaphis foeniculi* (Passerini) (Mescheloff & Rosen 1990b); *Hyperomyzus lactucae* (L.) (?) (Güz & Kiliñer 2005); *Macrosiphum euphorbiae* (Thomas) (Mescheloff & Rosen 1990b); *Macrosiphum rosae* (L.) (?) (Mescheloff & Rosen 1990b); *Myzus persicae* (Sulzer) (Abou-Fakhr 1982; Starý & Erdelen 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Abou-Fakhr & Kawar 1998; Güz & Kiliñer 2005; Yoldaş *et al.* 2011; Laamari *et al.* 2012; Ahmad & Bakr 2013; Satar *et al.* 2014; Hasan 2016); *Ovatus mentharius* (van der Goot) (Güz & Kiliñer 2005); *Rhopalosiphum maidis* (Fitch) (Starý & Erdelen 1982; Ghanim & El-Adl 1983; Mescheloff & Rosen

1990b; El-Heneidy *et al.* 2001, 2002, 2004; Sobhy *et al.* 2004; Güz & Kiliñer 2005; Gadallah *et al.* 2017); *Rhopalosiphum nymphaeae* (L.) (Starý 1976); *Rhopalosiphum padi* (L.) (Ghanim & El-Adl 1983; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Abdel-Rahman *et al.* 2000; El-Heneidy *et al.* 2001, 2002, 2004; Sobhy *et al.* 2004; Abdel-Rahman 2005; Slman 2006; Gadallah *et al.* 2017); *Schizaphis graminum* (Rondani) (Starý & Erdelen 1982; Ghanim & El-Adl 1983; Mescheloff & Rosen 1990b; Abdel-Rahman *et al.* 2000; El-Heneidy *et al.* 2001, 2002, 2004; Sobhy *et al.* 2004; Abdel-Rahman 2005; Slman 2006); *Schizaphis rosazevedoi* Ilharco (Mescheloff & Rosen 1990b); *Sitobion avenae* (Fabricius) (Ghanim & El-Adl 1983; El-Heneidy *et al.* 2001, 2002; Sobhy *et al.* 2004; Gadallah *et al.* 2017); *Sitobion fragariae* (Walker) (Mescheloff & Rosen 1990b).

### Distribution in the Middle East and North Africa

Algeria (Starý 1975, 1976; Laamari *et al.* 2011, 2012); Egypt (Starý 1976; Ghanim & El-Adl 1983; Abdel-Rahman *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003, 2004; Sobhy *et al.* 2004; Abdel-Rahman 2005; Slman 2006; El-Gantiry *et al.* 2012; El-Ghiet *et al.* 2014; Gadallah *et al.* 2017); Iraq (Al-Azawi 1970; Starý & Kaddou 1971; Starý 1976); Israel (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1970, 1975, 1976; Mescheloff & Rosen 1990b); Jordan (Irshaid & Hasan 2011; Hasan 2016); Lebanon (Starý 1976; Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); Libya (Havelka *et al.* 2011; Tomanović *et al.* 2014); Morocco (Starý & Sekkat 1987); Palestine (Samara & Qubbaj 2012); Saudi Arabia (Ahmad & Bakr 2013); Syria (Starý 1975, 1976); Tunisia (Starý 1976; Ben Halima & Ben Hamouda 2005; Boukhris-Bouhachem 2011; Ayadi *et al.* 2017); Turkey (Starý 1976; Uysal *et al.* 2004; Eastern part – Tozlu *et al.* 2002; Ölmez & Ulusoy 2003; Central part – Yumruktepe & Uygün 1994; Güz & Kiliñer 2005; Satar *et al.* 2014; Western part – Yoldaş *et al.* 2002, 2011; Erdoğan *et al.* 2008; Akar & Erdoğan 2017); UAE (Starý *et al.* 2013); Yemen (Starý & Erdelen 1982; Starý *et al.* 2013).

### General distribution

Cosmopolitan.

### Remarks

All evidence from Iran (Starý 1979, Starý *et al.* 2000; Rakhshani *et al.* 2008a), refer to *Aphidius platensis* (Tomanović *et al.* 2014). Identification-revision of this species group is recommended. Description and illustration of *Aphidius colemani* in Mescheloff & Rosen 1990b, clearly represent the diagnostic characters of *Aphidius platensis*.

*Aphidius eadyi* Starý, González & Hall, 1980  
Figs 9, 85, 188, 285, 386, 482, 522

### Host records

*Acyrtosiphon pisum* (Harris) (González *et al.* 1978; Starý 1979; Starý *et al.* 1980, Starý & Sekkat 1987; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Rakhshani *et al.* 2006a, 2008a; Laamari *et al.* 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Chaouche & Laamari 2015).

### Distribution in the Middle East and North Africa

Algeria (Laamari *et al.* 2012; Chaouche & Laamari 2015); Iran (Starý 1979; Starý *et al.* 1980, 2000; Rakhshani *et al.* 2006a, 2008a; Nazari *et al.* 2012; Barahoei *et al.* 2013); Morocco (Starý & Sekkat 1987; Starý *et al.* 1980); Turkey (Central and Eastern parts – Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Western part – Erdoğan *et al.* 2008; Akar & Erdoğan 2017).

### General distribution

Eastern and Western Palaearctic, Nearctic (imported), Oceanic.

*Aphidius eglanteriae* Haliday, 1834

Figs 86, 189, 284, 387, 523

### Host records

*Chaetosiphon tetrarhodum* (Walker) (Barjadze *et al.* 2010).

### Distribution in the Middle East and North Africa

Turkey (Western part – Barjadze *et al.* 2010).

### General distribution

Western Palaearctic (Europe).

*Aphidius ervi* Haliday, 1834

Figs 10, 87, 190, 286, 388, 483, 524

### Host records

*Acyrtosiphon gossypii* Mordvilko (Laamari *et al.* 2011, 2012; Barahoei *et al.* 2013); *Acyrtosiphon ilka* Mordvilko (as *Acyrtosiphon bidentis* Eastop – Starý 1976); *Acyrtosiphon kondoi* Shinji (González *et al.* 1978; Starý *et al.* 2000; Rakhshani *et al.* 2006a, 2008a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Acyrtosiphon lactucae* (Passerini) (Zeren & Düzgüneş 1983; Uysal *et al.* 2004); *Acyrtosiphon pisum* (Harris) (Bodenheimer & Swirski 1957; Eady 1969; Avidov & Harpaz 1969; Starý 1976; Starý & González 1978; González *et al.* 1978; Monajemi & Esmaili 1981; Tremblay *et al.* 1985; Talebi *et al.* 2009; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Barahoei *et al.* 2013; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Rasulian 1989; Starý & Sekkat 1987; Mescheloff & Rosen 1990b; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2006a, 2008a, 2008b; Laamari *et al.* 2011, 2012; Rakhshani *et al.* 2012b; Chaouche & Laamari 2015); *Aphis craccivora* Koch (Zeren & Düzgüneş 1983; Laamari *et al.* 2011; Chaouche & Laamari 2015); *Aphis fabae* Scopoli (Zeren & Düzgüneş 1983; Uysal *et al.* 2004; Laamari *et al.* 2011); *Capitophorus elaeagni* (Del Guercio); *Dysaphis foeniculus* (Theobald) (Ayadi *et al.* 2017); *Dysaphis* spp., *Hyperomyzus lactucae* (L.) (Laamari *et al.* 2011, 2012); *Lipaphis pseudobrassicae* (Davis) (Chaouche & Laamari 2015); *Macrosiphum euphorbiae* (Thomas) (Starý 1976; Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Zeren & Düzgüneş 1983; Ben Halima & Ben Hamouda 1993; Abou-Fakhr & Kawar 1998; Uysal *et al.* 2004; Rakhshani *et al.* 2008a; Laamari *et al.* 2011, 2012); *Metopolophium dirhodum* (Walker) (Starý & Sekkat 1987; Elmali & Toros 1994; Gülçlü & Özbek 2002; Uysal *et al.* 2004); *Microlophium carnosum* (Buckton) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009); *Myzus persicae* (Sulzer) (Starý 1976; Zeren & Düzgüneş 1983; Starý & Sekkat 1987; Ben Halima & Ben Hamouda 1993; Uysal *et al.* 2004; Rakhshani *et al.* 2008a; Laamari *et al.* 2012; Barahoei *et al.* 2013; Chaouche & Laamari 2015); *Rhopalosiphum padi* (L.) (Laamari *et al.* 2011; Taheri & Rakhshani 2013; Gadallah *et al.* 2017); *Schizaphis graminum* (Rondani) (Starý & Sekkat 1987); *Sitobion avenae* (Fabricius) (Elmali & Toros 1994; Darvish-Mojeni & Bayat-Asadi 1995; Uysal *et al.* 2004; Rakhshani *et al.* 2008a; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2013; Ayadi *et al.* 2017; Gadallah *et al.* 2017); *Sitobion fragariae* (Walker) (Laamari *et al.* 2011, 2012); *Uroleucon aeneum* (Hille Ris Lambers) (?); *Uroleucon sonchi* (L.) (?) (Laamari *et al.* 2011); *Wahlgreniella nervata* (Gillette) (Barahoei *et al.* 2013).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Egypt (Gadallah *et al.* 2017); Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2006a, 2008a, 2008b, 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); Iraq (Al-Azawi 1970; Starý 1976); Israel (Bodenheimer & Swirski 1957; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1990b); Lebanon (Mackauer & Starý 1967; Starý 1976; Marsh 1977; Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); Morocco (Mimeur 1934; Eady 1969; Starý 1976; Starý & Sekkat 1987; González *et al.* 1978); Palestine (Samara & Qubbaj 2012); Tunisia (Ben Halima & Ben Hamouda 1993; Ayadi *et al.* 2017); Turkey (Eastern part – Elmalı & Toros 1994; Gülçlü & Özbek 2002; Central part – Zeren & Düzgüneş 1983; Uysal *et al.* 2004; Erdoğan *et al.* 2008; Western part – Akar & Erdoğan 2017); UAE (Starý *et al.* 2013); Yemen (Starý *et al.* 2013).

### General distribution

Cosmopolitan.

*Aphidius funebris* Mackauer, 1961  
Figs 11, 88, 191, 287, 389, 484, 525

### Host records

*Aphis fabae* Scopoli (?) (Chaouche & Laamari 2015); *Brachycaudus cardui* (L.) (?) (Güz & Kiliñer 2005; Laamari *et al.* 2011, 2012); *Hyperomyzus lactucae* (L.) (?) (Laamari *et al.* 2011); *Uroleucon acroptilidis* Kadyrbekov, Renxin & Shao (Barahoei *et al.* 2013); *Uroleucon aeneum* (Hille Ris Lambers) (Güz & Kiliñer 2005; Laamari *et al.* 2011, 2012); *Uroleucon chondrillae* (Nevsky) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2008a); *Uroleucon cichorii* (Koch) (Rakhshani *et al.* 2008a); *Uroleucon compositae* (Theobald) (Laamari *et al.* 2012; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Uroleucon erigeronense* (Thomas) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009); *Uroleucon jaceae* (L.) (Al-Azawi 1970; Starý & Kaddou 1971; Starý 1976; Güz & Kiliñer 2005; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Uroleucon sonchi* (L.) (Al-Azawi 1970; Starý & Kaddou 1971; Starý 1976; Düzgüneş *et al.* 1982; Starý & Sekkat 1987; Uysal *et al.* 2004; Güz & Kiliñer 2005; Rakhshani *et al.* 2008a; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013; Chaouche & Laamari 2015; Ayadi *et al.* 2017); *Uroleucon* sp. (Starý 1976; Aslan *et al.* 2004; Uysal *et al.* 2004; Barahoei *et al.* 2012, 2013).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2008a; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Taheri & Rakhshani 2013); Iraq (Al-Azawi 1970; Starý & Kaddou 1971; Starý 1976); Morocco (Starý & Sekkat 1987); Turkey (Central part – Düzgüneş *et al.* 1982; Aslan *et al.* 2004; Güz & Kiliñer 2005; Eastern part – Uysal *et al.* 2004; Western part – Erdoğan *et al.* 2008; Akar & Erdoğan 2017).

### General distribution

Eastern and Western Palaearctic, Oceanic, Oriental.

*Aphidius hieraciorum* Starý, 1962  
Figs 89, 192, 288, 390, 526

### Host records

*Nasonovia ribisnigri* (Mosley) (Nazari *et al.* 2012); *Nasonovia* sp. (Mossadegh *et al.* 2011).



### Distribution in the Middle East and North Africa

Iran (Mossadegh *et al.* 2011; Nazari *et al.* 2012).

### General distribution

Eastern and Western Palaearctic.

*Aphidius iranicus* Rakhshani & Starý, 2007  
Figs 90, 193, 289, 391, 527

### Host records

*Titanosiphon neoartemisiae* (Takahashi) (Tomanović *et al.* 2007; Talebi *et al.* 2009 – as *Titanosiphon bellicosum* Nevesky).

### Distribution in the Middle East and North Africa

Iran (Tomanović *et al.* 2007; Talebi *et al.* 2009).

### General distribution

This species has not been recorded outside Iran.

*Aphidius matricariae* Haliday, 1834  
Figs 12, 91, 194, 290, 392, 485, 528

### Material examined

SAUDI ARABIA • 1 ♂; Abha-Mahala College campus; Nov. 2012; on *Chrysanthemum* sp. • 1 ♀, 1 ♂; Abha-Mahala College campus; Apr. 2013; on *Dodonea viscosa* • 1 ♀, 3 ♂♂; Abha; May 2013; on *Dodonea viscosa* • 2 ♀♀; Abha; 28 Nov. 2012; Agricultural field; on *Lablab purpureus* • 7 ♀♀, 1 ♂; Abha; Nov. 2012; on *Lablab purpureus* • 1 ♀, 6 ♂♂; Abha-Mahala College campus; Nov. 2012; on *Lactuca virosa* • 28 ♀♀, 23 ♂♂; Abha-Mazra; May 2013; *Aphis punicae* Passerini on *Punica granatum* • 3 ♂♂; Abha-Mahala College campus; Nov. 2012; on *Setaria glauca* • 1 ♂; Abha-Mahala College campus; Dec. 2012; on *Solanum nigrum* • 4 ♀♀, 2 ♂♂; Abha-Mahala College campus; Apr. 2013; on *Solanum nigrum* • 1 ♂; Abha-Mahala College campus; Nov. 2012; on *Sonchus oleraceus*; Z. Ahmed leg. (DPPZ).

### Host records

*Acyrtosiphon gossypii* Mordvilko (?) (Chaouche & Laamari 2015); *Amegosiphon platicaudum* (Narzikulov) (Nazari *et al.* 2012); *Aphis affinis* Del Guercio (Starý & Kaddou 1971; Starý 1976; Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Aphis aurantii* Boyer de Fonscolombe (Hussein & Kawar 1984; Tremblay *et al.* 1985; Ben Halima *et al.* 1994; Uysal *et al.* 2004; Ben Halima & Ben Hamouda 2005; Boukhris-Bouhachem 2011); *Aphis craccivora* Koch (Starý & Kaddou 1971; Starý 1976; Mescheloff & Rosen 1990b; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Abdel-Samad & Ahmed 2009; Mossadegh *et al.* 2011; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013; Chaouche & Laamari 2015); *Aphis crepidis* (Börner) (Starý *et al.* 2000); *Aphis dlabolai* Holman (Barahoei *et al.* 2013); *Aphis euphorbiae* Kaltenbach (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Barahoei *et al.* 2013); *Aphis fabae* Scopoli (Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Ben Halima & Ben Hamouda 1993; Abou-Fakhr & Kawar 1998; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013; Ayadi *et al.* 2017); *Aphis gossypii* Glover (Starý 1979; Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Ben



Halima & Ben Hamouda 1993; Ben Halima *et al.* 1994; Starý *et al.* 2000; Ben Halima & Ben Hamouda 2005; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Boukhris-Bouhachem 2011; Mossadegh *et al.* 2011; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Ahmad & Bakr 2013; Barahoei *et al.* 2013; Satar *et al.* 2014; Ayadi *et al.* 2017); *Aphis hederæ* Kalténbach (Mescheloff & Rosen 1990b); *Aphis illinoisensis* Shimer (Barjadze *et al.* 2010; Havelka *et al.* 2011); *Aphis intybi* Koch (Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis nasturtii* Kalténbach (Starý 1976; Mescheloff & Rosen 1990b – as *Aphis zizyphi* Theobald; Nazari *et al.* 2012); *Aphis nerii* Boyer de Fonscolombe (Abou-Fakhr 1982; Tremblay *et al.* 1985; Ben Halima *et al.* 1994; Abou-Fakhr & Kawar 1998; Ben Halima & Ben Hamouda 2005; Laamari *et al.* 2012); *Aphis parietariae* Theobald (Starý & Kaddou 1971; Starý 1976); *Aphis plantaginis* Goeze (Barahoei *et al.* 2013); *Aphis pomi* De Geer (Ölmez & Ulusoy 2003; Rakhshani *et al.* 2008a; Rakhshani 2012; Barahoei *et al.* 2013); *Aphis punicae* Passerini (Laamari *et al.* 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Aphis solanella* Theobald (Barahoei *et al.* 2013); *Aphis spiraecola* Patch (Laamari *et al.* 2012; Rakhshani 2012); *Aphis umbrella* (Börner) (Schlinger & Mackauer 1963; Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990b; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012); *Aulacorthum solani* (Kalténbach) (Hussein & Kawar 1984); *Brachycaudus amygdalinus* (Schouteden) (Mescheloff & Rosen 1990b; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Rakhshani 2012); *Brachycaudus cardui* (L.) (Ölmez & Ulusoy 2003; Rakhshani *et al.* 2008a; Laamari *et al.* 2011, 2012; Rakhshani 2012); *Brachycaudus divaricatae* Shaposhnikov (Jafari *et al.* 2011; Jafari & Modarres Awal 2012); *Brachycaudus helichrysi* (Kalténbach) (Starý 1976; Erkin 1983; Mescheloff & Rosen 1990b; Mokhtari *et al.* 2000; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2012b; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Rakhshani 2012; Jafari *et al.* 2011; Laamari *et al.* 2011, 2012; Jafari & Modarres Awal 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Satar *et al.* 2014; Chaouche & Laamari 2015); *Brachycaudus persicae* (Passerini) (Rakhshani 2012); *Brachycaudus tragopogonis* (Kalténbach) (Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2008a; Talebi *et al.* 2009); *Brevicoryne brassicae* (L.) (?) (Chaouche & Laamari 2015); *Capitophorus elaeagni* (Del Guercio) (Mescheloff & Rosen 1990b; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); *Capitophorus inulae* (Passerini) (Mescheloff & Rosen 1990b); *Diuraphis noxia* (Kurdjumov) (González *et al.* 1992; Zareh *et al.* 1995; Starý *et al.* 2000; Uysal *et al.* 2004; Laamari *et al.* 2011, 2012, 2016); *Dysaphis crataegi* (Kalténbach) (Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); *Dysaphis devecta* (Walker) (Starý *et al.* 2000; Aslan & Karaca 2005); *Dysaphis foeniculus* (Theobald) (Chaouche & Laamari 2015); *Dysaphis lappae* (Koch) (Laamari *et al.* 2011, 2012); *Dysaphis plantaginea* (Passerini) (Radjabi 1989; Mescheloff & Rosen 1990b – as *Myzus mali* Ferrari; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Aslan & Karaca 2005; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Rakhshani 2012); *Dysaphis pyri* (Boyer de Fonscolombe) (Erkin 1983; Radjabi 1989; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Laamari *et al.* 2012); *Eucarazzia elegans* (Ferrari) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2013); *Hyalopterus amygdali* (Blanchard) (?) (Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Nazari *et al.* 2012); *Hyalopterus pruni* (Geoffroy) (?) (Erkin 1983; Mokhtari *et al.* 2000; Starý *et al.* 2000; Uysal *et al.* 2004; Laamari *et al.* 2011, 2012); *Hyperomyzus lactucae* (L.) (?) (Laamari *et al.* 2011; Mossadegh *et al.* 2011; Chaouche & Laamari 2015); *Lipaphis erysimi* (Kalténbach) (Mossadegh *et al.* 2011); *Lipaphis lepidii* (Nevsky) (Starý 1979; Starý *et al.* 2000; Mossadegh *et al.* 2011); *Lipaphis pseudobrassicae* (Davis) (Barahoei *et al.* 2013; Chaouche & Laamari 2015); *Macrosiphum euphorbiae* (Thomas) (Yoldaş *et al.* 1990; Mescheloff & Rosen 1990b; Ben Halima & Ben Hamouda 1993; Uysal *et al.* 2004); *Macrosiphum rosae* (L.) (Ben Halima & Ben Hamouda 1993; Laamari *et al.* 2011); *Metopolophium dirhodum* (Walker) (Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Myzus ascalonicus* Doncaster (Barahoei *et al.* 2013); *Myzus beybienkoi* (Narzykulov) (Starý *et al.* 2000); *Myzus cerasi* (Fabricius) (Erkin 1983; Mokhtari *et al.* 2000; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2008a; Rakhshani 2012); *Myzus certus* (Walker)

(Barahoei *et al.* 2013); *Myzus ornatus* Laing (Staráy *et al.* 2000); *Myzus persicae* (Sulzer) (Schlinger & Mackauer 1963; Rosen 1967, 1969; Avidov & Kotter 1966; Avidov & Harpaz 1969; Starý & Kaddou 1971; Starý 1976, 1979; Abou-Fakhr 1982; Erkin 1983; Tremblay *et al.* 1985; Karaat & Goven 1986; Radjabi 1989; Mescheloff & Rosen 1990b; Ben Halima & Ben Hamouda 1993; Ben Halima *et al.* 1994; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Ben Halima & Ben Hamouda 2005; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Boukhris-Bouhachem 2011; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani 2012; Taheri & Rakhshani 2013; Chaouche & Laamari 2015; Ayadi *et al.* 2017); *Nasonovia ribisnigri* (Mosley) (?) (Laamari *et al.* 2011, 2012); *Ovatus insitus* (Walker) (Rakhshani *et al.* 2008a; Rakhshani 2012); *Phorodon humuli* (Schrank) (Schlinger & Mackauer 1963; Starý *et al.* 2000); *Rhopalomyzus* sp. (Staráy 1979); *Rhopalosiphum maidis* (Fitch) (Ibrahim 1990a, 1990b; Mescheloff & Rosen 1990b; Ibrahim & Afifi 1991; El-Heneidy 1994; Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003; Abdel-Rahman 2005; Slman 2006; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Chaouche & Laamari 2015; Ayadi *et al.* 2017); *Rhopalosiphum nymphaeae* (L.) (Mokhtari *et al.* 2000; Starý *et al.* 2000); *Rhopalosiphum padi* (L.) (Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Ibrahim 1990b; Mescheloff & Rosen 1990b; El-Heneidy 1994, Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; El-Heneidy *et al.* 2001, 2002, 2003; Abdel-Rahman 2005; Slman 2006; Rakhshani *et al.* 2008a, 2008b; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013; Chaouche & Laamari 2015; Gadallah *et al.* 2017); *Schizaphis graminum* (Rondani) (Mescheloff & Rosen 1990b; El-Heneidy 1994; Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003; Abdel-Rahman 2005; Slman 2006; Rakhshani *et al.* 2008a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Schizaphis rosazevedoi* Ilharco (Mescheloff & Rosen 1990b); *Sitobion avenae* (Fabricius) (Mescheloff & Rosen 1990b; El-Heneidy 1994; Starý *et al.* 2000; El-Heneidy *et al.* 2001, 2002, 2003; Slman 2006; Rakhshani *et al.* 2008a, 2008b; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Barahoei *et al.* 2013; Gadallah *et al.* 2017); *Sitobion fragariae* (Walker) (Mescheloff & Rosen 1990b; Barahoei *et al.* 2013); *Uroleucon compositae* (Theobald) (?) (Laamari *et al.* 2011); *Uroleucon sonchi* (L.) (?) (Mescheloff & Rosen 1990b); *Wahlgreniella nervata* (Gillette) (Barahoei *et al.* 2013).

#### **Distribution in the Middle East and North Africa**

Algeria (Staráy 1976; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Egypt (Ibrahim 1990a, 1990b; El-Heneidy 1994; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003, 2004; Abdel-Rahman 2005; Abdel-Samad & Ahmed 2009; El-Ghiet *et al.* 2014; Gadallah *et al.* 2017); Iran (Staráy 1979; Starý *et al.* 2000; Rakhshani *et al.* 2008a, 2008b; Rakhshani *et al.* 2012b; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2012, 2013; Taheri & Rakhshani 2013); Iraq (Staráy & Kaddou 1971; Starý 1976); Israel (Schlinger & Mackauer 1963; Rosen 1967, 1969; Avidov & Kotter 1966; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1990b); Lebanon (Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); Saudi Arabia (Ahmad & Bakr 2013); Tunisia (Ben Halima & Ben Hamouda 1993; Ben Halima *et al.* 1994; Ben Halima & Ben Hamouda 2005; Boukhris-Bouhachem 2011; Ayadi *et al.* 2017); Turkey (Staráy 1976; Uysal *et al.* 2004; Eastern part – Karaat & Goven 1986; Ölmez & Ulusoy 2003; Central part – Aslan *et al.* 2004; Satar *et al.* 2014; Western part – Erkin 1983; Aslan & Karaca 2005; Erdoğan *et al.* 2008; Barjadze *et al.* 2010; Havelka *et al.* 2011; Akar & Erdoğan 2017); UAE (Staráy *et al.* 2013); Yemen (Staráy *et al.* 2013).

#### **General distribution**

Cosmopolitan.

*Aphidius microlophii* Pennachio & Tremblay, 1987  
Figs 92, 195, 291, 393, 486, 529

**Host records**

Lacking host data (Akar & Erdoğan 2017).

**Distribution in the Middle East and North Africa**

Turkey (Western part – Akar & Erdoğan 2017).

**General distribution**

Western Palaearctic (Europe).

*Aphidius myzocallidis* Mescheloff & Rosen, 1990  
Figs 93, 196, 292, 530

**Host records**

*Myzocallis glandulosa* Hille Ris Lambers (Mescheloff & Rosen 1990b).

**Distribution in the Middle East and North Africa**

Israel (Mescheloff & Rosen 1990b).

**General distribution**

This species has not been recorded outside Israel.

*Aphidius persicus* Rakhshani & Starý, 2006  
Figs 13, 94, 197, 293, 394, 487, 531

**Host records**

*Macrosiphoniella* sp., *Uroleucon bielawskii* (Szelegiewicz), *Uroleucon carthami* (Hille Ris Lambers) (Barahoei *et al.* 2013); *Uroleucon chondrillae* (Nevsky); (Rakhshani *et al.* 2006b, 2008a, 2011; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Barahoei *et al.* 2013); *Uroleucon compositae* (Theobald); *Uroleucon ochropus* (Hille Ris Lambers), (Barahoei *et al.* 2013); *Uroleucon sonchi* (L.) (Rakhshani *et al.* 2008a; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013); *Uroleucon* spp. (Rakhshani *et al.* 2012b; Barahoei *et al.* 2012, 2013).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2006b, 2008a, 2012b; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012, Taheri & Rakhshani 2013); Iraq (Rakhshani *et al.* 2006b).

**General distribution**

Western Asia.

*Aphidius platensis* Brèthes, 1913  
Figs 14, 95, 198, 294, 395, 488, 532

**Material examined**

SAUDI ARABIA • 1 ♀, 1 ♂; Abha-KKU campus; May 2012; *Aphis gossypii* Glover on *Aster squamatus* • 1 ♀; Raidah; Apr. 2011; net sweeping • 7 ♀♀, 4 ♂♂; Abha; May 2013; on *Hibiscus rosa-sinensis* • 1

♀, 1 ♂; Abha; May 2013; on *Lablab purpureus* • 2 ♀♀; Abha-Mahala College campus; Dec. 2012; on *Setaria glauca* • 1 ♀; Abha-Mahala College campus; Apr. 2013; *Aphis solanella* Theobald on *Solanum nigrum* • 13 ♀♀, 8 ♂♂; Abha; Jun. 2012; on *Trifolium alexandrinum* • 7 ♀♀, 4 ♂♂; Abha-Mahala College campus; 6 Mar. 2013; on *Trigonella* sp.; Z. Ahmad leg. (DPPZ).

### Host records

*Amegosiphon platicaudum* (Narzikulov) (Nazari *et al.* 2012); *Aphis acetosae* L. and *Aphis affinis* del Guercio (Barahoei *et al.* 2013); *Aphis craccivora* Koch (Rakhshani *et al.* 2005a, 2006a, 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis fabae* Scopoli (Rakhshani *et al.* 2008a, 2012b; Talebi *et al.* 2009; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis gossypii* Glover (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Nazari *et al.* 2012; Current study), *Aphis intybi* Koch (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis nerii* Boyer de Fonscolombe (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis plantaginis* Goeze (Barahoei *et al.* 2013); *Aphis punicae* Passerini (Rakhshani *et al.* 2008a, 2012b; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis solanella* Theobald (Barahoei *et al.* 2013; Current study); *Aphis rumicis* L. (Rakhshani *et al.* 2012b); *Aphis umbrella* (Börner) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Nazari *et al.* 2012); *Brachycaudus amygdalinus* (Schouteden) (Rakhshani 2012; Barahoei *et al.* 2013); *Brachycaudus cardui* (L.) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Brachycaudus helichrysi* (Kaltenbach) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2013); *Brachycaudus tragopogonis* (Kaltenbach) (Barahoei *et al.* 2013); *Capitophorus elaeagni* (Del Guercio) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009); *Diuraphis noxia* (Kurdjumov) (Stary *et al.* 2000); *Dysaphis pulverina* ssp. *iranica* Stroyan, *Dysaphis radicola* (Mordvilko) (Barahoei *et al.* 2013); *Hayhurstia atriplicis* (L.) (Rakhshani *et al.* 2012b); *Hyalopterus amygdali* (Blanchard) (Taheri & Rakhshani 2013); *Macrosiphum euphorbiae* (Thomas) (Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Macrosiphum rosae* (L.) (?) (Taheri & Rakhshani 2013); *Metopolophium dirhodum* (Walker) (Barahoei *et al.* 2013); *Myzus persicae* (Sulzer) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Rakhshani 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Phorodon humuli* (Schrank) (Rakhshani *et al.* 2008a; Rakhshani 2012); *Rhopalosiphum maidis* (Fitch) (Barahoei *et al.* 2013); *Rhopalosiphum padi* (L.) (Rakhshani *et al.* 2008a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Schizaphis graminum* (Rondani) (Stary *et al.* 2000; Rakhshani *et al.* 2008a, 2008b; Barahoei *et al.* 2013); *Sitobion avenae* (F.) (Stary *et al.* 2000; Rakhshani *et al.* 2008a, 2008b; Barahoei *et al.* 2013).

### Distribution in the Middle East and North Africa

Iran (Stary *et al.* 2000; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Rakhshani *et al.* 2005a, 2006a, 2008a; 2008b, 2012b; Rakhshani 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); Saudi Arabia (new record).

### General distribution

Eastern Palaearctic (Middle East), Neotropical (Chile), Oriental.

### Remarks

Based on molecular and morphological studies, this species was separated from *Aphidius colemani* (Tomanović *et al.* 2014). All host records of *Aphidius colemani* Viereck, 1912 in Iran (Barahoei *et al.* 2014; Farahani *et al.* 2016) referring to *Aphidius platensis*. Other records of *Aphidius colemani* from the Western Asia and records of *Aphidius transcaspicus* Telenga from the aphids other than *Hyalopterus* spp. most probably refer to *Aphidius platensis*.



*Aphidius popovi* Starý, 1978  
Figs 15, 96, 199, 295, 396, 489, 533

**Host records**

*Amphorophora catharinae* (Nevsky) (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Nazari *et al.* 2012; Rakhshani *et al.* 2012b; Barahoei *et al.* 2013); *Metopolophium dirhodum* (Walker) (Barahoei *et al.* 2012, 2013).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2012; Nazari *et al.* 2012; Rakhshani *et al.* 2012b; Barahoei *et al.* 2013).

**General distribution**

Eastern Palaearctic (Central and Western Asia).

*Aphidius rhopalosiphi* De Stefani-Perez, 1902  
Figs 16, 97, 200, 296, 397, 490, 534

**Host records**

*Diuraphis noxia* (Kurdjumov) (Starý *et al.* 2000; Uysal *et al.* 2004; Laamari *et al.* 2011, 2012, 2016); *Metopolophium dirhodum* (Walker) (Rakhshani *et al.* 2008a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Rhopalosiphum maidis* (Fitch) (Ghanim & El-Adl 1983; El-Serafy 1999; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Gadallah *et al.* 2017); *Rhopalosiphum padi* (L.) (Ghanim & El-Adl 1983; El-Serafy 1999; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2008b; Laamari *et al.* 2011; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013; Chaouche & Laamari 2015); *Schizaphis graminum* (Rondani) (Ghanim & El-Adl 1983; El-Serafy 1999; Rakhshani *et al.* 2008a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Sitobion avenae* (Fabricius) (Ghanim & El-Adl 1983; Darvish-Mojeni 1994; El-Serafy 1999; Starý *et al.* 2000; Rakhshani *et al.* 2008a, 2008b; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Barahoei *et al.* 2013; Gadallah *et al.* 2017)

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Egypt (Ghanim & El-Adl 1983; El-Serafy 1999; Gadallah *et al.* 2017); Iran (Darvish-Mojeni 1994; Starý *et al.* 2000; Rakhshani *et al.* 2008a, 2008b; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); Israel (Starý 1981b); Turkey (Central part – Uysal *et al.* 2004).

**General distribution**

Holarctic, Neotropical, Oceanic, Oriental.

*Aphidius ribis* Haliday, 1834  
Figs 98, 201, 297, 398, 535

**Host records**

*Cryptomyzus ribis* (L.) (Düzgüneş *et al.* 1982; Alaoğlu 1994; Uysal *et al.* 2004); *Myzus persicae* (Sulzer) (?) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**Distribution in the Middle East and North Africa**

Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Eastern part – Alaoğlu 1994).



### General distribution

Holarctic, Oriental.

*Aphidius rosae* Haliday, 1833  
Figs 17, 99, 202, 298, 399, 491, 536

### Host records

*Macrosiphum rosae* (L.) (Starý & Kaddou 1971; Starý 1976; Ben Halima & Ben Hamouda 1993; Uysal *et al.* 2004; Mehrparvar *et al.* 2005; Rakhshani *et al.* 2008a; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Sitobion fragariae* (Walker) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Uroleucon* sp. (?) (Mescheloff & Rosen 1990b).

### Distribution in the Middle East and North Africa

Iran (Mehrparvar *et al.* 2005; Rakhshani *et al.* 2008a; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Barahoei *et al.* 2013); Iraq (Starý & Kaddou 1971; Starý 1976); Israel (Mescheloff & Rosen 1990b); Tunisia (Ben Halima & Ben Hamouda 1993); Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Western part – Akar & Erdoğan 2017).

### General distribution

Holarctic, Neotropical, Oceanic, Oriental.

*Aphidius salicis* Haliday, 1834  
Figs 18, 100, 203, 299, 400, 492, 537

### Host records

*Cavariella aegopodii* (Scopoli) (Starý 1979; Düzgüneş *et al.* 1982; Mescheloff & Rosen 1990b; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2007b, 2008a; Talebi *et al.* 2009; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Cavariella aquatica* (Gillette & Bragg) (Starý 1979; Starý *et al.* 2000); *Cavariella aspidaphoides* Hille Ris Lambers (Starý 1979; Starý *et al.* 2000); *Cavariella theobaldi* (Gillette & Bragg) (Starý 1979; Düzgüneş *et al.* 1982; Starý *et al.* 2000; Uysal *et al.* 2004); *Hyadaphis foeniculi* (Passerini) (Talebi *et al.* 2009).

### Distribution in the Middle East and North Africa

Iran (Starý *et al.* 2000; Rakhshani *et al.* 2007b, 2008a; Talebi *et al.* 2009); Israel (Mescheloff & Rosen 1990b); Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

### General distribution

Australasian, Holarctic, Neotropical, Oceanic, Oriental.

*Aphidius setiger* (Mackauer, 1961)  
Figs 19, 101, 204, 300, 401, 493, 538

### Host records

*Periphyllus testudinaceus* (Ferne) (Rakhshani *et al.* 2008a); *Periphyllus* sp. (Starý 1979; Starý *et al.* 2000; Nazari *et al.* 2012).

### Distribution in the Middle East and North Africa

Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2008a; Nazari *et al.* 2012).

**General distribution**

Afrotropical, Holarctic, Oriental.

*Aphidius smithi* Sharma & Subba Rao, 1959

Figs 20, 102, 205, 301, 402, 494, 539

**Host records**

*Acyrtosiphon kondoi* Shinji (González *et al.* 1978; Starý *et al.* 2000; Rakhshani *et al.* 2006a); *Acyrtosiphon pisum* (Harris) (González *et al.* 1978; Starý 1979; Mescheloff & Rosen 1990b; Starý *et al.* 2000; Rakhshani *et al.* 2006a, 2008a, 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Nearctaphis bakeri* (Cowen) (Barahoei *et al.* 2013); *Sitobion avenae* (F.) (?) (Rakhshani *et al.* 2008a).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011); Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2006a, 2008a, 2012b; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012); Iraq (Al-Azawi 1970); Israel (Mescheloff & Rosen 1990b); Turkey (Western part – Akar & Erdoğan 2017).

**General distribution**

Australasian, Holarctic, Neotropical, Oceanic, Oriental.

*Aphidius sonchi* Marshall, 1896

Figs 103, 206, 302, 403, 540

**Host records**

*Hyperomyzus lactucae* (L.) (Laamari *et al.* 2012; Ayadi *et al.* 2017)

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2012); Egypt (Hassan 1957; Starý 1976); Israel (Bodenheimer & Swirski 1957; Starý 1976); Tunisia (Ayadi *et al.* 2017).

**General distribution**

Australasian, Eastern and Western Palaeartic, Oceanic, Oriental.

*Aphidius stigmaticus* Rakhshani & Tomanović, 2011

Figs 21, 104, 207, 303, 404, 495, 541

**Host records**

*Macrosiphoniella tanacetaria* (Kaltenbach) (Rakhshani *et al.* 2011).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2011).

**General distribution**

This species has not been reported outside Iran.

*Aphidius transcaspicus* Telenga, 1958  
Figs 22, 105, 208, 304, 405, 496, 542

**Material examined**

SAUDI ARABIA • 9 ♀♀, 1 ♂; Abha; May 2013; *Hyalopterus pruni* (Geoffroy) on *Prunus armeniaca*; Z. Ahmed leg. (DPPZ).

**Host records**

*Aphis nasturtii* Kalténbach (?) (Starý & Kaddou 1971 – as *Aphis zizyphi* Theobald); *Brachycaudus amygdalinus* (Schouteden) (?) (Mescheloff & Rosen 1990b); *Hyalopterus amygdali* (Blanchard) (Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2008a; Mossadegh *et al.* 2011; Rakhshani 2012; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Hyalopterus pruni* (Geoffroy) (Starý & Kaddou 1971; Erkin 1983; Mescheloff & Rosen 1990b – as *Aphidius magdae* n.sp.; Mokhtari *et al.* 2000; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Uysal *et al.* 2004; Lozier *et al.* 2008; Rakhshani *et al.* 2008a, 2012b; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Rakhshani 2012; Tomanović *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013; Ayadi *et al.* 2017); *Melanaphis donacis* (Passerini) (Starý & Kaddou 1971; Mescheloff & Rosen 1990b; Barahoei *et al.* 2014).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011, 2012); Iran (Starý *et al.* 2000; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Rakhshani *et al.* 2008a, 2012b; Rakhshani 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); Egypt (Lozier *et al.* 2008); Iraq (Al-Rawy *et al.* 1969; Starý 1969a, 1969c; Starý & Kaddou 1971); Israel (Mescheloff & Rosen 1990b; Lozier *et al.* 2008); Morocco (Lozier *et al.* 2008); Tunisia (Lozier *et al.* 2008; Ben Halima *et al.* 2013; Ayadi *et al.* 2017); Turkey (Uysal *et al.* 2004; Eastern part – Ölmez & Ulusoy 2003; Lozier *et al.* 2008; Western part – Aslan *et al.* 2004; Erkin 1983; Erdoğan *et al.* 2008).

**General distribution**

Eastern and Western Palaearctic, Nearctic (imported), Oriental.

*Aphidius uroleuci* Mescheloff & Rosen, 1990  
Figs 106, 209, 305, 406, 497, 543

**Host records**

*Uroleucon carthami* (Hille Ris Lambers), *Uroleucon inulae* (Ferrari), *Uroleucon jaceae* (L.), *Uroleucon sonchi* (L.) (Mescheloff & Rosen 1990b).

**Distribution in the Middle East and North Africa**

Israel (Mescheloff & Rosen 1990b).

**General distribution**

This species has not been recorded outside Israel.

*Aphidius urticae* Haliday, 1834  
Figs 23, 107, 210, 306, 407, 498, 544

**Host records**

*Acyrtosiphon gossypii* Mordvilko (Barahoei *et al.* 2013); *Acyrtosiphon pisum* (Harris) (Mescheloff & Rosen 1990b; Rakhshani *et al.* 2008a); *Acyrtosiphon* sp. (Starý & González 1978); *Macrosiphum*

*euphorbiae* (Thomas) (Starý 1976); *Microlophium carnosum* (Buckton) (Starý *et al.* 2000; Talebi *et al.* 2009; Rakhshani *et al.* 2008a).

**Distribution in the Middle East and North Africa**

Iran (Starý *et al.* 2000; Rakhshani *et al.* 2008a; Barahoei *et al.* 2013); Israel (Mescheloff & Rosen 1990b); Morocco (González *et al.* 1978); Turkey (Starý 1976; Eastern part – Tomanović *et al.* 2008; Western part – Tomanović *et al.* 2008; Akar & Erdoğan 2017).

**General distribution**

Holarctic, Oceanic, Oriental.

*Aphidius uzbekistanicus* Luzhetskii, 1960

Figs 24, 108, 211, 307, 408, 499, 545

**Host records**

*Diuraphis noxia* (Kurdjumov) (Zareh *et al.* 1995; Starý *et al.* 2000); *Metopolophium dirhodum* (Walker) (Mescheloff & Rosen 1990b; Özder & Toros 1999; Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2008b; Barahoei *et al.* 2013); *Rhopalosiphum maidis* (Fitch) (Ibrahim 1990a; El-Serafy 1999; Özder & Toros 1999; Starý *et al.* 2000; Uysal *et al.* 2004; Gadallah *et al.* 2017); *Rhopalosiphum padi* (L.) (Starý 1979; Ibrahim 1990a; El-Serafy 1999; Starý *et al.* 2000; Sertkaya & Yigit 2002; Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2008b; Nazari *et al.* 2012; Gadallah *et al.* 2017); *Schizaphis graminum* (Rondani) (Ibrahim 1990a; El-Serafy 1999; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2008b; Barahoei *et al.* 2013); *Sitobion avenae* (Fabricius) (Starý 1979; Mescheloff & Rosen 1990b; Darvish-Mojeni & Bayat-Asadi 1995; El-Serafy 1999; Özder & Toros 1999; Starý *et al.* 2000; Sertkaya & Yigit 2002; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Rakhshani *et al.* 2008a, 2008b, 2012b; Barahoei *et al.* 2013; Gadallah *et al.* 2017); *Sitobion fragariae* (Walker) (Mescheloff & Rosen 1990b; Laamari *et al.* 2011, 2012).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011, 2012); Egypt (Ibrahim 1990a; El-Serafy 1999; Gadallah *et al.* 2017); Iran (Starý 1979; Starý *et al.* 2000; Nazari *et al.* 2012; Rakhshani *et al.* 2008a, 2008b, 2012b; Barahoei *et al.* 2013); Israel (Mescheloff & Rosen 1990b); Morocco (Starý 1981b); Turkey (Eastern part – Ölmez & Ulusoy 2003; Central part – Aslan *et al.* 2004; Uysal *et al.* 2004; Western part – Özder & Toros 1999; Sertkaya & Yigit 2002; Erdoğan *et al.* 2008).

**General distribution**

Holarctic, Neotropical, Oriental.

*Areopraon lepellei* (Waterston, 1926)

Figs 25, 109, 212, 308, 409, 546

**Host records**

*Eriosoma lanuginosum* (Hartig) (Kazemzadeh *et al.* 2009; Rakhshani *et al.* 2012b).

**Distribution in the Middle East and North Africa**

Iran (Kazemzadeh *et al.* 2009; Rakhshani *et al.* 2012b).

**General distribution**

Eastern and Western Palaearctic, Oriental (India).

***Betuloxys hortorum*** (Starý, 1960)

Figs 110, 213, 309, 410, 547

**Host records**

*Tinocallis saltans* (Nevsky) (Mackauer & Starý 1967; Starý 1979; Starý *et al.* 2000).

**Distribution in the Middle East and North Africa**

Iran (Mackauer & Starý 1967; Starý 1979; Starý *et al.* 2000).

**General distribution**

Eastern Palaearctic (Iran), Western Palaearctic (Eastern and central Europe), Oriental (India).

***Binodoxys acalephae*** (Marshall, 1896)

Figs 26, 111, 214, 310, 411, 548

**Host records**

*Acyrtosiphon pisum* (Harris) (?) (Talebi *et al.* 2009; Barahoei *et al.* 2013; Chaouche & Laamari 2015); *Anuraphis* sp. (Güz & Kiliñer 2005); *Aphis affinis* Del Guercio (Starý & Kaddou 1971; Starý 1976); *Aphis craccivora* Koch (Starý 1979; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2005a, 2012b; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Ayadi *et al.* 2017); *Aphis euphorbiae* Kaltenbach (Talebi *et al.* 2009; Nazari *et al.* 2012); *Aphis fabae* Scopoli (Düzgüneş *et al.* 1982; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Güz & Kiliñer 2005; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Rakhshani *et al.* 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Aphis fabae cirsiacanthoidis* Scopoli (Uysal *et al.* 2004); *Aphis galiiscabri* Schrank (Güz & Kiliñer 2005); *Aphis gossypii* Glover (Yumruktepe & Uygun 1994; Uysal *et al.* 2004; Laamari *et al.* 2011); *Aphis grossulariae* Kaltenbach (Starý 1976; Uysal *et al.* 2004); *Aphis idaei* van der Goot (Barahoei *et al.* 2014); *Aphis nerii* Boyer de Fonscolombe (Talebi *et al.* 2009); *Aphis pomi* de Geer (Rakhshani 2012); *Aphis punicae* Passerini (Ayadi *et al.* 2017); *Aphis ruborum* (Börner) (Uysal *et al.* 2004); *Aphis vallei* Hille Ris Lambers & Stroyan (Starý 1976; Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Aphis spiraeicola* Patch (Rakhshani 2012); *Aphis umbrella* (Börner) (Mackauer & Starý 1967; Starý *et al.* 2000; Talebi *et al.* 2009; Nazari *et al.* 2012); *Aphis urticata* Gmelin (Talebi *et al.* 2009); *Aphis* sp. (Starý 1976; 1979; Mossadegh *et al.* 2011); *Hyadaphis coriandri* (Das) (Chaouche & Laamari 2015); *Protaphis* sp. (Barahoei *et al.* 2012, 2013).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Egypt (El-Heneidy 1994; Abdel-Rahman *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003, 2004); Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2005a; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani 2012; Rakhshani *et al.* 2012b); Iraq (Starý & Kaddou 1971; Starý 1976); Morocco (Starý 1976); Tunisia (Ayadi *et al.* 2017); Turkey (Starý 1976; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Central part – Güz & Kiliñer 2005; Western part – Akar & Erdoğan 2017); UAE (Starý *et al.* 2013); Yemen (Starý *et al.* 2013).

**General distribution**

Holarctic, Oriental.



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

Figs 27, 112, 215, 311, 412, 549

**Host records**

*Aphis acetosae* L. (Barahoei *et al.* 2013); *Aphis affinis* del Guercio (Mossadegh *et al.* 2011; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis aurantii* Boyer de Fonscolombe (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Hussein & Kawar 1984; Tremblay *et al.* 1985; Mescheloff & Rosen 1993; Ben Halima & Ben Hamouda 2005; Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011); *Aphis craccivora* Koch (Avidov & Harpaz 1969; Starý & Kaddou 1971; Starý 1976; Düzgüneş *et al.* 1982; Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1993; Ragab 1996; Abou-Fakhr & Kawar 1998; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2005a; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Barahoei *et al.* 2013; Satar *et al.* 2014); *Aphis epilobiaria* Theobald (Mescheloff & Rosen 1993; Nazari *et al.* 2012); *Aphis fabae* Scopoli (Al-Azawi 1970; Starý 1976; Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Mescheloff & Rosen 1993; Ben Halima *et al.* 1994 – as *Aphis citricola* van der Goot; Abou-Fakhr & Kawar 1998; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Ben Halima & Ben Hamouda 2005 – as *Aphis citricola* van der Goot; Güz & Kilinçer 2005; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Taheri & Rakhshani 2013); *Aphis fabae cirsiacanthoidis* Scopoli (Aslan *et al.* 2004; Uysal *et al.* 2004); *Aphis farinosa* Gmelin (Starý *et al.* 2000); *Aphis gossypii* Glover (Mimeur 1934; Rosen 1967, 1969; Avidov & Harpaz 1969; Al-Azawi 1970; Starý 1976; Abou-Fakhr 1982; Zeren & Düzgüneş 1983; Hussein & Kawar 1984; Tremblay *et al.* 1985; Mescheloff & Rosen 1993; Ben Halima & Ben Hamouda 1993; Yumruktepe & Uygün 1994; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; Yoldaş *et al.* 2002; Uysal *et al.* 2004; Mossadegh *et al.* 2011; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Satar *et al.* 2014; Ayadi *et al.* 2017); *Aphis hederiae* Kaltenbach (Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1993; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000); *Aphis idaei* van der Goot (Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis intybi* Koch (Mescheloff & Rosen 1993); *Aphis nasturtii* Kaltenbach (Starý & Kaddou 1971 – as *Aphis zizyphi* Theobald; Starý 1976; Mescheloff & Rosen 1993); *Aphis nerii* Boyer de Fonscolombe (Starý 1976; Mescheloff & Rosen 1993; Ben Halima *et al.* 1994; Ben Halima & Ben Hamouda 2005; Talebi *et al.* 2009; Laamari *et al.* 2011); *Aphis pomi* de Geer (Erkin 1983; Hussein & Kawar 1984; Radjabi 1989; Mescheloff & Rosen 1993; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani 2012); *Aphis polygonata* (Nevsky) (Mossadegh *et al.* 2011); *Aphis punicae* Passerini (Starý 1976; Al-Azawi 1970; Starý & Kaddou 1971; Mescheloff & Rosen 1993; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Laamari *et al.* 2011, 2012; Ayadi *et al.* 2017); *Aphis ruborum* (Börner) (Düzgüneş *et al.* 1982; Aslan *et al.* 2004; Uysal *et al.* 2004); *Aphis rumicis* L. (Talebi *et al.* 2009); *Aphis solanella* Theobald (Starý & Kaddou 1971; Starý 1976; Güz & Kilinçer 2005; Barahoei *et al.* 2012, 2013; Rakhshani 2012; Ayadi *et al.* 2017); *Aphis spiraeicola* Patch (Mescheloff & Rosen 1993; Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011; Labdaoui & Guenaoui 2018); *Aphis umbrella* (Börner) (Mackauer & Starý 1967; Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1993; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Nazari *et al.* 2012); *Aphis viticis* Ferrari (Starý & Kaddou 1971; Starý 1976); *Aphis* sp. (Mimeur 1934; Starý 1976; Uysal *et al.* 2004; Laamari *et al.* 2012); *Brachycaudus helichrysi* (Kaltenbach) (Satar *et al.* 2014); *Myzus persicae* (Sulzer) (Hussein & Kawar 1984; Tremblay *et al.* 1985; Satar *et al.* 2014); *Sitobion avenae* (Fabricius) (?) (Gadallah *et al.* 2017).

**Distribution in the Middle East and North Africa**

Algeria (Starý 1976; Laamari *et al.* 2011, 2012; Labdaoui & Guenaoui 2018); Egypt (Mackauer & Starý 1967; Starý 1976; Ragab 1996; Gadallah *et al.* 2017); Iran (Starý *et al.* 2000; Rakhshani *et al.* 2005a; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani 2012; Taheri &

Rakhshani 2013); Iraq (Starý 1969a; Al-Azawi 1970; Starý & Kaddou 1971; Starý 1976); Israel (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1993); Lebanon (Mackauer & Starý 1967; Starý 1976; Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); Morocco (Mimeur 1934; Starý 1976); Tunisia (Mackauer & Starý 1967; Starý 1976; Ben Halima & Ben Hamouda 1993, 2005; Ben Halima *et al.* 1994; Boukhris-Bouhachem 2011; Ayadi *et al.* 2017); Turkey (Uysal *et al.* 2004; Eastern part – Ölmez & Ulusoy 2003; Central part – Zeren & Düzgüneş 1983; Düzgüneş *et al.* 1982; Aslan *et al.* 2004; Güz & Kiliñer 2005; Yumruktepe & Uygun 1994; Satar *et al.* 2014; Western part – Erkin 1983; Aslan & Karaca 2005; Erdoğan *et al.* 2008; Yoldaş *et al.* 2011; Akar & Erdoğan 2017); UAE (Starý *et al.* 2013).

### General distribution

Eastern and Western Palaearctic, Oriental.

#### *Binodoxys brevicornis* (Haliday, 1833)

Figs 28, 113, 216, 312, 413, 550

### Host records

*Cavariella aegopodii* (Scopoli) (Starý 1976; Mescheloff & Rosen 1993; Rakhshani *et al.* 2007b; Talebi *et al.* 2009; Barahoei *et al.* 2013); *Hyadaphis coriandri* (Das) (Mescheloff & Rosen 1993; Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Ayadi *et al.* 2017); *Hyadaphis foeniculi* (Passerini) (Starý 1976); *Hyadaphis* sp. (Starý *et al.* 2000; Güz & Kiliñer 2005).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976); Iran (Starý *et al.* 2000; Rakhshani *et al.* 2007b; Barahoei *et al.* 2013); Israel (Starý 1976; Mescheloff & Rosen 1993); Tunisia (Ayadi *et al.* 2017); Turkey (Starý 1976; Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Güz & Kiliñer 2005).

### General distribution

Eastern and Western Palaearctic, Neotropical (accidentally introduced), Oriental (India).

#### *Binodoxys centaureae* (Haliday, 1833)

Figs 114, 217, 313, 414, 551

### Host records

*Uroleucon* sp. (Starý 1976; Laamari *et al.* 2012).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Laamari *et al.* 2012).

### General distribution

Eastern and Western Palaearctic, Oriental.

#### *Binodoxys heraclei* (Haliday, 1833)

Figs 29, 115, 218, 314, 415, 552

### Host records

*Cavariella aspidaphoides* Hille Ris Lambers (Rakhshani *et al.* 2007b; Talebi *et al.* 2009; Nazari *et al.* 2012); *Cavariella theobaldi* (Gillette & Bragg) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2007b; Talebi *et al.* 2009; Nazari *et al.* 2012); Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**General distribution**

Eastern and Western Palaearctic, Oriental.

*Binodoxys* sp.

**Host records**

Lacking host data (Samara & Qubbaj 2012).

**Distribution in the Middle East and North Africa**

Palestine (Samara & Qubbaj 2012).

*Diaeretiella rapae* (M'Intosh, 1855)

Figs 30, 116, 219, 315, 416, 553

**Material examined**

SAUDI ARABIA • 1 ♀; Abha; agricultural field; 28 Nov. 2012; *Brevicoryne brassicae* (L.) on *Brassica oleracea* • 15 ♀♀, 7♂♂; Abha; Nov. 2012; *B. brassicae* (L.) on *Brassica oleracea* • 1 ♀, 3 ♂♂; Abha-Mahala College campus; Nov. 2012; on *Hordeum* • 14 ♀♀, 5♂♂; Abha; May 2013; *B. brassicae* (L.) on *Raphanus sativus* • 6 ♀♀; Abha; Jun. 2012; on *Trifolium alexandrinum*; Z. Ahmed leg. (DPPZ).

**Host records**

*Amegosiphon platicaudum* (Narzikulov) (Nazari *et al.* 2012); *Aphis aurantii* Boyer de Fonscolombe (Tremblay *et al.* 1985); *Aphis craccivora* Koch (Mescheloff & Rosen 1990b; Rakhshani *et al.* 2006a; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Barahoei *et al.* 2013; Ayadi *et al.* 2017); *Aphis fabae* Scopoli (Abou-Fakhr 1982; Tremblay *et al.* 1985; Güz & Kiliñer 2005; Laamari *et al.* 2012; Barahoei *et al.* 2013); *Aphis gossypii* Glover (Ben Halima & Ben Hamouda 1993; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Barahoei *et al.* 2013; Satar *et al.* 2014); *Aphis illinoisensis* Shimer (El-Gantiry *et al.* 2012); *Aphis nerii* Boyer de Fonscolombe (Laamari *et al.* 2012); *Aphis punicae* Passerini (Nazari *et al.* 2012); *Aphis solanella* Theobald, *Aphis umbrella* (Börner) (Barahoei *et al.* 2013); *Aphis spiraecola* Patch (Laamari *et al.* 2012); *Aspidaphis adjuvans* (Walker) (Mescheloff & Rosen 1990b); *Brachycaudus amygdalinus* (Schouteden) (Stary 1979; Mescheloff & Rosen 1990b; Stary *et al.* 2000); *Brachycaudus cardui* (L.) (Stary 1979; Stary *et al.* 2000; Laamari *et al.* 2011, 2012); *Brachycaudus helichrysi* (Kaltenbach) (Erkin 1983; Uysal *et al.* 2004; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); *Brevicoryne brassicae* (L.) (Talhok 1961; Hafez 1965; Davatchi & Shojai 1968; Al-Azawi 1970; Stary 1976, 1979; Abou-Fakhr 1982; Kiliñer 1982; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Hussein & Kawar 1984; Tremblay *et al.* 1985; Stary & Sekkat 1987; Mescheloff & Rosen 1990b; Avcı & Özbek 1991; Abou-Fakhr & Kawar 1998; Stary *et al.* 2000; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Uysal *et al.* 2004; Güz & Kiliñer 2005; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani *et al.* 2012b; Taheri & Rakhshani 2013; Chaouche & Laamari 2015); *Capitophorus inulae* (Passerini) (Mescheloff & Rosen 1990b); *Diuraphis noxia* (Kurdjumov) (Stary 1976; González *et al.* 1992; Ahmadi & Sarafrazi 1993; Elmali & Toros 1994; Zareh *et al.* 1995; Ahmadi 2000; Stary *et al.* 2000; Baer *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2008b, 2012b; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Laamari *et al.* 2016); *Dysaphis foeniculus* (Theobald) (Ayadi *et al.* 2017); *Dysaphis pyri* (Boyer de Fonscolombe) (Erkin 1983; Uysal *et al.* 2004); *Dysaphis tulipae* (Boyer de Fonscolombe) (Stary

1976; Laamari *et al.* 2011, 2012); *Hayhurstia atriplicis* (L.) (Starý 1976, 1979; Mescheloff & Rosen 1990b; Starý *et al.* 2000; Güz & Kiliñer 2005; Laamari *et al.* 2012; Nazari *et al.* 2012; Rakhshani *et al.* 2012b); *Hyadaphis coriandri* (Das) and *Hyadaphis foeniculi* (Passerini) (Güz & Kiliñer 2005); *Hyadaphis tataricae* (Aizenberg) (Aslan *et al.* 2004; Uysal *et al.* 2004); *Hyperomyzus lactucae* (L.) (Güz & Kiliñer 2005); *Lipaphis erysimi* (Kaltenbach) (Starý 1979; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Mossadegh *et al.* 2011); *Lipaphis lepidii* (Nevsky) (Starý *et al.* 2000; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Nazari *et al.* 2012); *Lipaphis pseudobrassicae* (Davis) (Barahoei *et al.* 2013); *Lipaphis* sp. (Güz & Kiliñer 2005); *Macrosiphoniella sanborni* (Gillette) (Al-Azawi 1970; Starý 1976); *Neomariaella lambersi* (Szelegiewicz) (Starý 1979; Starý *et al.* 2000); *Metopolophium dirhodum* (Walker) (Rakhshani *et al.* 2008b); *Myzus beybienkoi* (Narzykulov) (Starý 1979; Starý *et al.* 2000); *Myzus persicae* (Sulzer) (Avidov & Kotter 1966; Avidov & Harpaz 1969; Starý 1976; Starý 1979; Erkin 1983; Starý & Sekkat 1987; Hodjat & Moradeshaghi 1988; Mescheloff & Rosen 1990b; Starý *et al.* 2000; Boukhris-Bouhachem 2011; Laamari *et al.* 2011; Mossadegh *et al.* 2011; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Nazari *et al.* 2012; Rakhshani 2012; Taheri & Rakhshani 2013; Barahoei *et al.* 2013; Chaouche & Laamari 2015); *Rhopalosiphum maidis* (Fitch) (Mimeur 1934; Starý 1976, 1979; Starý & Sekkat 1987; El-Heneidy & Attia 1988/1989; El-Heneidy 1991, 1994; Elmali & Toros 1994; Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Uysal *et al.* 2004; Slman 2006; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2013; Ayadi *et al.* 2017); *Rhopalosiphum padi* (L.) (Hassan 1963; El-Heneidy & Attia 1988/1989; El-Heneidy 1991, 1994; Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Uysal *et al.* 2004; Abdel-Rahman 2005; Slman 2006; Rakhshani *et al.* 2008b; Mossadegh *et al.* 2011; Barahoei *et al.* 2013); *Saltusaphis scirpus* Theobald (Starý *et al.* 2000); *Schizaphis graminum* (Rondani) (Bodenheimer & Swirski 1957; Starý 1976, 1979; El-Heneidy & Attia 1988/1989; El-Heneidy 1991, 1994; Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Abdel-Rahman 2005; Slman 2006; Rakhshani *et al.* 2008b; Barahoei *et al.* 2013); *Sitobion avenae* (Fabricius) (El-Heneidy & Attia 1988/1989; El-Heneidy 1991, 1994; Starý *et al.* 2000; El-Heneidy *et al.* 2001, 2002; Slman 2006; Rakhshani *et al.* 2008b; Mossadegh *et al.* 2011; Rakhshani *et al.* 2012b; Barahoei *et al.* 2013); *Uroleucon sonchi* (L.) (?) (Starý & Kaddou 1971).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Egypt (Hassan 1963; Hafez 1965; Mackauer & Starý 1967; Starý 1976; El-Heneidy & Attia 1988/1989; El-Heneidy 1991, 1994; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Ragab *et al.* 2002; Abdel-Rahman 2005; Slman 2006; El-Gantiry *et al.* 2012); Iran (Starý 1979; Starý *et al.* 2000; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani *et al.* 2006a, 2012b; Rakhshani 2012; Taheri & Rakhshani 2013); Iraq (Al-Azawi 1970; Starý & Kaddou 1971; Starý 1976); Israel (Bodenheimer & Swirski 1957; Avidov & Kotter 1966; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1990b); Jordan (Baer *et al.* 2004); Lebanon (Talhouk 1961; Starý 1976; Abou-Fakhr 1982; Hussein & Kwar 1984; Tremblay *et al.* 1985; Abou-Fakhr & Kwar 1998); Libya (Mackauer & Starý 1967; Starý 1976); Morocco (Mimeur 1934; Starý 1976; Starý & Sekkat 1987; Baer *et al.* 2004); Palestine (Samara & Qubbaj 2012); Saudi Arabia (Ahmad & Bakr 2013); Syria (Baer *et al.* 2004); Tunisia (Ben Halima & Ben Hamouda 1993; Boukhris-Bouhachem 2011; Ayadi *et al.* 2017); Turkey (Eastern part – Ölmez & Ulusoy 2003; Central part – Düzgüneş *et al.* 1982, Kiliñer 1982; Zeren & Düzgüneş 1983; Elmali & Toros 1994; Aslan *et al.* 2004; Uysal *et al.* 2004; Güz & Kiliñer 2005; Satar *et al.* 2014; Western part – Erkin 1983; Erdoğan *et al.* 2008; Akar & Erdoğan 2017); Yemen (Starý *et al.* 2013).

### General distribution

Cosmopolitan.



***Diaeretus leucopterus*** (Haliday, 1834)

Figs 117, 220, 316, 417, 554

**Host records**

*Eulachnus tuberculostemmatus* (Theobald) (Starý 1976; Mescheloff & Rosen 1990b).

**Distribution in the Middle East and North Africa**

Israel (Starý 1976; Mescheloff & Rosen 1990b).

**General distribution**

Eastern and Western Palaearctic, Oriental.

***Ephedrus cerasicola*** Starý, 1962

Figs 31, 118, 221, 317, 418, 555

**Host records**

*Dysaphis plantaginea* (Passerini) (Rakhshani 2012; Barahoei *et al.* 2013); *Myzus cerasi* (F.) (Rakhshani 2012); *Myzus persicae* (Sulzer) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Rakhshani 2012); *Phorodon humuli* (Schrank) (Mokhtari *et al.* 2000; Starý *et al.* 2000); *Rhopalosiphum nymphaeae* (L.) (Mokhtari *et al.* 2000; Starý *et al.* 2000).

**Distribution in the Middle East and North Africa**

Iran (Starý *et al.* 2000; Rakhshani 2012; Barahoei *et al.* 2013); Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**General distribution**

Holarctic, Oceanic.

***Ephedrus chaitophori*** Gärdenfors, 1986

Figs 119, 222, 318, 419, 556

**Host records**

*Chaitophorus populeti* (Panzer) (Rakhshani *et al.* 2007b).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2007b).

**General distribution**

Holarctic.

***Ephedrus helleni*** Mackauer, 1968

Figs 32, 120, 223, 319, 420, 557

**Host records**

*Cavariella aquatica* (Gillette & Bragg) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2007b; Talebi *et al.* 2009); *Hayhurstia atriplicis* (L.) (Barahoei *et al.* 2014).



### **Distribution in the Middle East and North Africa**

Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2007b; Talebi *et al.* 2009).

### **General distribution**

Eastern and Western Palaearctic, Oriental.

*Ephedrus lacertosus* (Haliday, 1833)

Figs 121, 224, 320, 421, 558

### **Host records**

Lacking host data (Tomanović *et al.* 2008).

### **Distribution in the Middle East and North Africa**

Turkey (Eastern part – Tomanović *et al.* 2008).

### **General distribution**

Holarctic, Neotropical, Oriental.

*Ephedrus nacheri* Quilis, 1934

Figs 122, 225, 321, 422, 559

### **Host records**

*Hayhurstia atriplicis* (L.) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

### **Distribution in the Middle East and North Africa**

Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

### **General distribution**

Eastern and Western Palaearctic, Oriental.

*Ephedrus niger* Gautier, Bonnamour & Gaumont, 1929

Figs 33, 123, 226, 322, 423, 560

### **Host records**

*Macrosiphoniella abrotani* (Walker) (Mackauer & Starý 1967; Starý *et al.* 2000; Rakhshani *et al.* 2011); *Macrosiphoniella sanborni* (Gillette) (Rakhshani *et al.* 2011; Nazari *et al.* 2012); *Macrosiphoniella* sp. (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2011; Barahoei *et al.* 2013); *Macrosiphum rosae* (L.) (?) (Mescheloff & Rosen 1988); *Uroleucon acroptilidis* Kadyrbekov, Renxin & Shao, *Uroleucon bielawskii* (Szelegiewicz) (Nazari *et al.* 2012; Barahoei *et al.* 2013); *Uroleucon cichorii* (Koch) (Starý *et al.* 2000; Barahoei *et al.* 2012, 2013); *Uroleucon compositae* (Theobald) (Nazari *et al.* 2012; Barahoei *et al.* 2013); *Uroleucon erigeronense* (Thomas) (Starý *et al.* 2000; Talebi *et al.* 2009; Nazari *et al.* 2012); *Uroleucon inulae* (Ferrari) (Mescheloff & Rosen 1988); *Uroleucon jaceae* (L.) (Starý *et al.* 2000; Talebi *et al.* 2009; Rakhshani *et al.* 2011, 2012b; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012); *Uroleucon sonchi* (L.) (Talebi *et al.* 2009; Rakhshani *et al.* 2012b; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Taheri & Rakhshani 2013); *Uroleucon* sp. (Starý 1979; Starý *et al.* 2000; Barahoei *et al.* 2012, 2013).

### Distribution in the Middle East and North Africa

Algeria (Gärdenfors 1986; Laamari *et al.* 2011); Iran (Mackauer & Starý 1967; Starý 1979; Starý *et al.* 2000; Talebi *et al.* 2009; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani *et al.* 2012b; Taheri & Rakhshani 2013); Israel (Mescheloff & Rosen 1988).

### General distribution

Eastern and Western Palaearctic, Oriental.

*Ephedrus persicae* Froggatt, 1904  
Figs 34, 124, 227, 323, 424, 561

### Material examined

SAUDI ARABIA • 1 ♂; Raidah; Apr. 2011; net sweeping; Z. Ahmad leg. (DPPZ).

### Host records

*Absinthaphis* sp. (Mescheloff & Rosen 1988); *Acyrtosiphon malvae* (Mosley) (Laamari *et al.* 2011, 2012); *Acyrtosiphon pisum* (Harris) (Laamari *et al.* 2011); *Aphis affinis* del Guercio (Talebi *et al.* 2009; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis aurantii* Boyer de Fonscolombe (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Hussein & Kawar 1984; Tremblay *et al.* 1985; Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011); *Aphis brunnea* Ferrari, *Aphis chloris* Koch (Mescheloff & Rosen 1988); *Aphis craccivora* Koch (Mackauer 1963; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1988; Düzgüneş *et al.* 1982; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2005a, 2006a; Žikić *et al.* 2009; Laamari *et al.* 2011; Yoldaş *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012); *Aphis epilobiaria* Theobald (Mescheloff & Rosen 1988); *Aphis fabae* Scopoli (Al-Azawi 1970; Starý 1976, 1979; Düzgüneş *et al.* 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1988; Uysal *et al.* 2004; Žikić *et al.* 2009; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis fabae cirsiacanthoidis* Scopoli (Uysal *et al.* 2004); *Aphis gossypii* Glover (Al-Azawi 1970; Starý 1976; Abou-Fakhr 1982; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Tremblay *et al.* 1985; Mescheloff & Rosen 1988; Abou-Fakhr & Kawar 1998; Uysal *et al.* 2004; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2013; Satar *et al.* 2014; Ayadi *et al.* 2017); *Aphis hederiae* Kaltenbach, *Aphis intybi* Koch (Mescheloff & Rosen 1988); *Aphis nerii* Boyer de Fonscolombe (Talebi *et al.* 2009; Barahoei *et al.* 2014); *Aphis plantaginis* Goeze (Barahoei *et al.* 2013); *Aphis pomi* De Geer (Düzgüneş *et al.* 1982; Starý *et al.* 2000; Uysal *et al.* 2004; Laamari *et al.* 2011, 2012); *Aphis punicae* Passerini (Mackauer 1963; Starý & Sekkat 1987; Mescheloff & Rosen 1988; Starý *et al.* 2000; Laamari *et al.* 2011, 2012); *Aphis ruborum* (Börner) (Starý 1976; Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Aphis solanella* Theobald (Tremblay *et al.* 1985); *Aphis umbrella* (Börner) (Starý 1976; Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); *Aphis verbasci* Schrank, *Aphis nasturtii* Kaltenbach (Mescheloff & Rosen 1988 – as *Aphis zizyphi* Theobald); *Brachycaudus amygdalinus* (Schouteden) (Bodenheimer & Swirski 1957; Avidov & Harpaz 1969; Starý 1976; Starý & Sekkat 1987; Düzgüneş *et al.* 1982; Mescheloff & Rosen 1988; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Talebi *et al.* 2009; Žikić *et al.* 2009; Jafari *et al.* 2011; Laamari *et al.* 2011; Jafari & Modarres Awal 2012; Nazari *et al.* 2012; Rakhshani 2012; Rakhshani *et al.* 2012b); *Brachycaudus cardui* (L.) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Aslan & Karaca 2005; Žikić *et al.* 2009); *Brachycaudus helichrysi* (Kaltenbach) (Starý 1979; Erkin 1983; Mescheloff & Rosen 1988; Starý *et al.* 2000; Uysal *et al.* 2004; Žikić *et al.* 2009; Laamari *et al.* 2011; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2013; Satar *et al.* 2014); *Brachyunguis tamaricis* (Lichtenstein) (Starý 1976, 1979; Starý *et al.* 2000; Laamari *et al.* 2012); *Cavariella aegopodii* (Scopoli); *Cavariella theobaldi* (Gillette & Bragg) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Diuraphis noxia* (Kurdjumov) (Starý *et al.* 2000); *Dysaphis crataegi*

(Kaltenbach) (Talhouk 1961; Starý 1976; Starý *et al.* 2000); *Dysaphis devecta* (Walker) (Aslan *et al.* 2004; Uysal *et al.* 2004; Aslan & Karaca 2005; Žikić *et al.* 2009); *Dysaphis foeniculus* (Theobald) (Talebi *et al.* 2009); *Dysaphis plantaginea* (Passerini) (Düzgüneş *et al.* 1982; Erkin 1983; Hussein & Kwar 1984 – as *Dysaphis mali* (Ferrari); Starý *et al.* 2000; Uysal *et al.* 2004; Aslan & Karaca 2005; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2013); *Dysaphis pyri* (Boyer de Fonscolombe) (Mackauer 1963; Erkin 1983; Starý *et al.* 2000; Uysal *et al.* 2004; Žikić *et al.* 2009; Rakhshani 2012); *Dysaphis reaumuri* (Mordvilko) (Rakhshani 2012; Barahoei *et al.* 2013); *Eulachnus tuberculostemmatus* (Theobald) (?) (Mescheloff & Rosen 1988); *Hayhurstia atriplicis* (L.) (Mescheloff & Rosen 1988; Barahoei *et al.* 2013); *Hyadaphis coriandri* (Das) (Talebi *et al.* 2009; Barahoei *et al.* 2014); *Hyadaphis foeniculi* (Passerini) (Mescheloff & Rosen 1988); *Hyalopterus amygdali* (Blanchard) (Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Uysal *et al.* 2004; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Rakhshani 2012; Barahoei *et al.* 2013); *Hyalopterus pruni* (Geoffroy) (Düzgüneş *et al.* 1982; Erkin 1983; Mescheloff & Rosen 1988; Uysal *et al.* 2004; Aslan & Karaca 2005); *Macchiatiella rhamni* (Boyer de Fonscolombe) (Abou-Fakhr 1982; Abou-Fakhr & Kwar 1998); *Melanaphis donacis* (Passerini) (Mescheloff & Rosen 1988); *Metopolophium dirhodum* (Walker) (Starý *et al.* 2000; Rakhshani *et al.* 2008b); *Myzus cerasi* (Fabricius) (Erkin 1983; Aslan *et al.* 2004; Uysal *et al.* 2004; Žikić *et al.* 2009; Rakhshani 2012); *Myzus persicae* (Sulzer) (Starý 1974; Erkin 1983; Zeren & Düzgüneş 1983; Karaat & Goven 1986; Uysal *et al.* 2004; Talebi *et al.* 2009; Žikić *et al.* 2009; Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011; Laamari *et al.* 2011; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2013; Hasan 2016); *Phorodon humuli* (Schrank) (Rakhshani 2012; Barahoei *et al.* 2013); *Rhopalosiphum maidis* (Fitch) (Avidov & Harpaz 1969; Starý 1976, 1979; Gärdenfors 1986; Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013); *Rhopalosiphum padi* (L.) (Starý 1979; Gärdenfors 1986; Özder & Toros 1999; Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Uysal *et al.* 2004; Rakhshani *et al.* 2008b; Gadallah *et al.* 2017); *Schizaphis graminum* (Rondani) (Starý *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Rakhshani *et al.* 2008b; Žikić *et al.* 2009; Rakhshani *et al.* 2012b); *Sipha maydis* Passerini (?) (Starý *et al.* 2000); *Sitobion avenae* (Fabricius) (Starý *et al.* 2000; El-Heneidy *et al.* 2001, 2002; Barahoei *et al.* 2013; Gadallah *et al.* 2017).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Gärdenfors 1986; Laamari *et al.* 2011, 2012); Egypt (Gärdenfors, 1986; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003; El-Ghiet *et al.* 2014); Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2005a, 2006a, 2008b, 2012b; Mossadegh *et al.* 2011; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani 2012; Taheri & Rakhshani 2013); Iraq (Al-Azawi 1970; Starý 1976; Žikić *et al.* 2009); Israel (Rosen 1967, 1969; Bodenheimer & Swirski 1957; Avidov & Harpaz 1969; Starý 1974, 1976; Gärdenfors, 1986; Mescheloff & Rosen 1988); Jordan (Hasan 2016); Lebanon (Talhouk 1961; Mackauer & Starý 1967; Starý 1974, 1976; Abou-Fakhr 1982; Hussein & Kwar 1984; Tremblay *et al.* 1985); Libya (Starý 1976); Morocco (Starý & Sekkat 1987); Syria (Starý 1974, 1976); Tunisia (Boukhris-Bouhachem 2011; Ayadi *et al.* 2017); Turkey (Uysal *et al.* 2004; Eastern part – Karaat & Goven 1986; Ölmez & Ulusoy 2003; Central part – Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Aslan *et al.* 2004; Satar *et al.* 2014; Western part – Erkin 1983; Özder & Toros 1999; Aslan & Karaca 2005; Žikić *et al.* 2009; Yoldaş *et al.* 2011; Akar & Erdoğan 2017); UAE (Starý *et al.* 2013); Yemen (Starý *et al.* 2013).

### General distribution

Cosmopolitan.

***Ephedrus plagiator* (Nees, 1811)**

Figs 35, 125, 228, 324, 425, 562

**Host records**

*Acyrtosiphon pisum* (Harris), *Aphis fabae* Scopoli, *Aphis pomi* De Geer (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Brachycaudus cardui* (L.) (Starý *et al.* 2000); *Brachycaudus helichrysi* (Kaltenbach) (Rakhshani 2012); *Corylobium avellanae* (Schrank) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Diuraphis noxia* (Kurdjumov) (Pike *et al.* 1991; Uysal *et al.* 2004); *Dysaphis crataegi* (Kaltenbach) (Düzgüneş *et al.* 1982; Starý *et al.* 2000; Uysal *et al.* 2004); *Dysaphis devectora* (Walker), *Dysaphis plantaginea* (Passerini) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Dysaphis pyri* (Boyer de Fonscolombe) (Rakhshani 2012); *Dysaphis* sp. (Starý 1979); *Hyalopterus pruni* (Geoffroy) (Düzgüneş *et al.* 1982; Hussein & Kawar 1984; Uysal *et al.* 2004); *Macrosiphum* sp. (Starý 1976; Uysal *et al.* 2004); *Myzus cerasi* (F.) (Mokhtari *et al.* 2000; Starý *et al.* 2000); *Rhopalosiphum oxyacanthae* (Schrank) (Düzgüneş *et al.* 1982 – as *Rhopalosiphum insertum* (Walker); Uysal *et al.* 2004), *Rhopalosiphum maidis* (Fitch) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Rhopalosiphum padi* (L.) (Rakhshani *et al.* 2008b; Barahoei *et al.* 2013); *Schizaphis graminum* (Rondani) (Rakhshani *et al.* 2008b; Barahoei *et al.* 2014); *Sitobion avenae* (Fabricius) (Elmali & Toros 1994; Darvish-Mojeni & Bayat-Asadi 1995; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2008b; Nazari *et al.* 2012).

**Distribution in the Middle East and North Africa**

Egypt (Abdel-Rahman 2005; El-Ghiet *et al.* 2014); Iran (Starý 1979; Starý *et al.* 2000; Rakhshani 2012; Barahoei *et al.* 2013; Nazari *et al.* 2012); Iraq (Starý 1976); Lebanon (Hussein & Kawar 1984); Turkey (Starý 1976; Uysal *et al.* 2004; Central part – Düzgüneş *et al.* 1982; Elmali & Toros 1994; Western part – Erdoğan *et al.* 2008; Akar & Erdoğan 2017).

**General distribution**

Australasian, Eastern and Western Palaearctic, Neotropical, Oceanic, Oriental.

***Lipolexis gracilis* Förster, 1862**

Figs 36, 126, 229, 325, 426, 563

**Host records**

*Aphis fabae* Scopoli (Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998; Rakhshani *et al.* 2008d); *Aphis gossypii* Glover (Tremblay *et al.* 1985); *Aphis pomi* De Geer (Aslan & Karaca 2005); *Aphis salviae* Walker (Barahoei *et al.* 2013; Alikhani *et al.* 2013); *Aphis umbrella* (Börner) (Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); *Aphis* sp. (Starý 1976; Laamari *et al.* 2012); *Brachycaudus amygdalinus* (Schouteden) (Rakhshani *et al.* 2012b).

**Distribution in the Middle East and North Africa**

Algeria (Starý 1976; Laamari *et al.* 2012); Iran (Rakhshani *et al.* 2008c, 2012b; Barahoei *et al.* 2013; Alikhani *et al.* 2013); Lebanon (Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); Turkey (Western part – Aslan & Karaca 2005; Central part – Rakhshani *et al.* 2008d; Tomanović *et al.* 2008).

**General distribution**

Eastern and Western Palaearctic, Oriental.



***Lysiphlebus cardui*** (Marshall, 1896)  
Figs 37, 127, 230, 326, 427, 504, 564

**Host records**

*Aphis fabae* Scopoli (Alikhani *et al.* 2013); *Aphis gossypii* Glover (?) (Laamari *et al.* 2012).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2012); Iran (Alikhani *et al.* 2013).

**General distribution**

Eastern (Iran) and Western Palaearctic.

***Lysiphlebus confusus*** Tremblay & Eady, 1978  
Figs 38, 128, 231, 327, 428, 505, 565

*Lysiphlebus marismortui* Mescheloff & Rosen, 1990a, Israel Journal of Entomology, 24: 35–50. **syn. nov.**

**Host records**

*Acyrtosiphon* sp. (?) (Starý *et al.* 2000); *Aphis affinis* del Guercio (Taheri & Rakhshani 2013); *Aphis aurantii* Boyer de Fonscolombe (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Tremblay *et al.* 1985; Ben Halima *et al.* 1994; Starý 1976; Aghajanzadeh *et al.* 1995; Starý *et al.* 2000; Uysal *et al.* 2004; Ben Halima & Ben Hamouda 2005); *Aphis craccivora* Koch (Al-Azawi 1970; Starý & Kaddou 1971; Starý 1976, 1979; Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990a; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; Uysal *et al.* 2004; Güz & Kiliñer 2005; Talebi *et al.* 2009; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Barahoei *et al.* 2013; Satar *et al.* 2014; Chaouche & Laamari 2015; Rakhshani *et al.* 2005a, 2006a); *Aphis euphorbiae* Kaltenbach (Güz & Kiliñer 2005); *Aphis fabae* Scopoli (Starý 1976; Al-Azawi 1970; Starý & Kaddou 1971; Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Mescheloff & Rosen 1990a; Ben Halima & Ben Hamouda 1993, 2005; Ben Halima *et al.* 1994 – as *Aphis citricola* van der Goot; Abou-Fakhr & Kawar 1998; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Ben Halima & Ben Hamouda 2005 – as *Aphis citricola* van der Goot; Uysal *et al.* 2004; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012); *Aphis farinosa* Gmelin (Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2007b; Talebi *et al.* 2009; Nazari *et al.* 2012); *Aphis gossypii* Glover (Starý 1976; Al-Azawi 1970; Starý & Kaddou 1971; Mescheloff & Rosen 1990a; Ben Halima & Ben Hamouda 1993, 2005; Ben Halima *et al.* 1994; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Laamari *et al.* 2011; Nazari *et al.* 2012; Satar *et al.* 2014); *Aphis hederiae* Kaltenbach (Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990a; Abou-Fakhr & Kawar 1998); *Aphis idaei* van der Goot (Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis intybi* Koch (Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Aphis nasturtii* Kaltenbach (Al-Azawi 1970; Starý 1976; Laamari *et al.* 2012); *Aphis nasturtii* Kaltenbach (Mescheloff & Rosen 1990a – as *Aphis zizyphi* Theobald); *Aphis nerii* Boyer de Fonscolombe (Al-Azawi 1970; Starý 1976; Ben Halima *et al.* 1994; Ben Halima & Ben Hamouda 2005); *Aphis potentillae* Nevsky (Laamari *et al.* 2011, 2012); *Aphis punicae* Passerini (Aslan *et al.* 2004; Uysal *et al.* 2004); *Aphis ruborum* (Börner) (Starý 1976; Mescheloff & Rosen 1990a; Aslan *et al.* 2004; Uysal *et al.* 2004); *Aphis solanella* Theobald (Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); *Aphis umbrella* (Börner) (Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990a; Abou-Fakhr & Kawar 1998); *Aphis urticata* Gmelin (Güz & Kiliñer 2005); *Aphis vallei* Hille Ris Lambers & Stroyan (Starý 1976; Güz & Kiliñer 2005); *Aphis verbasci* Schrank (Mescheloff & Rosen 1990a; Starý *et al.* 2000; Talebi *et al.* 2009; Rakhshani



*et al.* 2012b; Barahoei *et al.* 2013); *Aulacorthum* sp. (Starý 1979); *Brachycaudus amygdalinus* (Schouteden) (Mescheloff & Rosen 1990a); *Brachycaudus cardui* (L.) (Abou-Fakhr 1982; Tremblay *et al.* 1985; Abou-Fakhr & Kwar 1998; Starý *et al.* 2000; Uysal *et al.* 2004); *Brachycaudus helichrysi* (Kaltenbach) (Aslan *et al.* 2004; Uysal *et al.* 2004; Nazari *et al.* 2012; Satar *et al.* 2014); *Brachyunguis skafi* Remaudière & Talhouk (Starý *et al.* 2000); *Dysaphis crataegi* (Kaltenbach); *Dysaphis foeniculus* (Theobald) (Güz & Kiliñer 2005); *Ephedraphis ephedrae* (Nevsky) (Starý 1979; Starý *et al.* 2000); *Hyadaphis foeniculi* (Passerini) (Tremblay *et al.* 1985); *Hyperomyzus lactucae* (L.) (?) (Barahoei *et al.* 2013); *Macrosiphoniella tapuskae* (Hottes & Frison) (?) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2011); *Melanaphis* sp. (Mescheloff & Rosen 1990a); *Myzus persicae* (Sulzer) (Ben Halima *et al.* 1994; Abou-Fakhr & Kwar 1998); *Protaphis* sp. (Starý 1979); *Uroleucon* sp. (?) (Barahoei *et al.* 2012, 2013).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Iran (Starý 1979; Aghajanzadeh *et al.* 1995; Starý *et al.* 2000; Rakhshani *et al.* 2005a; Rakhshani *et al.* 2007b; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Rakhshani *et al.* 2012b; Taheri & Rakhshani 2013); Egypt (Mackauer & Starý 1967; Starý 1976); Iraq (Starý 1969a, 1976, 1979; Al-Azawi 1970; Starý & Kaddou 1971); Israel (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1990a); Lebanon (Abou-Fakhr 1982; Hussein & Kwar 1984; Tremblay *et al.* 1985; Abou-Fakhr & Kwar 1998); Tunisia (Ben Halima & Ben Hamouda 1993, 2005; Ben Halima *et al.* 1994); Turkey (Starý 1976; Uysal *et al.* 2004; Eastern part – Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Güz & Kiliñer 2005; Satar *et al.* 2014; Akar & Erdoğan 2017); UAE (Starý *et al.* 2013).

### General distribution

Eastern and Western Palaearctic, Oriental.

### Remarks

Mescheloff & Rosen (1990a) described *Lysiphlebus marismortui* from Israel. Based on the original description of this species, which is very closely related to *Lysiphlebus confusus*, and the fact that *Lysiphlebus confusus* exhibits major morphological variability (Tomanović *et al.* 2018), we believe that *Lysiphlebus marismortui* falls as a synonym of *Lysiphlebus confusus*.

*Lysiphlebus desertorum* Starý, 1965  
Figs 39, 129, 232, 328, 429, 506, 566

### Host records

*Aphis craccivora* Koch (Barahoei *et al.* 2013); *Aphis* sp. (Rakhshani *et al.* 2012b); *Protaphis terricola* (Rondani) (Barahoei *et al.* 2013); *Protaphis* sp. (Talebi *et al.* 2009; Nazari *et al.* 2012); *Xerobion cinae* (Nevsky) (Starý 1979; Starý *et al.* 2000; Barahoei *et al.* 2013).

### Distribution in the Middle East and North Africa

Iran (Starý 1979; Starý *et al.* 2000; Talebi *et al.* 2009; Nazari *et al.* 2012; Rakhshani *et al.* 2012b; Barahoei *et al.* 2013).

### General distribution

Eastern (Iran, Uzbekistan) and Western (Spain) Palaearctic.

*Lysiphlebus fabarum* (Marshall, 1896)

Figs 40, 130, 233, 329, 430, 507, 567

**Material examined**

SAUDI ARABIA • 11 ♀♀, 3 ♂♂; Abha; May 2013; on *Lablab purpureus*; Z. Ahmad leg. (DPPZ).

**Host records**

*Acyrtosiphon ilka* Mordvilko (?) (Starý 1979; Starý *et al.* 2000); *Acyrtosiphon gossypii* Mordvilko (?) (Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Acyrtosiphon lactucae* (Passerini) (?) (Starý *et al.* 2000); *Acyrtosiphon pisum* (Harris) (?) (Zeren & Düzgüneş 1983; Uysal *et al.* 2004); *Aphis acetosae* L. (Starý *et al.* 2000; Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Aphis affinis* Del Guercio (Starý & Kaddou 1971; Starý 1976; Starý & Sekkat 1987; Starý *et al.* 2000; Uysal *et al.* 2004; Talebi *et al.* 2009; Rakhshani *et al.* 2012b; Nazari *et al.* 2012; Tomanović *et al.* 2012; Barahoei *et al.* 2013; Rakhshani *et al.* 2013; Taheri & Rakhshani 2013); *Aphis althaeae* (Nevsky) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2012b); *Aphis astragali* Ossiannilsson (Laamari *et al.* 2011, 2012); *Aphis aurantii* Boyer de Fonscolombe (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Hussein & Kwar 1984; Tremblay *et al.* 1985; Yumruktepe & Uygün 1994; Aghajanzadeh *et al.* 1995; Starý *et al.* 2000; Uysal *et al.* 2004; Boukhris-Bouhachem 2011; Rakhshani *et al.* 2013); *Aphis brunnea* Ferrari (Chaouche & Laamari 2015); *Aphis chloris* Koch (Mescheloff & Rosen 1990a); *Aphis craccivora* Koch (Starý 1976, 1979; Starý & Kaddou 1971; Monajemi & Esmaili 1981; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Abou-Fakhr 1982; Tremblay *et al.* 1985; Starý & Sekkat 1987; Mescheloff & Rosen 1990a; Abou-Fakhr & Kwar 1998; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Uysal *et al.* 2004; Güz & Kiliñer 2005; Rakhshani *et al.* 2005a, 2006a; Abdel-Samad & Ahmed 2009; Talebi *et al.* 2009; Mossadegh *et al.* 2011; Barahoei *et al.* 2011, 2012, 2013; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Rakhshani *et al.* 2012b, 2013; Taheri & Rakhshani 2013; Satar *et al.* 2014); *Aphis davletshinae* Hillie Ris Lambers (Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Rakhshani *et al.* 2013); *Aphis epilobiaria* Theobald (Mescheloff & Rosen 1990a); *Aphis epilobii* Kaltenbach (Nazari *et al.* 2012; Rakhshani *et al.* 2013); *Aphis euphorbiae* Kaltenbach (Rakhshani *et al.* 2013); *Aphis euphorbicola* Rezwani & Lampel (Rakhshani *et al.* 2012b, 2013; Barahoei *et al.* 2013); *Aphis fabae* Scopoli (Davatchi & Shojai 1968; Starý 1976; Al-Azawi 1970; Starý & Kaddou 1971; Abou-Fakhr 1982; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Tremblay *et al.* 1985; Starý & Sekkat 1987; Mescheloff & Rosen 1990a; Yumruktepe & Uygün 1994; Abou-Fakhr & Kwar 1998; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Uysal *et al.* 2004; Güz & Kiliñer 2005; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Rakhshani *et al.* 2012b, 2013; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Barahoei *et al.* 2011, 2012, 2013; Chaouche & Laamari 2015); *Aphis fabae cirsiacanthoidis* Scopoli (Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani *et al.* 2013); *Aphis galiiscabri* Schrank (Güz & Kiliñer 2005); *Aphis gerardiana* Mordvilko (Rakhshani *et al.* 2012b, 2013); *Aphis gossypii* Glover (Avidov & Harpaz 1969; Al-Azawi 1970; Starý 1976, 1979; Abou-Fakhr 1982; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Tremblay *et al.* 1985; Starý & Sekkat 1987; Mescheloff & Rosen 1990a; Yumruktepe & Uygün 1994; Abou-Fakhr & Kwar 1998; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Boukhris-Bouhachem 2011; Mossadegh *et al.* 2011; Rakhshani *et al.* 2012b, 2013; Nazari *et al.* 2012; Barahoei *et al.* 2011, 2012, 2013; Taheri & Rakhshani 2013; Satar *et al.* 2014); *Aphis hederiae* Kaltenbach (Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990a; Abou-Fakhr & Kwar 1998); *Aphis idaei* van der Goot (Talebi *et al.* 2009; Taheri & Rakhshani 2013; Rakhshani *et al.* 2013; Barahoei *et al.* 2013); *Aphis intybi* Koch (Düzgüneş *et al.* 1982; Starý *et al.* 2000; Aslan *et al.* 2004; Uysal *et al.* 2004; Güz & Kiliñer 2005; Talebi *et al.* 2009; Rakhshani *et al.* 2012b; Taheri & Rakhshani 2013); *Aphis nasturtii* Kaltenbach (Starý 1976, 1979; Starý *et al.* 2000; Nazari *et al.* 2012; Laamari *et al.* 2012; Rakhshani *et al.* 2013; Barahoei *et al.* 2013); *Aphis nerii*

Boyer de Fonscolombe (Starý *et al.* 2000; Aslan *et al.* 2004; Uysal *et al.* 2004; Talebi *et al.* 2009; Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Aphis origani* Passerini, *Aphis plantaginis* Goeze (Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Aphis pomi* De Geer (Düzgüneş *et al.* 1982; Radjabi 1989; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani 2012); *Aphis punicae* (Passerini) (Starý 1976; Mescheloff & Rosen 1990a; Talebi *et al.* 2009; Laamari *et al.* 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Rakhshani *et al.* 2013; Taheri & Rakhshani 2013); *Aphis ruborum* (Börner) (Starý & Kaddou 1971; Starý 1976, 1979; Düzgüneş *et al.* 1982; Starý *et al.* 2000; Uysal *et al.* 2004; Güz & Kiliñer 2005; Rakhshani *et al.* 2013); *Aphis rumicis* L. (Starý *et al.* 2000; Güz & Kiliñer 2005; Talebi *et al.* 2009; Nazari *et al.* 2012; Rakhshani *et al.* 2013); *Aphis salviae* Walker (Starý 1979; Starý *et al.* 2000; Güz & Kiliñer 2005); *Aphis solanella* Theobald (Starý & Kaddou 1971; Starý 1976; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Uysal *et al.* 2004; Güz & Kiliñer 2005; Nazari *et al.* 2012; Rakhshani *et al.* 2013 Talebi *et al.* 2009 – as *Aphis evonymi* F.; Barahoei *et al.* 2013; Rakhshani *et al.* 2013 – as *Aphis evonymi* F.); *Aphis spiraeicola* Patch (Starý *et al.* 2000; Laamari *et al.* 2012; Rakhshani 2012; Rakhshani *et al.* 2013); *Aphis taraxacicola* (Börner) (Starý 1979; Starý *et al.* 2000); *Aphis tirucallis* Hille Ris Lambers (Ölmez & Ulusoy 2003; Uysal *et al.* 2004); *Aphis umbrella* (Börner) (Abou-Fakhr 1982; Tremblay *et al.* 1985; Mescheloff & Rosen 1990a; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; Talebi *et al.* 2009; Nazari *et al.* 2012; Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Aphis urticata* Gmelin (Starý *et al.* 2000; Güz & Kiliñer 2005; Rakhshani *et al.* 2013), *Aphis verbasci* Schrank (Güz & Kiliñer 2005); *Aphis* sp. (Starý & Kaddou 1971; Starý 1976, 1979; Starý *et al.* 2000; Güz & Kiliñer 2005; Barahoei *et al.* 2013; Laamari *et al.* 2012; Nazari *et al.* 2012); *Brachycaudus amygdalinus* (Schouteden) (Nazari *et al.* 2012; Rakhshani 2012); *Brachycaudus cardui* (L.) (Düzgüneş *et al.* 1982; Elmali & Toros 1994; Starý *et al.* 2000; Aslan *et al.* 2004; Uysal *et al.* 2004; Talebi *et al.* 2009; Laamari *et al.* 2011; Rakhshani *et al.* 2012b, 2013; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Brachycaudus helichrysi* (Kaltenbach) (Starý 1976; Starý *et al.* 2000; Aslan *et al.* 2004; Uysal *et al.* 2004; Jafari *et al.* 2011; Laamari *et al.* 2011, 2012; Jafari & Modarres Awal 2012; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2013; Rakhshani *et al.* 2013; Taheri & Rakhshani 2013); *Brachycaudus persicae* (Passerini) (Rakhshani 2012); *Brachycaudus tragopogonis* (Kaltenbach) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Barahoei *et al.* 2012, 2013; Rakhshani *et al.* 2012b, 2013); *Brachycaudus tragopogonis setosus* (Hille Ris Lambers) (Starý *et al.* 2000); *Brachyunguis harmalae* Das (Talebi *et al.* 2009; Rakhshani *et al.* 2012b, 2013); *Brachyunguis zygophylli* (Nevsky) (Barahoei *et al.* 2011, 2012, 2013; Rakhshani *et al.* 2013); *Cavariella aegopodii* (Scopoli) (Abou-Fakhr 1982; Tremblay *et al.* 1985; Uysal *et al.* 2004); *Capitophorus elaeagni* (Del Guercio) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Coloradoa* sp. (Starý 1979; Starý *et al.* 2000); *Dysaphis lappae* Koch (Starý 1979); *Dysaphis plantaginea* (Passerini) (Düzgüneş *et al.* 1982; Starý *et al.* 2000; Aslan *et al.* 2004; Uysal *et al.* 2004; Rakhshani 2012; Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Dysaphis radicola* (Mordvilko) (Talebi *et al.* 2009; Rakhshani *et al.* 2013); *Dysaphis rumecicola emicis* (Mimeur) (Mescheloff & Rosen 1990a); *Hayhurstia atriplicis* (L.) (Nazari *et al.* 2012; Rakhshani *et al.* 2013); *Hyadaphis coriandri* (Das) (Talebi *et al.* 2009; Rakhshani *et al.* 2013); *Hyadaphis foeniculi* (Passerini) (Tremblay *et al.* 1985); *Hyalopterus amygdali* (Blanchard) (?) (Rakhshani 2012); *Hyalopterus pruni* (Geoffroy) (?) (Starý 1976; Erkin 1983; Uysal *et al.* 2004; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Laamari *et al.* 2012); *Lipaphis erysimi* (Kaltenbach) (Talebi *et al.* 2009; Rakhshani *et al.* 2013), *Lipaphis fritzmülleri* Börner (Talebi *et al.* 2009); *Lipaphis lepidii* (Nevsky) (Starý 1979; Starý *et al.* 2000; Talebi *et al.* 2009; Rakhshani *et al.* 2013); *Macrosiphoniella papillata* Holman (?) (Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Macrosiphoniella sanborni* (Gillette) (?) (Starý *et al.* 2000); *Macrosiphum rosae* (L.) (?) (Taheri & Rakhshani 2013); *Melanaphis sacchari* (Zehntner) (Barahoei *et al.* 2011; Rakhshani *et al.* 2013); *Melanaphis* sp. (Barahoei *et al.* 2012, 2013); *Metopolophium dirhodum* (Walker) (?) (Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Myzus beybienkoi* (Narzikulov) (Talebi *et al.* 2009; Rakhshani *et al.* 2013); *Myzus persicae* (Sulzer) (Karaat & Goven 1986; Mescheloff & Rosen 1990a; Ölmez & Ulusoy 2003; Uysal *et al.* 2004;

Güz & Kiliñer 2005; Talebi *et al.* 2009; Boukhris-Bouhachem 2011; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Phorodon humuli* (Schrank) (Mokhtari *et al.* 2000; Starý *et al.* 2000); *Protaphis alexandrae* (Nevsky) (Rakhshani *et al.* 2012b, 2013); *Protaphis anthemidis* (Börner) (Talebi *et al.* 2009; Nazari *et al.* 2012; Rakhshani *et al.* 2013); *Protaphis elongata* (Nevsky) (Talebi *et al.* 2009; Rakhshani *et al.* 2013); *Protaphis terricola* (Rondani) (Güz & Kiliñer 2005; Barahoei *et al.* 2013; Rakhshani *et al.* 2013); *Protaphis* sp. (Starý 1976, 1979; Mescheloff & Rosen 1990a; Barahoei *et al.* 2013); *Rhopalosiphum maidis* (Fitch) (Starý 1976; Düzgüneş *et al.* 1982; Özder & Toros 1999; Uysal *et al.* 2004); *Rhopalosiphum nymphaeae* (L.) (Mokhtari *et al.* 2000; Starý *et al.* 2000); *Rhopalosiphum padi* (L.) (Rakhshani *et al.* 2008b, 2013; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Gadallah *et al.* 2017); *Saltusaphis scirpus* Theobald (Starý *et al.* 2000; Tomanović *et al.* 2012); *Saltusaphis* sp. (Starý 1979); *Sitobion avenae* (Fabricius) (?) (Elmali & Toros 1994; Özder & Toros 1999; Uysal *et al.* 2004); *Uroleucon compositae* (Theobald) (?) (Laamari *et al.* 2011); *Uroleucon jaceae* (L.) (?) (Aslan *et al.* 2004; Uysal *et al.* 2004; Güz & Kiliñer 2005).

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Egypt (Mackauer & Starý 1967; Starý 1976; Abdel-Samad & Ahmed 2009; Gadallah *et al.* 2017); Iran (Starý 1979; Aghajanzadeh *et al.* 1995; Starý *et al.* 2000; Rakhshani *et al.* 2005a, 2006a, 2012b, 2013; Mossadegh *et al.* 2011; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2011, 2012, 2013; Taheri & Rakhshani 2013); Iraq (Starý 1969a, 1976; Al-Azawi 1970; Starý & Kaddou 1971); Israel (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1990a); Lebanon (Mackauer & Starý 1967; Starý 1976; Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); Morocco (Mimeur 1934; Starý 1976; Starý & Sekkat 1987); Syria (Starý 1976); Tunisia (Boukhris-Bouhachem 2011); Turkey (Starý 1976; Eastern part – Karaat & Goven 1986; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Uysal *et al.* 2004; Güz & Kiliñer 2005; Central part – Satar *et al.* 2014; Western part – Erkin 1983; Erdoğan *et al.* 2008; Akar & Erdoğan 2017); UAE (Starý *et al.* 2013).

### General distribution

Australasian, Eastern and Western Palaearctic, Oceanic, Oriental.

### Remarks

Specimens reared from *Brachycaudus tragopogonis* (Kaltenbach) are most probably refer to *Lysiphlebus volkli* Tomanović & Kavallieratos, 2018.

*Lysiphlebus fritzmuelleri* Mackauer, 1960  
Figs 41, 131, 234, 330, 431, 508, 568

### Host records

Lacking host data (Akar & Erdoğan 2017).

### Distribution in the Middle East and North Africa

Turkey (Western part – Akar & Erdoğan 2017).

### General distribution

Australasian, Eastern Palaearctic (Kazakhstan), Western Palaearctic (Eastern and central Europe), Oceanic, Oriental.



*Lysiphlebus testaceipes* (Cresson, 1880)  
Figs 42, 132, 235, 331, 432, 509, 569

**Host records**

*Acyrtosiphon gossypii* Mordvilko (Chaouche & Laamari 2015); *Aphis astragali* Ossiannilsson (Laamari *et al.* 2012); *Aphis aurantii* Boyer de Fonscolombe (Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011); *Aphis brunnea* Ferrari (Chaouche & Laamari 2015); *Aphis craccivora* Koch (Rakhshani *et al.* 2005a; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); *Aphis euphorbiae* Kaltenbach (Laamari *et al.* 2011, 2012); *Aphis fabae* Scopoli (Laamari *et al.* 2011, 2012); *Aphis gossypii* Glover (Ben Halima 2011; Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015; Ayadi *et al.* 2017); *Aphis illinoisensis* Shimer (Havelka *et al.* 2011; Laamari *et al.* 2011, 2012); *Aphis nerii* Boyer de Fonscolombe (Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015; Ayadi *et al.* 2017); *Aphis pomi* De Geer (Laamari *et al.* 2011, 2012; Mdellel & Ben Halima 2015); *Aphis potentillae* Nevsky, *Aphis punicae* (Passerini) and *Aphis solanella* Theobald (Ayadi *et al.* 2017); *Aphis spiraeicola* Patch (Labdaoui & Guenaoui 2018); *Brachycaudus cardui* (L.) and *Brachycaudus helichrysi* (Kaltenbach) (Laamari *et al.* 2011, 2012); *Diuraphis noxia* (Kurdjumov) (Laamari *et al.* 2016); *Brevicoryne brassicae* (L.) (Uysal *et al.* 2004); *Dysaphis foeniculus* (Theobald) (Chaouche & Laamari 2015); *Dysaphis plantaginea* (Passerini); *Dysaphis pyri* (Boyer de Fonscolombe); *Dysaphis tulipae* (Boyer de Fonscolombe); *Hyalopterus pruni* (Geoffroy) (Laamari *et al.* 2011, 2012); *Myzus persicae* (Sulzer) (Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); *Macrosiphum euphorbiae* (Thomas) (Laamari *et al.* 2011, 2012); *Rhopalosiphum maidis* (Fitch) (Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Ayadi *et al.* 2017); *Uroleucon compositae* (Theobald) (Laamari *et al.* 2012).

**Distribution in the Middle East and North Africa**

Algeria (Havelka *et al.* 2011; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015; Laamari *et al.* 2016; Labdaoui & Guenaoui 2018); Egypt (Laboratory population – Adly & El-Gantiry 2014); Iran (Rakhshani *et al.* 2005a); Libya (Mitrović *et al.* 2013; Žikić *et al.* 2015); Tunisia (Ben Halima 2011; Boukhris-Bouhachem 2011; Ayadi *et al.* 2017); Turkey (Uysal *et al.* 2004; Western part – Yoldaş *et al.* 2011).

**General distribution**

Cosmopolitan.

*Lysiphlebus volkli* Tomanović & Kavallieratos, 2018

**Host records**

*Aphis verbasci* Schrank, *Brachycaudus tragopogonis* (Kaltenbach) (Tomanović *et al.* 2018).

**Distribution in the Middle East and North Africa**

Iran (Tomanović *et al.* 2018).

**General distribution**

Eastern Palaearctic (Iran), Western Palaearctic (Southeastern Europe).

*Monoctonia pistaciaecola* Starý, 1962  
Figs 43, 133, 236, 332, 433, 570

**Host records**

*Forda* sp. (Starý & Kaddou 1971; Starý 1976); *Smynthuodes betae* Westwood (Wool & Burstein 1991); Lacking host data (Kargarian *et al.* 2016).



**Distribution in the Middle East and North Africa**

Iran (Kargarian *et al.* 2016), Iraq (Starý & Kaddou 1971; Starý 1976); Israel (Wool & Burstein 1991).

**General distribution**

Eastern and Western Palaearctic.

*Monoctonia vesicarii* Tremblay, 1991  
Figs 44, 134, 237, 333, 434, 571

**Host records**

*Pemphigus spyrothecae* Passerini (Ghafouri Moghaddam *et al.* 2012; Rakhshani *et al.* 2015).

**Distribution in the Middle East and North Africa**

Iran (Ghafouri Moghaddam *et al.* 2012; Rakhshani *et al.* 2015).

**General distribution**

Eastern (Iran) and Western Palaearctic.

*Monoctonus crepidis* (Haliday, 1834)  
Figs 135, 238, 334, 435, 572

**Host records**

Lacking host data (Tomanović *et al.* 2008).

**Distribution in the Middle East and North Africa**

Turkey (Central part – Tomanović *et al.* 2008).

**General distribution**

Western Palaearctic, Nearctic, Oriental.

*Monoctonus mali* van Achterberg, 1989  
Figs 136, 239, 335, 436, 573

**Host records**

*Ovatus insitus* (Walker) (Ölmez & Ulusoy 2003; Uysal *et al.* 2004).

**Distribution in the Middle East and North Africa**

Iran (Mosavi *et al.* 2012); Turkey (Eastern part – Ölmez & Ulusoy 2003; Uysal *et al.* 2004).

**General distribution**

Eastern (Iran) and Western Palaearctic.

*Pauesia abietis* (Marshall, 1896)  
Figs 137, 240, 336, 437, 574

**Host records**

*Cinara pinimaritimae* (Dufour) (Uysal *et al.* 2004 – as *Cinara maritimae* (Dufour)); *Cinara pilicornis* (Hartig) (Schimitschek, 1944; Starý 1976 – as *Cinara pinicola* (Kaltenbach)).

**Distribution in the Middle East and North Africa**

Turkey (Schimitschek 1944; Starý 1976; Uysal *et al.* 2004).

**General distribution**

Afrotropical, Eastern and Western Palaearctic, Oriental.

*Pauesia anatolica* Michelena, Assael & Mendel, 2005  
Figs 138, 241, 337, 438, 575

**Host records**

*Cinara cedri* Mimeur (Michelena *et al.* 2005).

**Distribution in the Middle East and North Africa**

Israel (imported); Turkey (Western part – Michelena *et al.* 2005).

**General distribution**

Western Palaearctic.

*Pauesia antennata* (Mukerji, 1950)  
Figs 45, 139, 242, 338, 439, 576

**Host records**

*Pterochloroides persicae* (Cholodkovsky) (Mackauer & Starý 1967; Starý & Kaddou 1971; Starý 1976; Starý *et al.* 2000; Rakhshani *et al.* 2005b, 2012b; Talebi *et al.* 2009; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2013).

**Distribution in the Middle East and North Africa**

Iran (Mackauer & Starý 1967; Rakhshani *et al.* 2005b, 2012b; Nazari *et al.* 2012; Rakhshani 2012; Barahoei *et al.* 2013); Iraq (Starý & Kaddou 1971; Starý 1976); Tunisia (Mdellel *et al.* 2015); Yemen (Cross & Poswal 1996).

**General distribution**

Eastern and Western Palaearctic, Oriental.

*Pauesia cedrobii* Starý & Leclant, 1977  
Figs 140, 339, 440, 577

**Host records**

*Cinara (Cedrobium) laportei* Remaudière (Starý & Leclant 1977).

**Distribution in the Middle East and North Africa**

Morocco (Starý & Leclant 1977; Fabre & Rabasse 1987).

**General distribution**

Western Palaearctic.

***Pauesia hazratbalensis*** Bhagat, 1981  
Figs 46, 141, 243, 340, 441, 578

**Host records**

*Cinara (Cupressobium) tujafilina* (del Guercio) (Starý *et al.* 2005; Rakhshani *et al.* 2012b, 2017); *Cinara pinihabitans* (Mordvilko) (Heidari Latibari *et al.* 2019).

**Distribution in the Middle East and North Africa**

Iran (Starý *et al.* 2005; Rakhshani *et al.* 2012b; 2017).

**General distribution**

Eastern Palaearctic, Oriental.

***Pauesia picta*** (Haliday, 1834)  
Figs 142, 244, 341, 442, 579

**Host records**

*Cinara pini* (L.) (Aslan *et al.* 2004; Uysal *et al.* 2004).

**Distribution in the Middle East and North Africa**

Turkey (Central part – Aslan *et al.* 2004; Uysal *et al.* 2004).

**General distribution**

Western Palaearctic, Oriental.

***Pauesia pini*** (Haliday, 1834)  
Figs 143, 342, 443, 580

**Host records**

*Cinara palaestinensis* Hille Ris Lambers (Bodenheimer & Swirski 1957; Avidov & Harpaz 1969; Starý 1976).

**Distribution in the Middle East and North Africa**

Israel (Bodenheimer & Swirski 1957; Avidov & Harpaz 1969; Starý 1976).

**General distribution**

Eastern and Western Palaearctic, Oriental.

***Pauesia silana*** Tremblay, 1969  
Figs 144, 245, 343, 444, 581

**Host records**

*Cinara palaestinensis* Hille Ris Lambers (Mescheloff & Rosen 1990b); *Cinara pini* (L.) (Benhamacha *et al.* 2017).

**Distribution in the Middle East and North Africa**

Algeria (Benhamacha *et al.* 2017), Israel (Mescheloff & Rosen 1990b).

**General distribution**

Western Palaearctic.

*Pauesia unilachni* (Gahan, 1926)  
Figs 145, 344, 445, 582

**Host records**

*Cinara* (*Schizolachnus*) *pineti* (Fabricius) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**Distribution in the Middle East and North Africa**

Turkey (Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004).

**General distribution**

Afrotropical, Eastern and Western Palaearctic, Oriental.

*Pauesia* sp.

**Host records**

*Cinara cedri* Mimeur (Aslan *et al.* 2004; Uysal *et al.* 2004).

**Distribution in the Middle East and North Africa**

Saudi Arabia (Ahmad & Bakr 2013); Turkey (Central part – Aslan *et al.* 2004; Uysal *et al.* 2004); Yemen (Starý *et al.* 2013).

*Praon abjectum* (Haliday, 1833)  
Figs 47, 146, 246, 345, 446, 583

**Host records**

*Aphis craccivora* Koch, *Aphis punicae* Passerini, *Aphis solanella* Theobald, *Aphis viticis* Ferrari, *Aphis* sp. (Starý & Kaddou 1971; Starý 1976); *Brachycaudus cardui* (L.) (Rakhshani *et al.* 2007a; Rakhshani 2012)

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2007a; Rakhshani 2012); Iraq (Starý 1969a, 1976; Starý & Kaddou 1971); Turkey (Western part – Tomanović *et al.* 2008; Akar & Erdoğan 2017).

**General distribution**

Eastern and Western Palaearctic, Nearctic, Oriental.

*Praon absinthii* Bignell, 1894  
Figs 48, 147, 247, 346, 447, 584

**Host records**

*Macrosiphoniella absinthii* (L.) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2011); *Macrosiphoniella oblonga* (Mordvilko) (Rakhshani *et al.* 2007a, 2011; Talebi *et al.* 2009); *Macrosiphoniella sanborni* (Gillette) (Rakhshani *et al.* 2007a, 2011).

**Distribution in the Middle East and North Africa**

Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2007a; Talebi *et al.* 2009).

### General distribution

Eastern and Western Palaearctic, Oriental.

*Praon athenaeum* Kavallieratos & Lykouressis, 2000

Figs 148, 248, 347, 448, 585

### Host records

Lacking host data (Akar & Erdoğan 2017)

### Distribution in the Middle East and North Africa

Turkey (Western part – Akar & Erdoğan 2017).

### General distribution

Western Palaearctic (Europe).

*Praon barbatum* Mackauer, 1967

Figs 49, 149, 249, 348, 449, 586

### Material examined

SAUDI ARABIA • 4 ♀♀; Abha; Jun. 2012; *Acyrtosiphon pisum* (Harris) on *Trifolium alexandrinum*; Z. Ahmad leg. (DPPZ).

### Host records

*Acyrtosiphon pisum* (Harris) (González *et al.* 1978; Starý & González 1978; Starý 1979; Tremblay *et al.* 1985; Starý *et al.* 2000; Rakhshani *et al.* 2007a; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Nearctaphis bakeri* (Cowen) (Barahoei *et al.* 2013).

### Distribution in the Middle East and North Africa

Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2007a; Nazari *et al.* 2012; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); Lebanon (Tremblay *et al.* 1985); Morocco (Starý 1976); Saudi Arabia (new record).

### General distribution

Eastern and Western Palaearctic, Nearctic (imported).

*Praon bicolor* Mackauer, 1959

Figs 50, 150, 250, 349, 450, 587

### Host records

Lacking host data (Farahani *et al.* 2015).

### Distribution in the Middle East and North Africa

Iran (Farahani *et al.* 2015).

### General distribution

Eastern (Iran) and Western Palaearctic.



***Praon exsoletum*** (Nees, 1811)

Figs 51, 151, 251, 350, 451, 588

**Material examined**

SAUDI ARABIA • 2 ♀♀, 2 ♂♂; Abha; Jun. 2012; *Therioaphis trifolii* (Monell) on *Trifolium alexandrinum*; Z. Ahmad leg. (DPPZ).

**Host records**

*Acyrtosiphon pisum* (Harris) (?) (Monajemi & Esmaili 1981; Starý *et al.* 2000), *Therioaphis riehmi* (Börner) (van den Bosch 1957; Starý *et al.* 2000); *Therioaphis trifolii* (Monell) (Harpaz 1955; van den Bosch 1957; Farahbakhsh 1961; Starý 1979; Avidov & Harpaz 1969; Starý 1976; Monajemi & Esmaili 1981; Starý & Erdelen 1982; Tremblay *et al.* 1985; Rasulian 1989; Mescheloff & Rosen 1988; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2006a, 2007a; Laamari *et al.* 2011, 2012; Rakhshani *et al.* 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Therioaphis* sp. (Starý & Kaddou 1971; Starý 1976).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011, 2012); Egypt (Starý 1976); Iran (Starý *et al.* 2000; Rakhshani *et al.* 2006a, 2007a, 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013); Iraq (Starý & Kaddou 1971; Starý 1976); Israel (Harpaz 1955; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1988); Lebanon (van den Bosch 1957; Starý 1976; Tremblay *et al.* 1985); Saudi Arabia (Ahmad & Bakr 2013); Turkey (Starý 1976; Eastern part – van den Bosch 1957; Uysal *et al.* 2004; Western part – Erdoğan *et al.* 2008; Akar & Erdoğan 2017); Yemen (Starý & Erdelen 1982; Starý *et al.* 2013).

**General distribution**

Afrotropical, Holarctic, Neotropical.

***Praon flavinode*** (Haliday, 1833)

Figs 52, 152, 252, 351, 452, 589

**Host records**

*Tinocallis nevskyi* Remaudière, Quednau & Heie (Barahoei *et al.* 2010, 2012, 2013) *Tuberculatus (Tuberculoides) albosiphonatus* Hille Ris Lambers (Starý & Kaddou 1971; Starý 1976); *Tuberculatus (Tuberculoides) moerickei* Hille Ris Lambers (Starý 1976); *Tuberculatus* sp. (Starý 1969b, 1976; Starý & Kaddou 1971).

**Distribution in the Middle East and North Africa**

Iran (Barahoei *et al.* 2010, 2012, 2013); Iraq (Starý 1969b, 1976; Starý & Kaddou 1971); Turkey (Western part – Akar & Erdoğan 2017).

**General distribution**

Eastern and Western Palaearctic, Oriental.

***Praon gallicum*** Starý, 1971

Figs 53, 153, 253, 352, 453, 590

**Host records**

*Rhopalosiphum maidis* (Fitch) (El-Serafy 1999); *Rhopalosiphum padi* (L.) (Ibrahim 1990a, 1990b; El-Serafy 1999; Bagheri-Matin *et al.* 2010; Nazari *et al.* 2012); *Schizaphis graminum* (Rondani) (El-Serafy 1999); *Sitobion avenae* (Fabricius) (El-Serafy 1999).

### **Distribution in the Middle East and North Africa**

Egypt (Ibrahim 1990a, 1990b; El-Serafy 1999); Iran (Bagheri-Matin *et al.* 2010; Nazari *et al.* 2012).

### **General distribution**

Eastern and Western Palaearctic, Nearctic (imported), Neotropical (imported).

*Praon longicorne* Marshall, 1896  
Figs 54, 154, 254, 353, 454, 591

### **Host records**

Lacking host data (Tomanović *et al.* 2008).

### **Distribution in the Middle East and North Africa**

Turkey (Central and Eastern part – Tomanović *et al.* 2008).

### **General distribution**

Eastern and Western Palaearctic, Oriental.

*Praon necans* Mackauer, 1959  
Figs 55, 155, 255, 354, 455, 592

### **Host records**

*Aphis craccivora* Koch (Nazari *et al.* 2012); *Aphis gossypii* Glover, *Aphis nerii* Boyer de Fonscolombe (Mossadegh *et al.* 2011); *Aphis punicae* Passerini, *Macrosiphoniella sanborni* (Gillette) (Nazari *et al.* 2012); *Myzus persicae* (Sulzer) (Mossadegh *et al.* 2011); *Rhopalosiphum maidis* (Fitch) (El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003); *Rhopalosiphum nymphaeae* (L.) (Nazari *et al.* 2012; Mossadegh *et al.* 2011); *Rhopalosiphum padi* (L.) (Abdel-Rahman *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003; Abdel-Rahman 2005; Mossadegh *et al.* 2011; Nazari *et al.* 2012); *Schizaphis graminum* (Rondani) (Abdel-Rahman *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003; Abdel-Rahman 2005); *Sitobion avenae* (Fabricius) (El-Heneidy *et al.* 2001, 2002, 2003; Mossadegh *et al.* 2011).

### **Distribution in the Middle East and North Africa**

Egypt (Abdel-Rahman *et al.* 2000; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002, 2003; Abdel-Rahman 2005; El-Ghiet *et al.* 2014); Iran (Nazari *et al.* 2012; Mossadegh *et al.* 2011); Iraq (Starý 1976).

### **General distribution**

Eastern and Western Palaearctic, Oriental.

*Praon nonveilleri* Tomanović & Kavallieratos, 2003  
Figs 156, 256, 355, 456, 593

### **Host records**

Lacking host data (Akar & Erdoğan 2017).

### **Distribution in the Middle East and North Africa**

Turkey (Western part – Akar & Erdoğan 2017).

**General distribution**

Western Palaearctic (Europe).

*Praon orpheusi* Kavallieratos, Athanassiou & Tomanović, 2003  
Figs 56, 157, 257, 356, 457, 594

**Host records**

*Hyperomyzus lactucae* (L.) (Rakhshani *et al.* 2007a; Talebi *et al.* 2009).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2007a, Talebi *et al.* 2009).

**General distribution**

Eastern (Iran) and Western Palaearctic (Bulgaria, Greece).

*Praon pubescens* Starý, 1961  
Figs 57, 158, 258, 357, 458, 595

**Host records**

*Nasonovia ribisnigri* (Mosley) (Nazari *et al.* 2012); Lacking host data (Tomanović *et al.* 2008).

**Distribution in the Middle East and North Africa**

Iran (Nazari *et al.* 2012); Turkey (Central part – Tomanović *et al.* 2008; Western part – Akar & Erdoğan 2017).

**General distribution**

Eastern (Iran) and Western Palaearctic, Oriental.

*Praon rosaecola* Starý, 1961  
Figs 58, 159, 259, 358, 459, 596

**Host records**

*Macrosiphum rosae* (L.) (Mescheloff & Rosen 1988; Rakhshani *et al.* 2007a, 2012b; Talebi *et al.* 2009; Barahoei *et al.* 2010, 2012, 2013); *Wahlgreniella nervata* (Gillette) (Barahoei *et al.* 2013).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2007a; 2012b; Barahoei *et al.* 2010, 2012, 2013); Israel (Mescheloff & Rosen 1988).

**General distribution**

Eastern (Iran) and Western Palaearctic.

*Praon unitum* Mescheloff & Rosen, 1988  
Figs 59, 160, 260, 359, 460, 597

**Host records**

*Macrosiphoniella sanborni* (Gillette) (Mescheloff & Rosen 1988; Rakhshani *et al.* 2011); *Uroleucon acroptilidis* Kadyrbekov, Renxin & Shao (Barahoei *et al.* 2010, 2012, 2013); *Uroleucon jaceae* (L.) (Barahoei *et al.* 2013); *Uroleucon sonchi* (L.) (Mescheloff & Rosen 1988; Barahoei *et al.* 2013).

### Distribution in the Middle East and North Africa

Iran (Barahoei *et al.* 2010, 2012, 2013); Israel (Mescheloff & Rosen 1988).

### General distribution

Eastern (Iran) and Western Palaearctic (Israel).

*Praon uroleucon* Tomanović & Kavallieratos, 2003  
Figs 161, 261, 360, 461, 598

### Host records

Lacking host data (Akar & Erdoğan 2017).

### Distribution in the Middle East and North Africa

Turkey (Akar & Erdoğan 2017).

### General distribution

Western Palaearctic (Southeastern Europe).

*Praon volucre* (Haliday, 1833)  
Figs 60, 162, 262, 361, 462, 599

### Material examined

SAUDI ARABIA • 9 ♀♀; Abha, Jun. 2012; *Acyrtosiphon pisum* (Harris) on *Trifolium alexandrinum* • 3 ♀♀; Abha-Mahala College campus; 28 Nov. 2012; *Uroleocon* sp. on *Sonchus oleraceus* • 1 ♀; Abha-Mahala College campus; Dec. 2012; *Aphis solanella* Theobald on *Solanum nigrum* • 1 ♀; Abha-Mahala College campus; Nov. 2012; on *Setaria glauca* • 3 ♀♀, 4♂♂ Abha; May 2013; on *Lactuca sativa* • 3♀♀ 4♂♂; Abha; May 2013; on *Lactuca sativa* • 1 ♀; Qunfudah; Apr. 2011; net sweeping • 1 ♀; Raidah; Apr. 2011; Z. Ahmad leg (DPPZ).

### Host records

*Acyrtosiphon lactucae* (Passerini) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Rakhshani *et al.* 2007a); *Acyrtosiphon pisum* (Harris) (Zeren & Düzgüneş 1983; Uysal *et al.* 2004; Rakhshani *et al.* 2006a, 2007a; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); *Amphorophora catharinae* (Nevsky) (Rakhshani *et al.* 2012b; Barahoei *et al.* 2010, 2012, 2013); *Aphis affinis* del Guercio (Rakhshani *et al.* 2012b); *Aphis aurantii* Boyer de Fonscolombe (Hussein & Kawar 1984; Tremblay *et al.* 1985; Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011); *Aphis craccivora* Koch (Zeren & Düzgüneş 1983; Mescheloff & Rosen 1988; Uysal *et al.* 2004; Rakhshani *et al.* 2005a, 2006a, 2007a; Barahoei *et al.* 2010; Yoldaş *et al.* 2011; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2012, 2013; Rakhshani *et al.* 2012b); *Aphis dlabolai* Holman (Barahoei *et al.* 2013); *Aphis epilobiaria* Theobald (Mescheloff & Rosen 1988); *Aphis fabae* Scopoli (Starý 1979; Abou-Fakhr 1982; Düzgüneş *et al.* 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Mescheloff & Rosen 1988; Ben Halima *et al.* 1994 – as *Aphis citricola* van der Goot; Abou-Fakhr & Kawar 1998; Starý *et al.* 2000; Tomanović *et al.* 2003; Kavallieratos *et al.* 2004; Uysal *et al.* 2004; Ben Halima & Ben Hamouda 2005 – as *Aphis citricola* van der Goot; Güz & Kiliñer 2005; Rakhshani *et al.* 2007a; Laamari *et al.* 2011, 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Kavallieratos *et al.* 2013; Taheri & Rakhshani 2013); *Aphis gossypii* Glover (Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Yoldaş *et al.* 2011; Barahoei *et al.* 2013; Satar *et al.* 2014); *Aphis nasturtii* Kaltenbach (Mescheloff & Rosen 1988 – as *Aphis zizyphi* Theobald); *Aphis nerii* Boyer de Fonscolombe (Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); *Aphis pomi* de Geer (Düzgüneş *et al.* 1982; Hussein & Kawar 1984; Uysal *et al.* 2004; Rakhshani 2012); *Aphis punicae* Passerini (Hussein & Kawar 1984); *Aphis salviae* Walker (Laamari

*et al.* 2011, 2012); *Aphis solanella* Theobald (Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Rakhshani *et al.* 2007a; Talebi *et al.* 2009; Barahoei *et al.* 2010, 2012, 2013); *Aphis spiraecola* Patch (Yoldaş *et al.* 2011; Boukhris-Bouhachem 2011); *Aphis umbrella* (Börner) (Tremblay *et al.* 1985; Abou-Fakhr & Kwar 1998); *Aphis urticae* Gmelin (Rakhshani *et al.* 2012b); *Brachycaudus amygdalinus* (Schouteden) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Rakhshani *et al.* 2007a; Talebi *et al.* 2009; Rakhshani 2012); *Brachycaudus cardui* (L.) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004; Aslan & Karaca 2005; Laamari *et al.* 2011, 2012; Rakhshani 2012); *Brachycaudus helichrysi* (Kaltenbach) (Tremblay *et al.* 1985; Rakhshani *et al.* 2007a; Talebi *et al.* 2009; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Rakhshani 2012; Barahoei *et al.* 2013); *Brachycaudus persicae* (Passerini) (Rakhshani 2012); *Brachycaudus tragopogonis* (Kaltenbach) (Mescheloff & Rosen 1988); *Brachycaudus* sp. (Mescheloff & Rosen 1988); *Brevicoryne brassicae* (L.) (Kilinçer 1982; Uysal *et al.* 2004); *Diuraphis noxia* (Kurdjumov) (Pike *et al.* 1991; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2007a, 2008b; Barahoei *et al.* 2013); *Dysaphis pyri* (Boyer de Fonscolombe) (Rakhshani 2012); *Hyalopterus amygdali* (Blanchard) (Kavallieratos *et al.* 2004; Rakhshani *et al.* 2007a; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Rakhshani 2012); *Hyalopterus pruni* (Geoffroy) (Starý & Kaddou 1971; Starý 1976; Düzgüneş *et al.* 1982; Hussein & Kwar 1984; Tomanović *et al.* 2003; Kavallieratos *et al.* 2004; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Ben Halima & Ben Hamouda 2005; Aslan & Karaca 2005; Güz & Kilinçer 2005; Rakhshani *et al.* 2007a; Rakhshani 2012; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Barahoei *et al.* 2013); *Hyperomyzus lactucae* (L.) (Abou-Fakhr 1982; Düzgüneş *et al.* 1982; Hussein & Kwar 1984; Tremblay *et al.* 1985; Mescheloff & Rosen 1988; Abou-Fakhr & Kwar 1998; Tomanović *et al.* 2003; Uysal *et al.* 2004; Güz & Kilinçer 2005; Rakhshani *et al.* 2007a; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); *Hyperomyzus picridis* (Börner) (Laamari *et al.* 2011, 2012); *Liosomaphis berberidis* (Kaltenbach) (Laamari *et al.* 2011); *Macrosiphum euphorbiae* (Thomas) (Zeren & Düzgüneş 1983; Mescheloff & Rosen 1988; Yoldaş *et al.* 1990; Ben Halima & Ben Hamouda 1993; Uysal *et al.* 2004); *Macrosiphum rosae* (L.) (Starý & Kaddou 1971; Starý 1976; Abou-Fakhr 1982; Düzgüneş *et al.* 1982; Hussein & Kwar 1984; Tremblay *et al.* 1985; Abou-Fakhr & Kwar 1998; Starý & Sekkat 1987; Uysal *et al.* 2004; Rakhshani *et al.* 2007a; Talebi *et al.* 2009; Barahoei *et al.* 2010, 2012, 2013; Laamari *et al.* 2011; Nazari *et al.* 2012; Kavallieratos *et al.* 2013); *Macrosiphum* sp. (Starý *et al.* 2000); *Macrosiphoniella riedeli* Szelegiewicz (Mescheloff & Rosen 1988); *Macrosiphoniella* sp. (Rakhshani *et al.* 2011); *Melanaphis donacis* (Passerini) (Starý & Kaddou 1971; Starý 1976); *Metopolophium dirhodum* (Walker) (Rakhshani *et al.* 2008b; Barahoei *et al.* 2013; Taheri & Rakhshani 2013); *Myzaphis rosarum* (Kaltenbach) (Düzgüneş *et al.* 1982; Uysal *et al.* 2004); *Myzus beybienkoi* (Narzykulov) (Starý *et al.* 2000); *Myzus persicae* (Sulzer) (Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976, 1979; Abou-Fakhr 1982; Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Hussein & Kwar 1984; Tremblay *et al.* 1985; Starý & Sekkat 1987; Mescheloff & Rosen 1988; Ben Halima & Ben Hamouda 1993; Ben Halima *et al.* 1994; Abou-Fakhr & Kwar 1998; Starý *et al.* 2000; Uysal *et al.* 2004; Ben Halima & Ben Hamouda 2005; Güz & Kilinçer 2005; Rakhshani *et al.* 2007a; Rakhshani 2012; Jafari *et al.* 2011; Boukhris-Bouhachem 2011; Yoldaş *et al.* 2011; Laamari *et al.* 2012; Jafari & Modarres Awal 2012; Nazari *et al.* 2012; Barahoei *et al.* 2013; Chaouche & Laamari 2015); *Phorodon humuli* (Schränk) (Rakhshani *et al.* 2007a); *Rhopalosiphum maidis* (Fitch) (Hafez 1994; Güz & Kilinçer 2005; Rakhshani *et al.* 2007a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2010, 2012, 2013); *Rhopalosiphum padi* (L.) (Starý 1976; Hafez 1994; Özder & Toros 1999; Uysal *et al.* 2004; Rakhshani *et al.* 2007a, 2008b; Barahoei *et al.* 2013; Gadallah *et al.* 2017); *Schizaphis graminum* (Rondani) (Mescheloff & Rosen 1988; Hafez 1994; Rakhshani *et al.* 2007a, 2008b; Nazari *et al.* 2012; Barahoei *et al.* 2013); *Sitobion avenae* (Fabricius) (Düzgüneş *et al.* 1982; Özder & Toros 1999; Ölmez & Ulusoy 2003; Uysal *et al.* 2004; Rakhshani *et al.* 2007a, 2008b; Barahoei *et al.* 2013; Gadallah *et al.* 2017); *Sitobion fragariae* (Walker) (Starý 1976; Mescheloff & Rosen 1988; Laamari *et al.* 2011, 2012); *Uroleucon aeneum* (Hille Ris Lambers) (Tomanović *et al.* 2003; Kavallieratos *et al.* 2004); *Uroleucon cichorii* (Koch) (Tremblay *et al.* 1985; Rakhshani *et al.* 2007a); *Uroleucon compositae* (Theobald) (Rakhshani *et al.* 2007a; Barahoei *et al.* 2013); *Uroleucon inulicola* (Hille Ris Lambers) (Abou-Fakhr & Kwar 1998); *Uroleucon jaceae* (L.) (Rakhshani *et al.* 2007a); *Uroleucon sonchi* (L.) (Abou-Fakhr 1982;



Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998; Kavallieratos *et al.* 2004; Güz & Kiliñer 2005; Rakhshani *et al.* 2007a, 2012b; Talebi *et al.* 2009; Nazari *et al.* 2012; Laamari *et al.* 2011, 2012; Barahoei *et al.* 2010, 2012, 2013); *Uroleucon* sp. (Chaouche & Laamari 2015)

### Distribution in the Middle East and North Africa

Algeria (Starý 1976; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Egypt (Hafez 1994; El-Ghiet *et al.* 2014; Gadallah *et al.* 2017); Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2005a, 2006a, 2007a, 2012b; Jafari *et al.* 2011; Jafari & Modarres Awal 2012; Rakhshani 2012; Nazari *et al.* 2012; Taheri & Rakhshani 2013; Barahoei *et al.* 2010, 2012, 2013); Iraq (Starý & Kaddou 1971; Starý 1976); Israel (Fleschner 1963; Rosen 1967, 1969; Avidov & Harpaz 1969; Starý 1976; Mescheloff & Rosen 1988); Lebanon (Abou-Fakhr 1982; Hussein & Kawar 1984; Tremblay *et al.* 1985; Abou-Fakhr & Kawar 1998); Morocco (Starý & Sekkat 1987); Tunisia (Ben Halima & Ben Hamouda 1993, 2005; Ben Halima *et al.* 1994; Boukhris-Bouhachem 2011); Turkey (Tomanović *et al.* 2003; Eastern part – Ölmez & Ulusoy 2003; Central part – Düzgüneş *et al.* 1982; Zeren & Düzgüneş 1983; Kiliñer 1982; Güz & Kiliñer 2005; Satar *et al.* 2014; Western part – Yoldaş *et al.* 1990; Özder & Toros 1999; Kavallieratos *et al.* 2004, 2013; Aslan & Karaca 2005; Erdoğan *et al.* 2008; Yoldaş *et al.* 2011; Akar & Erdoğan 2017).

### General distribution

Eastern and Western Palaearctic, Neotropical, Oriental.

*Praon yomenae* Takada, 1968  
Figs 61, 163, 263, 362, 463, 600

### Material examined

SAUDI ARABIA • 1 ♂; Abha; May 2013; *Uroleucon* sp. on *Sonchus oleraceus* • 5 ♀♀; Abha-Mahala College campus; Nov. 2012; *Uroleucon* sp. on *Sonchus oleraceus*; Z. Ahmad leg. (DPPZ).

### Host records

*Acyrtosiphon pisum* (Harris) (?) (Chaouche & Laamari 2015); *Metopolophium dirhodum* (Walker) (?) (Gülçlü & Özbek 2002; Uysal *et al.* 2004); *Uroleucon acroptilidis* Kadyrbekov, Renxin & Shao (Barahoei *et al.* 2010, 2012, 2013); *Uroleucon aeneum* Hille Ris Lambers (Laamari *et al.* 2012); *Uroleucon carthami* (Hille Ris Lambers) (Mescheloff & Rosen 1988 – as *Praon dorsale*; Barahoei *et al.* 2013); *Uroleucon cichorii* (Koch) (Barahoei *et al.* 2010, 2012, 2013); *Uroleucon chondrillae* (Nevsky) (Rakhshani *et al.* 2007a; Nazari *et al.* 2012); *Uroleucon compositae* (Theobald) (Rakhshani *et al.* 2007a); *Uroleucon jaceae* (L.) (Güz & Kiliñer 2005 – as *Praon dorsale*; Rakhshani *et al.* 2007a; Barahoei *et al.* 2010, 2012, 2013; Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); *Uroleucon picridis* (Fabricius) (Mescheloff & Rosen 1988 – as *Praon dorsale*); *Uroleucon sonchi* (L.) (Starý & Sekkat 1987; Mescheloff & Rosen 1988 – as *Praon dorsale*; Tomanović *et al.* 2003; Kavallieratos *et al.* 2004; Rakhshani *et al.* 2007a, 2012b; Talebi *et al.* 2009; Barahoei *et al.* 2010, 2012, 2013); *Uroleucon tortuosissimae* Rezwani & Lampel (Barahoei *et al.* 2013).

### Distribution in the Middle East and North Africa

Algeria (Laamari *et al.* 2011, 2012; Chaouche & Laamari 2015); Iran (Rakhshani *et al.* 2007a, 2012b; Barahoei *et al.* 2010, 2012, 2013; Nazari *et al.* 2012); Israel (Mescheloff & Rosen 1988); Morocco (Starý & Sekkat 1987); Turkey (Eastern part – Gülçlü & Özbek 2002; Tomanović *et al.* 2003; Central part – Güz & Kiliñer 2005; Erdoğan *et al.* 2008; Western part – Kavallieratos *et al.* 2004; Uysal *et al.* 2004; Akar & Erdoğan 2017); Yemen (Starý *et al.* 2013).

**General distribution**

Eastern and Western Palaearctic, Oriental.

**Remarks**

All records for *Praon dorsale* (Haliday 1833) associated with *Uroleucon* aphids in the Middle East and North Africa refer to *Praon yomenae*. Record of *P. yomenae* on *Acyrtosiphon pisum* (Chaouche & Laamari 2015), is probably referring to a misidentification of *Praon barbatum* Mackauer, which is very similar to *P. yomane*.

*Tanytrichophorus petiolaris* Mackauer, 1961

**Host records**

*Brachycaudus persicae* (Passerini) (Mackauer 1961; Starý 1979; Starý *et al.* 2000).

**Distribution in the Middle East and North Africa**

Tehran (Starý *et al.* 2000).

**General distribution**

The species has not been reported outside Iran.

**Remarks**

The species was described on the basis of male specimens only (Mackauer 1961), while no female specimens have been recorded since the original description. Therefore, it has been excluded from the key of the present study.

*Toxares deltiger* (Haliday, 1833)

Figs 62, 164, 264, 363, 464, 601

**Host records**

Lacking host data (Tomanović *et al.* 2008).

**Distribution in the Middle East and North Africa**

Turkey (Eastern part – Tomanović *et al.* 2008).

**General distribution**

Holarctic, Oriental.

*Trioxyis asiaticus* Telenga, 1953

Figs 63, 165, 265, 364, 465, 602

**Host records**

*Acyrtosiphon gossypii* Mordvilko (Mackauer 1960; Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2008c; Talebi *et al.* 2009; Barahoei *et al.* 2013); *Acyrtosiphon pisum* (Harris) (Barahoei *et al.* 2013).

**Distribution in the Middle East and North Africa**

Iran (Mackauer 1960; Starý 1979; Starý *et al.* 2000; Talebi *et al.* 2009; Barahoei *et al.* 2013).

**General distribution**

Eastern Palaearctic.

***Trioxys cirsii*** (Curtis, 1831)  
Figs 64, 166, 266, 365, 466, 603

**Host records**

*Drepanosiphum platanoidis* (Schrank) (Babaeae *et al.* 2000; Starý *et al.* 2000; Rakhshani *et al.* 2008c).

**Distribution in the Middle East and North Africa**

Iran (Babaeae *et al.* 2000; Starý *et al.* 2000; Rakhshani *et al.* 2008c).

**General distribution**

Australasian, Eastern and Western Palaearctic, Nearctic.

***Trioxys complanatus*** Quilis, 1931  
Figs 65, 167, 267, 366, 467, 604

**Host records**

*Therioaphis khayami* Remaudière (Starý *et al.* 2000); *Therioaphis rieghi* (Börner) (van den Bosch 1957; Starý 1979; Starý *et al.* 2000); *Therioaphis trifolii* (Monell) (van den Bosch 1957; Farahbakhsh 1961; Avidov & Harpaz 1969; Al-Azawi 1970; Starý 1976, 1979; Monajemi & Esmaili 1981; Starý & Erdelen 1982; Düzgüneş *et al.* 1982; Tremblay *et al.* 1985; Starý *et al.* 2000; Uysal *et al.* 2004; Rakhshani *et al.* 2006a, 2008c, 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013; Laamari *et al.* 2012; Starý *et al.* 2013); *Therioaphis* spp. (Starý 1976, 1979; Mescheloff & Rosen 1993).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2012); Iran (van den Bosch 1957; Farahbakhsh 1961; Starý 1979; Monajemi & Esmaili 1981; Starý *et al.* 2000; Rakhshani *et al.* 2006a, 2012b; Nazari *et al.* 2012; Barahoei *et al.* 2013); Iraq (van den Bosch 1957; Al-Azawi 1970; Starý 1976); Israel (van den Bosch 1957; Starý 1976; Mescheloff & Rosen 1993); Lebanon (Tremblay *et al.* 1985); Morocco (Starý 1976); Turkey (van den Bosch 1957; Avidov & Harpaz 1969; Starý 1976; Central part – Düzgüneş *et al.* 1982; Uysal *et al.* 2004); UAE (Starý *et al.* 2013); Yemen (Starý & Erdelen 1982; Starý *et al.* 2013).

**General distribution**

Cosmopolitan.

***Trioxys curvicaudus*** Mackauer, 1967  
Figs 66, 168, 367, 468, 605

**Host records**

*Eucallipterus tiliae* (L.) (Rakhshani *et al.* 2008c).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2008c).

**General distribution**

Eastern and Western Palaearctic, Nearctic.

***Trioxys moshei*** Mescheloff & Rosen, 1993  
Figs 68, 170, 369, 470, 607

**Host records**

*Hoplocallis picta* (Ferrari) (Mescheloff & Rosen 1993 – as *Myzocallis bodenheimeri* Hille Ris Lambers).

**Distribution in the Middle East and North Africa**

Israel (Mescheloff & Rosen 1993).

**General distribution**

This species has not been reported outside Israel.

***Trioxys metacarpalis*** Rakhshani & Starý, 2012  
Figs 67, 169, 268, 368, 469, 606

**Host records**

*Chaitaphis tenuicauda* Nevsky (Rakhshani *et al.* 2012b).

**Distribution in the Middle East and North Africa**

Iran (Rakhshani *et al.* 2012b).

**General distribution**

This species has not been reported outside Iran.

***Trioxys pallidus*** (Haliday, 1833)  
Figs 69, 171, 269, 370, 471, 608

**Host records**

*Chromaphis juglandicola* (Kaltenbach) (van den Bosch *et al.* 1970; Starý & Kaddou 1971; van den Bosch & Messenger 1973; Starý 1976; Starý 1979; Starý & Sekkat 1987; Mohammadbeigi 2000; Starý *et al.* 2000; Ölmez & Ulusoy 2003; Aslan *et al.* 2004; Rakhshani *et al.* 2004, Uysal *et al.* 2004; Talebi *et al.* 2009; Laamari *et al.* 2011, 2012; Rakhshani *et al.* 2008c, 2012b; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Taheri & Rakhshani 2013); *Hoplocallis picta* (Ferrari) (Rakhshani *et al.* 2008c); *Monellia caryella* (Fitch) (Mescheloff & Rosen 1993 – as *Monellia costalis* (Fitch)); *Pterocallis alni* (De Geer) (Babae *et al.* 2000; Starý *et al.* 2000); *Tuberculatus (Tuberculoides) albosiphonatus* Hille Ris Lambers (Starý 1976); *Tuberculatus (Tuberculoides) moerickei* Hille Ris Lambers (Starý 1976); *Tuberculatus* sp. (Starý 1969b; Starý & Kaddou 1971).

**Distribution in the Middle East and North Africa**

Algeria (Laamari *et al.* 2011, 2012); Iran (van den Bosch *et al.* 1970; van den Bosch & Messenger 1973; Starý 1979; Mohammadbeigi 2000; Starý *et al.* 2000; Rakhshani *et al.* 2004; Barahoei *et al.* 2012, 2013; Nazari *et al.* 2012; Taheri & Rakhshani 2013); Iraq (Starý 1969b, 1976; Starý & Kaddou 1971); Israel (Mescheloff & Rosen 1993); Morocco (Starý & Sekkat 1987); Turkey (Central part – Starý 1976; Aslan *et al.* 2004; Uysal *et al.* 2004; Eastern part – Ölmez & Ulusoy 2003).

**General distribution**

Eastern and Western Palaearctic, Nearctic (imported), Neotropical (imported), Oriental.

***Trioxys pannonicus* Starý, 1960**  
Figs 70, 172, 270, 371, 472, 609

**Host records**

*Macrosiphoniella tuberculata* (Nevsky) (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2011); *Macrosiphoniella* sp. (Rakhshani *et al.* 2008c; Talebi *et al.* 2009); *Titanosiphon neoartemisiae* (Takahashi) (Barahoei *et al.* 2014)

**Distribution in the Middle East and North Africa**

Iran (Talebi *et al.* 2009; Starý 1979; Starý *et al.* 2000; Barahoei *et al.* 2014).

**General distribution**

Eastern and Western Palaearctic, Oriental.

***Trioxys pappi* Takada, 1979**  
Figs 71, 173, 473, 610

**Host records**

Lacking host data (Davidian 2005).

**Distribution in the Middle East and North Africa**

Iran (Davidian 2005) - as *Trioxys persicus* Davidian.

**General distribution**

Eastern Palaearctic (Iran, Mongolia).

***Trioxys quercicola* Starý, 1969**  
Figs 174, 372, 474, 611

**Host records**

*Thelexes suberi* (Del Guercio) (Starý 1969b, 1976; Starý & Kaddou 1971).

**Distribution in the Middle East and North Africa**

Iraq (Starý 1969b, 1976; Starý & Kaddou 1971).

**General distribution**

This species has not been reported outside Iraq.

***Trioxys tanaceticola* Starý, 1971**  
Figs 72, 175, 271, 373, 475, 612

**Host records**

*Coloradoa heinzei* Börner (Starý 1979; Starý *et al.* 2000); *Coloradoa absinthii* (Lichtenstein) (Talebi *et al.* 2009); *Coloradoa* sp. (Barahoei *et al.* 2014); *Titanosiphon neoartemisiae* (Takahashi) (?) (Rakhshani *et al.* 2008c; Talebi *et al.* 2009).

**Distribution in the Middle East and North Africa**

Iran (Starý 1979; Starý *et al.* 2000; Rakhshani *et al.* 2008c; Talebi *et al.* 2009).



### General distribution

Eastern and Western Palaearctic.

### *Trioxys* spp.

### Host records

*Aphis craccivora* Koch (?) (Abdel-Samad & Ahmed 2009); *Hyadaphis coriandri* (Das) (Chaouche & Laamari 2015).

### Distribution in the Middle East and North Africa

Algeria (Chaouche & Laamari 2015); Egypt (El-Heneidy 1991, 1994; El-Heneidy & Abdel-Samad 2001; El-Heneidy *et al.* 2001, 2002; Abdel-Rahman 2005; Abdel-Samad & Ahmed 2009).

### Remarks

These species may belong to genus *Binodoxys*, on the basis of host range patterns.

### Host aphid-parasitoid associations

*Absinthaphis* sp.: *Ephedrus persicae* Froggatt.

*Acyrtosiphon gossypii* Mordvilko: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday (?); *Aphidius urticae* Haliday; *Lysiphlebus fabarum* (Marshall) (?); *Lysiphlebus testaceipes* (Cresson); *Trioxys asiaticus* Telenga.

*Acyrtosiphon ilka* Mordvilko: *Lysiphlebus fabarum* (Marshall) (?); *Aphidius ervi* Haliday.

*Acyrtosiphon kondoi* Shinji: *Aphidius ervi* Haliday; *Aphidius smithi* Sharma & Subba Rao.

*Acyrtosiphon lactucae* (Passerini): *Aphidius ervi* Haliday; *Lysiphlebus fabarum* (Marshall) (?); *Praon volucre* (Haliday).

*Acyrtosiphon malvae* (Mosley): *Ephedrus persicae* Froggatt.

*Acyrtosiphon pisum* (Harris): *Aphidius avenae* Haliday; *Aphidius banksae* Kittel; *Aphidius colemani* Viereck [- *platensis* Brèthes, in part] (?); *Aphidius eadyi* Starý, González & Hall; *Aphidius ervi* Haliday; *Aphidius smithi* Sharma & Subba Rao; *Aphidius urticae* Haliday; *Binodoxys acalephae* (Marshall) (?); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus fabarum* (Marshall) (?); *Praon barbatum* Mackauer; *Praon exoletum* (Nees) (?); *Praon volucre* (Haliday); *Praon yomenae* Takada (?); *Trioxys asiaticus* Telenga.

*Acyrtosiphon* sp.: *Aphidius urticae* Haliday; *Lysiphlebus confusus* Tremblay & Eady (?).

*Amegosiphon platicaudum* (Narzikulov): *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Diaeretiella rapae* (M'Intosh).

*Amphorophora catharinae* (Nevsky): *Aphidius popovi* Starý; *Praon volucre* (Haliday).

*Anuraphis* sp.: *Binodoxys acalephae* (Marshall).

*Aphis acetosae* L.: *Aphidius platensis* Brèthes; *Binodoxys angelicae* (Haliday); *Lysiphlebus fabarum* (Marshall).

*Aphis affinis* Del Guercio: *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Aphis althaeae* (Nevsky): *Lysiphlebus fabarum* (Marshall).

*Aphis astragali* Ossiannilsson: *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson).

*Aphis aurantii* Boyer de Fonscolombe: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).

*Aphis brunnea* Ferrari: *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson).

*Aphis chloris* Koch: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall).

*Aphis craccivora* Koch: *Adialytus veronicaecola* (Stary); *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus desertorum* Stary; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon abjectum* (Haliday); *Praon necans* Mackauer; *Praon volucre* (Haliday); *Trioxys* sp. (?).

*Aphis crepidis* (Börner): *Aphidius matricariae* Haliday.

*Aphis davletshinae* Hillie Ris Lambers: *Lysiphlebus fabarum* (Marshall).

*Aphis dlabolai* Holman: *Aphidius matricariae* Haliday; *Praon volucre* (Haliday).

*Aphis epilobiaria* Theobald: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Aphis epilobii* Kaltenbach: *Lysiphlebus fabarum* (Marshall).

*Aphis euphorbiae* Kaltenbach: *Aphidius matricariae* Haliday; *Binodoxys acalephae* (Marshall); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson).

*Aphis euphorbicola* Rezwani & Lampel: *Lysiphlebus fabarum* (Marshall).

*Aphis fabae cirsiiacanthoidis* Scopoli: *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall).

*Aphis fabae* Scopoli: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius funebris* Mackauer (?); *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lipolexis gracilis* Förster; *Lysiphlebus cardui* (Marshall); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).

*Aphis farinosa* Gmelin: *Lysiphlebus confusus* Tremblay & Eady.

*Aphis galiiscabri* Schrank: *Binodoxys acalephae* (Marshall); *Lysiphlebus fabarum* (Marshall).

*Aphis gerardiana* Mordvilko: *Lysiphlebus fabarum* (Marshall).

*Aphis gossypii* Glover: *Lysiphlebus cardui* (Marshall) (?); *Adialytus veronicaecola* (Stary); *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lipolexis gracilis* Förster; *Lysiphlebus confusus* Tremblay &

Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Aphis grossulariae* Kaltenbach: *Binodoxys acalephae* (Marshall).

*Aphis hederæ* Kaltenbach: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall).

*Aphis idaei* van der Goot: *Binodoxys acalephae* (Marshall); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall).

*Aphis illinoisensis* Shimer: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Diaeretiella rapae* (M'Intosh); *Lysiphlebus testaceipes* (Cresson).

*Aphis intybi* Koch: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall).

*Aphis nasturtii* Kaltenbach: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius transcaspicus* Telenga (?); *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Aphis nerii* Boyer de Fonscolombe: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Aphis origani* Passerini: *Lysiphlebus fabarum* (Marshall).

*Aphis parietariae* Theobald: *Aphidius matricariae* Haliday.

*Aphis plantaginis* Goeze: *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall).

*Aphis polygonata* (Nevsky): *Binodoxys angelicae* (Haliday).

*Aphis pomi* De Geer: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lipolexis gracilis* Förster; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).

*Aphis potentillae* Nevsky: *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus testaceipes* (Cresson).

*Aphis punicae* (Passerini): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon abjectum* (Haliday); *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Aphis ruborum* (Börner): *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall).

*Aphis rumicis* L.: *Aphidius platensis* Brèthes; *Binodoxys angelicae* (Haliday); *Lysiphlebus fabarum* (Marshall).

*Aphis salviae* Walker: *Lipolexis gracilis* Förster; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Aphis solanella* Theobald: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius platensis* Brèthes; *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon abjectum* (Haliday); *Praon volucre* (Haliday).

*Aphis spiraecola* Patch: *Aphidius matricariae* Haliday; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes*; *Praon volucre* (Haliday).

*Aphis taraxacicola* (Börner): *Lysiphlebus fabarum* (Marshall).

*Aphis tirucallis* Hille Ris Lambers: *Lysiphlebus fabarum* (Marshall).

*Aphis umbrella* (Börner): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lipolexis gracilis* Förster; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Aphis urticata* Gmelin: *Binodoxys acalephae* (Marshall); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Aphis vallei* Hille Ris Lambers & Stroyan: *Binodoxys acalephae* (Marshall); *Lysiphlebus confusus* Tremblay & Eady.

*Aphis verbasci* Schrank: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus volkli* Tomanović & Kavallieratos.

*Aphis viticis* Ferrari: *Binodoxys angelicae* (Haliday); *Praon abjectum* (Haliday).

*Aphis* spp.: *Aphidius avenae* Haliday; *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Binodoxys acalephae* (Marshall); *Binodoxys angelicae* (Haliday); *Lipolexis gracilis* Förster; *Lysiphlebus desertorum* Starý; *Lysiphlebus fabarum* (Marshall); *Praon abjectum* (Haliday).

*Aspidaphis adjuvans* (Walker): *Diaeretiella rapae* (M'Intosh).

*Aulacorthum solani* (Kaltenbach): *Aphidius matricariae* Haliday.

*Aulacorthum* sp.: *Lysiphlebus confusus* Tremblay & Eady.

*Brachycaudus amygdalinus* (Schouteden): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius transcaspicus* Telenga (?); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lipolexis gracilis* Förster; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Brachycaudus cardui* (L.): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius funebris* Mackauer (?); *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon abjectum* (Haliday); *Praon volucre* (Haliday).

*Brachycaudus divaricatae* Shaposhnikov: *Aphidius matricariae* Haliday.

*Brachycaudus helichrysi* (Kaltenbach): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Binodoxys angelicae* (Haliday); *Diaeretiella rapae*



(M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).

*Brachycaudus persicae* (Passerini): *Aphidius matricariae* Haliday; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday); *Tanytrichophorus petiolaris* Mackauer.

*Brachycaudus tragopogonis* (Kaltenbach): *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Lysiphlebus volkli* Tomanović & Kavallieratos; *Praon volucre* (Haliday).

*Brachycaudus tragopogonis setosus* (Hille Ris Lambers): *Lysiphlebus fabarum* (Marshall).

*Brachycaudus* sp.: *Praon volucre* (Haliday).

*Brachyunguis harmalae* Das: *Lysiphlebus fabarum* (Marshall).

*Brachyunguis skafi* Remaudière & Talhouk: *Lysiphlebus confusus* Tremblay & Eady.

*Brachyunguis tamaricis* (Lichtenstein): *Ephedrus persicae* Froggatt.

*Brachyunguis zygophylli* (Nevsky): *Lysiphlebus fabarum* (Marshall).

*Brevicoryne brassicae* (L.): *Aphidius matricariae* Haliday (?); *Diaeretiella rapae* (M'Intosh); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).

*Capitophorus elaeagni* (Del Guercio): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Lysiphlebus fabarum* (Marshall).

*Capitophorus inulae* (Passerini): *Aphidius matricariae* Haliday; *Diaeretiella rapae* (M'Intosh).

*Cavariella aegopodii* (Scopoli): *Aphidius salicis* Haliday; *Binodoxys brevicornis* (Haliday); *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall).

*Cavariella aquatica* (Gillette & Bragg): *Aphidius salicis* Haliday; *Ephedrus helleni* Mackauer.

*Cavariella aspidaphoides* Hille Ris Lambers: *Aphidius salicis* Haliday; *Binodoxys heraclei* (Haliday).

*Cavariella theobaldi* (Gillette & Bragg): *Aphidius salicis* Haliday; *Binodoxys heraclei* (Haliday); *Ephedrus persicae* Froggatt.

*Chaetosiphon tetrarhodum* (Walker): *Aphidius eglanteriae* Haliday.

*Chaitaphis tenuicauda* Nevsky: *Trioxys metacarpalis* Rakhshani & Starý.

*Chaitophorus euphraticus* Hodjat: *Adialytus salicaphis* (Fitch).

*Chaitophorus leucomelas* Koch: *Adialytus salicaphis* (Fitch).

*Chaitophorus populeti* (Panzer): *Adialytus salicaphis* (Fitch); *Ephedrus chaitophori* Gärdenfors.

*Chaitophorus populialbae* (Boyer de Fonscolombe): *Adialytus salicaphis* (Fitch).

*Chaitophorus remaudierei* Pintera: *Adialytus salicaphis* (Fitch).

*Chaitophorus salijaponicus* Essig & Kuwana: *Adialytus salicaphis* (Fitch).

*Chaitophorus truncatus* (Hausmann): *Adialytus salicaphis* (Fitch).

*Chaitophorus vitellinae* (Schrank): *Adialytus salicaphis* (Fitch).

*Chaitophorus* spp.: *Adialytus salicaphis* (Fitch).

*Chromaphis juglandicola* (Kaltenbach): *Trioxys pallidus* (Haliday).

*Cinara* (*Cedrobium*) *laportei* Remaudière: *Pauesia cedrobii* Starý & Leclant.



- Cinara (Cupressobium) tujafilina* (del Guercio): *Pauesia hazratbalensis* Bhagat.
- Cinara (Schizolachnus) pineti* (Fabricius): *Pauesia unilachni* (Gahan).
- Cinara cedri* Mimeur: *Pauesia anatolica* Michelena, Assael & Mendel; *Pauesia* sp.
- Cinara palaestinensis* Hille Ris Lambers: *Pauesia pini* (Haliday); *Pauesia silana* Tremblay.
- Cinara pilicornis* (Hartig): *Pauesia abietis* (Marshall).
- Cinara pini* (L.): *Pauesia picta* (Haliday).
- Cinara pinimaritimae* (Dufour): *Pauesia abietis* (Marshall).
- Coloradoa absinthii* (Lichtenstein): *Trioxys tanaceticola* Starý.
- Coloradoa achilleae* Hille Ris Lambers: *Aphidius arvensis* (Starý).
- Coloradoa heinzei* Börner: *Trioxys tanaceticola* Starý.
- Coloradoa* sp.: *Lysiphlebus fabarum* (Marshall); *Trioxys tanaceticola* Starý.
- Corylobium avellanae* (Schrank): *Ephedrus plagiator* (Nees).
- Cryptomyzus ribis* (L.): *Aphidius ribis* Haliday.
- Diuraphis noxia* (Kurdjumov): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius rhopalosiphi* De Stefani-Perez; *Aphidius uzbekistanicus* Luzhetzki; *Diaeretiella rapae* (M'Intosh); *Ephedrus plagiator* (Nees); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).
- Drepanosiphum platanoidis* (Schrank): *Trioxys cirsii* (Curtis).
- Dysaphis crataegi* (Kaltenbach): *Aphidius matricariae* Haliday; *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus confusus* Tremblay & Eady.
- Dysaphis devector* (Walker): *Aphidius matricariae* Haliday; *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees).
- Dysaphis foeniculus* (Theobald): *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Diaeretiella rapae* (M'Intosh); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus testaceipes* (Cresson); *Ephedrus persicae* Froggatt.
- Dysaphis lappae* (Koch): *Aphidius matricariae* Haliday; *Lysiphlebus fabarum* (Marshall).
- Dysaphis plantaginea* (Passerini): *Aphidius matricariae* Haliday; *Ephedrus cerasicola* Starý; *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson).
- Dysaphis pulverina* ssp. *iranica* Stroyan: *Aphidius platensis* Brèthes.
- Dysaphis pyri* (Boyer de Fonscolombe): *Aphidius matricariae* Haliday; *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).
- Dysaphis radicola* (Mordvilko): *Aphidius platensis* Brèthes; *Lysiphlebus fabarum* (Marshall).
- Dysaphis reaumuri* (Mordvilko): *Ephedrus persicae* Froggatt.
- Dysaphis rumecicola emicis* (Mimeur): *Lysiphlebus fabarum* (Marshall).
- Dysaphis tulipae* (Boyer de Fonscolombe): *Diaeretiella rapae* (M'Intosh); *Lysiphlebus testaceipes* (Cresson).
- Dysaphis* spp.: *Aphidius ervi* Haliday; *Ephedrus plagiator* (Nees).
- Ephedraphis ephedrae* (Nevsky): *Lysiphlebus confusus* Tremblay & Eady.
- Eriosoma lanuginosum* (Hartig): *Areopraon lepelleyi* (Waterson).

*Eucallipterus tiliae* (L.): *Trioxys curvicaudus* Mackauer.

*Eucarazzia elegans* (Ferrari): *Aphidius matricariae* Haliday.

*Eulachnus tuberculostemmatus* (Theobald): *Diaeretus leucopterus* (Haliday); *Ephedrus persicae* Froggatt (?).

*Forda* sp.: *Monoctonia pistaciaecola* Starý.

*Hayhurstia atriplicis* (L.): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius platensis* Brèthes; *Diaeretiella rapae* (M'Intosh); *Ephedrus helleni* Mackauer; *Ephedrus nacheri* Quilis; *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall).

*Hoplocallis picta* (Ferrari): *Trioxys moshei* Mescheloff & Rosen; *Trioxys pallidus* (Haliday).

*Hyadaphis coriandri* (Das): *Binodoxys acalephae* (Marshall); *Binodoxys brevicornis* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall); *Trioxys* sp.

*Hyadaphis foeniculi* (Passerini): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius salicis* Haliday; *Binodoxys brevicornis* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall).

*Hyadaphis tataricae* (Aizenberg): *Diaeretiella rapae* (M'Intosh).

*Hyadaphis* sp.: *Binodoxys brevicornis* (Haliday).

*Hyalopterus amygdali* (Blanchard): *Aphidius matricariae* Haliday (?); *Aphidius platensis* Brèthes; *Aphidius transcaspicus* Telenga; *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall) (?); *Praon volucre* (Haliday).

*Hyalopterus pruni* (Geoffroy): *Aphidius matricariae* Haliday (?); *Aphidius transcaspicus* Telenga; *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus fabarum* (Marshall) (?); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).

*Hyperomyzus lactucae* (L.): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part] (?); *Aphidius funebris* Mackauer (?); *Aphidius matricariae* Haliday (?); *Aphidius avenae* Haliday; *Aphidius ervi* Haliday; *Aphidius sonchi* Marshall; *Diaeretiella rapae* (M'Intosh); *Lysiphlebus confusus* Tremblay & Eady (?); *Praon orpheusi* Kavallieratos, Athanassiou & Tomanović; *Praon volucre* (Haliday).

*Hyperomyzus picridis* (Börner): *Praon volucre* (Haliday).

*Liosomaphis berberidis* (Kaltenbach): *Praon volucre* (Haliday).

*Lipaphis erysimi* (Kaltenbach): *Diaeretiella rapae* (M'Intosh); *Lysiphlebus fabarum* (Marshall); *Aphidius matricariae* Haliday.

*Lipaphis fritzmuellerei* Börner: *Lysiphlebus fabarum* (Marshall).

*Lipaphis lepidii* (Nevsky): *Aphidius matricariae* Haliday; *Diaeretiella rapae* (M'Intosh); *Lysiphlebus fabarum* (Marshall).

*Lipaphis pseudobrassicae* (Davis): *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Diaeretiella rapae* (M'Intosh).

*Lipaphis* sp.: *Diaeretiella rapae* (M'Intosh).

*Macchiatiella rhamni* (Boyer de Fonscolombe): *Ephedrus persicae* Froggatt.

*Macrosiphoniella abrotani* (Walker): *Aphidius absinthii* Marshall; *Ephedrus niger* Gautier, Bonnamour & Gaumont.

*Macrosiphoniella absinthii* (L.): *Praon absinthii* Bignell.

*Macrosiphoniella artemisiae* (Boyer de Fonscolombe): *Aphidius absinthii* Marshall.

*Macrosiphoniella helichrysi* Remaudière: *Aphidius absinthii* Marshall.

*Macrosiphoniella* nr. *macrura* Hille Ris Lambers: *Aphidius absinthii* Marshall.

*Macrosiphoniella oblonga* (Mordvilko): *Aphidius absinthii* Marshall; *Praon absinthii* Bignell.

*Macrosiphoniella papillata* Holman: *Lysiphlebus fabarum* (Marshall) (?).

*Macrosiphoniella pulvera* (Walker): *Aphidius absinthii* Marshall.

*Macrosiphoniella riedeli* Szelegiewicz: *Aphidius absinthii* Marshall; *Praon volucre* (Haliday).

*Macrosiphoniella sanborni* (Gillette): *Diaeretiella rapae* (M'Intosh); *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Lysiphlebus fabarum* (Marshall) (?); *Praon absinthii* Bignell; *Praon necans* Mackauer; *Praon unitum* Mescheloff & Rosen.

*Macrosiphoniella tanacetaria* (Kaltenbach): *Aphidius stigmaticus* Rakhshani & Tomanović.

*Macrosiphoniella tapuskae* (Hottes & Frison): *Lysiphlebus confusus* Tremblay & Eady (?).

*Macrosiphoniella tuberculata* (Nevsky): *Aphidius absinthii* Marshall; *Trioxys pannonicus* Starý.

*Macrosiphoniella* spp.: *Aphidius absinthii* Marshall; *Aphidius asteris* Haliday; *Aphidius persicus* Rakhshani & Starý; *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Praon volucre* (Haliday); *Trioxys pannonicus* Starý.

*Macrosiphum euphorbiae* (Thomas): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius urticae* Haliday; *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday).

*Macrosiphum rosae* (L.): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part] (?); *Aphidius platensis* Brèthes (?); *Aphidius matricariae* Haliday; *Aphidius rosae* Haliday; *Ephedrus niger* Gautier, Bonnamour & Gaumont (?); *Lysiphlebus fabarum* (Marshall) (?); *Praon rosaecola* Starý; *Praon volucre* (Haliday).

*Macrosiphum* spp.: *Ephedrus plagiator* (Nees); *Praon volucre* (Haliday).

*Neomariaella lambersi* (Szelegiewicz): *Diaeretiella rapae* (M'Intosh).

*Melanaphis donacis* (Passerini): *Aphidius transcaspicus* Telenga; *Ephedrus persicae* Froggatt; *Praon volucre* (Haliday).

*Melanaphis sacchari* (Zehntner): *Lysiphlebus fabarum* (Marshall).

*Melanaphis* sp.: *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall).

*Metopolophium dirhodum* (Walker): *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius popovi* Starý; *Aphidius rhopalosiphi* De Stefani-Perez; *Aphidius uzbekistanicus* Luzhetskii; *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall) (?); *Praon volucre* (Haliday); *Praon yomenae* Takada (?).

*Microlophium carnosum* (Buckton): *Aphidius ervi* Haliday; *Aphidius urticae* Haliday.

*Monellia caryella* (Fitch): *Trioxys pallidus* (Haliday).

*Myzaphis rosarum* (Kaltenbach): *Praon volucre* (Haliday).

*Myzocallis glandulosa* Hille Ris Lambers: *Aphidius myzocallidis* Mescheloff & Rosen.

*Myzus ascalonicus* Doncaster: *Aphidius matricariae* Haliday.

*Myzus beybienkoi* (Narzikulov): *Aphidius matricariae* Haliday; *Diaeretiella rapae* (M'Intosh); *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Myzus cerasi* (F.): *Aphidius matricariae* Haliday; *Ephedrus cerasicola* Starý; *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees).

*Myzus ornatus* Laing: *Aphidius matricariae* Haliday.

*Myzus persicae* (Sulzer): *Aphidius avenae* Haliday; *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius ribis* Haliday (?); *Binodoxys angelicae* (Haliday); *Diaeretiella rapae* (M'Intosh); *Ephedrus cerasicola* Starý; *Ephedrus persicae* Froggatt; *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Nasonovia ribisnigri* (Mosley): *Aphidius hieraciorum* Starý; *Aphidius matricariae* Haliday (?); *Praon pubescens* Starý.

*Nearctaphis bakeri* (Cowen): *Aphidius smithi* Sharma & Subba Rao, *Praon barbatum* Mackauer.

*Ovatus insitus* (Walker): *Aphidius matricariae* Haliday; *Monoctonus mali* van Achterberg.

*Ovatus mentharius* (van der Goot): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part].

*Pemphigus spyrothecae* Passerini: *Monoctonia vesicarii* Tremblay.

*Periphyllus testudinaceus* (Ferne): *Aphidius setiger* (Mackauer).

*Periphyllus* sp.: *Aphidius setiger* (Mackauer).

*Phorodon humuli* (Schrank): *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Ephedrus cerasicola* Starý; *Ephedrus persicae* Froggatt; *Lysiphlebus fabarum* (Marshall); *Praon volucre* (Haliday).

*Protaphis alexandrae* (Nevsky): *Lysiphlebus fabarum* (Marshall).

*Protaphis anthemidis* (Börner): *Lysiphlebus fabarum* (Marshall).

*Protaphis elongata* (Nevsky): *Lysiphlebus fabarum* (Marshall).

*Protaphis terricola* (Rondani): *Lysiphlebus fabarum* (Marshall); *Lysiphlebus desertorum* Starý.

*Protaphis* spp.: *Binodoxys acalephae* (Marshall); *Lysiphlebus confusus* Tremblay & Eady; *Lysiphlebus desertorum* Starý; *Lysiphlebus fabarum* (Marshall).

*Pterochloroides persicae* (Cholodkovsky): *Pauesia antennata* (Mukerji).

*Pterocomma pilosum* Buckton: *Aphidius cingulatus* Ruthe.

*Pterocomma populeum* (Kaltenbach): *Aphidius cingulatus* Ruthe.

*Pterocomma* sp.: *Aphidius cingulatus* Ruthe.

*Rhopalomyzus* sp.: *Aphidius matricariae* Haliday.

*Rhopalosiphum maidis* (Fitch): *Aphidius avenae* Haliday; *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius rhopalosiphii* De Stefani-Perez; *Aphidius uzbekistanicus* Luzhetzki; *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus fabarum* (Marshall); *Lysiphlebus testaceipes* (Cresson); *Praon gallicum* Starý; *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Rhopalosiphum nymphaeae* (L.): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday; *Ephedrus cerasicola* Starý; *Lysiphlebus fabarum* (Marshall); *Praon necans* Mackauer.



*Rhopalosiphum oxyacanthae* (Schrank): *Ephedrus plagiator* (Nees).

*Rhopalosiphum padi* (L.): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius rhopalosiphii* De Stefani-Perez; *Aphidius uzbekistanicus* Luzhetzki; *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus fabarum* (Marshall); *Praon gallicum* Starý; *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Saltusaphis scirpus* Theobald: *Diaeretiella rapae* (M'Intosh); *Lysiphlebus fabarum* (Marshall).

*Saltusaphis* sp.: *Lysiphlebus fabarum* (Marshall).

*Schizaphis graminum* (Rondani): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius rhopalosiphii* De Stefani-Perez; *Aphidius uzbekistanicus* Luzhetzki; *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Praon gallicum* Starý; *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Schizaphis rosazevedoi* Ilharco: *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius matricariae* Haliday.

*Sipha elegans* Del Guercio: *Adialytus ambiguus* (Haliday).

*Sipha flava* (Forbes): *Adialytus ambiguus* (Haliday).

*Sipha maydis* Passerini: *Adialytus ambiguus* (Haliday); *Ephedrus persicae* Froggatt (?).

*Sipha* sp.: *Adialytus ambiguus* (Haliday).

*Sitobion avenae* (F.): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius platensis* Brèthes; *Aphidius rhopalosiphii* De Stefani-Perez; *Aphidius smithi* Sharma & Subba Rao (?); *Aphidius uzbekistanicus* Luzhetzki; *Binodoxys angelicae* (Haliday) (?); *Diaeretiella rapae* (M'Intosh); *Ephedrus persicae* Froggatt; *Ephedrus plagiator* (Nees); *Lysiphlebus fabarum* (Marshall) (?); *Praon gallicum* Starý; *Praon necans* Mackauer; *Praon volucre* (Haliday).

*Sitobion fragariae* (Walker): *Aphidius colemani* Viereck [- *platensis* Brèthes, in part]; *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Aphidius rosae* Haliday; *Aphidius uzbekistanicus* Luzhetzki; *Praon volucre* (Haliday).

*Smynthuroides betae* Westwood: *Monoctonia pistaciaecola* Starý.

*Thelaxes confertae* Börner: *Adialytus thelaxis* Starý.

*Thelaxes suberi* (Del Guercio): *Adialytus thelaxis* Starý; *Trioxys quercicola* Starý.

*Thelaxes* sp.: *Adialytus thelaxis* Starý.

*Therioaphis khayami* Remaudière: *Trioxys complanatus* Quilis.

*Therioaphis rieghi* (Börner): *Praon exsoletum* (Nees); *Trioxys complanatus* Quilis.

*Therioaphis trifolii* (Monell): *Praon exsoletum* (Nees); *Trioxys complanatus* Quilis.

*Therioaphis* sp.: *Praon exsoletum* (Nees).

*Tinocallis nevskyi* Remaudière, Quednau & Heie: *Praon flavinode* (Haliday).

*Tinocallis saltans* (Nevsky): *Betuloxys hortorum* (Starý).

*Titanosiphon neoartemisiae* (Takahashi): *Aphidius iranica* Rakhshani & Starý; *Trioxys pannonicus* Starý; *Trioxys tanacetica* Starý (?).

*Tuberculatus* (*Tuberculoides*) *albosiphonatus* Hille Ris Lambers: *Praon flavinode* (Haliday); *Trioxys pallidus* (Haliday).



*Tuberculatus (Tuberculoides) moerickei* Hille Ris Lambers: *Praon flavinode* (Haliday); *Trioxys pallidus* (Haliday).

*Tuberculatus* sp.: *Praon flavinode* (Haliday); *Trioxys pallidus* (Haliday).

*Uroleucon acroptilidis* Kadyrbekov, Renxin & Shao: *Aphidius funebris* Mackauer; *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Praon unitum* Mescheloff & Rosen; *Praon yomenae* Takada.

*Uroleucon aeneum* (Hille Ris Lambers): *Aphidius ervi* Haliday (?); *Aphidius funebris* Mackauer; *Praon volucre* (Haliday); *Praon yomenae* Takada.

*Uroleucon bielawskii* (Szelegiewicz): *Aphidius persicus* Rakhshani & Starý; *Ephedrus niger* Gautier, Bonnamour & Gaumont.

*Uroleucon carthami* (Hille Ris Lambers): *Aphidius uroleuci* Mescheloff & Rosen; *Praon yomenae* Takada; *Aphidius persicus* Rakhshani & Starý.

*Uroleucon chondrillae* (Nevsky): *Aphidius funebris* Mackauer; *Aphidius persicus* Rakhshani & Starý; *Praon yomenae* Takada.

*Uroleucon cichorii* (Koch): *Aphidius funebris* Mackauer; *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Praon volucre* (Haliday); *Praon yomenae* Takada.

*Uroleucon compositae* (Theobald): *Aphidius matricariae* Haliday (?); *Aphidius funebris* Mackauer; *Aphidius persicus* Rakhshani & Starý; *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Lysiphlebus fabarum* (Marshall) (?); *Lysiphlebus testaceipes* (Cresson); *Praon volucre* (Haliday); *Praon yomenae* Takada.

*Uroleucon erigeronense* (Thomas): *Aphidius funebris* Mackauer; *Ephedrus niger* Gautier, Bonnamour & Gaumont.

*Uroleucon inulae* (Ferrari): *Aphidius uroleuci* Mescheloff & Rosen; *Ephedrus niger* Gautier, Bonnamour & Gaumont.

*Uroleucon inulicola* (Hille Ris Lambers): *Praon volucre* (Haliday).

*Uroleucon jaceae* (L.): *Aphidius funebris* Mackauer; *Aphidius uroleuci* Mescheloff & Rosen; *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Lysiphlebus fabarum* (Marshall) (?); *Praon unitum* Mescheloff & Rosen; *Praon volucre* (Haliday); *Praon yomenae* Takada.

*Uroleucon ochropus* (Hille Ris Lambers): *Aphidius persicus* Rakhshani & Starý.

*Uroleucon picridis* (Fabricius): *Praon yomenae* Takada.

*Uroleucon sonchi* (L.): *Aphidius ervi* Haliday (?); *Aphidius matricariae* Haliday (?); *Aphidius funebris* Mackauer; *Aphidius persicus* Rakhshani & Starý; *Aphidius uroleuci* Mescheloff & Rosen; *Diaeretiella rapae* (M'Intosh) (?); *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Praon unitum* Mescheloff & Rosen; *Praon volucre* (Haliday); *Praon yomenae* Takada.

*Uroleucon tortuosissimae* Rezwani & Lampel: *Praon yomenae* Takada.

*Uroleucon* sp.: *Aphidius funebris* Mackauer; *Aphidius persicus* Rakhshani & Starý; *Aphidius rosae* Haliday (?); *Ephedrus niger* Gautier, Bonnamour & Gaumont; *Lysiphlebus confusus* Tremblay & Eady (?); *Praon volucre* (Haliday).

*Wahlgreniella nervata* (Gillette): *Aphidius ervi* Haliday; *Aphidius matricariae* Haliday; *Praon rosaecola* Starý.

*Xerobion cinae* (Nevsky): *Lysiphlebus desertorum* Starý.

**Key to female Aphidiinae of the Middle East and North Africa**

1. Forewing with seven closed cells. Forewing 2RS present and well developed (Figs 118–125, 164) ..... 2
  - Forewing with four closed cells or fewer. Forewing 2RS absent (Figs 73–117, 126–163, 165–175) ..... 10
2. Antennae 18-segmented (Fig. 62). Ovipositor sheath deltoid shaped (Fig. 601) ..... *Toxares deltiger* (Haliday)
  - Antennae 13-segmented (Figs 31–35). Ovipositor sheath elongated (Figs 555–562) ..... 3
3. Forewing 3RSa vein distinctly shorter than 2RS vein (Figs 119, 124). Petiole less than 1.5× as long as wide (Figs 419, 424) ..... 4
  - Forewing 3RSa vein subequal or distinctly longer than 2RS vein (Figs 118, 120–123, 125). Petiole more than 1.8× as long as wide (Figs 418, 420–423, 425) ..... 5
4. Antenna slightly thickened at apex (Fig. 34). F1 4.00–4.50× as long as wide. Ovipositor sheath stout (Fig. 561) ..... *Ephedrus persicae* Froggatt
  - Antenna distinctly thickened at the apex. F1 4.50–4.80× as long as wide. Ovipositor sheath elongated (Fig. 556) ..... *Ephedrus chaitophori* Gärdenfors
5. Antennae thickened at apex, apical and praeapical segments broadly joined forming a club (Fig. 32). Ovipositor sheath stout and wide at base (Fig. 557) ..... *Ephedrus helleni* Mackauer
  - Antennae filiform or only slightly thickened towards apex. Apical and praeapical segments normally joined, never forming a club (Figs 31, 33, 35) Ovipositor sheath medium sized (Figs 555, 559, 562) to elongated (Figs 558, 560), never widened at base ..... 6
6. Flagellomere 1 very long, 1.4–1.5× flagellomere 2. Forewing r vein as long as or slightly longer than width of stigma (Fig. 121) ..... *Ephedrus lacertosus* (Haliday)
  - Flagellomere 1 stout, 1.3× flagellomere 2 or shorter (Figs 31, 33, 35). Forewing vein r distinctly shorter than width of stigma (Figs 118, 122, 123, 125) ..... 7
7. Ovipositor sheath considerably elongated with praeapical depression (Fig. 560) ..... *Ephedrus niger* Gautier, Bonnamour & Gaumont
  - Ovipositor sheath less elongated, without praeapical depression (Figs 555, 559, 562) ..... 8
8. Petiole with strongly prominent central and less-developed lateral longitudinal carinae (Fig. 422). Flagellomere 1 3.00–3.50× as long as wide..... *Ephedrus nacheri* Quilis
  - Petiole with less developed central and prominent lateral longitudinal carinae (Figs 418, 425). Flagellomere 1 3.80–4.20 x as long as wide (Figs 31, 35) ..... 9
9. Flagellomere 1 yellow, 1.3–1.5× as long as flagellomere 2 bearing 1–2 longitudinal placodes (Fig. 31) ..... *Ephedrus cerasicola* Starý
  - Flagellomere 1 brown with narrow yellowish ring, 1.1–1.3× as long as flagellomere 2 bearing 3–5 longitudinal placodes (Fig. 35) ..... *Ephedrus plagiator* (Nees)
10. Notauli complete (Figs 212, 245–263). Forewing RS+M vein present, sometimes colourless throughout or partially (Figs 109, 146–163) ..... 11
  - Notauli incomplete or absent (Figs 176–211, 213–220, 229–245, 265–271). Forewing RS+M vein absent (Figs 73–108, 110–117, 126–145, 165–175) ..... 29

11. Antennae 13–14-segmented (Fig. 25). Propodeum areolated (Fig. 308). Ovipositor sheath densely setose at apical half (Fig. 546) ..... *Areopraon lepelleyi* (Waterson)  
 – Antennae 15–22(23)-segmented (Figs 47–61). Propodeum smooth (Figs 345–362). Ovipositor sheath sparsely setose (Figs 583–600) ..... 12
12. Lateral lobes of mesonotum densely pubescent (Figs 250, 254, 257–259, 262) ..... 13  
 – Lateral lobes of mesonotum with small (Figs 246, 248, 261) to large hairless areas (Figs 247, 249, 251–253, 255, 256, 260, 263) ..... 18
13. Forewing RS vein effaced, point-like (Fig. 157). Dorsal aspect of propodeum sparsely pubescent (Fig. 356) ..... *Praon orpheusi* Kavallieratos, Athanassiou & Tomanović  
 – Forewing RS never point-like and normally developed (Figs 150, 154, 158, 159, 162). Dorsal aspect of propodeum densely pubescent (Figs 349, 353, 357, 358, 361) ..... 14
14. Flagellomere 1 yellow. Petiole elongated, 1.5–1.6× as long as wide at spiracle (Figs 450, 454). Antennae 19–22 (23)-segmented ..... 15  
 – Flagellomere 1 brown, with small yellowish part at base. Petiole short, 1.20–1.35× as long as wide at spiracle (Figs 458, 459, 462). Antennae 16–18(19)-segmented ..... 16
15. Antennae 19-segmented (Fig. 50). Flagellomere 1 yellow. Dorsal aspect of petiole with few sparse hairs along sides (Fig. 450). Dorsal outline of ovipositor sheath almost straight (Fig. 587) .....  
 ..... *Praon bicolor* Mackauer  
 – Antenna 21–23-segmented (Fig. 54). Dorsal aspect of petiole with dense hairs along sides (Fig. 454). Dorsal outline of ovipositor sheath concave (Fig. 591) ..... *Praon longicorne* Marshall
16. Dorsal aspect of petiole with sparse hairs along sides (Fig. 459). Stigma 1.9–2.3× as long as R1 vein (Fig. 159) ..... *Praon rosaecola* Starý  
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- Propodeum sparsely setose, with regular carinae (Figs 336, 342). Petiole with prominent spiracular tubercles, distinctly widened to the base (Fig. 437, 443). Ovipositor sheath truncated apically (Figs 574, 580) ..... 93
- 93. Stigma uniformly brown. Propodeum with less concave central areola (Fig. 336) .....  
..... *Pauesia abietis* (Marshall)
- Stigma brown, yellowish at base. Propodeum with very concave central areola (Fig. 342) .....  
..... *Pauesia pini* (Haliday)



94. Forewing M+m-cu and r veins absent (Figs 74–77) .....	95
– Forewing with incomplete M+m-cu vein, r vein distinct (Figs 127–131) .....	98
95. Ovipositor sheath considerably elongated, length/width ratio 2.80–3.20 (Fig. 511) .....	
..... <i>Adialytus ambiguus</i> (Haliday)	
– Ovipositor sheath stout, length/width ratio 2.20–2.70 (Figs 512–514) .....	96
96. Flagellar segments (Fig. 4) subquadrate, slightly longer than their maximum width, length/width ratio 1.50–1.60. Flagellar segments and hind femur covered with long and prevalently erected setae (Fig. 502). Ovipositor sheath sharply angular (Fig. 513) .....	<i>Adialytus thelaxis</i> (Starý)
– Flagellar segments (Figs 3, 5) cylindrical, considerably longer than their maximum width, length/width ratio 2.00–2.90. Flagellar segments and hind femur covered with semi-erected (Fig. 501) or adpressed (Fig. 503) setae. Ovipositor sheath roundly angular (Figs 512, 514) .....	97
97. Petiole elongated, 2.20–2.40× as long as wide at spiracles (Fig. 376). Flagellar segments (Fig. 3) covered with prevalently semi-erected setae equal to segment diameter. Flagellomere 1 with 3–4 longitudinal placodes. Hind femur covered with prevalently semi-erected setae (Fig. 501) .....	<i>Adialytus salicaphis</i> (Fitch)
– Petiole short, 1.90–2.10× as long as wide at spiracles (Fig. 378). Flagellar segments (Fig. 5) covered with adpressed setae distinctly shorter than segment diameter. Flagellomere 1 with 0–1 longitudinal placode. Hind femur covered with short adpressed setae (Fig. 503) .....	<i>Adialytus veronicaecola</i> (Starý)
98. Stigma equal or distinctly longer than R1 vein. (Figs 129, 131, 132). Petiole narrowly triangular (Figs 429, 431, 432). Labial palps with 2 palpomeres .....	99
– Stigma distinctly shorter than R1 vein, reaching outer margin of wing (Figs 127, 128, 130). Petiole widely triangular (Fig. 427, 428, 430). Labial palps with 1 palpomere .....	101
99. Petiole wide at base, 1.0–1.3× as long as wide at base (Fig. 429). Hind femur with semi-erected setae (Fig. 506) .....	<i>Lysiphlebus desertorum</i> Starý
– Petiole more elongate, 1.5–2.0× as long as wide at base (Figs 431, 432). Hind femur with appressed setae (Figs 508, 509) .....	100
100. Petiole 1.5–1.7× as long as wide at base (Fig. 431) .....	<i>Lysiphlebus fritzmuelleri</i> Mackauer
– Petiole 1.7–2.0× as long as wide at base (Fig. 432) .....	<i>Lysiphlebus testaceipes</i> (Cresson)
101. Forewing marginal setae longer than those on the surface (Fig. 128) .....	<i>Lysiphlebus confusus</i> Tremblay & Eady
– Forewing marginal setae as long as those on the surface (Figs 127, 129) .....	102
102. Hind femur with appressed setae (Fig. 507). Stigma 2.8–3.4× as long as wide (Fig. 130) .....	<i>Lysiphlebus fabarum</i> (Marshall)
– Hind femur with semi-erected setae (Fig. 504). Stigma 3.2–4.0× as long as wide (Fig. 127) ...	103
103. Stigma 3.2–3.6× as long as wide (Fig. 127). Flagellomere 1 usually without or exceptionally with 1 longitudinal placode (Fig. 37) .....	<i>Lysiphlebus cardui</i> (Marshall)
– Stigma 3.8–4.0× as long as wide. Flagellomere 1 with 1–2 longitudinal placodes .....	<i>Lysiphlebus volkli</i> Tomanović & Kavallieratos

**Table 1.** Numbers of recorded genera and species of Aphidiinae in different countries of the Middle East and North Africa.

Countries	Area (km <sup>2</sup> )	Number of genera	Number of species
Algeria	2,381,741	7	29
Bahrain	765.3	–	–
Djibouti	23,200	–	–
Egypt	1,001,449	8	22
Eritrea	117,598	–	–
Iran	1,648,000	16	75
Iraq	437,072	10	28
Israel	20,770	11	38
Jordan	89,342	3	3
Kuwait	17,820	–	–
Lebanon	10,452	7	13
Libya	1,759,540	2	4
Morocco	446,550	8	19
Oman	309,501	–	–
Palestine	6,220	3	4
Qatar	11,571	–	–
Saudi Arabia	2,150,000	4	8
Somalia	637,657	–	–
Sudan	1,886,068	–	–
Syria	185,180	4	3
Tunisia	163,610	7	16
Turkey	783,562	13	57
UAE	83,600	5	9
Yemen	528,076	7	11

## Discussion

The overall number of the recorded species from the Middle East and North Africa is less than one fifth of the total known Aphidiinae species, worldwide. Among the 24 countries of the Middle East and North Africa (Table 1), there are still no published records on aphid parasitoids from eight countries (Bahrain, Djibouti, Eritrea, Kuwait, Oman, Qatar, Somalia, Sudan) (Fig. 613). Except on a few occasions, the explored areas of the Middle East and North Africa were mostly limited to the agricultural landscapes and nearby areas (Abou-Fakhr & Kwar 1998; Havelka *et al.* 2011; Ahmad & Bakr 2013; Starý *et al.* 2013; Tomanović *et al.* 2014). With a diverse range of habitats explored, Iran and Turkey are the most investigated regions of the Middle East and North Africa, in regards to Aphidiinae. For example, Barahoei *et al.* (2014) recorded 78 species of aphid parasitoids, belonging to 17 genera, from Iran (including some misidentified genera and species). However, the last up-to-date of Aphidiinae of Iran (Farahani *et al.* 2016) includes 73 species belonging to 15 genera. Two genera, *Toxares* Haliday and *Euaphidius* Mackauer, are not listed in Farahani *et al.* (2016) since the former is considered as a misidentification, while species of the latter are classified in *Aphidius* Nees on the basis of molecular and morphological analyses (Milošević *et al.* 2015). Incorporating a missing record, *Lysiphlebus cardui* (Alikhani *et al.*

2013) and the newly recorded species (Kargarian *et al.* 2016; Farahani *et al.* 2017), the number of Aphidiinae species in Iran reaches 76. Among the recorded aphidiines of Iran, four species are recorded only from Iran. Twenty-four species are only recorded from Iran in the Middle East and North Africa regions, but are also recorded from elsewhere in the world.

On the basis of biogeographical complexity, Aphidiinae of the Middle East and North Africa can be categorized in three groups consisting of endemic rare, endemic widely distributed, or invasive species. The first group is represented by few species (i.e., *Aphidius myzocallidis*, *Aphidius uroleuci*, *Trioxys moshei* and *Trioxys quercicola*), which have not been collected since their original description. A large group of species includes native elements of the Western Palaearctic region that are irregularly distributed in the Middle East and North Africa. The well known invasive species *Lysiphlebus testaceipes* which is probably native to South America (Stary *et al.* 2014) is now widely distributed in Europe (Kavallieratos *et al.* 2001, 2004, 2005, 2010, 2013; Žikić *et al.* 2015; Kavallieratos *et al.* 2016; Tomanović *et al.* 2018) and North African countries (Laamari & Coeur d'Acier 2010; Havelka *et al.* 2011; Boukhris-Bouhachem 2011; Ben Halima 2011; Mitrović *et al.* 2013; Tomanović *et al.* 2018). This species has even been recorded in Iran (Rakhshani *et al.* 2005a) and Turkey (Uysal *et al.* 2004; Yoldaş *et al.* 2011; Satar *et al.* 2014). Some other species have been recorded occasionally and can be classified as rare taxa of the Middle East and North Africa, although they are widely distributed in Europe (i.e., *Aphidius eglanteriae*, *Binodoxys centaureae*, *Diaeretus leucopterus*, *Ephedrus lacertosus*, *Ephedrus nacheri*, *Lysiphlebus cardui*, *Pauesia* spp., *Praon flavinode*, *Praon longicorne* and *Praon pubescens*). Seven species (i.e., *Aphidius eglanteriae*, *Aphidius microlophii*, *Lysiphlebus fritzmulleri*, *Pauesia anatolica*, *Praon athenaeum*, *Praon nonveilleri* and *Praon uroleucon*) are exclusively recorded in the western part of Turkey (Barjadze *et al.* 2010; Michelena *et al.* 2005; Akar & Erdoğan 2017) and possibly could not be considered as elements of the Middle East area. *Binodoxys centaureae*, *Pauesia cedrobii* and *Pauesia silana* are members of the Mediterranean region, which are only recorded in North Africa (Stary 1976; Stary & Leclant 1977; Laamari *et al.* 2012; Benhamacha *et al.* 2017). Few species of the genus *Pauesia* have been recorded in association with Cinarinae aphids in Middle Eastern countries, i.e., Algeria – *Pauesia silana* (Benhamacha *et al.* 2017); Iran – *Pauesia antennata* (Rakhshani *et al.* 2005b) and *Pauesia hazratbalensis* (Stary *et al.* 2005); Iraq – *Pauesia antennata* (Stary & Kaddou 1971); Morocco – *Pauesia cedrobii* (Stary & Leclant 1977; Fabre & Rabasse 1987); Saudi Arabia – *Pauesia* sp. (Ahmad & Bakr 2013; Stary *et al.* 2013); Tunisia (Mdellel *et al.* 2015) and Yemen (Cross & Poswal 1996) – *Pauesia antennata*. Furthermore, six species have been recorded from Turkey (*Pauesia abietis* – Schimitschek 1944; Stary 1976; *Pauesia unilachni* – Düzgüneş *et al.* 1982; *Pauesia picta* – Aslan *et al.* 2004, Uysal *et al.* 2004; *Pauesia anatolica* – Michelena *et al.* 2005) and Israel (*Pauesia pini* – Bodenheimer & Swirski 1957; Avidov & Harpaz 1969; Stary 1976; *Pauesia silana* – Mescheloff & Rosen 1990b; *Pauesia anatolica* – Michelena *et al.* 2005) as representative species of the Mediterranean region.

Recent evidence (Ghaliow *et al.* 2018) indicated that *Aphidius banksae* [former *Aphidius staryi* (Das & Chakrabarti 1990), synonymy by Kittel (2016)], which is described from Israel and Turkey, occurs in Europe and it is widely distributed from Greece to Great Britain. *Aphidius colemani* is a biological control agent distributed in Europe and the Mediterranean region. Recent molecular analysis revealed the existence of another related species, *Aphidius platensis* (Tomanović *et al.* 2014) in Iran, which is considered to be the same species as in Chile (South America). Our new material from Saudi Arabia also confirms the broader distribution of *A. platensis* in the Middle East, while recent records of this species in India (Lokeshwari *et al.* 2016) suggest an even further expanded area of distribution.

Among the 743 parasitoid-aphid associations from Middle Eastern and North Africa, 52 records were doubtful and need further investigation. They may correspond to data originated from mixed aphid colonies and/or misidentifications. For example, the parasitoid complex of *Uroleucon* aphids is reviewed

by Rakhshani *et al.* (2006b) but *A. ervi* has never been recorded as a member of this complex. Similarly, although *E. niger* is a specific parasitoid of *Uroleucon* and *Macrosiphoniella* aphids (Rakhshani *et al.* 2011), literature data that associate it to *Macrosiphum rosae* (Mescheloff & Rosen 1988) has never been confirmed.

The present study summarizes the presence of some important invasive aphid species and their aphidiine parasitoids as potential biocontrol agents in the target area. For example, *Aphis illinoisensis* has been determined as an invasive species in several Mediterranean countries including North Africa (Havelka *et al.* 2011; El-Gantiry *et al.* 2012), while *Cinara cedri* is an invasive species in Israel (Michelena *et al.* 2005), Saudi Arabia (Ahmad & Bakr 2013), Turkey (Central part – Aslan *et al.* 2004; Uysal *et al.* 2004) and Yemen (Stary *et al.* 2013). With regards to host range pattern of aphid parasitoids, occurrence of both rare and common species in the target region depended on the distribution of their host plants and associated aphids. However, major parts of Algeria and Libya, as the largest countries in North Africa, and of Saudi Arabia in Western Asia, are not adequately explored for aphid parasitoids.

Regarding the large number of Aphidiinae species identified in various areas of Middle Eastern and North Africa, further taxonomic revision should be conducted on some species of complicated genera. For example, the most recent revision of the genus *Lysiphlebus* Förster, 1862 in Europe (Tomanović *et al.* 2018) revealed the existence of some new species, of which *Lysiphlebus volkli* Tomanović & Kavallieratos is also widely present in Iran. Despite the recent revision by Tomanović *et al.* (2018), the taxonomic problem of the genus *Lysiphlebus* in the Palaearctic region has not been completely resolved. Among unresolved species, we propose *Lysiphlebus marismortui* Mescheloff & Rosen as a junior synonym of *Lysiphlebus confusus* Tremblay & Eady. The former has all diagnostic and general characters that fall into normal variability within populations of *L. confusus*. It is worthy noting that the records of *Adialytus ambiguus* from some countries (i.e., Algeria, Iraq), actually refer to *Lysiphlebus ambiguus*. The latter has been subsequently renamed as *Lysiphlebus confusus* (Tremblay & Eady 1978). Therefore, we excluded these records from the current study. *Adialytus ambiguus* is a species that is strictly associated with *Sipha* aphids (Rakhshani *et al.* 2012a; Stanković *et al.* 2015).

The lack of an adequate number of clear diagnostic characters is one of the main difficulties in the identification of Aphidiinae (Rakhshani *et al.* 2012b; Tomanović *et al.* 2018). This issue is common for some species of the genera *Aphidius* and *Praon*. Thus, the use of molecular markers, geometric morphometric analyses and ecological observations is necessary to identify species and elucidate the taxonomic ambiguities in some species-groups with similar host range patterns (Tomanović *et al.* 2014; Milošević *et al.* 2015; Rakhshani *et al.* 2015; Tomanović *et al.* 2018).

On the basis of the current review, and the background data, additional field surveys are necessary to be conducted in the unexplored regions, especially within the isolated areas from desert lowlands to humid and mountaneous highlands in different countries of the Middle East and North Africa so as to shed light on the very complex plant-aphid-aphidiine tritrophic associations and to reveal new species. As numerous species have been recorded in the region of the Middle East and North Africa, the proposed key will be a useful tool for the forthcoming studies that will help the accurate identification of aphid parasitoids.

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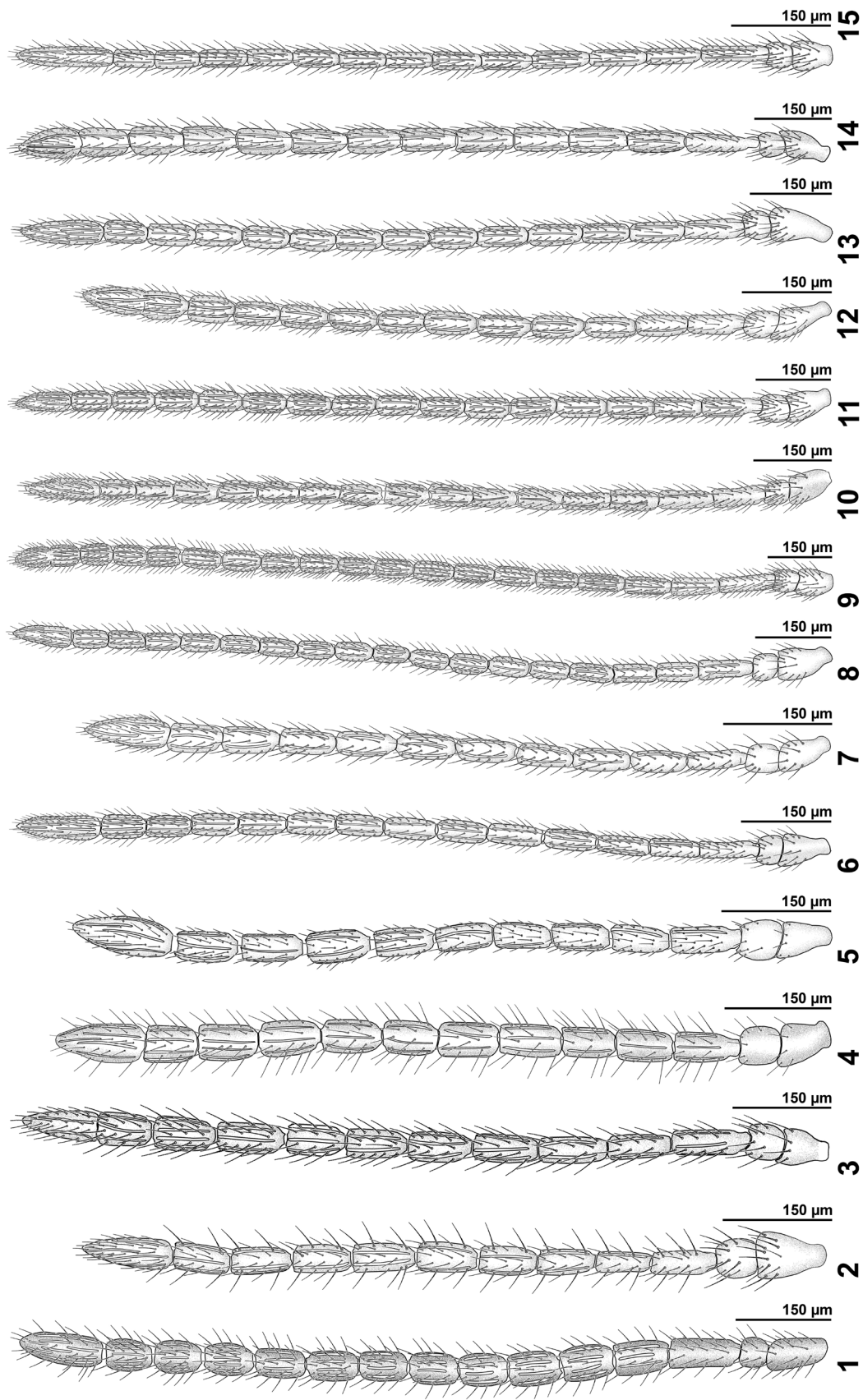
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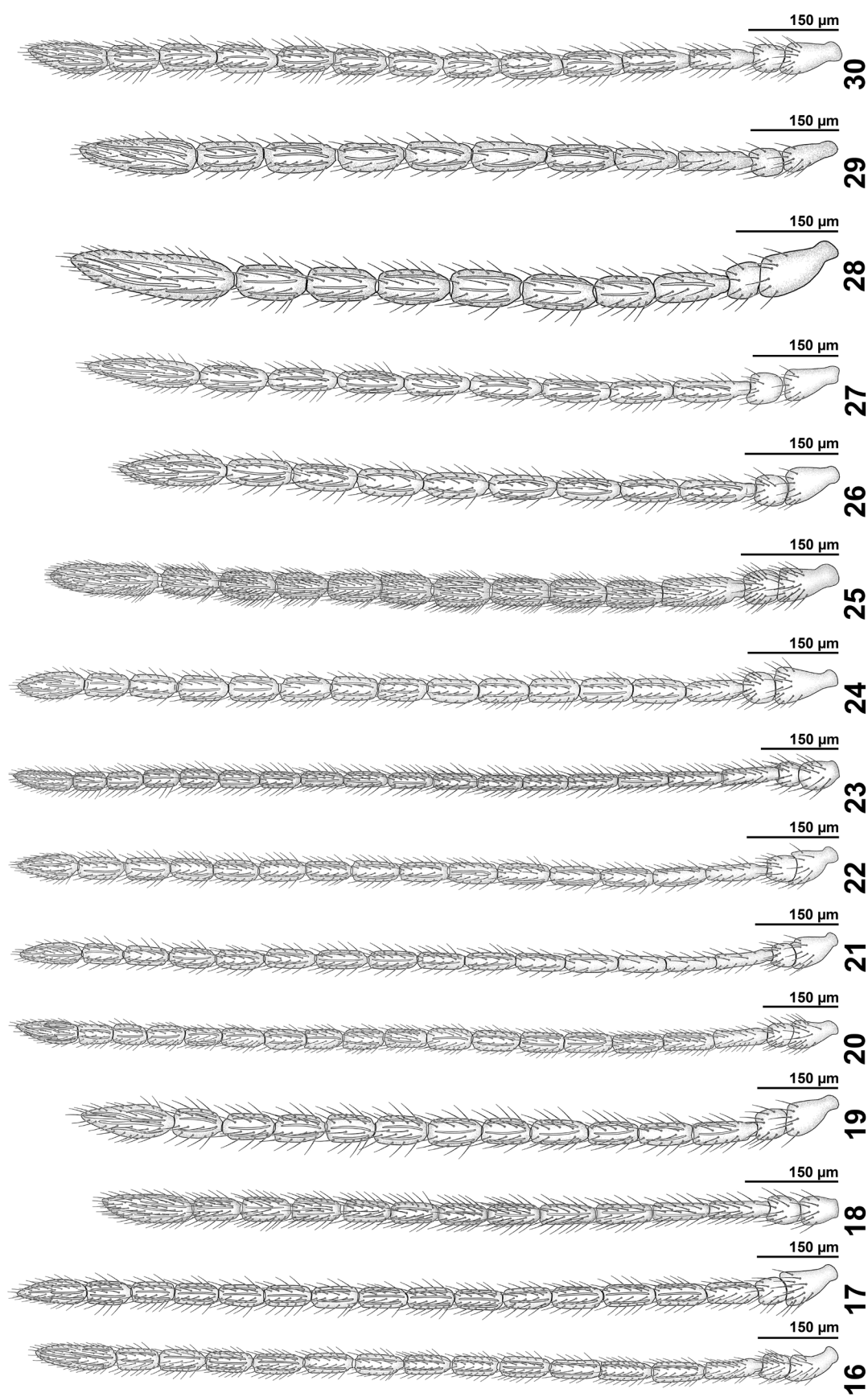
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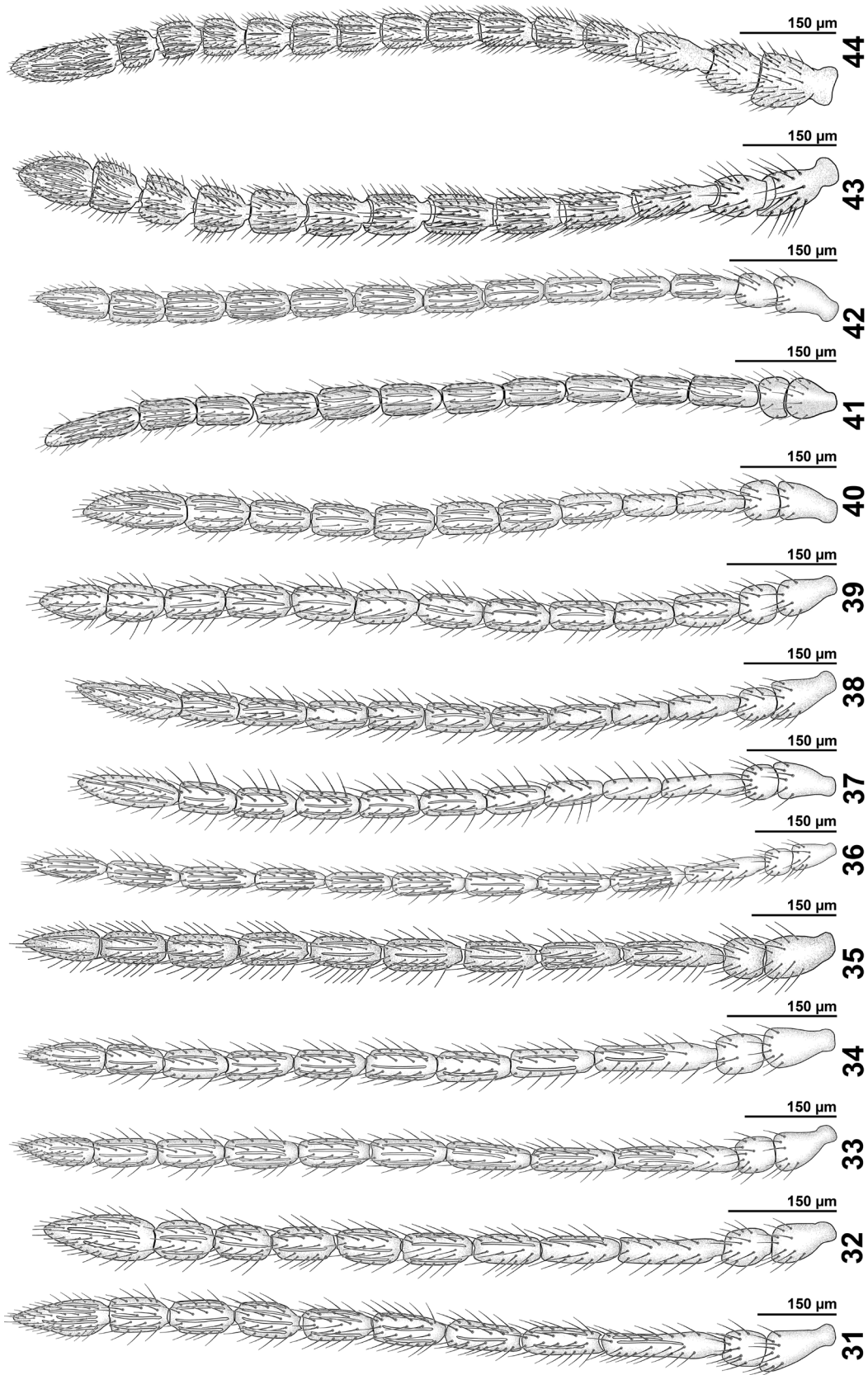


**Figs 1–15.** Antenna (♀): **1.** *Aclitus obscuripennis*. **2.** *Adialytus ambiguus*. **3.** *Adialytus salicaphis*. **4.** *Adialytus thelaxis*. **5.** *Adialytus veronicaecola*. **6.** *Aphidius absinthii*. **7.** *Aphidius arvensis*. **8.** *Aphidius cingulatus*. **9.** *Aphidius eadyi*. **10.** *Aphidius ervi*. **11.** *Aphidius funebris*. **12.** *Aphidius matricariae*. **13.** *Aphidius persicus*. **14.** *Aphidius platenis*. **15.** *Aphidius popovi*.

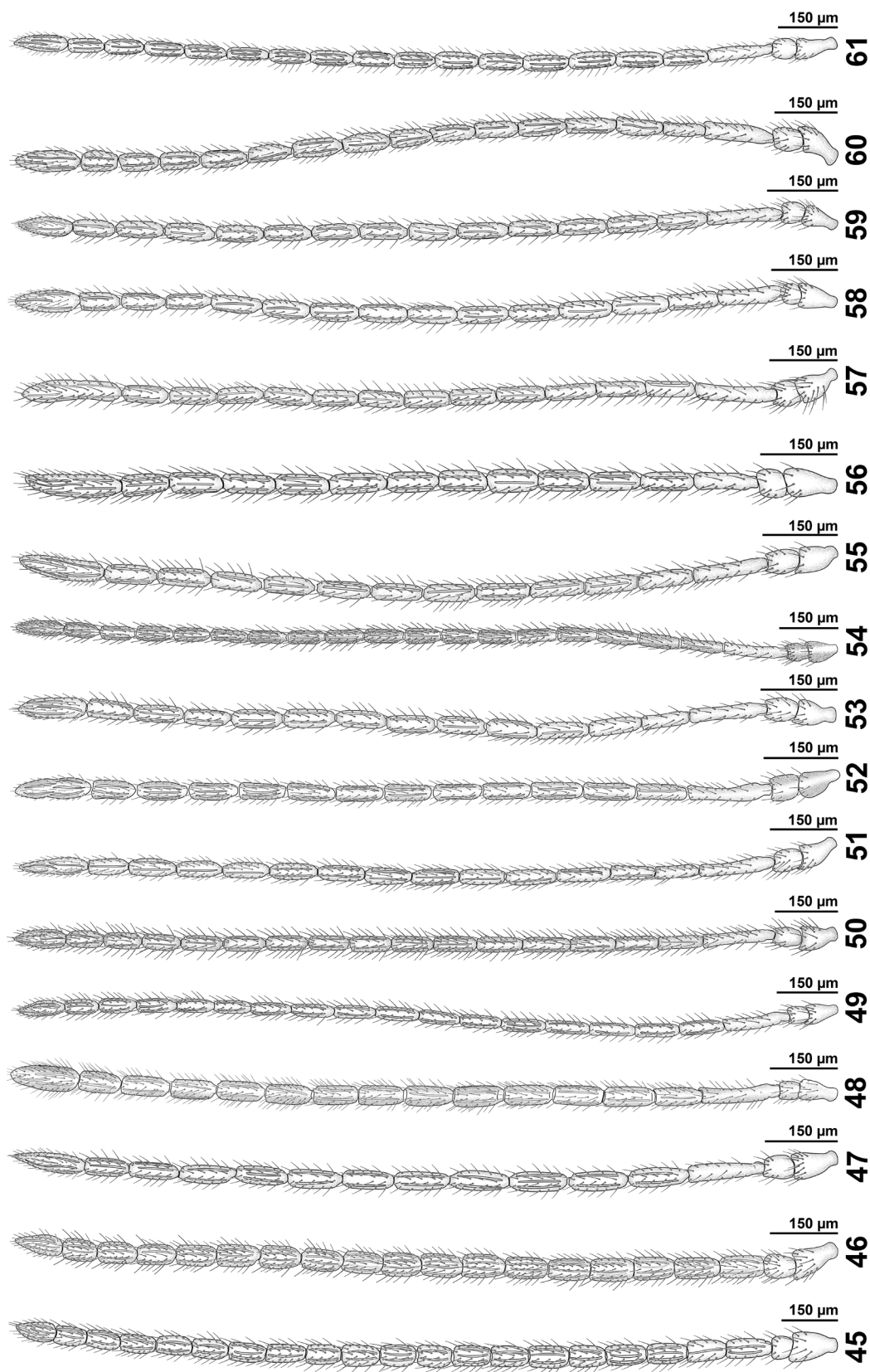


**Figs 16–30.** Antenna (♀): 16. *Aphidius rhopalosiphii*. 17. *Aphidius rosae*. 18. *Aphidius salicis*. 19. *Aphidius setiger*. 20. *Aphidius smithi*. 21. *Aphidius stigmaticus*. 22. *Aphidius transcaspicus*. 23. *Aphidius urticae*. 24. *Aphidius uzbekistanicus*. 25. *Areopraon lepellei*. 26. *Binodoxys acalephae*. 27. *Binodoxys angelicae*. 28. *Binodoxys brevicornis*. 29. *Binodoxys heraclei*. 30. *Diaeretella rapae*.

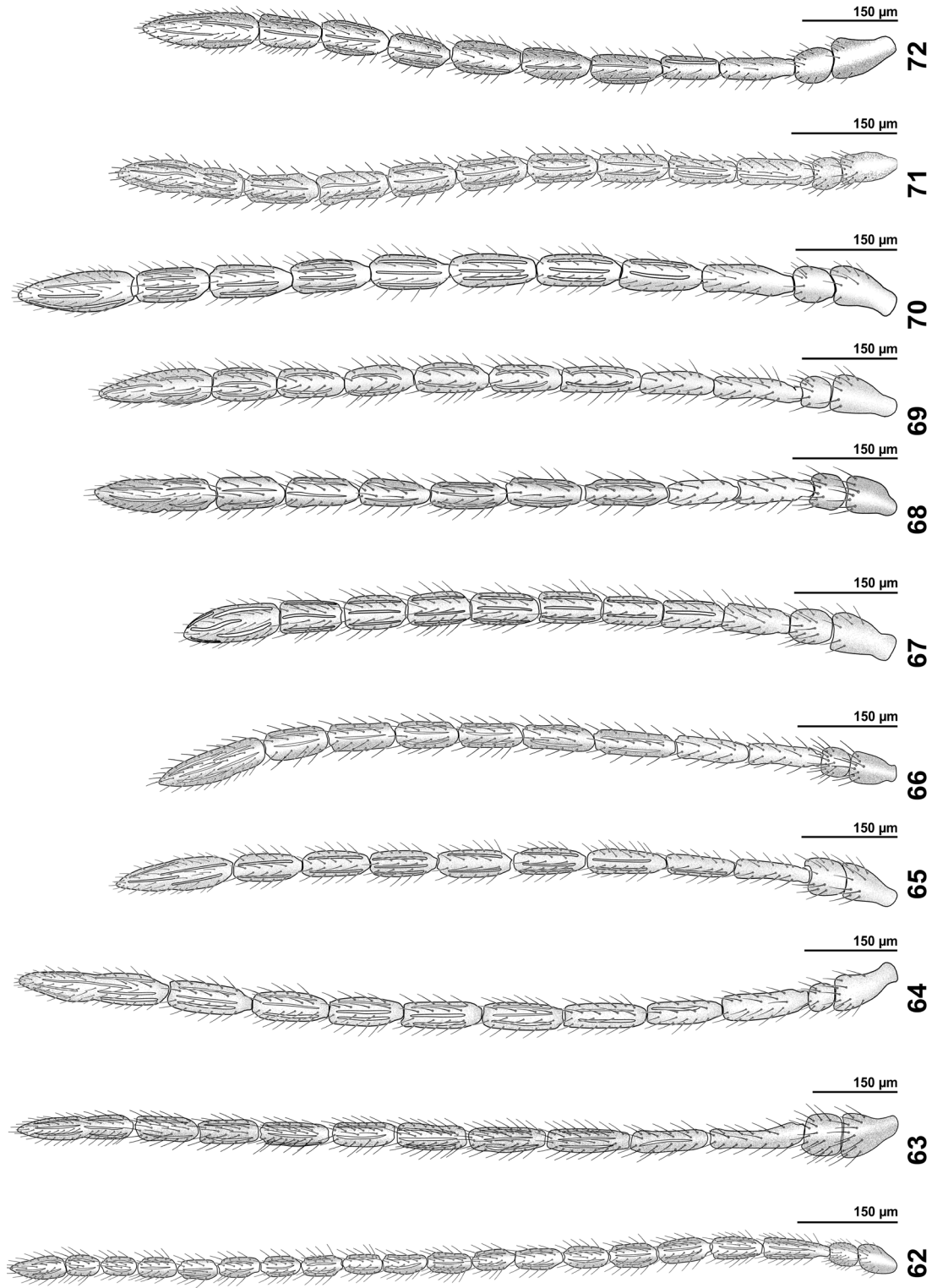




**Figs 31–44.** Antenna (♀): **31.** *Ephedrus cerasicola*. **32.** *Ephedrus helleni*. **33.** *Ephedrus niger*. **34.** *Ephedrus persicae*. **35.** *Ephedrus plagiator*. **36.** *Lipolexis gracilis*. **37.** *Lysiphlebus cardui*. **38.** *Lysiphlebus confusus*. **39.** *Lysiphlebus desertorum*. **40.** *Lysiphlebus fabarum*. **41.** *Lysiphlebus fritzmülleri*. **42.** *Lysiphlebus testaceipes*. **43.** *Monoctonia pistaciaecola*. **44.** *Monoctonia vesicarii*.

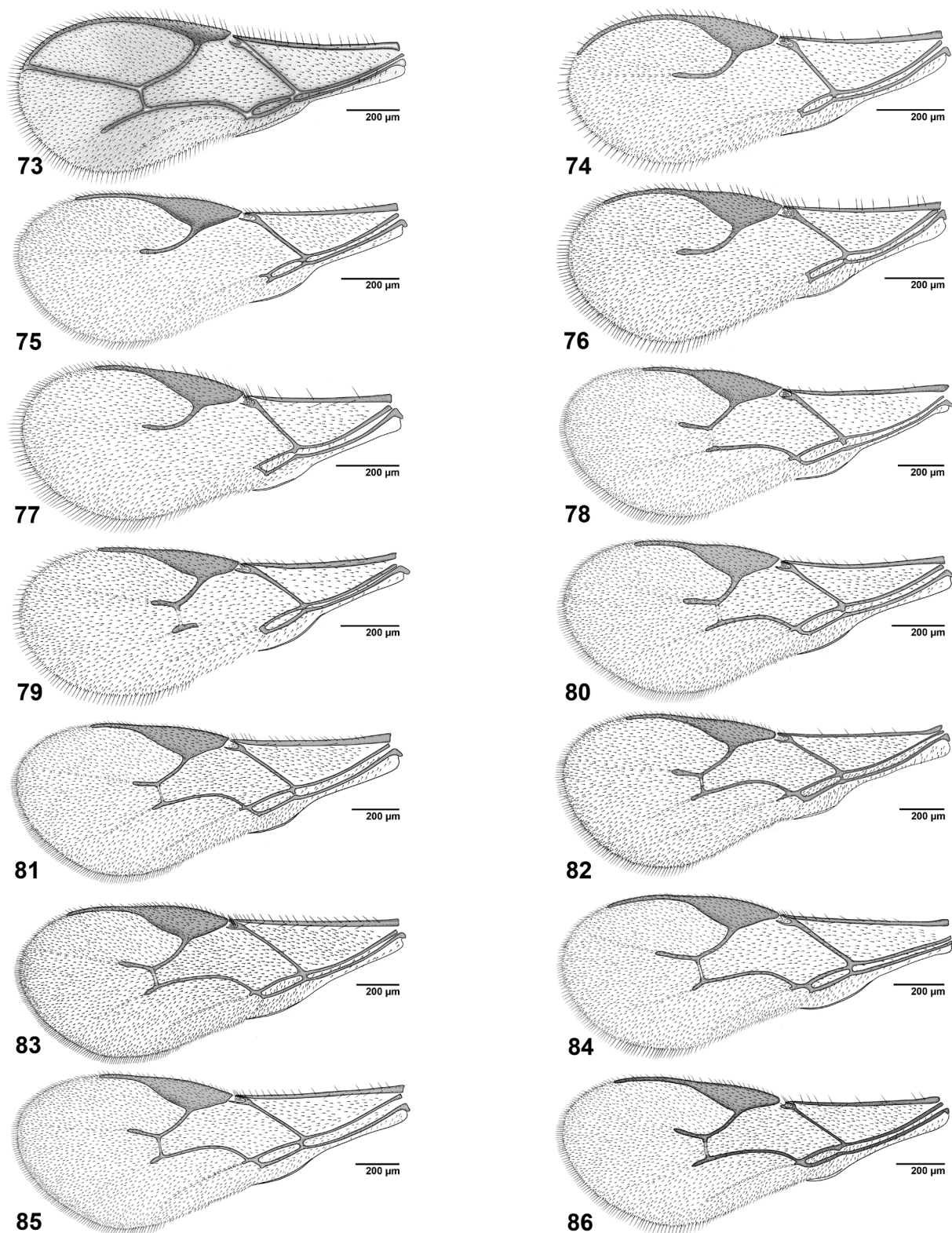


**Figs 45–61.** Antenna (♀): 45. *Pauesia antennata*. 46. *Pauesia hazratbalensis*. 47. *Praon abjectum*. 48. *Praon absinthii*. 49. *Praon barbatum*. 50. *Praon bicolor*. 51. *Praon exsoletum*. 52. *Praon flavinode*. 53. *Praon gallicum*. 54. *Praon longicornis*. 55. *Praon necans*. 56. *Praon orpheusi*. 57. *Praon pubescens*. 58. *Praon rosaecola*. 59. *Praon unitum*. 60. *Praon volucre*. 61. *Praon yomenae*.

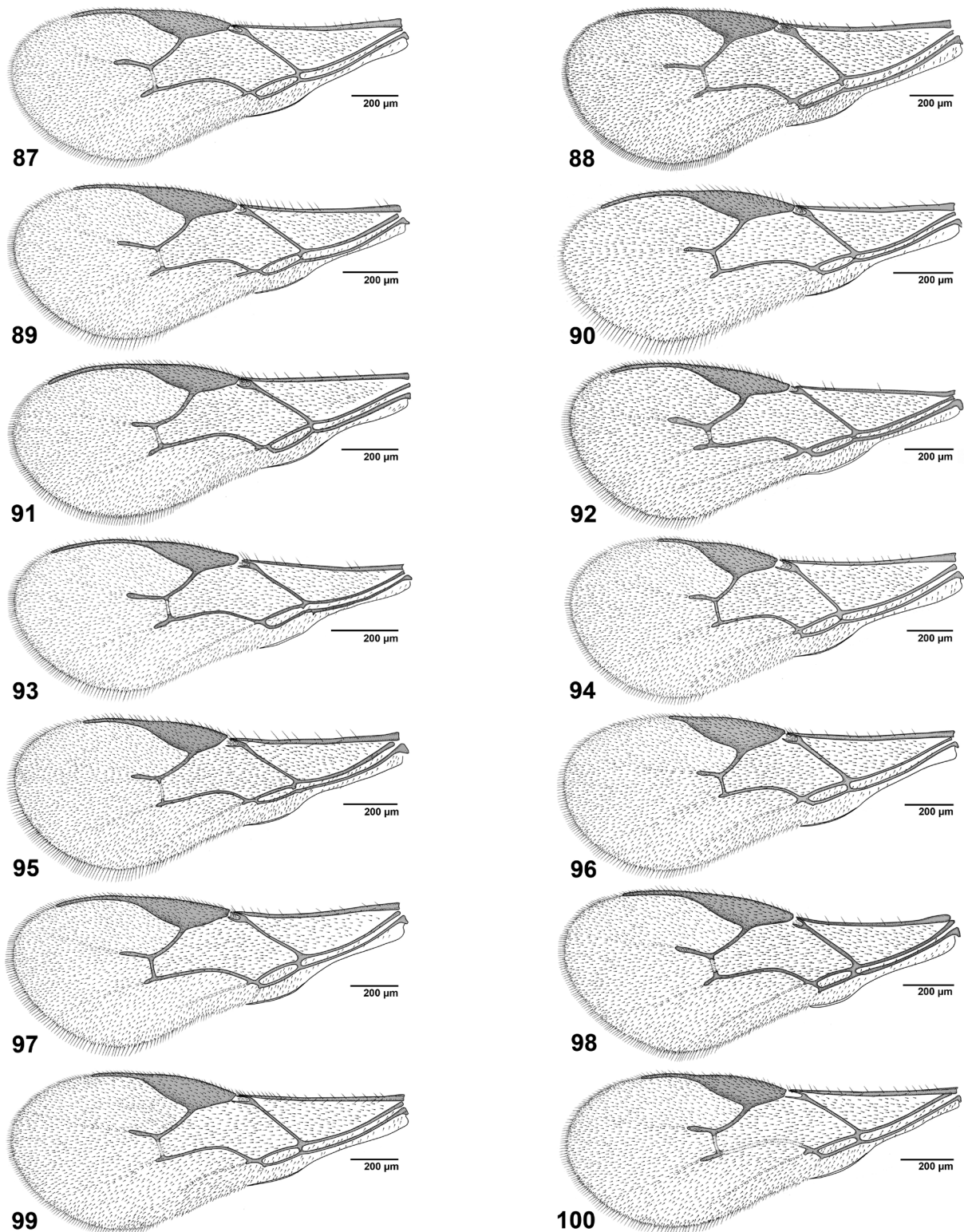


**Figs 62–72.** Antenna (♀): **62.** *Toxares deltiger*. **63.** *Trioxys asiaticus*. **64.** *Trioxys cirsi*. **65.** *Trioxys complanatus*. **66.** *Trioxys curvicaudus*. **67.** *Trioxys metacarpalis*. **68.** *Trioxys moshei*. **69.** *Trioxys pallidus*. **70.** *Trioxys pappi*. **71.** *Trioxys pammonicus*. **72.** *Trioxys tanaceticola*.



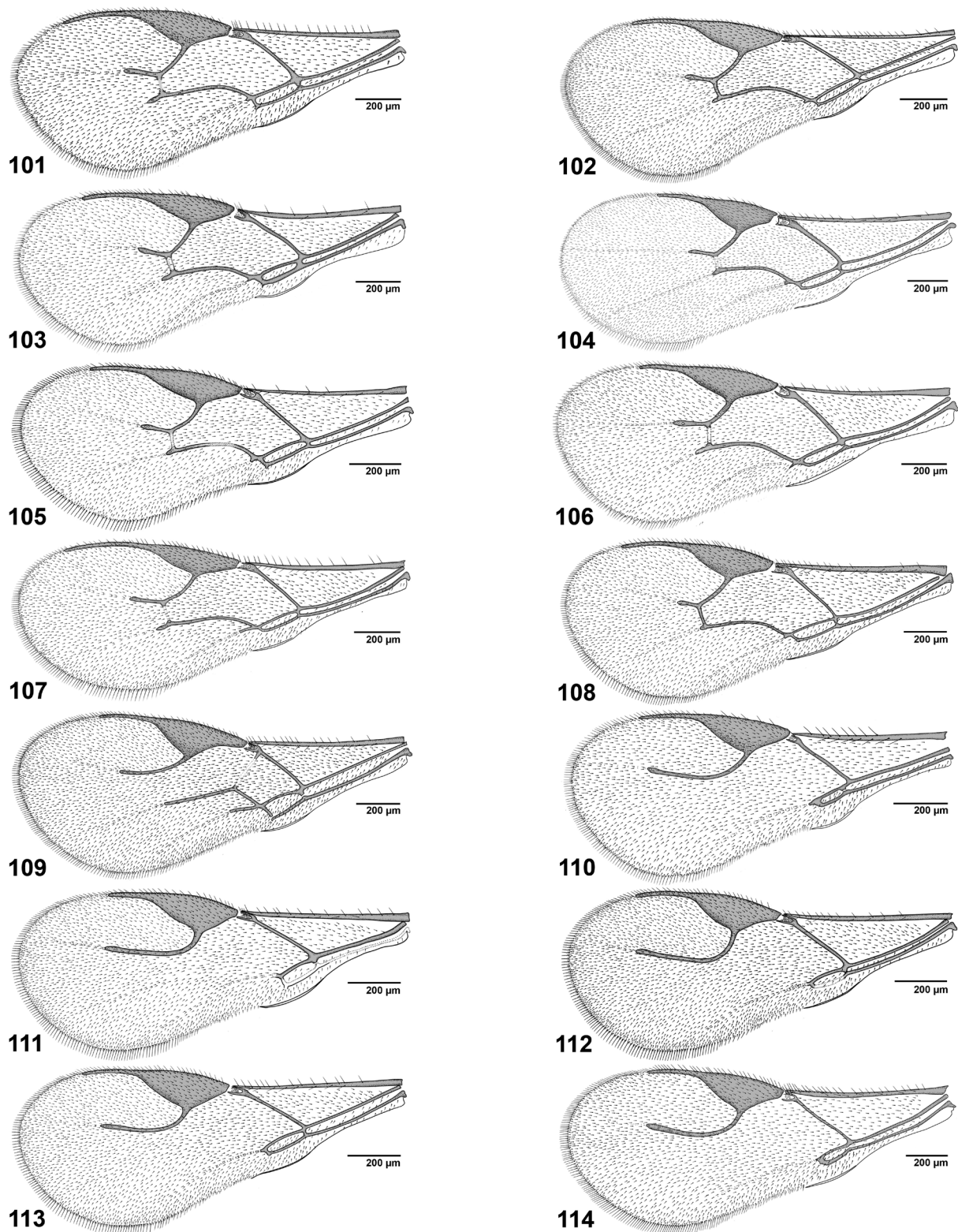


**Figs 73–86.** Forewing (♀): **73.** *Aclitus obscuripennis*. **74.** *Adialytus ambiguus*. **75.** *Adialytus salicaphis*. **76.** *Adialytus thelaxis*. **77.** *Adialytus veronicaecola*. **78.** *Aphidius absinthii*. **79.** *Aphidius arvensis*. **80.** *Aphidius asteris*. **81.** *Aphidius avenae*. **82.** *Aphidius banksae*. **83.** *Aphidius cingulatus*. **84.** *Aphidius colemani*. **85.** *Aphidius eadyi*. **86.** *Aphidius eglanteriae*.

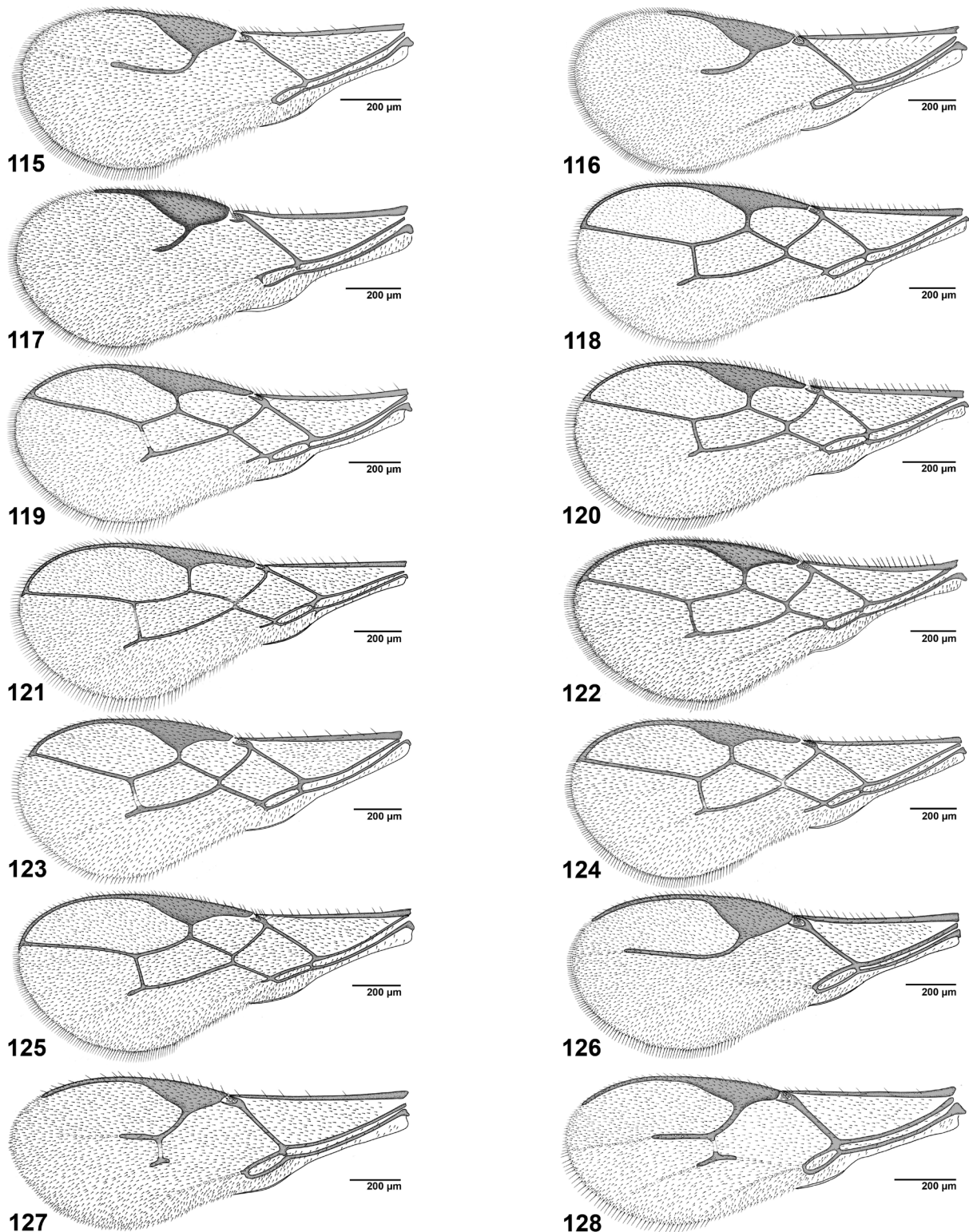


Figs 87–100. Forewing (♀): 87. *Aphidius ervi*. 88. *Aphidius funebris*. 89. *Aphidius hieraciorum*. 90. *Aphidius iranicus*. 91. *Aphidius matricariae*. 92. *Aphidius microlophii*. 93. *Aphidius myzocallidis*. 94. *Aphidius persicus*. 95. *Aphidius platensis*. 96. *Aphidius popovi*. 97. *Aphidius rhopalosiphi*. 98. *Aphidius ribis*. 99. *Aphidius rosae*. 100. *Aphidius salicis*.



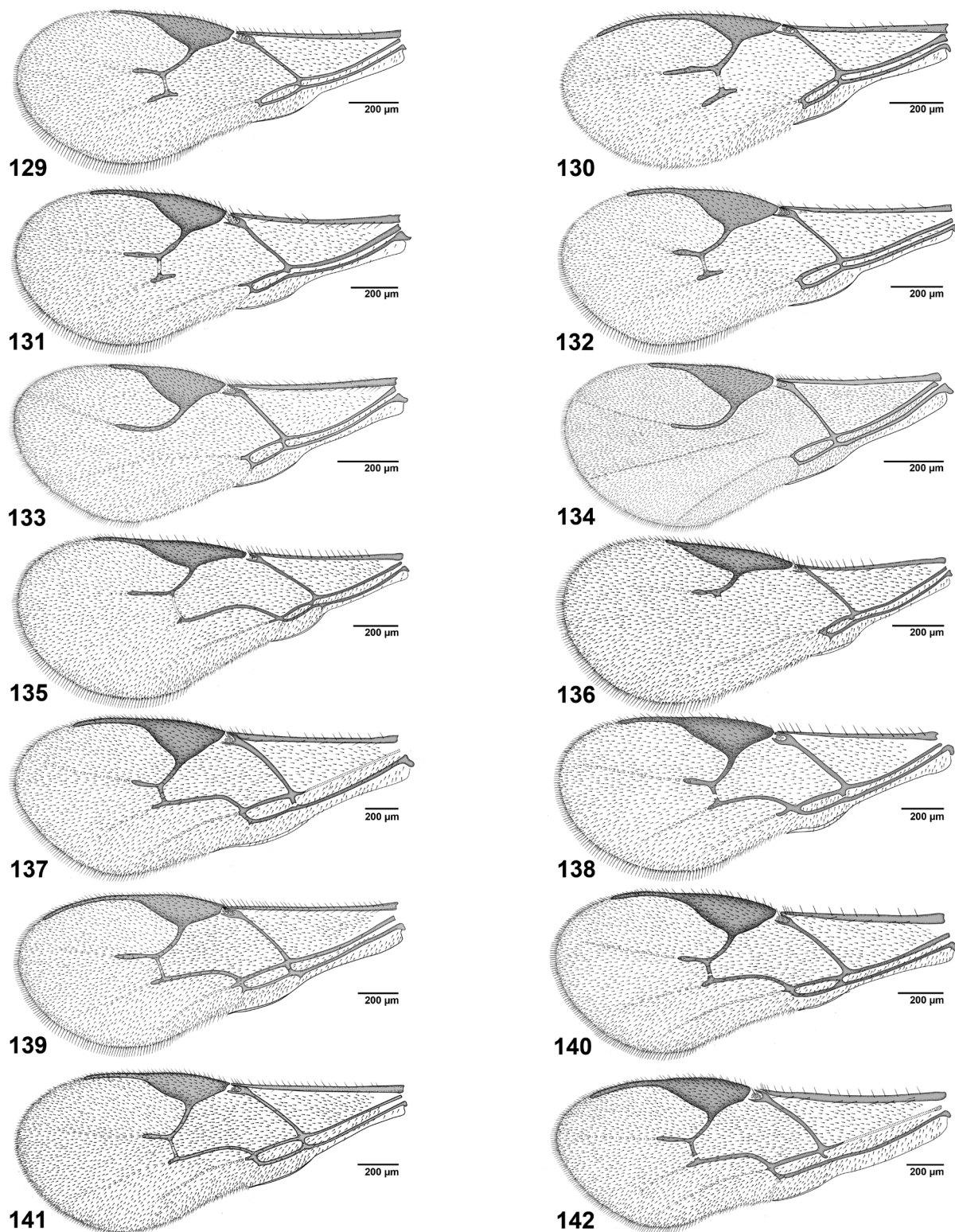


**Figs 101–114.** Forewing (♀): **101.** *Aphidius setiger*. **102.** *Aphidius smithi*. **103.** *Aphidius sonchi*. **104.** *Aphidius stigmaticus*. **105.** *Aphidius transcaspicus*. **106.** *Aphidius uroleuci*. **107.** *Aphidius urticae*. **108.** *Aphidius uzbekistanicus*. **109.** *Areopraon lepellei*. **110.** *Betuloxys hortorum*. **111.** *Binodoxys acalephae*. **112.** *Binodoxys angelicae*. **113.** *Binodoxys brevicornis*. **114.** *Binodoxys centaureae*.



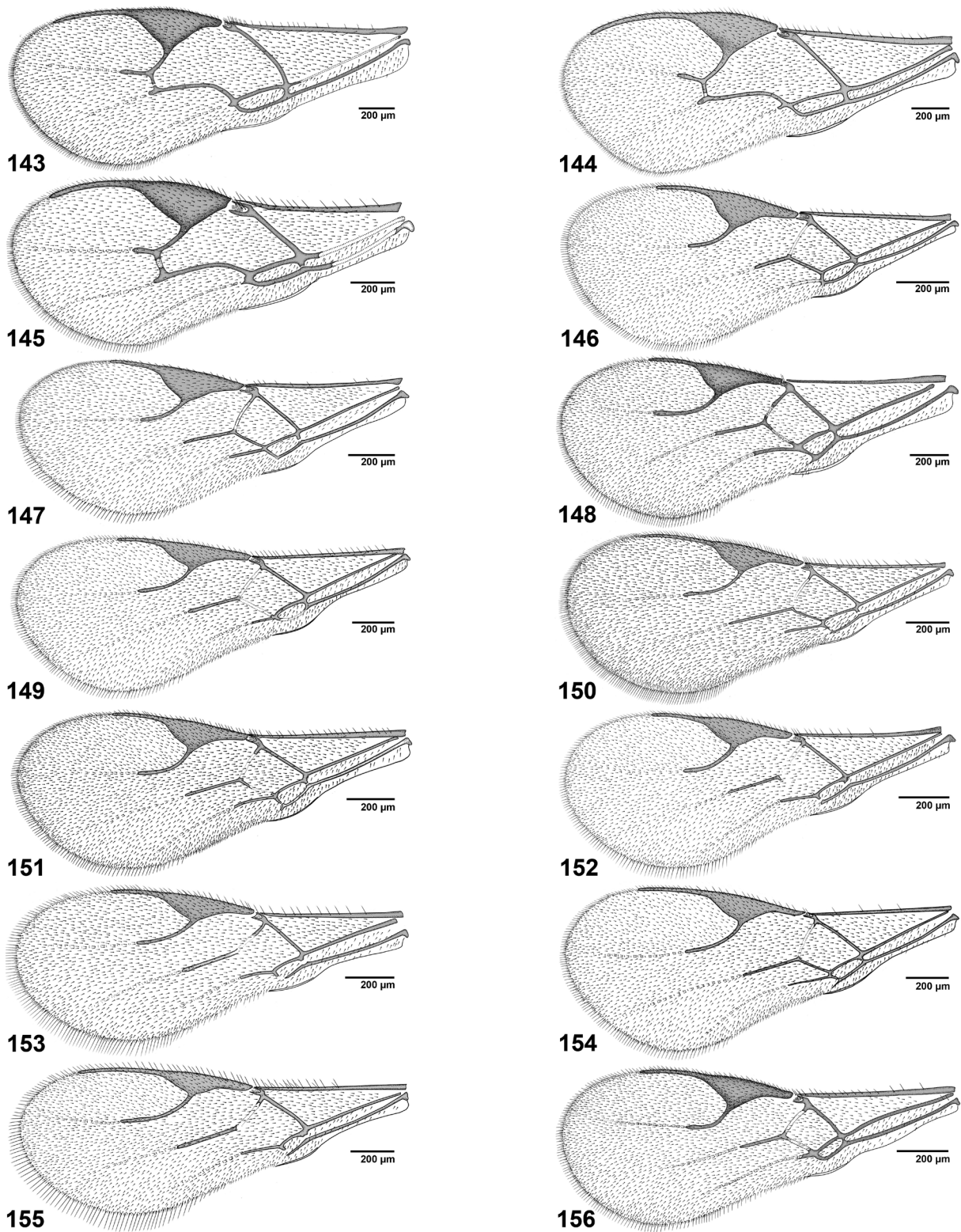
**Figs 115–128.** Forewing (♀): **115.** *Binodoxys heraclei*. **116.** *Diaeretiella rapae*. **117.** *Diaeretus leucopterus*. **118.** *Ephedrus cerasicola*. **119.** *Ephedrus chaitophori*. **120.** *Ephedrus helleni*. **121.** *Ephedrus lacertosus*. **122.** *Ephedrus nacheri*. **123.** *Ephedrus niger*. **124.** *Ephedrus persicae*. **125.** *Ephedrus plagiator*. **126.** *Lipolexis gracilis*. **127.** *Lysiphlebus cardui*. **128.** *Lysiphlebus confusus*.



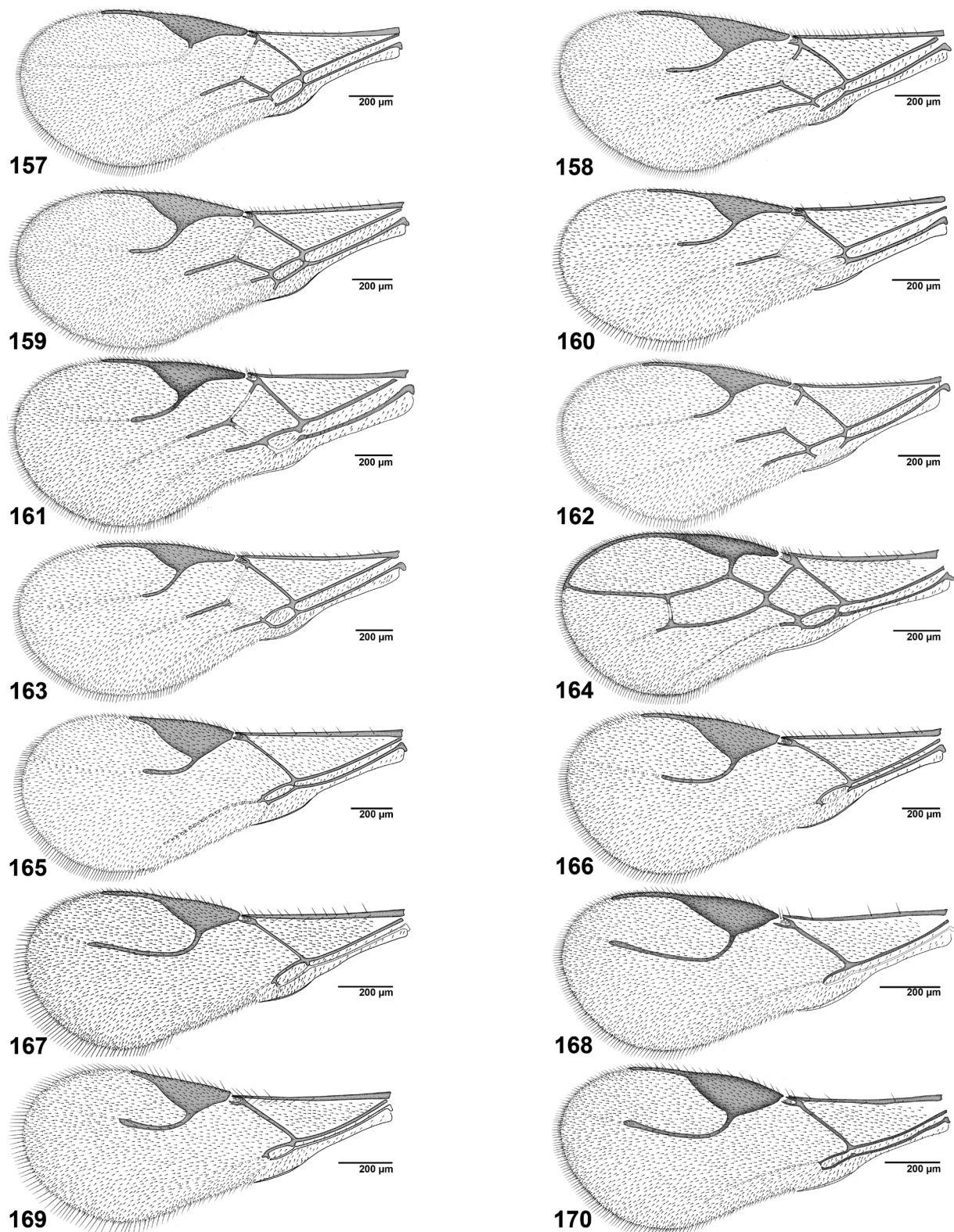


**Figs 129–142.** Forewing (♀): **129.** *Lysiphlebus desertorum*. **130.** *Lysiphlebus fabarum*. **131.** *Lysiphlebus fritzmulleri*. **132.** *Lysiphlebus testaceipes*. **133.** *Monoctonia pistaciaecola*. **134.** *Monoctonia vesicarii*. **135.** *Monoctonus crepidis*. **136.** *Monoctonus mali*. **137.** *Pauesia abietis*. **138.** *Pauesia anatolica*. **139.** *Pauesia antennata*. **140.** *Pauesia cedrobii*. **141.** *Pauesia hazratbalensis*. **142.** *Pauesia picta*.



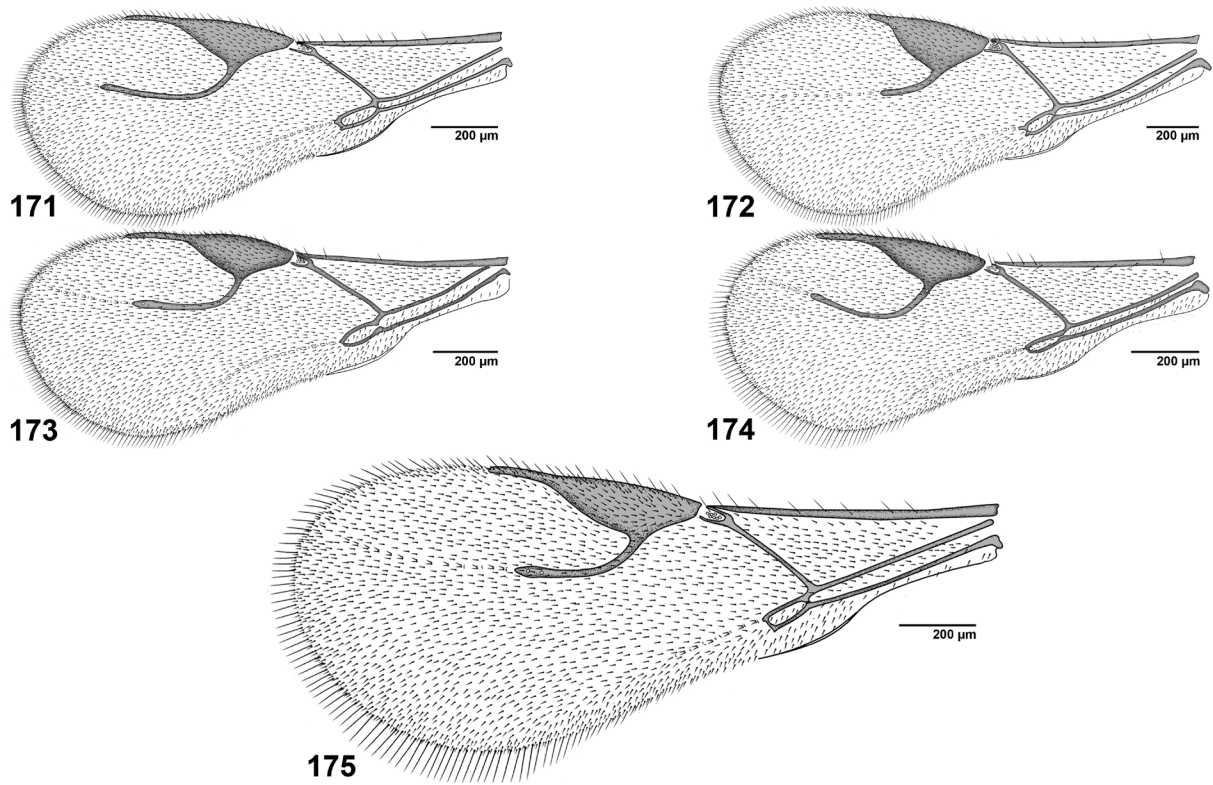


**Figs 143–156.** Forewing (♀): **143.** *Pauesia pini*. **144.** *Pauesia silana*. **145.** *Pauesia unilachni*. **146.** *Praon abjectum*. **147.** *Praon absinthii*. **148.** *Praon athenaeum*. **149.** *Praon barbatum*. **150.** *Praon bicolor*. **151.** *Praon exsoletum*. **152.** *Praon flavinode*. **153.** *Praon gallicum*. **154.** *Praon longicorne*. **155.** *Praon necans*. **156.** *Praon nonveilleri*.

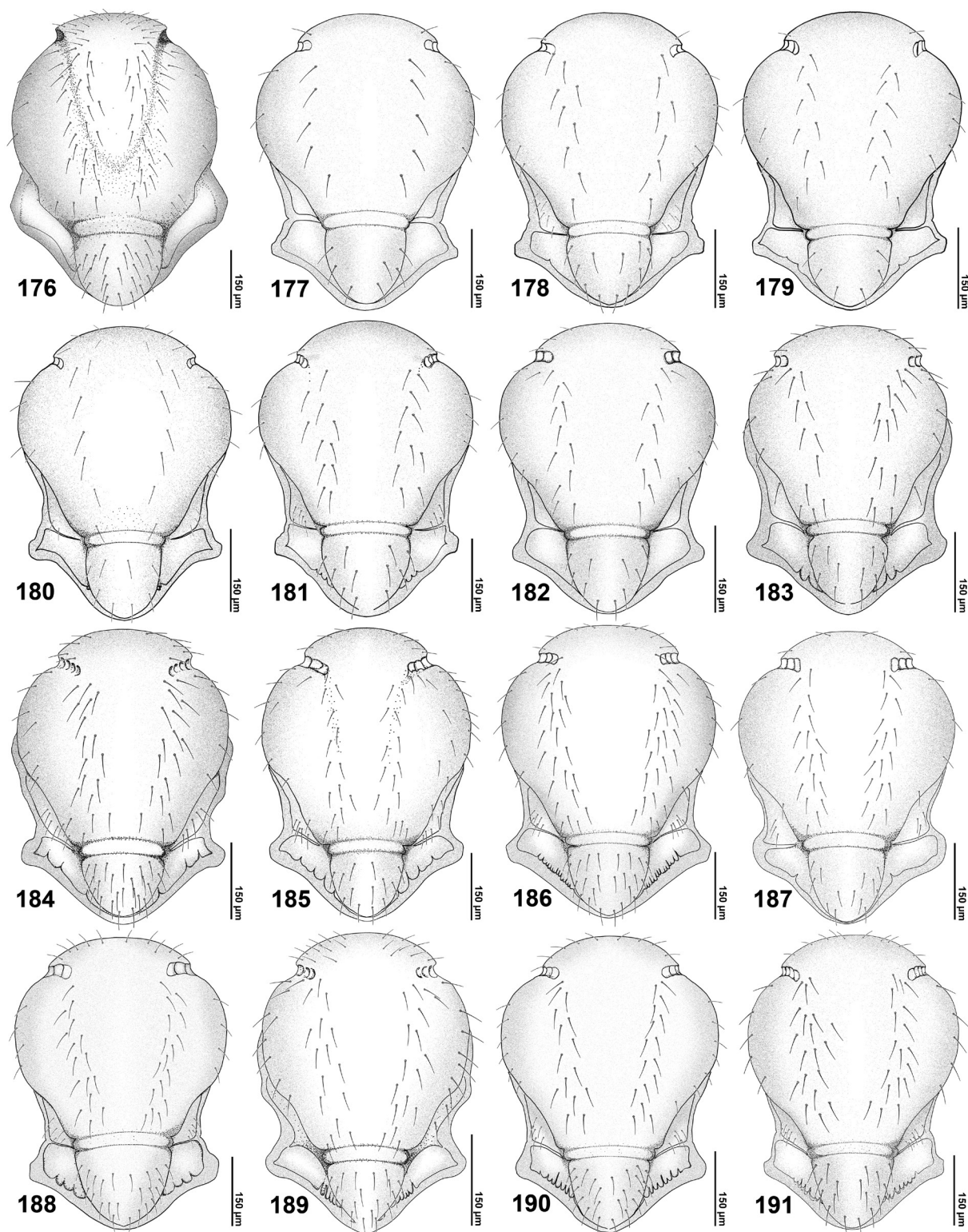


**Figs 157–170.** Forewing (♀): **157.** *Praon orpheusi*. **158.** *Praon pubescens*. **159.** *Praon rosaecola*. **160.** *Praon unitum*. **161.** *Praon uroleucon*. **162.** *Praon volucre*. **163.** *Praon yomenae*. **164.** *Toxares deltiger*. **165.** *Trioxys asiaticus*. **166.** *Trioxys cirsii*. **167.** *Trioxys complanatus*. **168.** *Trioxys curvicaudus*. **169.** *Trioxys metacarpalis*. **170.** *Trioxys moshei*.



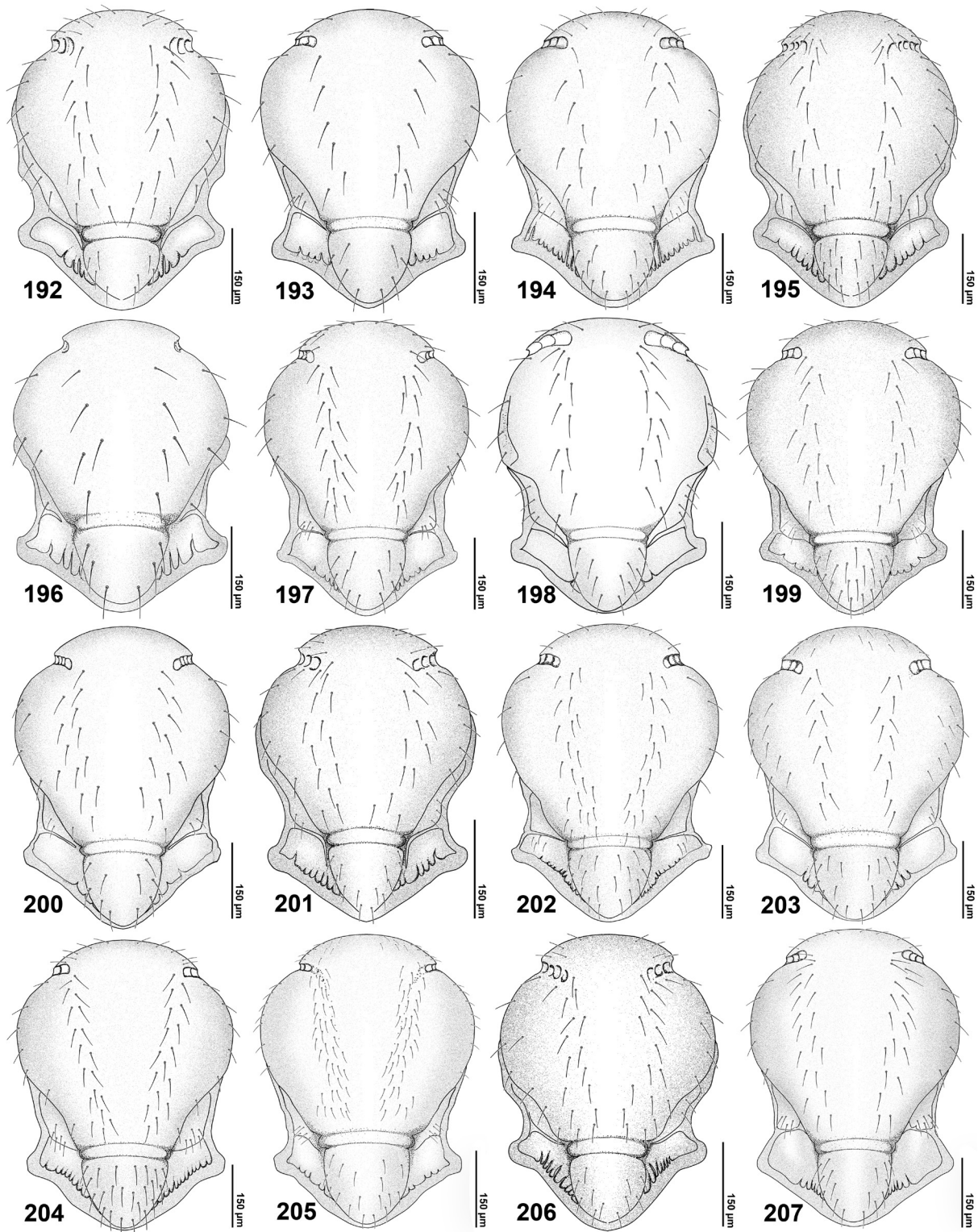


**Figs 171–175.** Forewing (♀): **171.** *Trioxys pallidus*. **172.** *Trioxys pannonicus*. **173.** *Trioxys pappi*. **174.** *Trioxys quercicola*. **175.** *Trioxys tanaceticola*.



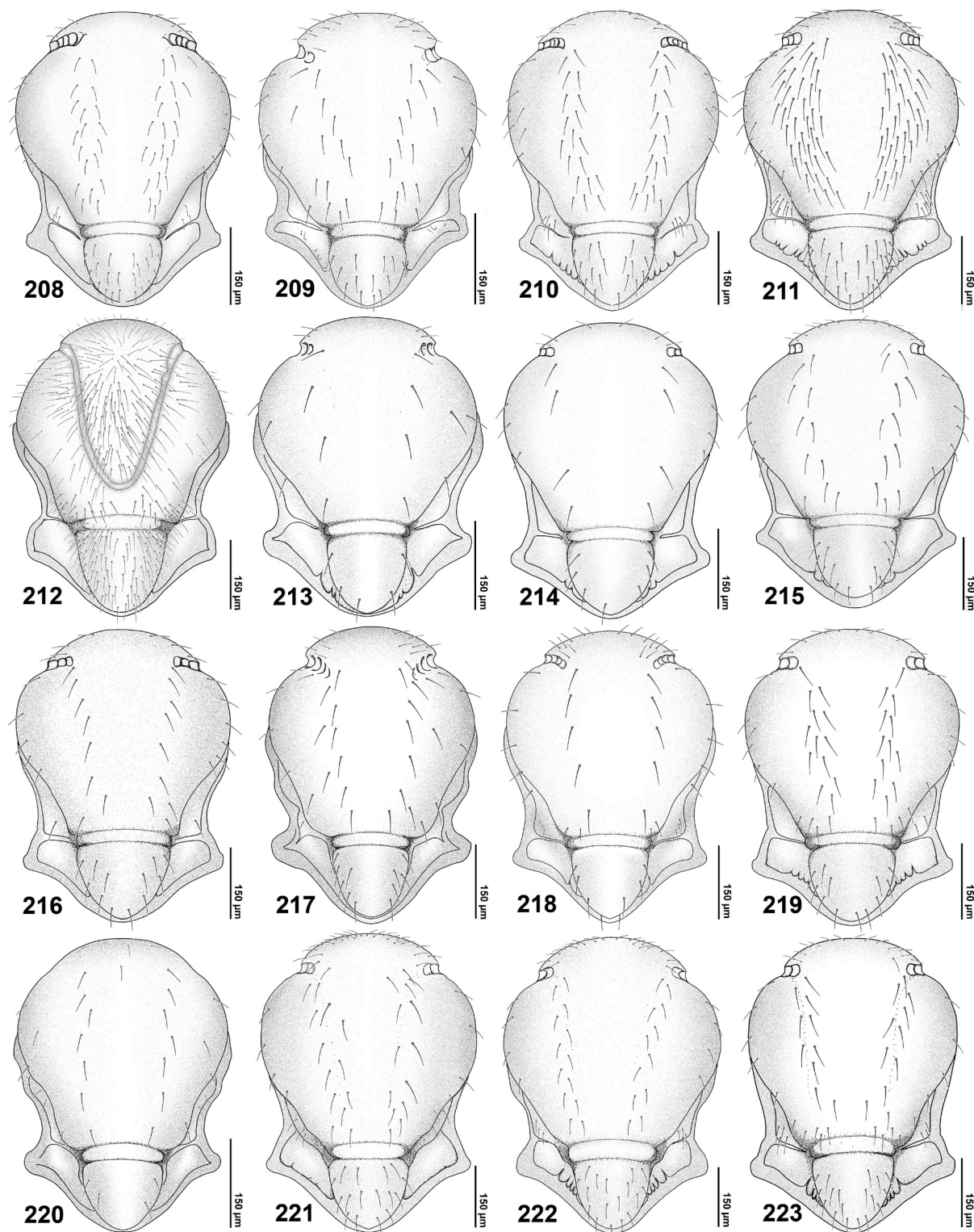
**Figs 176–191.** Dorsal aspect of mesonotum (♀): 176. *Aclitus obscuripennis*. 177. *Adialytus ambiguus*. 178. *Adialytus salicaphis*. 179. *Adialytus thelaxis*. 180. *Adialytus veronicaecola*. 181. *Aphidius absinthii*. 182. *Aphidius arvensis*. 183. *Aphidius asteris*. 184. *Aphidius avenae*. 185. *Aphidius banksae*. 186. *Aphidius cingulatus*. 187. *Aphidius colemani*. 188. *Aphidius eadyi*. 189. *Aphidius eglanteriae*. 190. *Aphidius ervi*. 191. *Aphidius funebris*.





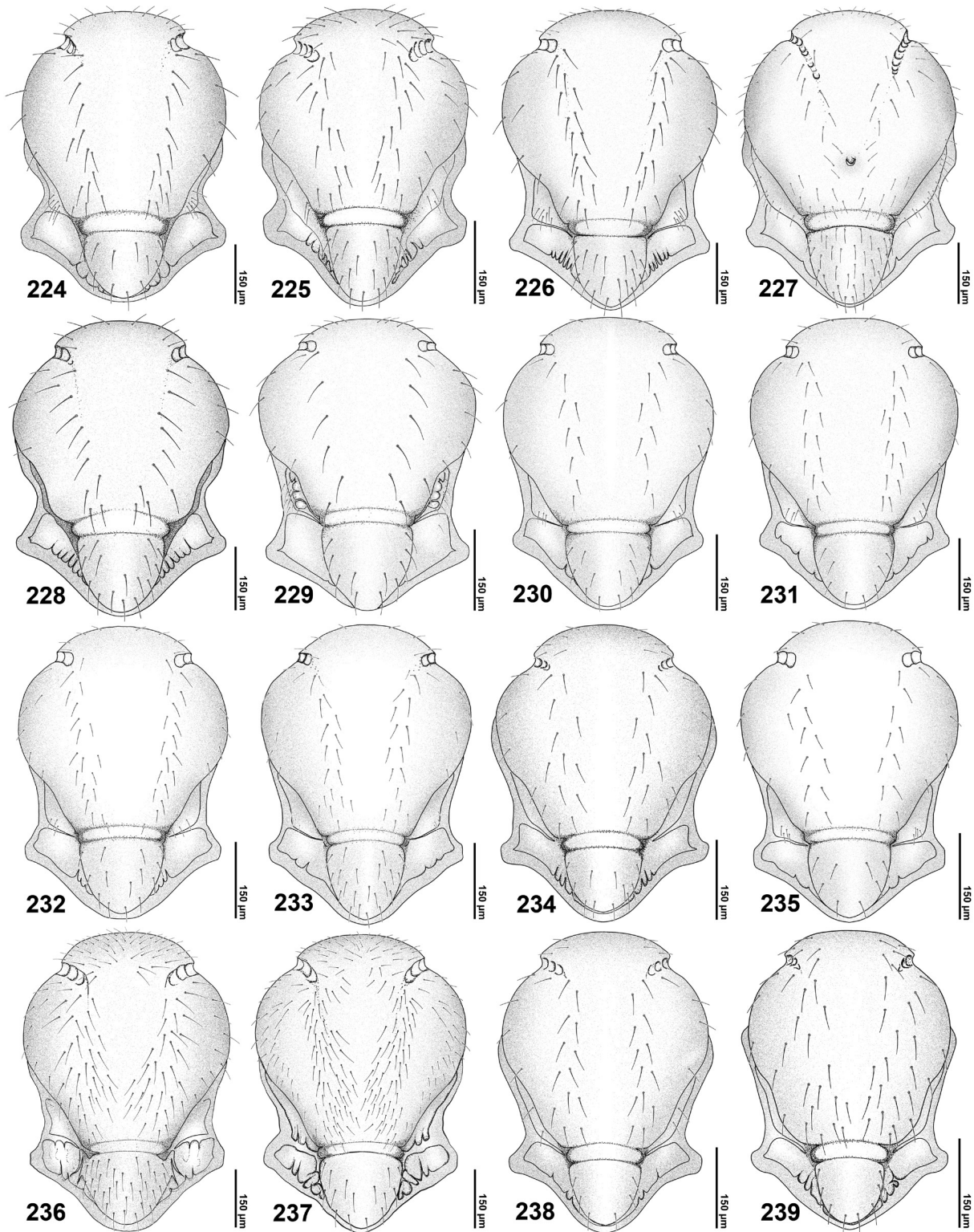
**Figs 192–207.** Dorsal aspect of mesonotum (♀): **192.** *Aphidius hieraciorum*. **193.** *Aphidius iranicus*. **194.** *Aphidius matricariae*. **195.** *Aphidius microlophii*. **196.** *Aphidius myzocallidis*. **197.** *Aphidius persicus*. **198.** *Aphidius platensis*. **199.** *Aphidius popovi*. **200.** *Aphidius rhopalosiphi*. **201.** *Aphidius ribis*. **202.** *Aphidius rosae*. **203.** *Aphidius salicis*. **204.** *Aphidius setiger*. **205.** *Aphidius smithi*. **206.** *Aphidius sonchi*. **207.** *Aphidius stigmaticus*.





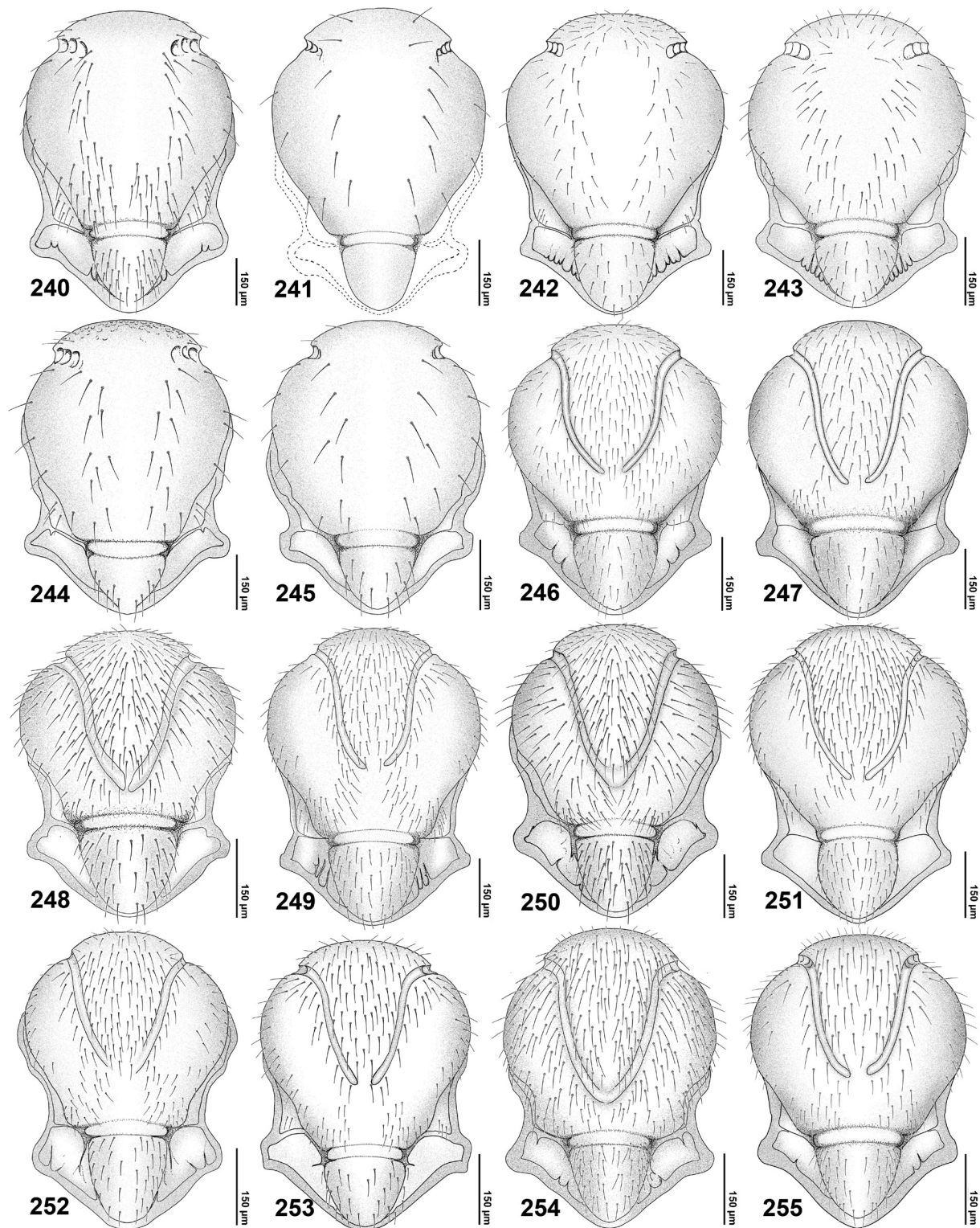
**Figs 208–223.** Dorsal aspect of mesonotum (♀): **208.** *Aphidius transcaspicus*. **209.** *Aphidius uroleuci*. **210.** *Aphidius urticae*. **211.** *Aphidius uzbekistanicus*. **212.** *Areopraon lepelleyi*. **213.** *Betuloxys hortorum*. **214.** *Binodoxys acalephae*. **215.** *Binodoxys angelicae*. **216.** *Binodoxys brevicornis*. **217.** *Binodoxys centaureae*. **218.** *Binodoxys heraclei*. **219.** *Diaeretiella rapae*. **220.** *Diaeretus leucopterus*. **221.** *Ephedrus cerasicola*. **222.** *Ephedrus chaitophori*. **223.** *Ephedrus helleni*.





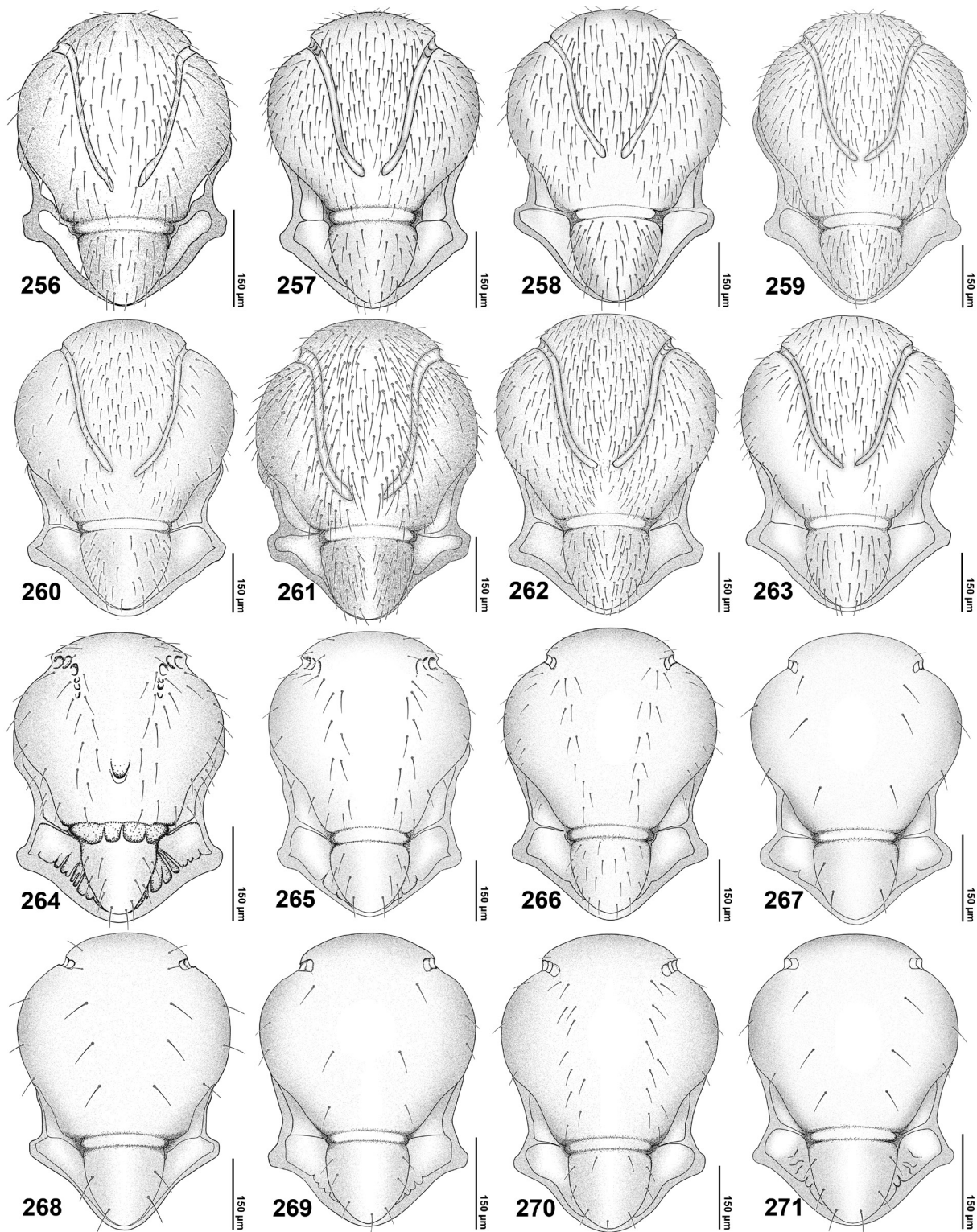
**Figs 224–239.** Dorsal aspect of mesonotum (♀): **224.** *Ephedrus lacertosus*. **225.** *Ephedrus nacheri*. **226.** *Ephedrus niger*. **227.** *Ephedrus persicae*. **228.** *Ephedrus plagiator*. **229.** *Lipolexis gracilis*. **230.** *Lysiphlebus cardui*. **231.** *Lysiphlebus confusus*. **232.** *Lysiphlebus desertorum*. **233.** *Lysiphlebus fabarum*. **234.** *Lysiphlebus fritzmulleri*. **235.** *Lysiphlebus testaceipes*. **236.** *Monoctonia pistaciaecola*. **237.** *Monoctonia vesicarii*. **238.** *Monoctonus crepidis*. **239.** *Monoctonus mali*.





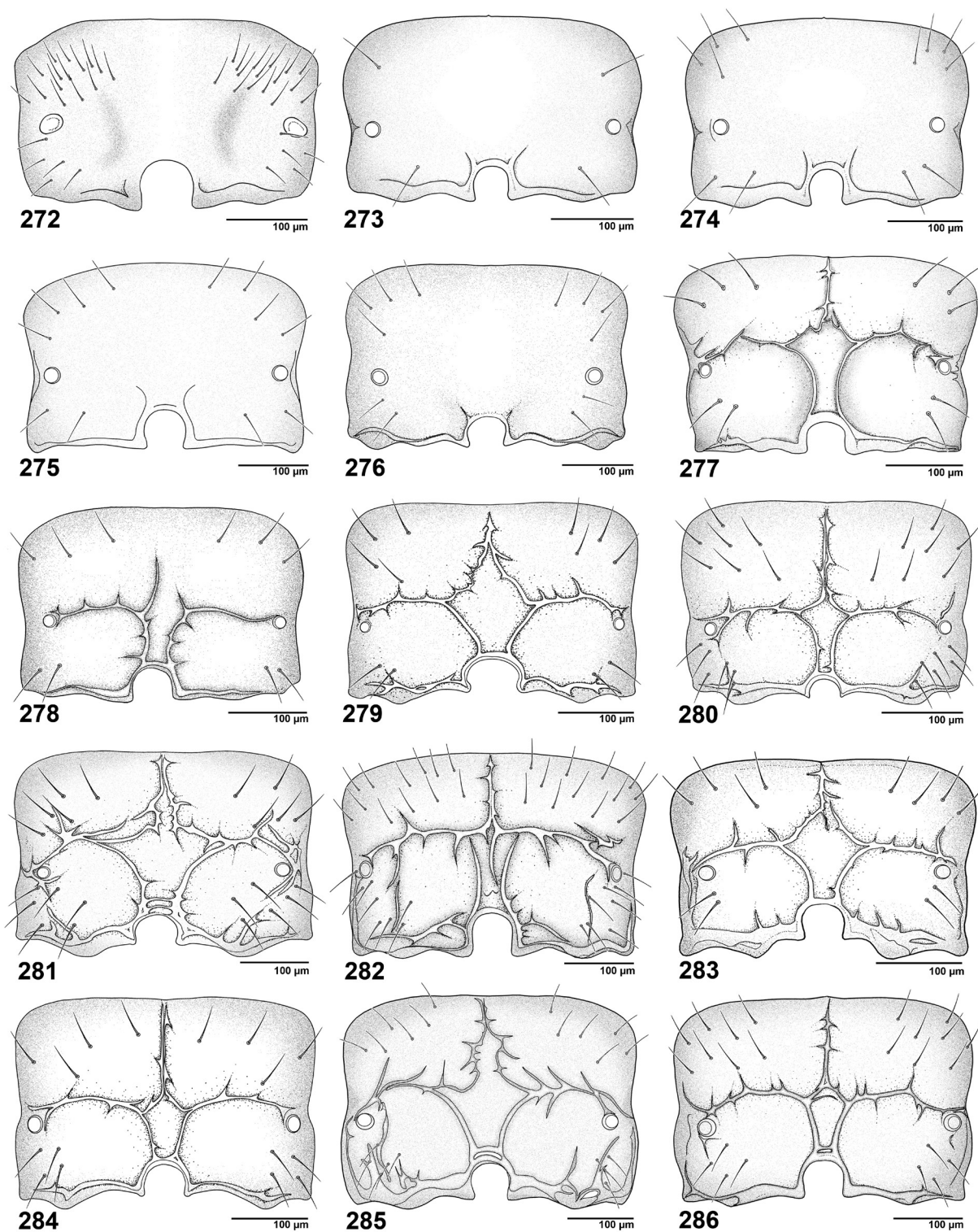
**Figs 240–255.** Dorsal aspect of mesonotum (♀): 240. *Pauesia abietis*. 241. *Pauesia anatolica*. 242. *Pauesia antennata*. 243. *Pauesia hazratbalensis*. 244. *Pauesia picta*. 245. *Pauesia silana*. 246. *Praon abjectum*. 247. *Praon absinthii*. 248. *Praon athenaeum*. 249. *Praon barbatum*. 250. *Praon bicolor*. 251. *Praon exsoletum*. 252. *Praon flavinode*. 253. *Praon gallicum*. 254. *Praon longicorne*. 255. *Praon necans*.





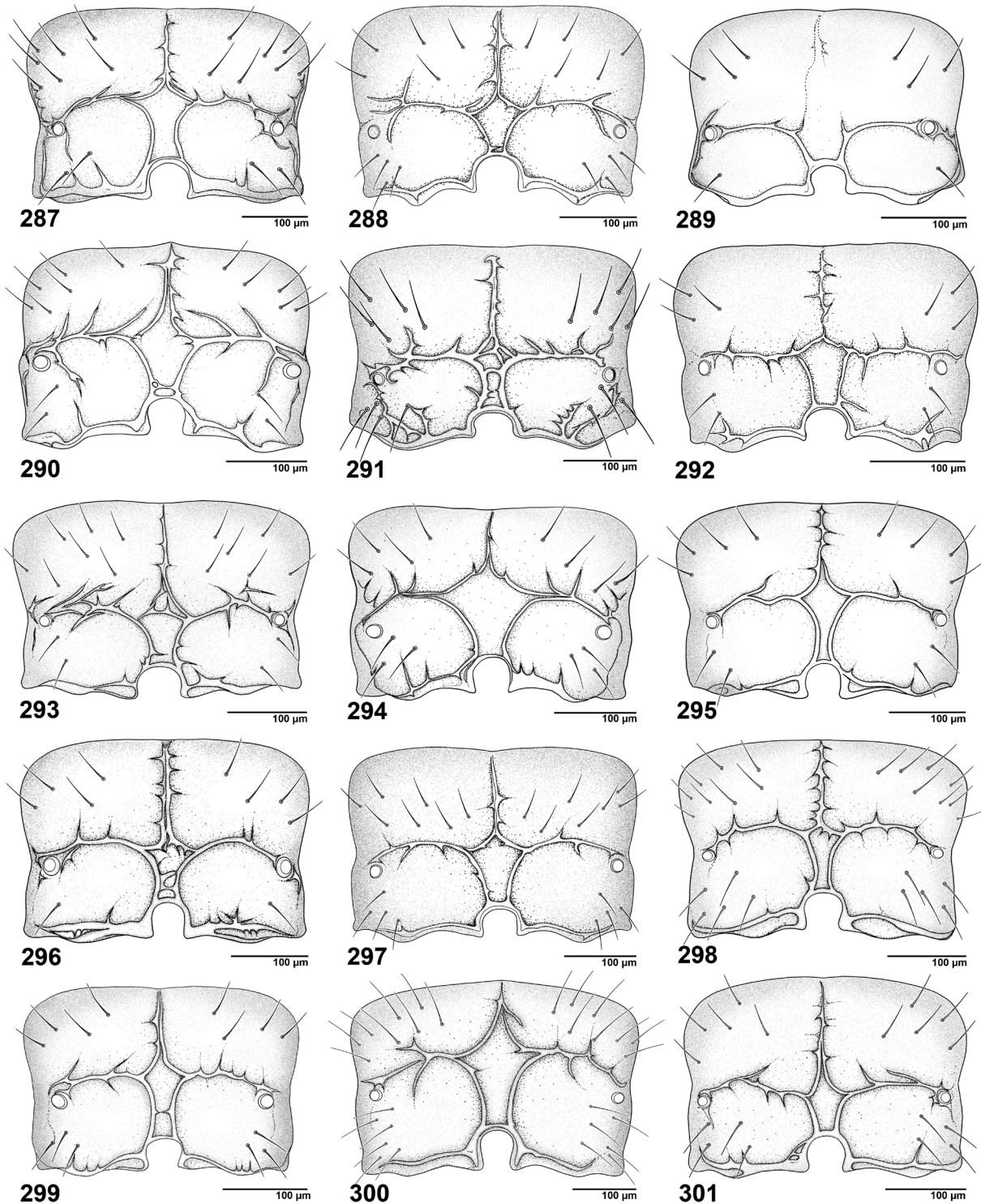
**Figs 256–271.** Dorsal aspect of mesonotum (♀): **256.** *Praon nonveilleri*. **257.** *Praon orpheusi*. **258.** *Praon pubescens*. **259.** *Praon rosaecola*. **260.** *Praon unitum*. **261.** *Praon uroleucon*. **262.** *Praon volucre*. **263.** *Praon yomenae*. **264.** *Toxares deltiger*. **265.** *Trioxys asiaticus*. **266.** *Trioxys cirsii*. **267.** *Trioxys complanatus*. **268.** *Trioxys metacarpalis*. **269.** *Trioxys pallidus*. **270.** *Trioxys pannonicus*. **271.** *Trioxys tanaceticola*.





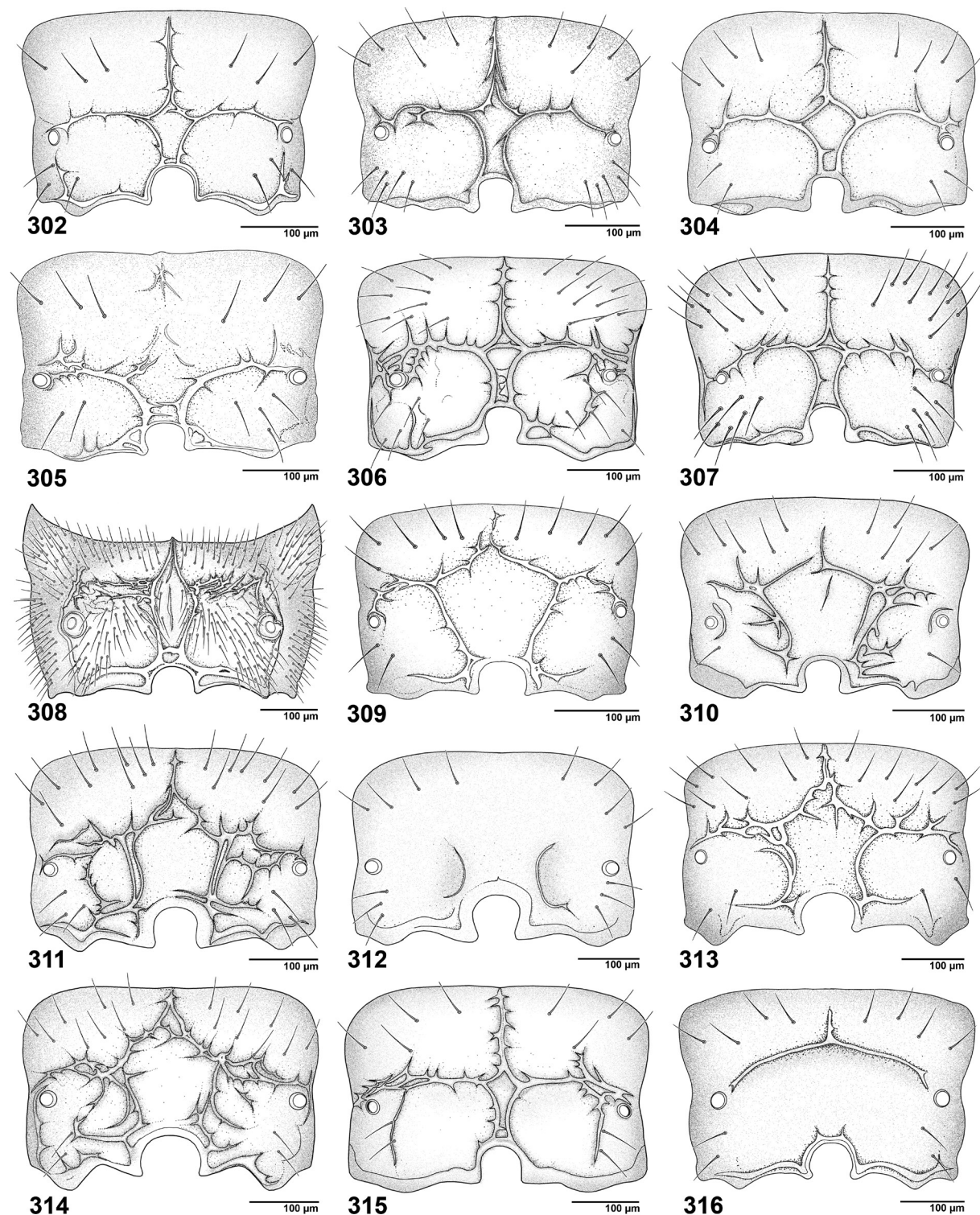
**Figs 272–286.** Dorsal aspect of propodeum (♀): **272.** *Aclitus obscuripennis*. **273.** *Adialytus ambiguus*. **274.** *Adialytus salicaphis*. **275.** *Adialytus thelaxis*. **276.** *Adialytus veronicaecola*. **277.** *Aphidius absinthii*. **278.** *Aphidius arvensis*. **279.** *Aphidius asteris*. **280.** *Aphidius avenae*. **281.** *Aphidius banksae*. **282.** *Aphidius cingulatus*. **283.** *Aphidius colemani*. **284.** *Aphidius eglanteriae*. **285.** *Aphidius eadyi*. **286.** *Aphidius ervi*.





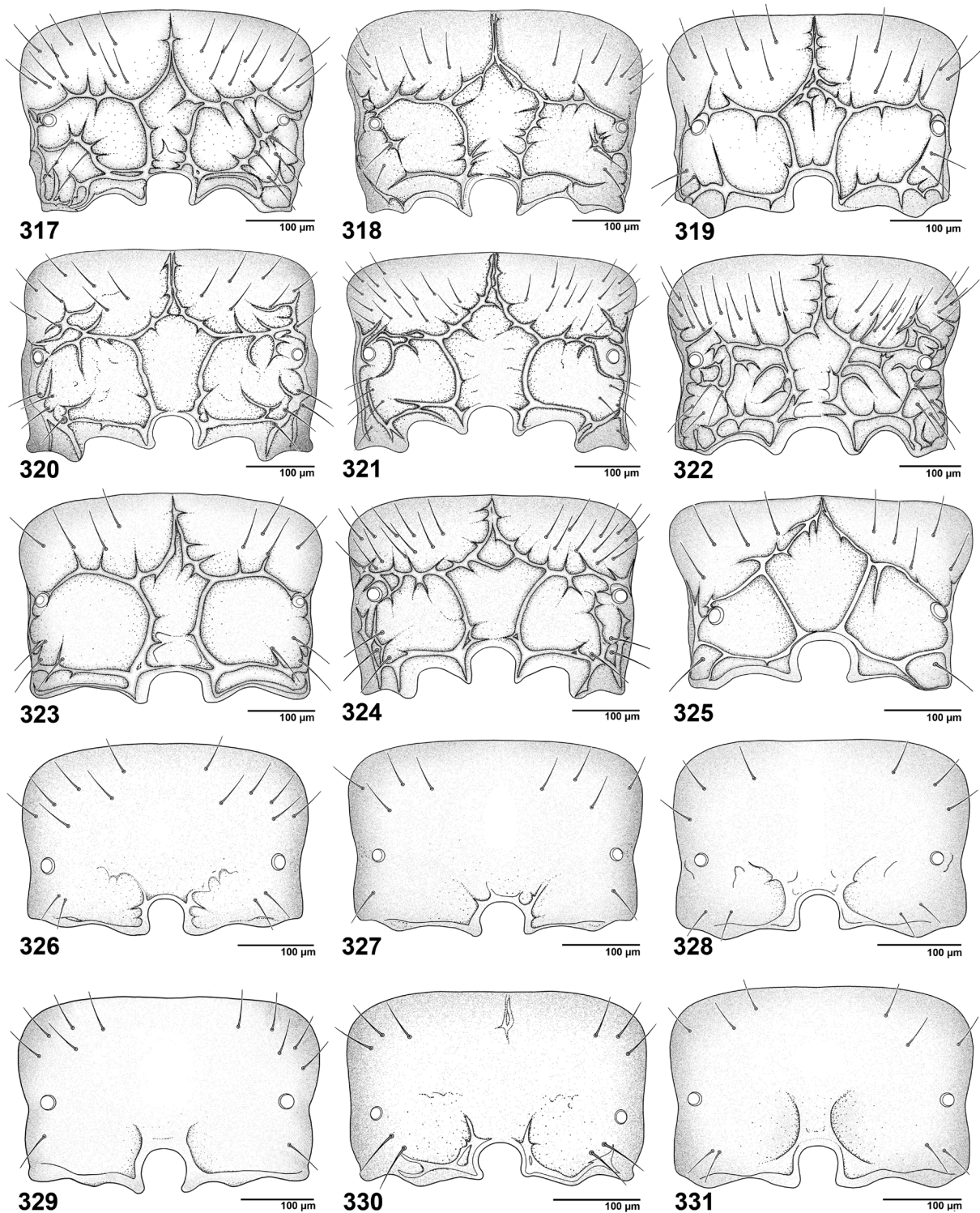
**Figs 287–301.** Dorsal aspect of propodeum (♀): **287.** *Aphidius funebris*. **288.** *Aphidius hieraciorum*. **289.** *Aphidius iranicus*. **290.** *Aphidius matricariae*. **291.** *Aphidius microlophii*. **292.** *Aphidius myzocallidis*. **293.** *Aphidius persicus*. **294.** *Aphidius platensis*. **295.** *Aphidius popovi*. **296.** *Aphidius rhopalosiphi*. **297.** *Aphidius ribis*. **298.** *Aphidius rosae*. **299.** *Aphidius salicis*. **300.** *Aphidius setiger*. **301.** *Aphidius smithi*.





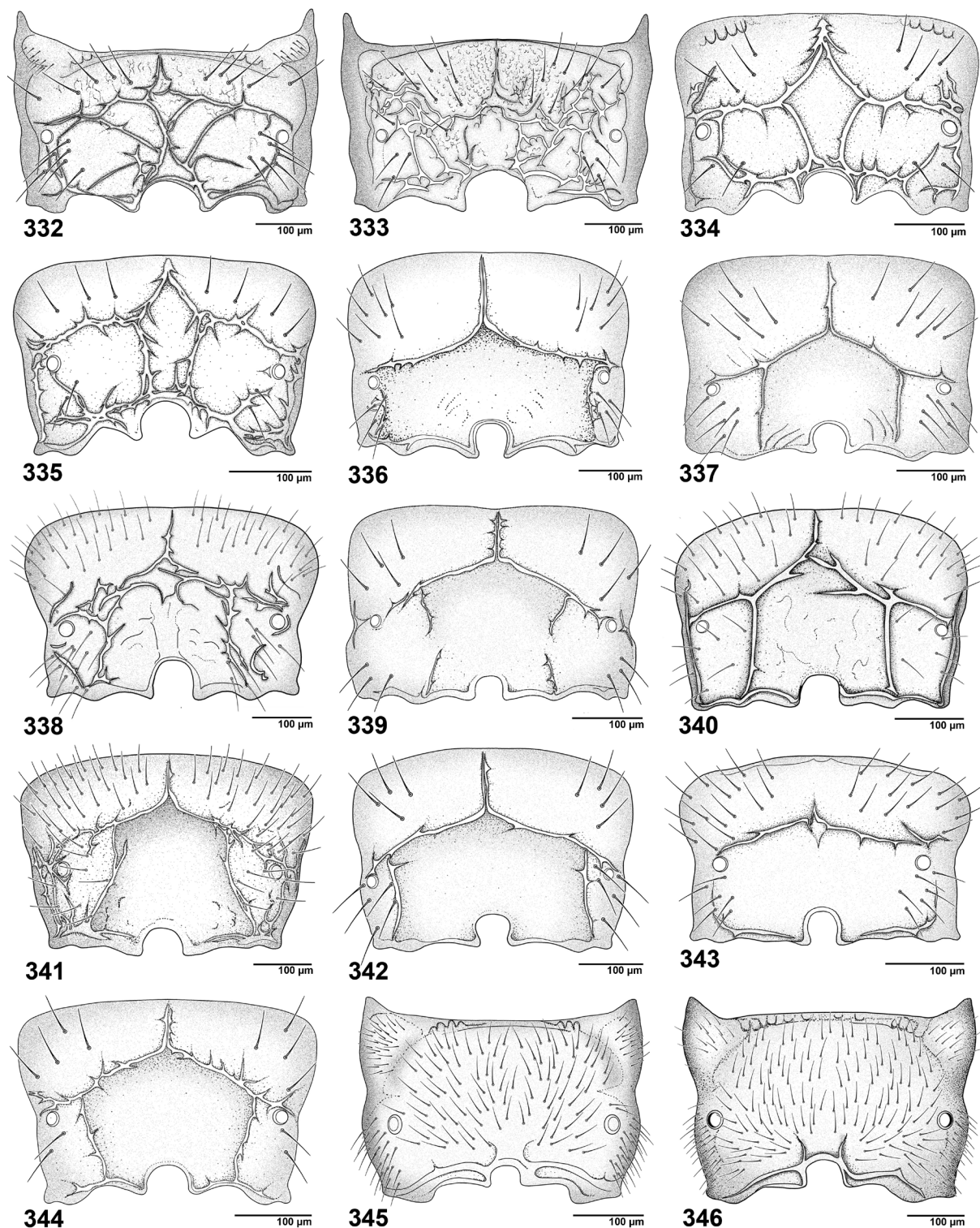
**Figs 302–316.** Dorsal aspect of propodeum (♀): **302.** *Aphidius sonchi*. **303.** *Aphidius stigmaticus*. **304.** *Aphidius transcaspicus*. **305.** *Aphidius uroleuci*. **306.** *Aphidius urticae*. **307.** *Aphidius uzbekistanicus*. **308.** *Areopraon lepellei*. **309.** *Betuloxys hortorum*. **310.** *Binodoxys acalephae*. **311.** *Binodoxys angelicae*. **312.** *Binodoxys brevicornis*. **313.** *Binodoxys centaureae*. **314.** *Binodoxys heraclei*. **315.** *Diaeretiella rapae*. **316.** *Diaeretus leucopterus*.





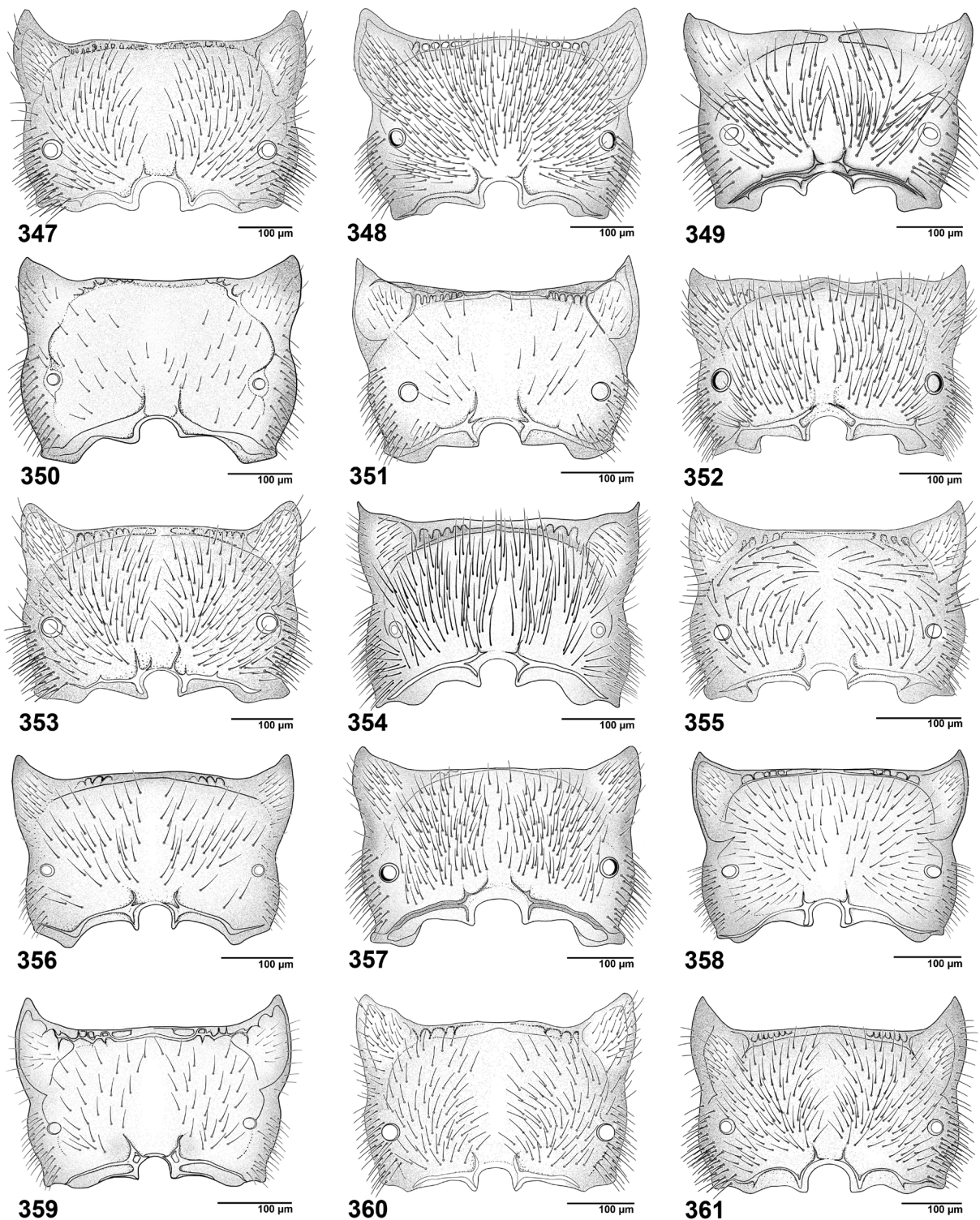
**Figs 317–331.** Dorsal aspect of propodeum (♀): **317.** *Ephedrus cerasicola*. **318.** *Ephedrus chaitophori*. **319.** *Ephedrus helleni*. **320.** *Ephedrus lacertosus*. **321.** *Ephedrus nacheri*. **322.** *Ephedrus niger*. **323.** *Ephedrus persicae*. **324.** *Ephedrus plagiator*. **325.** *Lipolexis gracilis*. **326.** *Lysiphlebus cardui*. **327.** *Lysiphlebus confusus*. **328.** *Lysiphlebus desertorum*. **329.** *Lysiphlebus fabarum*. **330.** *Lysiphlebus fritzmulleri*. **331.** *Lysiphlebus testaceipes*.





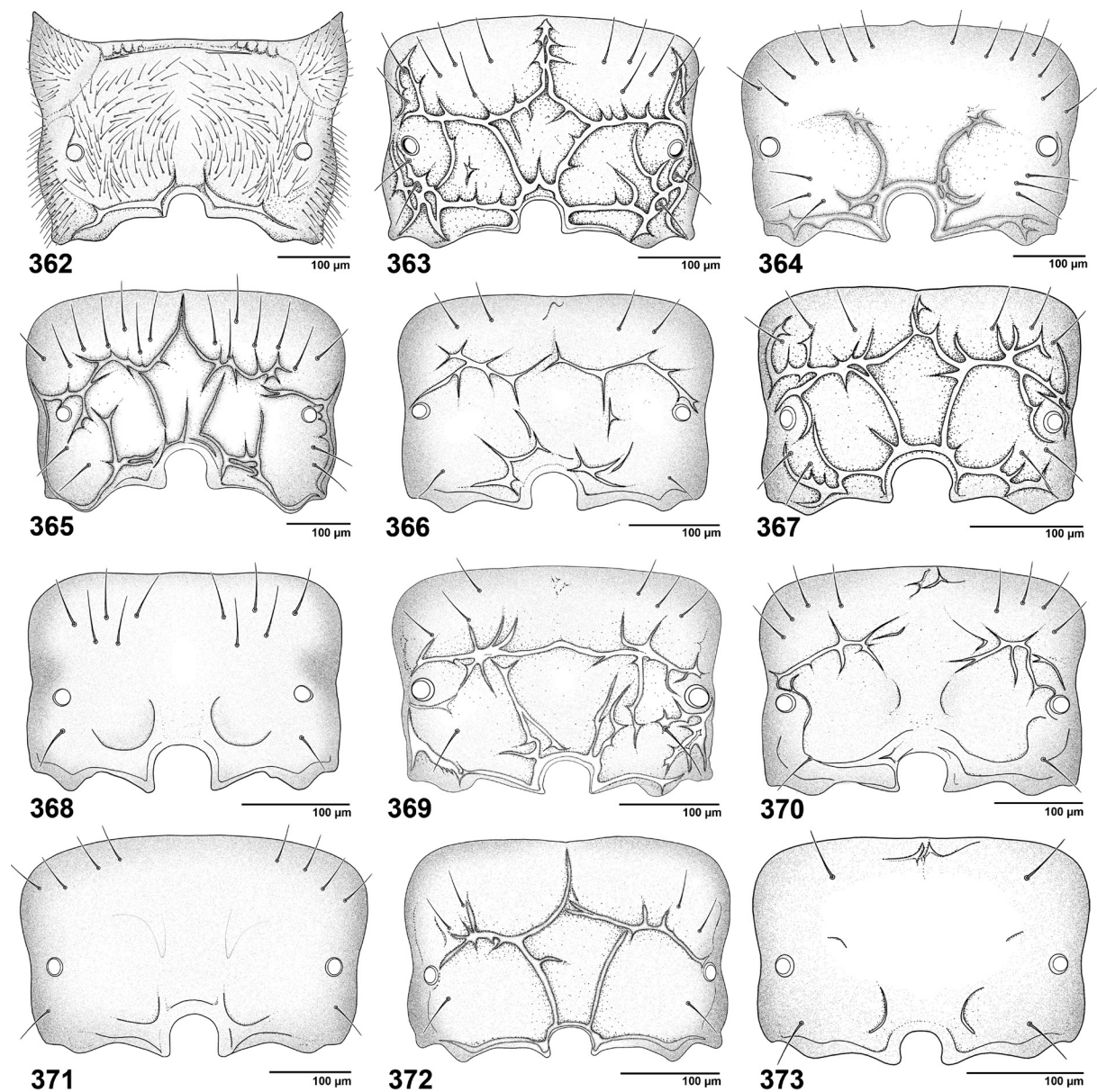
**Figs 332–346.** Dorsal aspect of propodeum (♀): **332.** *Monoctonia pistaciaecola*. **333.** *Monoctonia vesicarii*. **334.** *Monoctonus crepidis*. **335.** *Monoctonus mali*. **336.** *Pauesia abietis*. **337.** *Pauesia anatolica*. **338.** *Pauesia antennata*. **339.** *Pauesia cedrobii*. **340.** *Pauesia hazratbalensis*. **341.** *Pauesia picta*. **342.** *Pauesia pini*. **343.** *Pauesia silana*. **344.** *Pauesia unilachni*. **345.** *Praon abjectum*. **346.** *Praon absinthii*.





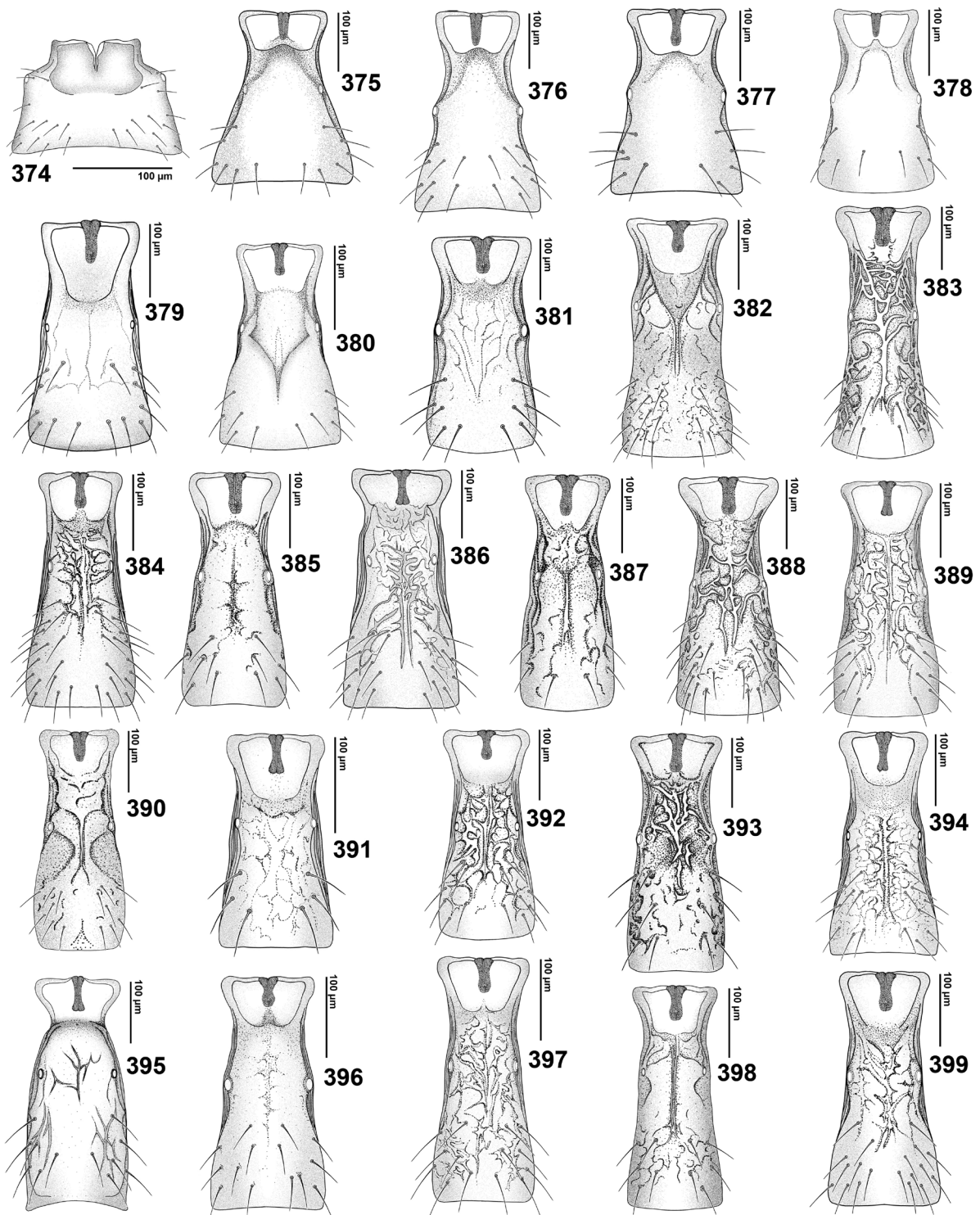
**Figs 347–361.** Dorsal aspect of propodeum (♀): **347.** *Praon athenaeum*. **348.** *Praon barbatum*. **349.** *Praon bicolor*. **350.** *Praon exsoletum*. **351.** *Praon flavinode*. **352.** *Praon gallicum*. **353.** *Praon longicorne*. **354.** *Praon necans*. **355.** *Praon nonveilleri*. **356.** *Praon orpheusi*. **357.** *Praon pubescens*. **358.** *Praon rosaecola*. **359.** *Praon unitum*. **360.** *Praon uroleucon*. **361.** *Praon volucre*.



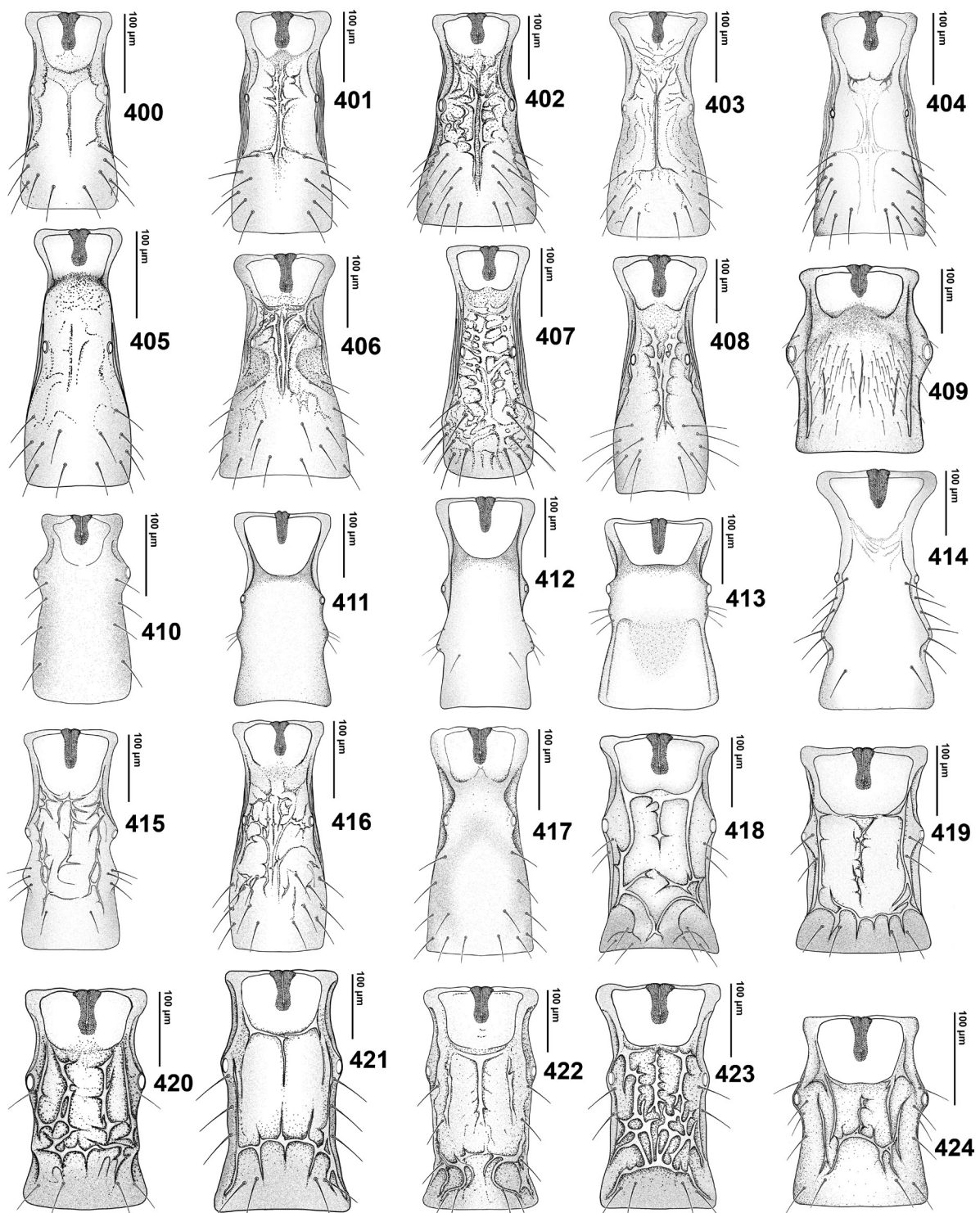


**Figs 362–373.** Dorsal aspect of propodeum (♀): **362.** *Praon yomenae*. **363.** *Toxares deltiger*. **364.** *Trioxyis asiaticus*. **365.** *Trioxyis cirsii*. **366.** *Trioxyis complanatus*. **367.** *Trioxyis curvicaudus*. **368.** *Trioxyis metacarpalis*. **369.** *Trioxyis moshei*. **370.** *Trioxyis pallidus*. **371.** *Trioxyis pannonicus*. **372.** *Trioxyis quercicola*. **373.** *Trioxyis tanaceticola*.



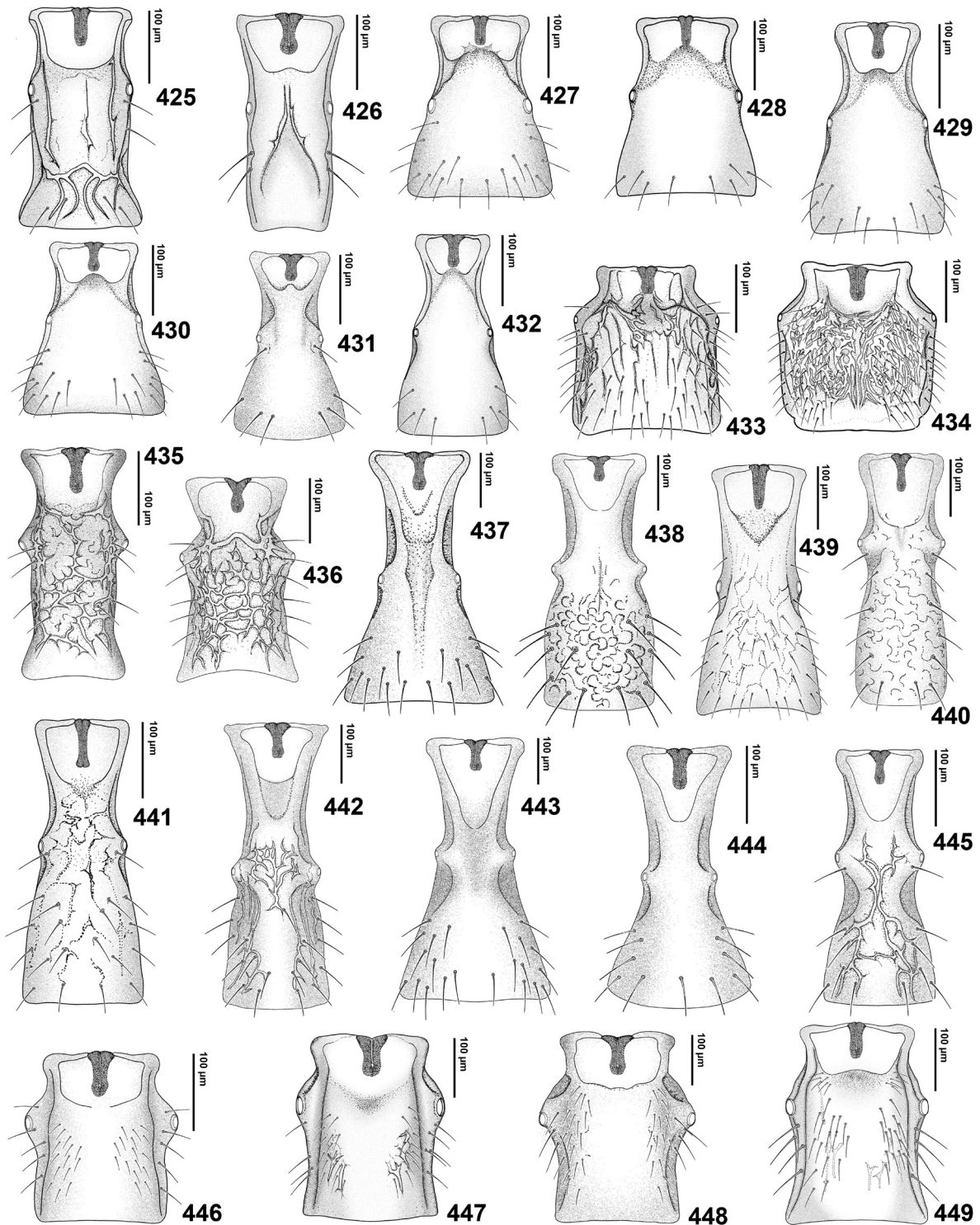


**Figs 374–399.** Dorsal aspect of petiole (♀): 374. *Aclitus obscuripennis*. 375. *Adialytus ambiguus*. 376. *Adialytus salicaphis*. 377. *Adialytus thelaxis*. 378. *Adialytus veronicaecola*. 379. *Aphidius absinthii*. 380. *Aphidius arvensis*. 381. *Aphidius asteris*. 382. *Aphidius avenae*. 383. *Aphidius banksae*. 384. *Aphidius cingulatus*. 385. *Aphidius colemani*. 386. *Aphidius eadyi*. 387. *Aphidius eglanteriae*. 388. *Aphidius ervi*. 389. *Aphidius funebris*. 390. *Aphidius hieraciorum*. 391. *Aphidius iranicus*. 392. *Aphidius matricariae*. 393. *Aphidius microlophii*. 394. *Aphidius persicus*. 395. *Aphidius platensis*. 396. *Aphidius popovi*. 397. *Aphidius rhopalosiphi*. 398. *Aphidius ribis*. 399. *Aphidius rosae*.

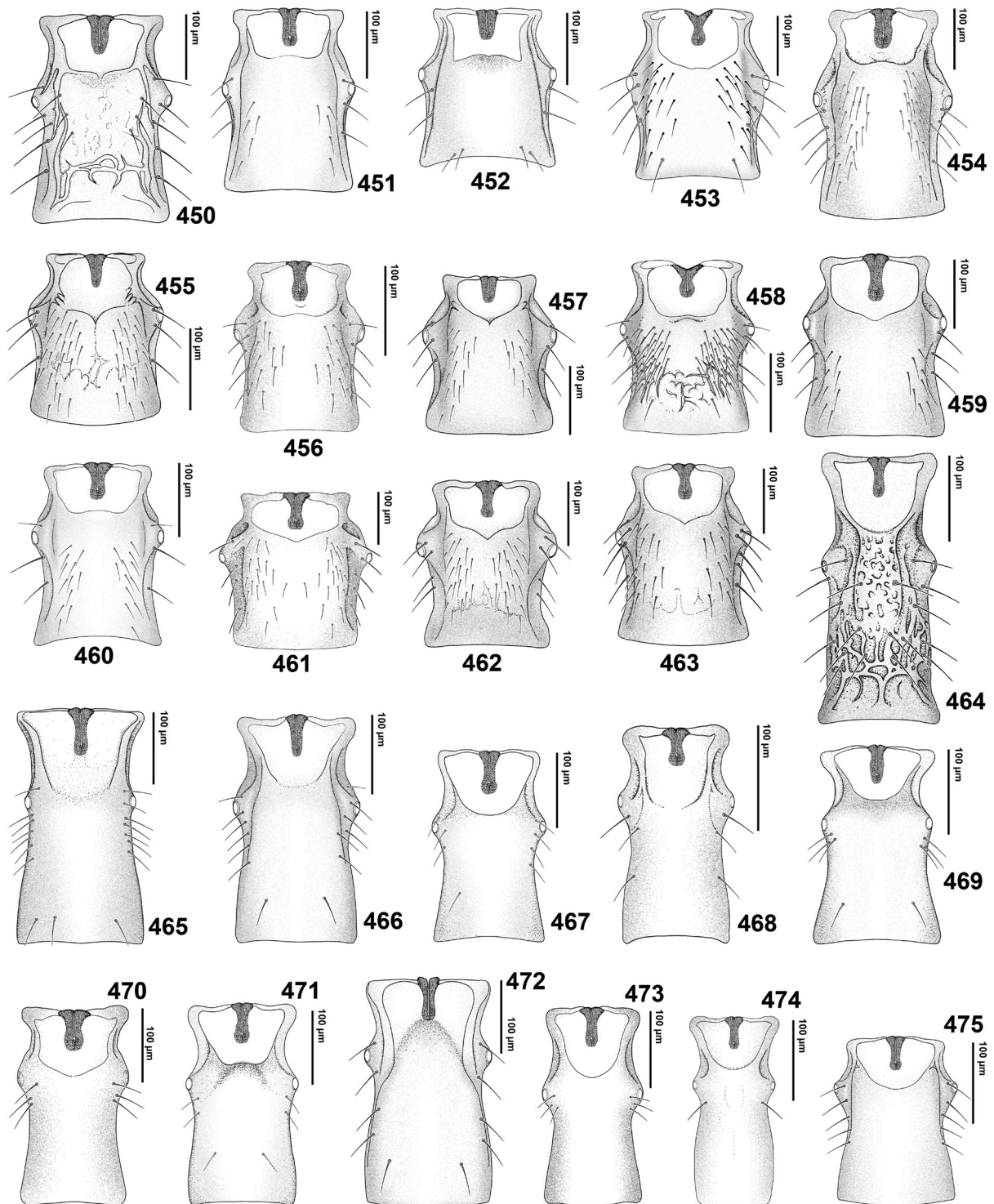


**Figs 400–424.** Dorsal aspect of petiole (♀): **400.** *Aphidius salicis*. **401.** *Aphidius setiger*. **402.** *Aphidius smithi*. **403.** *Aphidius sonchi*. **404.** *Aphidius stigmaticus*. **405.** *Aphidius transcaspicus*. **406.** *Aphidius uroleuci*. **407.** *Aphidius urticae*. **408.** *Aphidius uzbekistanicus*. **409.** *Areopraon lepellei*. **410.** *Betuloxys hortorum*. **411.** *Binodoxys acalephae*. **412.** *Binodoxys angelicae*. **413.** *Binodoxys brevicornis*. **414.** *Binodoxys centaureae*. **415.** *Binodoxys heraclei*. **416.** *Diaeretiella rapae*. **417.** *Diaeretus leucopterus*. **418.** *Ephedrus cerasicola*. **419.** *Ephedrus chaitophori*. **420.** *Ephedrus helleni*. **421.** *Ephedrus lacertosus*. **422.** *Ephedrus nacheri*. **423.** *Ephedrus niger*. **424.** *Ephedrus persicae*.



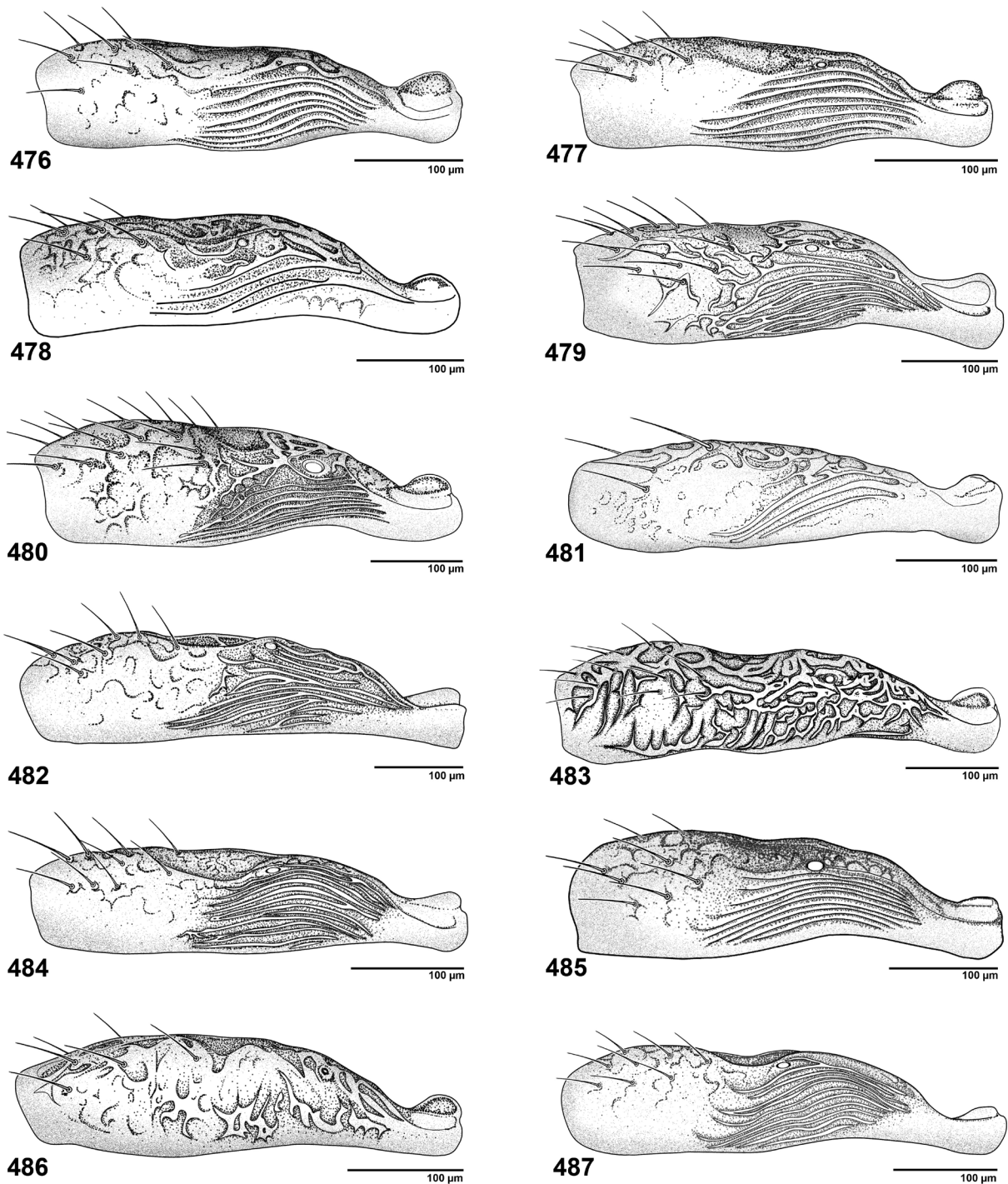


**Figs 425–449.** Dorsal aspect of petiole (♀): 425. *Ephedrus plagiator*. 426. *Lipolexis gracilis*. 427. *Lysiphlebus cardui*. 428. *Lysiphlebus confusus*. 429. *Lysiphlebus desertorum*. 430. *Lysiphlebus fabarum*. 431. *Lysiphlebus fritzmulleri*. 432. *Lysiphlebus testaceipes*. 433. *Monoctonia pistaciaecola*. 434. *Monoctonia vesicarii*. 435. *Monoctonus crepidis*. 436. *Monoctonus mali*. 437. *Pauesia abietis*. 438. *Pauesia anatolica*. 439. *Pauesia antennata*. 440. *Pauesia cedrobii*. 441. *Pauesia hazratbalensis*. 442. *Pauesia picta*. 443. *Pauesia pini*. 444. *Pauesia silana*. 445. *Pauesia unilachni*. 446. *Praon abjectum*. 447. *Praon absinthii*. 448. *Praon athenaeum*. 449. *Praon barbatum*.

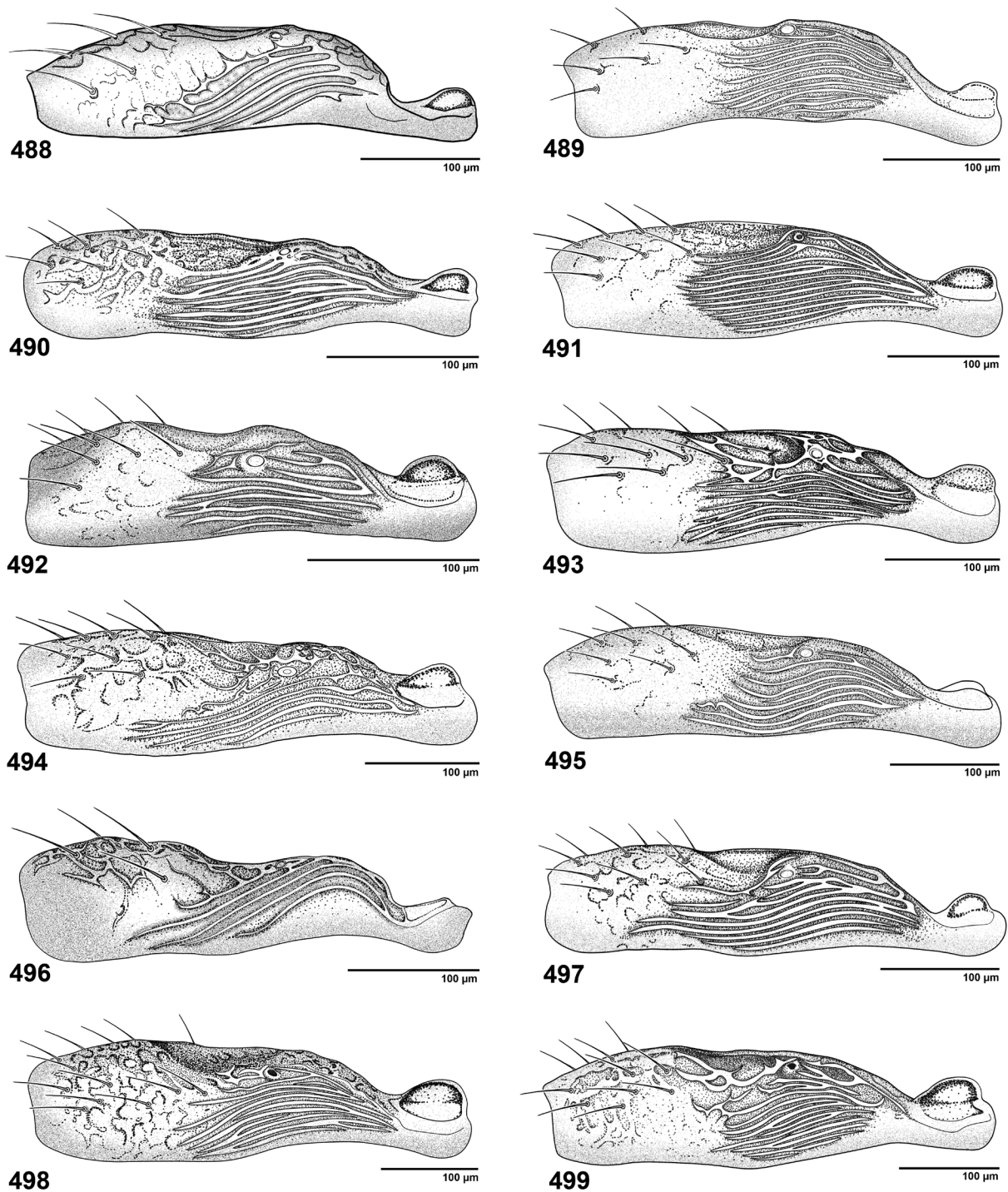


**Figs 450–475.** Dorsal aspect of petiole (♀): **450.** *Praon bicolor*. **451.** *Praon exsoletum*. **452.** *Praon flavinode*. **453.** *Praon gallicum*. **454.** *Praon longicorne*. **455.** *Praon necans*. **456.** *Praon nonveilleri*. **457.** *Praon orpheusi*. **458.** *Praon pubescens*. **459.** *Praon rosaecola*. **460.** *Praon unitum*. **461.** *Praon uroleucon*. **462.** *Praon volucre*. **463.** *Praon yomenae*. **464.** *Toxares deltiger*. **465.** *Trioxys asiaticus*. **466.** *Trioxys cirsii*. **467.** *Trioxys complanatus*. **468.** *Trioxys curvicaudus*. **469.** *Trioxys metacarpalis*. **470.** *Trioxys moshei*. **471.** *Trioxys pallidus*. **472.** *Trioxys pannonicus*. **473.** *Trioxys pappi*. **474.** *Trioxys quercicola*. **475.** *Trioxys tanaceticola*.



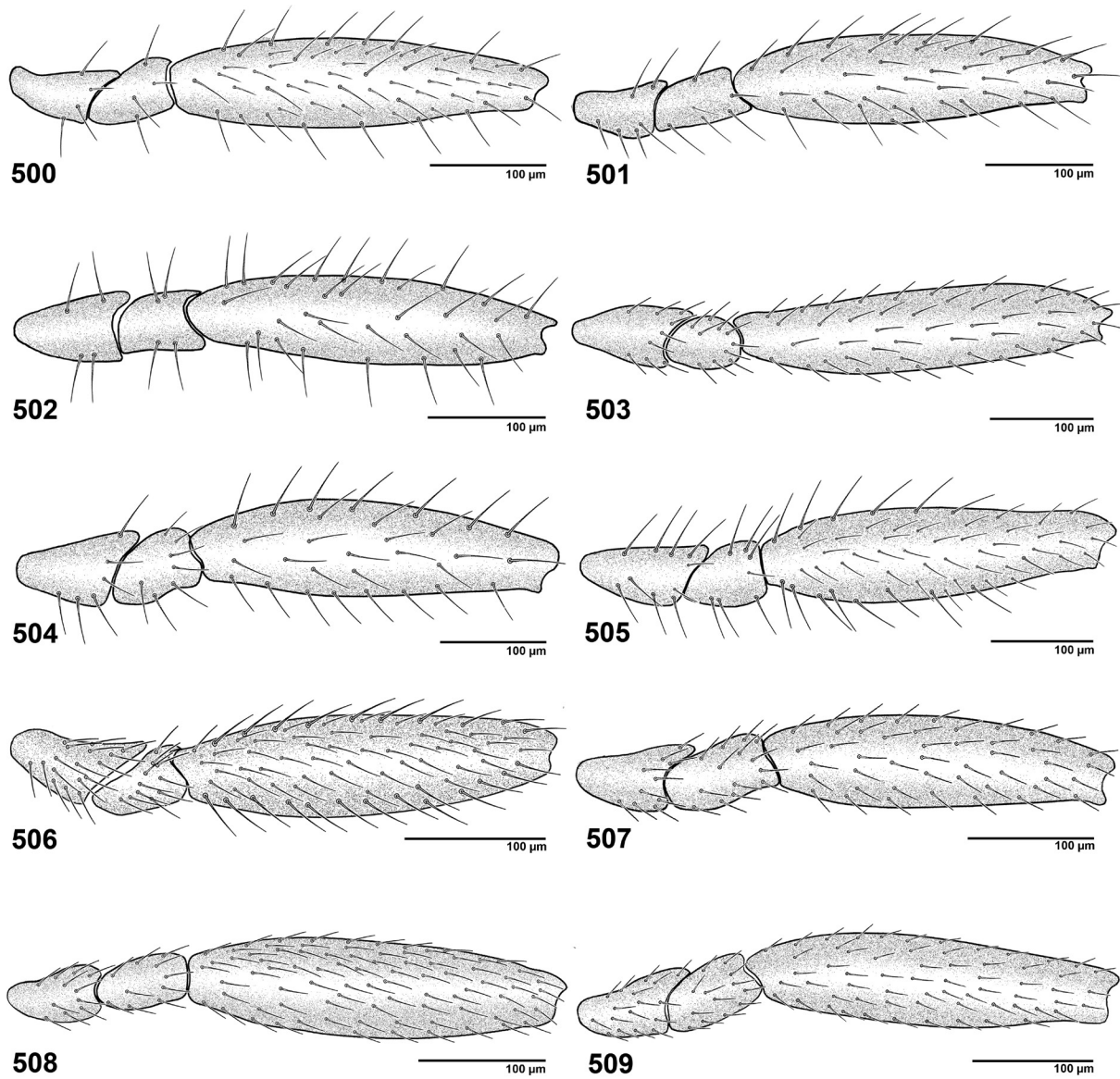


**Figs 476–487.** Anterolateral aspect of petiole in *Aphidius* species (♀): **476.** *Aphidius absinthii*. **477.** *Aphidius asteris*. **478.** *Aphidius avenae*. **479.** *Aphidius banksae*. **480.** *Aphidius cingulatus*. **481.** *Aphidius colemani*. **482.** *Aphidius eadyi*. **483.** *Aphidius ervi*. **484.** *Aphidius funebris*. **485.** *Aphidius matricariae*. **486.** *Aphidius microlophii*. **487.** *Aphidius persicus*.



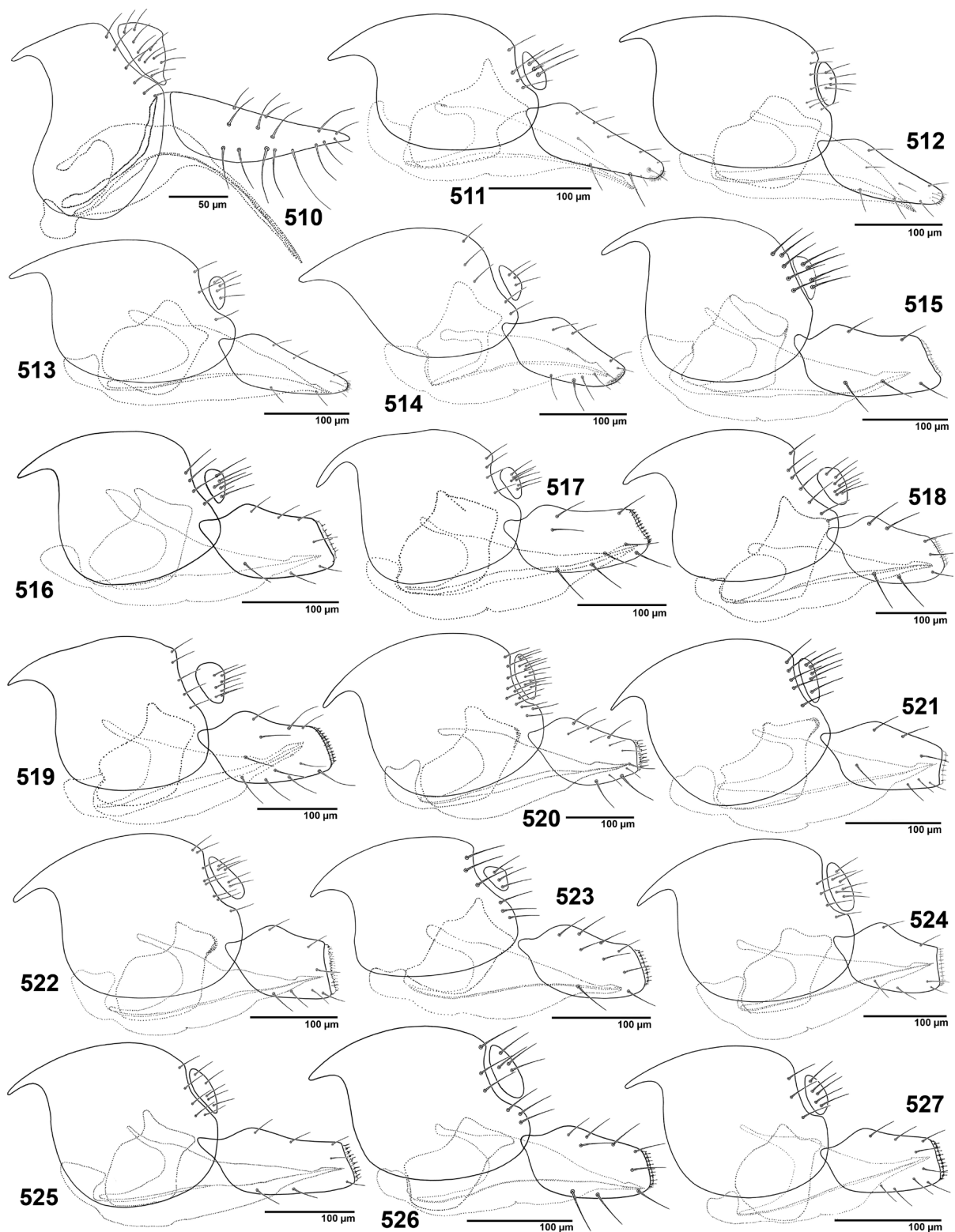
Figs 488–499. Anterolateral aspect of petiole in *Aphidius* species (♀): 488. *Aphidius platensis*. 489. *Aphidius popovi*. 490. *Aphidius rhopalosiphi*. 491. *Aphidius rosae*. 492. *Aphidius salicis*. 493. *Aphidius setiger*. 494. *Aphidius smithi*. 495. *Aphidius stigmaticus*. 496. *Aphidius transcaspicus*. 497. *Aphidius uroleuci*. 498. *Aphidius urticae*. 499. *Aphidius uzbekistanicus*.



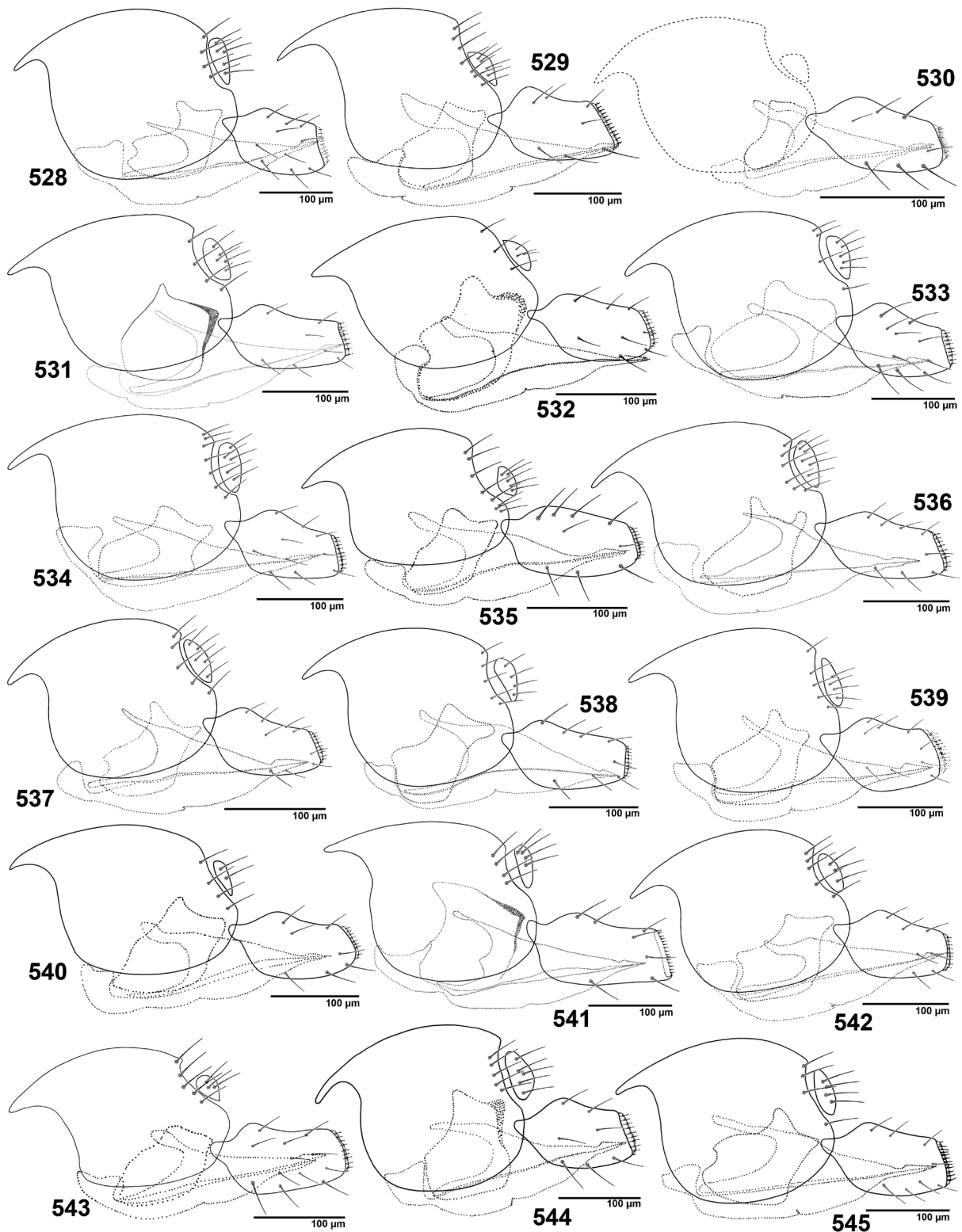


**Figs 500–509.** Lateral aspect of hind femur in *Adialytus* and *Lysiphlebus* species (♀): **500.** *Adialytus ambiguus*. **501.** *Adialytus salicaphis*. **502.** *Adialytus thelaxis*. **503.** *Adialytus veronicaecola*. **504.** *Lysiphlebus cardui*. **505.** *Lysiphlebus confusus*. **506.** *Lysiphlebus desertorum*. **507.** *Lysiphlebus fabarum*. **508.** *Lysiphlebus fritzmulleri*. **509.** *Lysiphlebus testaceipes*.

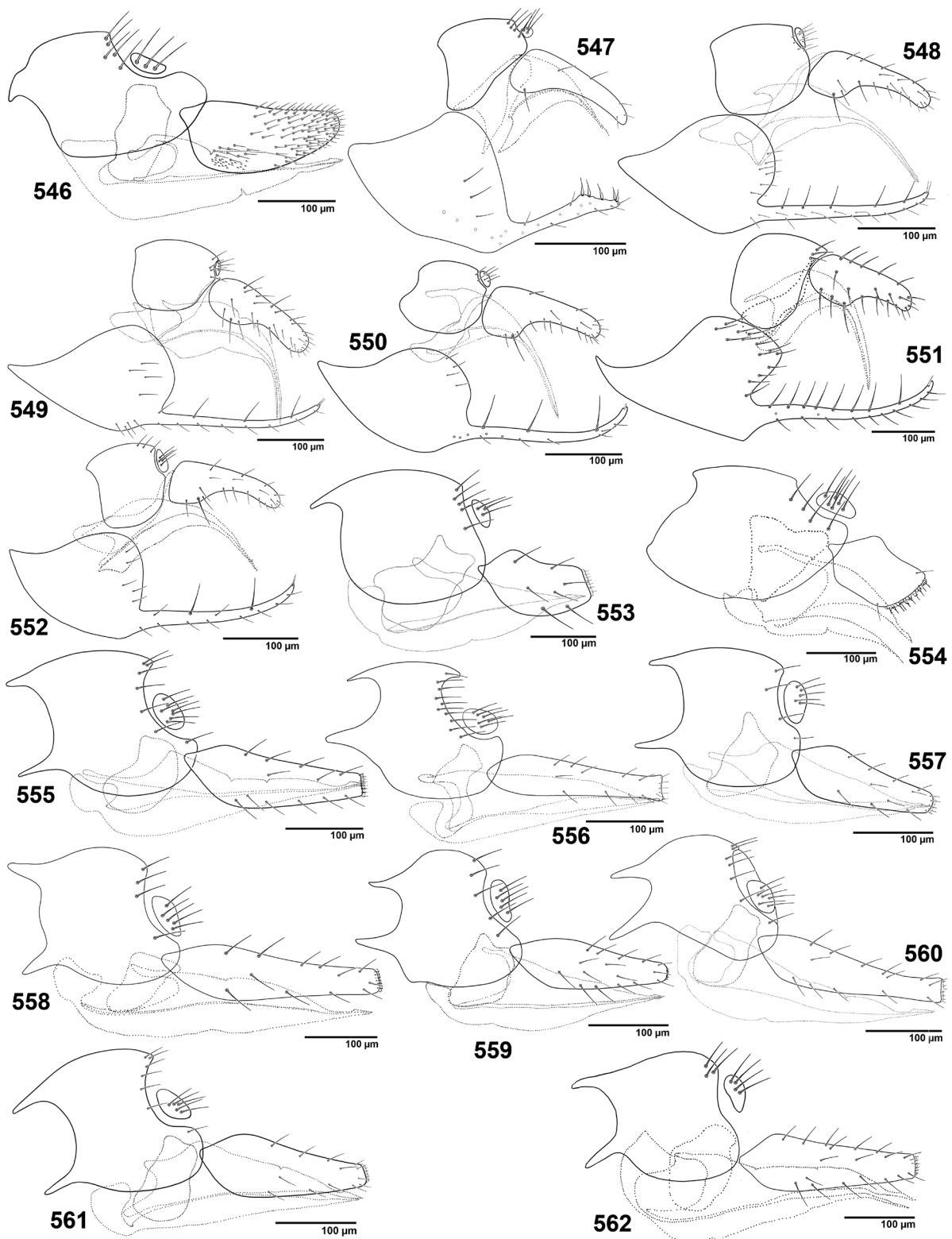




**Figs 510–527.** Lateral aspect of ♀ genitalia: **510.** *Aclitus obscuripennis*. **511.** *Adialytus ambiguus*. **512.** *Adialytus salicaphis*. **513.** *Adialytus thelaxis*. **514.** *Adialytus veronicaecola*. **515.** *Aphidius absinthii*. **516.** *Aphidius arvensis*. **517.** *Aphidius asteris*. **518.** *Aphidius avenae*. **519.** *Aphidius banksae*. **520.** *Aphidius cingulatus*. **521.** *Aphidius colemani*. **522.** *Aphidius eadyi*. **523.** *Aphidius eglanteriae*. **524.** *Aphidius ervi*. **525.** *Aphidius funebris*. **526.** *Aphidius hieraciorum*. **527.** *Aphidius iranicus*.

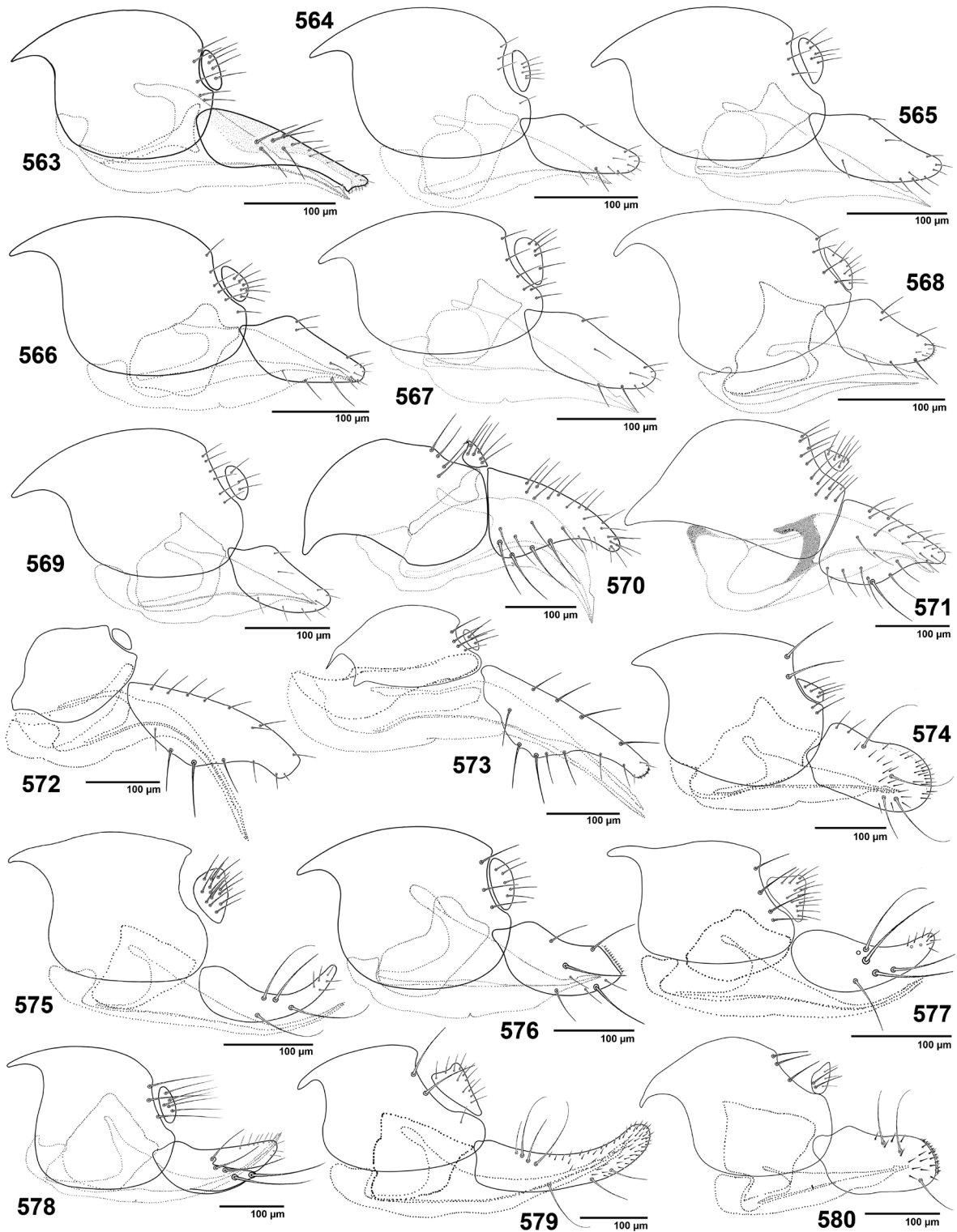


**Figs 528–545.** Lateral aspect of ♀ genitalia: **528.** *Aphidius matricariae*. **529.** *Aphidius microlophii*. **530.** *Aphidius myzocallidis*. **531.** *Aphidius persicus*. **532.** *Aphidius platensis*. **533.** *Aphidius popovi*. **534.** *Aphidius rhopalosiphi*. **535.** *Aphidius ribis*. **536.** *Aphidius rosae*. **537.** *Aphidius salicis*. **538.** *Aphidius setiger*. **539.** *Aphidius smithi*. **540.** *Aphidius sonchi*. **541.** *Aphidius stigmaticus*. **542.** *Aphidius transcaspicus*. **543.** *Aphidius uroleuci*. **544.** *Aphidius urticae*. **545.** *Aphidius uzbekistanicus*.

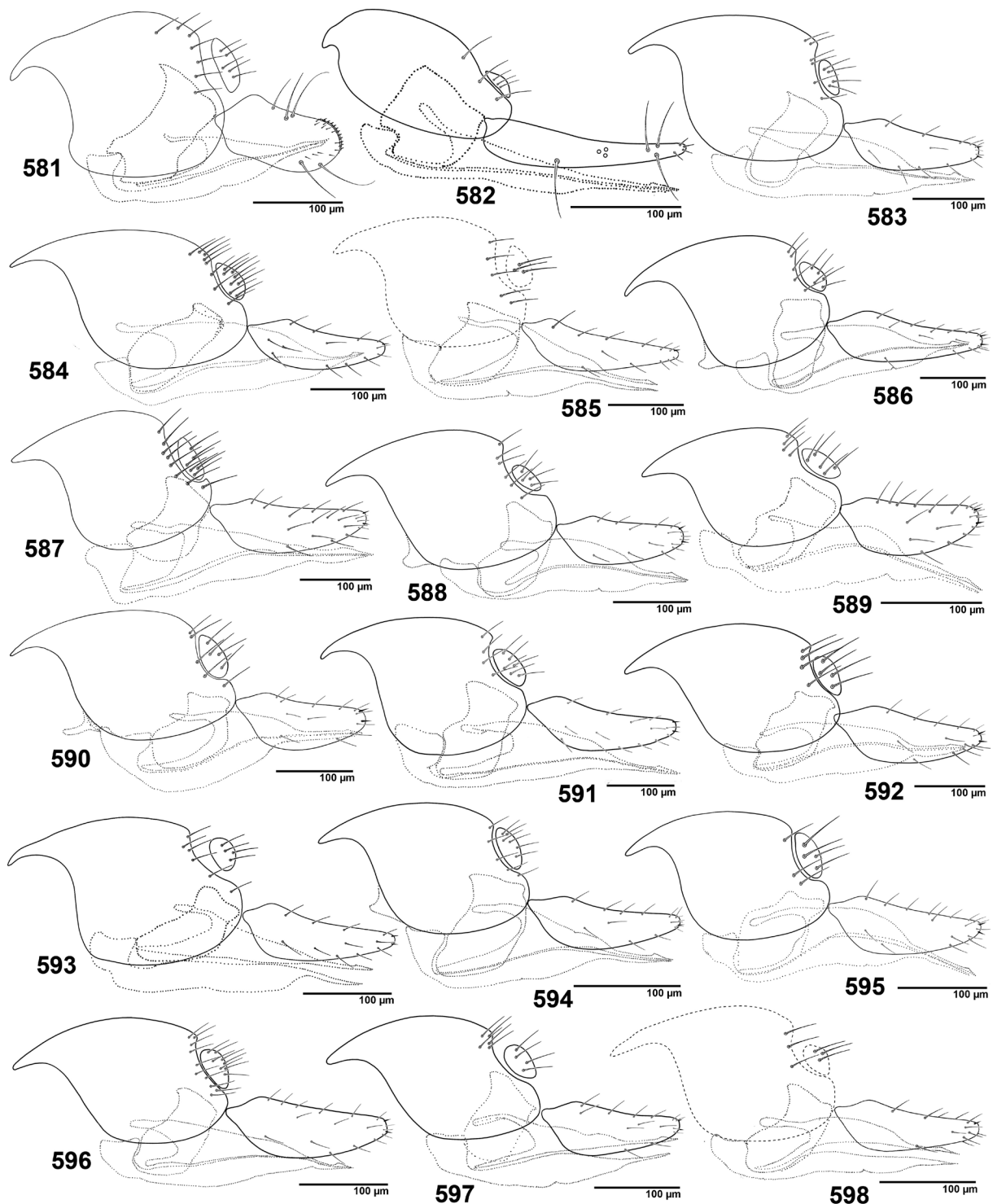


**Figs 546–562.** Lateral aspect of ♀ genitalia: **546.** *Areopraon lepellei*. **547.** *Betuloxys hortorum*. **548.** *Binodoxys acalephae*. **549.** *Binodoxys angelicae*. **550.** *Binodoxys brevicornis*. **551.** *Binodoxys centaureae*. **552.** *Binodoxys heraclei*. **553.** *Diaeretiella rapae*. **554.** *Diaeretus leucopterus*. **555.** *Ephedrus cerasicola*. **556.** *Ephedrus chaitophori*. **557.** *Ephedrus helleni*. **558.** *Ephedrus lacertosus*. **559.** *Ephedrus nacheri*. **560.** *Ephedrus niger*. **561.** *Ephedrus persicae*. **562.** *Ephedrus plagiator*.

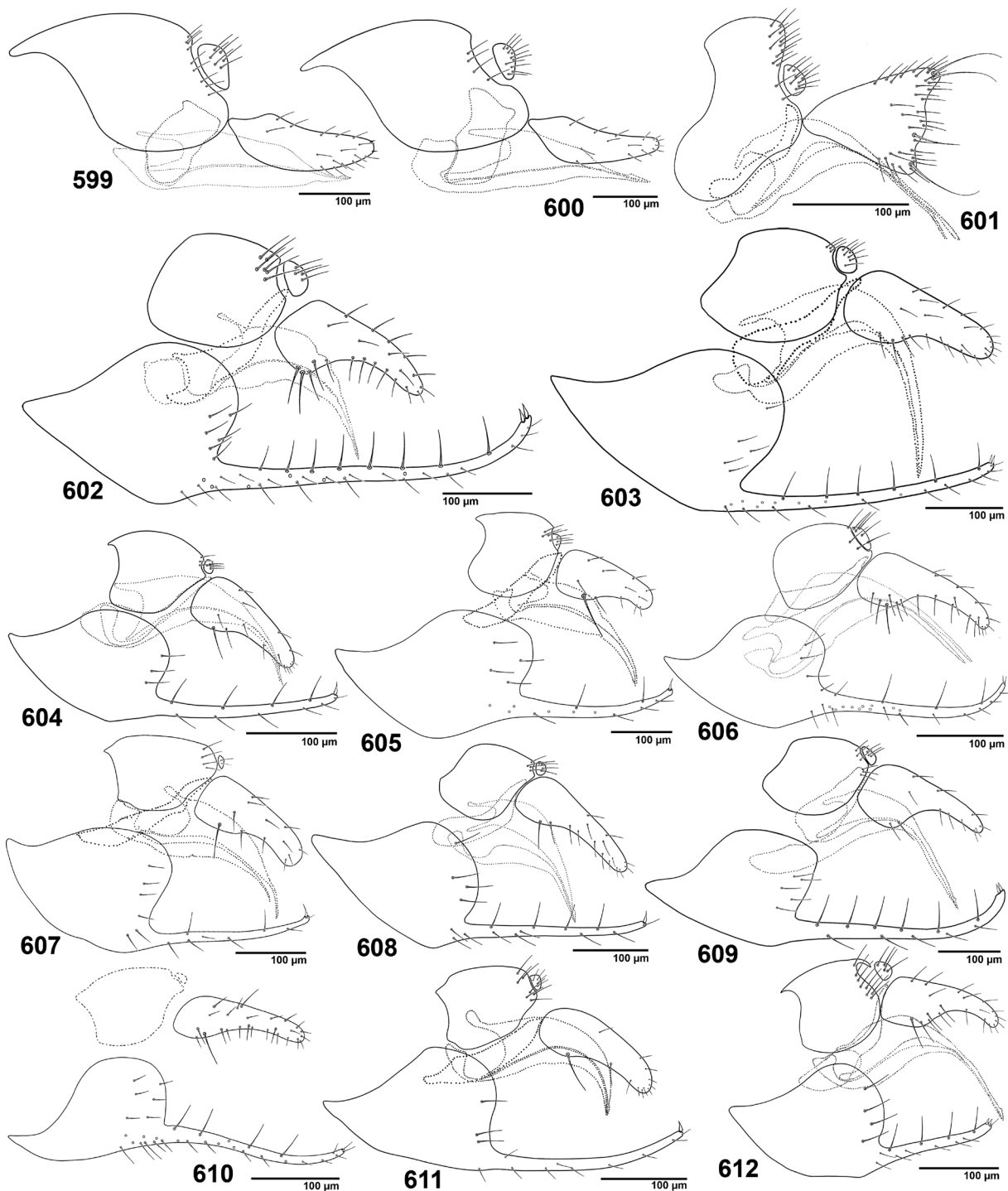




**Figs 563–580.** Lateral aspect of ♀ genitalia: **563.** *Lipolexis gracilis*. **564.** *Lysiphlebus cardui*. **565.** *Lysiphlebus confusus*. **566.** *Lysiphlebus desertorum*. **567.** *Lysiphlebus fabarum*. **568.** *Lysiphlebus fritzmulleri*. **569.** *Lysiphlebus testaceipes*. **570.** *Monoctonia pistaciaecola*. **571.** *Monoctonia vesicarii*. **572.** *Monoctonus crepidis*. **573.** *Monoctonus mali*. **574.** *Pauesia abietis*. **575.** *Pauesia anatolica*. **576.** *Pauesia antennata*. **577.** *Pauesia cedrobii*. **578.** *Pauesia hazratbalensis*. **579.** *Pauesia picta*. **580.** *Pauesia pini*.



**Figs 581–598.** Lateral aspect of ♀ genitalia: **581.** *Pauesia silana*. **582.** *Pauesia unilachni*. **583.** *Praon abjectum*. **584.** *Praon absinthii*. **585.** *Praon athenaeum*. **586.** *Praon barbatum*. **587.** *Praon bicolor*. **588.** *Praon exsoletum*. **589.** *Praon flavinode*. **590.** *Praon gallicum*. **591.** *Praon longicorne*. **592.** *Praon necans*. **593.** *Praon nonveilleri*. **594.** *Praon orpheusi*. **595.** *Praon pubescens*. **596.** *Praon rosaecola*. **597.** *Praon unitum*. **598.** *Praon uroleucon*.



**Figs 599–612.** Lateral aspect of ♀ genitalia: **599.** *Praon volucre*. **600.** *Praon yomenae*. **601.** *Toxares deltiger*. **602.** *Trioxys asiaticus*. **603.** *Trioxys cirsii*. **604.** *Trioxys complanatus*. **605.** *Trioxys curvicaudus*. **606.** *Trioxys metacarpalis*. **607.** *Trioxys moshei*. **608.** *Trioxys pallidus*. **609.** *Trioxys pannonicus*. **610.** *Trioxys pappi*. **611.** *Trioxys quercicola*. **612.** *Trioxys tanaceticola*.





**Fig. 613.** Map of the Middle East and North Africa. A country is highlighted with green color indicates that there are available data on aphidiine parasitoids. A country highlighted with red color, indicates that there are no available data on aphidiine parasitoids