

Aphidiinae (Hymenoptera, Braconidae) of the Agro-ecosystems in Plovdiv Region (Bulgaria)

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Abstract. Eleven Aphidiinae genera and 23 species from 197 aphidiids were identified. Six species of them are new to the fauna of Bulgaria. Thirty two plant-aphid-parasitoid associations are reported.

Key words: Aphidiinae, Hymenoptera, aphid, biological control, parasitoid.

Introduction

Species from the family Aphidiidae parasitize exclusively to aphids and are often used in biological control programs concerning crops protection from pests. The Aphidiinae females randomly search along the leaf veins or leaf margins generally detecting the aphids through antennae contact (Stary 1966, 1970, 1976). After finding a potential host the female evaluates its suitability and quality for offspring development by antenna and ovipositor probing. Stimuli that may induce a host examination are shape, texture, size, chemical compounds and host movements. A potential host has to satisfy the minimal physiological and dietary needs for the development and growth of the immature insects (Mackauer *et al.* 1996).

In Western Palearctic subfamily Aphidiinae is relatively well studied (Tomanovic *et al.* 2003, Kavallieratos *et al.* 2004). In Bulgaria 61 species from 18 genera are known till now (Stary 1962, Kolarov 1997).

Material and methods

The material was collected from the Experimentally Field of Agriculture University - Plovdiv (152 m a. s. l.).

The parasitoids were collected by three different methods. Mainly the insects were gathered by Malaise traps (Mal. trap in the text) which were checked periodically on every 15 days. Part of the material was gathered with entomological net (Ent. net in the text), and part was taken out from aphids. The aphidiids were collected from the mummies of 14 species of aphids that were found in the field.

The material was deposited in the collection of the author.

Results

Twenty-three species from eleven genera of the subfamily Aphidiinae in Plovdiv region were recorded. Six of them (marked with an asterisk) were new records to the Bulgarian fauna.

Faunistic list

* ***Adialytus ambiguus*** (Haliday, 1834)

Material: Collected from mummies of *Aphis fabae* on *Cirsium arvense*, 26.11.2004, 1♀.

Adialytus salicaphis (Fitch, 1855)

Material: Collected from mummies of *Chaitophorus leucomelas* on *Populus nigra*, 15.06.2004, 1♀.

Aphidius ervi (Haliday, 1834)

Material: Mal. trap, 21.05-16.06.2004, 2♀; 03.07-15.07.2004, 2♀.

Aphidius funebris (Mackauer, 1961)

Material: Collected from mummies of *Uroleucon* sp. on *Cichorium intibus*, 14.05.2004, 3♀, 2♂, on *Centaurea solstitialis*, 15.06.2004, 1♀, 2♂, and on *Sonchus oleraceus*, 17.06.2004, 4♀, 1♂.

Aphidius matricariae (Haliday, 1834)

Material: Collected from mummies of *Dysaphis plantaginea* on *Malus domestica*, 29.06.2006, and *Myzus cerasi* on *Prunus avium*, 15.05.2007, 1♀.

Aphidius rosae (Haliday, 1833)

Material: Collected from mummies of *Macrosiphum rosae* on *Rosa* sp., 06.07.2003, 1♀; 24.10.2004, 2♀, on *Lactuca seriola*, 12.2004, 1♀; on *Rosa* sp., 04.12.2004, 6♀, 5♂.

* ***Aphidius uroleuci*** (Mescheloff and Rosen, 1990)

Material: Collected from mummies of *Uroleucon* sp. on *Rosa* sp., 15.06.2001, 1♀.

Binodoxys acalephae (Marshall, 1896)

Material: Collected from mummies of *Aphis spiraecola* on *Malus domestica*, 05.11.2006, 1♂; 15.10.2006, 13♂; 5♂. *Dysaphis plantaginea* on *Malus domestica*, 15.10.2006

Binodoxys angelicae (Haliday, 1833)

Material: Collected from mummies of *Aphis urticata* on *Urtica dioica*, 15.05.2002, 4♀; Mal. trap, 21.05-16.06.2004, 3♀.

Diaeretiella rapae (M'Intosh, 1855)

Material: Collected from mummies of *Brevicoryne brassicae* on *Brassica rapa* subsp. *oleifera*, 29.11.2004, 1♂;

* ***Diaeretiellus macrocarpus*** Mackauer 1961

Material: Mal. trap, 25.10-03.11.2006, 1♀.

Ephedrus cerasicola (Stary, 1962)

Material: Mal. trap, 24.04-05.05.2003, 2♀; 16.06-03.07.2004, 1♀; 15.07-30.07.2004, 1♀; collected from mummies of *Myzus cerasi* on *Brassica rapa* subsp. *oleifera*, 15.05.2007, 1♂.

Ephedrus persicae (Froggatt, 1904)

Material: Collected from mummies of: *Myzus cerasi* on *Cerasus avium*, 15.05.2004, 3♀; 15.06.2004, 1♀, 1♂; *Brachycaudus cardui* on *Prunus avium*, 1♀; *Dysaphis plantaginea* on *Malus domestica*, 29.06.2006. 1♂.

Ephedrus plagiator (Nees, 1811)

Material: Mal. trap, 10.08- 23.08.2002, 1♀; 06.05-19.05.2003, 1♀; 16.06-03.07.2004, 1♀.

Lipolexis gracilis (Förster, 1862)

Material: Collected from mummies of *Aphis fabae* on *Cirsium arvense*, 15.05.2004, 8♀, 1♂.

Lysiphlebus confusus (Tremblay et Eady, 1978)

Material: Collected from mummies of *Aphis hederae* on *Hedera helix*, 18.11.2004, 8♀.

Lysiphlebus fabarum (Marshall, 1896)

Material: Mal. trap, 27.04-02.05.2003, 3♀; 17.10-29.10.2004, 1♀; 28.06.2004, 13♀, 8♂; collected from mummies of: *Aphis fabae* on *Cirsium arvense*, 14.05.2004, 24♀, 23♂; 29.05.2004, 20♀, 5♂; 15.06.2004, 47♀, 25♂; *Pterocomma* sp. on *Salix* sp., 03.06.2004, 8♀, 1♂; *Aphis* sp. on *Chondrila juncea*, 20.06.2004, 19♀, *Therioaphis* sp., on *Cichorium intibus*, 17.06.2004, 26♀, 26♂, *Aphis gossypii*, on *Cucumis sativus* 05.10.2004, 39♀, 41♂, *Aphis hederae* on *Hedera helix*, 10.11.2004, 5♀; 02.12.2004, 8♀, 4♂, 24.12.2002, 5♀, 01.01.2005, 2♀, 1♂; 12.01.2005, 1♀, 10.02.2005.

*** *Monoctonus mali*** (van Achterberg, 1989)

Material: Collected from mummies of *Dysaphis plantaginea* on *Malus domestica*, 28.04.2006.

*** *Paralipsis enervis*** (Nees, 1834)

Material: Mal. trap, 25.10-03.11.2006, 3♂.

Praon exoletum (Nees, 1811)

Material: Collected from mummies of *Therioaphis* sp. on *Cichorium intibus*., 14.05.2004, 2♀; *Dysaphis plantaginea* on *Malus domestica*, 15.05.2006.

*** *Praon rosaecola*** (Stary, 1961)

Material: Collected from mummies of *Macrosiphum rosae* on *Rosa* sp., 15.05.2004, 4♀.

Praon volucrae (Haliday, 1833)

Material: Collected from mummies of *Macrosiphum* sp. on *Rosa* sp., 21.10.2002, 8♀, 1♂.

Praon yomenae (Takada, 1968)

Material: Collected from mummies of *Uroleucon* sp. on *Centaurea solstitialis*, 15.06.2004, 3♀; *Uroleucon* sp. on *Cichorium intibus*, 15.06.2004, 3♀.

Tritrophic plant – aphid – parasitoid associations

Brassica rapa subsp. *oleifera* - *Brevicoryne brassicae* - ***Diaeretiella rapae***
Brassica rapa subsp. *oleifera* - *Myzus cerasi brassicae* - ***Ephedrus cerasicola***
Centaurea solstitialis - *Uroleucon* sp. - ***Aphidius funebris***
Centaurea solstitialis - *Uroleucon* sp. - ***Praon yomenae***
Cerasus avium - *Myzus cerasi* - ***Ephedrus persicae***
Chondrila juncea - *Aphis* sp. - ***Lysiphlebus fabarum***
Cichorium intibus - *Therioaphis* sp. - ***Lysiphlebus fabarum***
Cichorium intibus - *Therioaphis* sp. - ***Praon exoletum***
Cichorium intibus - *Uroleucon* sp. - ***Aphidius funebris***
Cichorium intibus - *Uroleucon* sp. - ***Praon yomenae***
Cirsium arvense - *Aphis fabae* - ***Adialytus ambiguus***
Cirsium arvense - *Aphis fabae* - ***Lipolexis gracilis***
Cirsium arvense - *Aphis fabae* - ***Lysiphlebus fabarum***

Cucumis sativus - *Aphis gossipii* - ***Lysiphlebus fabarum***
Hedera helix - *Aphis hederæ* - ***Lysiphlebus confuses***
Hedera helix - *Aphis hederæ* - ***Lysiphlebus fabarum***
Lactuca seriola - *Macrosiphum rosæ* - ***Aphidius rosæ***
Malus domestica - *Aphis spiræcola* - ***Binodoxys acalephæ***
Malus domestica - *Dysaphis plantaginea* - ***Aphidius matricariæ***
Malus domestica - *Dysaphis plantaginea* - ***Ephedrus persicæ***
Malus domestica - *Dysaphis plantaginea* - ***Monoctonus mali***
Malus domestica - *Dysaphis plantaginea* - ***Praon exoletum***
Populus nigra - *Chaitophorus leucomelas* - ***Adialytus salicaphis***
Prunus avium - *Brachycaudus cardui* - ***Ephedrus persicæ***
Prunus avium - *Myzus cerasi* - ***Aphidius matricariæ***
Rosa sp. - *Uroleucon* sp. - ***Aphidius uroleuci***
Rosa sp. - *Macrosiphum rosæ* - ***Aphidius rosæ***
Rosa sp. - *Macrosiphum rosæ* - ***Praon volucrae***
Rosa sp. - *Macrosiphum rosæ* - ***Praon rosaecola***
Salix sp. - *Pterocomma* sp. - ***Lysiphlebus fabarum***
Sonchus oleraceus - *Uroleucon* sp. - ***Aphidius funebris***
Urtica dioica - *Aphis urticae* - ***Binodoxys angelicæ***

Conclusion

With this six new species to the fauna of Bulgaria the numbers of Aphidiinae rises to 65 species from 18 genera. The list of plant-aphid-parasitoid associations is firstly reported for Bulgaria.

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