

## SOME BIOSYSTEMATIC NOTES ON *PRUNUS* APHID PARASITOIDS (HYMENOPTERA: APHIDIIDAE) IN YUGOSLAVIA

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A total of 9 parasitoid species of the most important aphids, reared and natural species of the genus *Prunus*, are registered in Yugoslavia. A list of the species with host record and key for identification aphid parasitoid species is given. The species *Ephedrus cerasicola* Starý is registered for the first time.

KEY WORDS: aphid parasitoids, *Prunus*, key.

### INTRODUCTION

Faunistic and ecological investigations of aphids of reared and natural species of the genus *Prunus* have been carried out in most European countries. Due to the great economic importance of some aphid species, of the complexes of their natural enemies (REMAUDIÈRE & LECLANT, 1971) were extensively studied. Due to their great effectiveness and specificity, the primary parasitoids of the family Aphidiidae are subject of a special interest (STARY, 1966a; CECILIO et al., 1997).

Until now the aphid parasitoid fauna on *Prunus* species was not investigated in Yugoslavia and this paper is a contribution to the knowledge of this fauna.

### MATERIAL AND METHODS

Material was collected in the period 1995-1997. Most material originates from the vicinity of Belgrade or from Vojvodina, while a small number of samples come from the mountain region of the country. Plant parts were taken with aphid colonies and reared in laboratory to obtain parasitoids. For parasitoid determination we used the following keys: STARY (1996b), GARDENFORS (1986) and PENNACCHIO (1990). The taxonomic nomenclature used in key are according to STARY (1970).

## RESULTS AND COMMENTS

**Faunistic survey of *Prunus* aphid parasitoid species in Yugoslavia on primary and secondary host plants**

Faunistic data are given as follows: aphid-plant, sex ratio (f-females/males), date, locality and collector (leg.) (ŽT-Željko Tomanović, OP-Olivera Petrović, MB-Miloje Brajković, NM-Nela Mihajlović).

*Ephedrus persicae* Froggat-*Brachcaudus cardui-Prunus domestica*, 4♀, 28.4.1995, Beograd, leg. OP; *Brachycaudus helichrysi-Sedum ochroleucum*, 1♂, 27.8.1990, Durmitor-Crno jezero, leg. OP; *B. helichrysi-Prunus cerasifera*, 1♀, 4.5.1995, Novi Beograd, leg. OP; *B. helichrysi-P. domestica*, 6♀ 18♂, 28.4.1995, Beograd, leg. OP; *Brachycaudus prunicola-P. cerasifera*, 1♀, 7.5.1995, Beograd, leg. OP; *Myzus cerasi-Prunus cerasus*, 1♀ 2♂, 7.5.1995, Beograd, leg. OP; *M. cerasi-P. cerasus*, 17♀ 8♂, 28.4.1995, Beograd, leg. OP; *M. cerasi-Prunus avium*, 1♀ 1♂, 28.4.1995, Beograd, leg. OP; *Myzus persicae-Prunus persica*, 1♀, 28.4.1995, Beograd, leg. OP; *M. persicae-P. cerasifera*, 21.4.1995, 1♀, Beograd, leg. OP; *Phorodon humuli-P. cerasifera*, 1♂, 18.5.1990, Rudnik, leg. OP; *P. humuli-P. cerasifera*, 2♀ 1♂, 29.5.1993, Beograd-Dušanovac, leg. ŽT; *P. humuli-Prunus spinosa*, 1♂, 7.5.1995, Beograd-Voždovac, leg. ŽT; *P. humuli-P. domestica*, 1♀ 2♂, 25.4.1995, Novi Beograd, leg. OP; *P. humuli-P. cerasifera*, 3♀ 1♂, 7.5.1995, Beograd, leg. OP; *P. humuli-P. cerasus*, 1♀ 3♂, 7.5.1995, Beograd, leg. OP; *P. humuli-P. spinosa*, 2♀, 21.4.1995, Beograd, leg. OP; *Rhopalosiphum nymphaeae-Prunus sp.*, 1♂, 25.4.1995, Novi Beograd.

*Ephedrus plagiator* (Nees)-*B. helichrysi-Melampyrum cristatum*, 1♀, Šara, leg. OP; *M. cerasi-P. cerasus*, 1♂, 28.4.1995, Beograd, leg. OP; *M. cerasi-P. avium*, 1♀ 1♂, 6.6.1995, Beograd-Dušanovac, leg. ŽT; *P. humuli-P. spinosa*, 2♀, 1.5.1990, Lugavčina, leg. OP; *P. humuli-P. cerasus*, 1♂, 7.5.1995, Beograd-Dušanovac, leg. ŽT; *P. humuli-P. cerasifera*, 4♀, 17.6.1993, Novi Beograd, leg. OP.

*Ephedrus cerasicola* Starý-*M. cerasi-P. cerasus*, 4♀, 14.6.1997, Beograd-Crveni krst, leg. ŽT; *P. humuli-P. persica*, 1♀, 6.5.1995, Grocka, leg. ŽT; *B. helichrysi-Myosotis sp.*, 1♀, 5.7.1997, Kopaonik-Pančičev vrh, leg. ŽT.

*Praon volucre* (Haliday)-*B. helichrysi-P. cerasifera*, 1♀, 21.4.1995, Beograd, leg. OP; *Hyalopterus pruni-P. cerasifera*, 12♀ 6♂, 15.5.1995, Beograd, leg. OP; *H. pruni-P. cerasifera*, 2♀ 3♂, 5.6.1995, Beograd, leg. OP; *H. pruni-P. cerasifera*, 2♀ 1♂, 10.6.1995, Beograd, leg. OP; *H. pruni-P. cerasifera*, 8♀ 4♂, 8.6.1996, Beograd-Karadorđev park, leg. ŽT; *H. pruni-P. cerasifera*, 13♀ 5♂, 13.6.1996, Starčevo, leg. ŽT; *H. pruni-P. domestica*, 2♀ 1♂, 20.6.1996, Žabalj, leg. ŽT; *H. pruni-P. cerasi-*

*fera*, 2♂, 2.8.1996, Beljanica, leg. OP; *H. pruni-Prunus armeniaca*, 7♀ 14♂, 14.6.1997, Beograd-Crveni krst, leg. ŽT; *M. persicae-P. persica*, 1♀, 20.4.1990, Obrenovac, leg. OP; *Myzus varians-Clematis vitalba*, 2♂, 5.11.1996, Beograd-Ada, leg. ŽT; *P. humuli-P. cerasifera*, 1♂, 6.5.1995, Beograd-Dušanovac, leg. ŽT. -

*Aphidius avenae* Haliday-*M. persicae-P. cerasifera*, 1♂, 12.6.1995, Beograd, leg. OP.

*Aphidius matricariae* Haliday-*B. cardui-P. cerasifera*, 1♂, 7.5.1995, Beograd, leg. OP; *M. cerasi-Prunus cerasus*, 1♂, 7.5.1995, Beograd, leg. ŽT; *M. cerasi-P. avium*, 7♀ 1♂, 6.6.1995, Beograd-Dušanovac, leg. ŽT; *M. persicae-Lepidium draba*, 1♀, 20.4.1990, Novi Beograd, leg. OP; *M. persicae-P. cerasifera* 1♀ 1♂, 21.4.1995, Beograd, leg. OP; *M. persicae-P. cerasifera*, 2♀, 12.6.1995, Beograd, leg. OP; *M. persicae-Solanum tuberosum*, 14.6.1995, 3♀ 2♂, Beograd-M.M. Lug, leg. MB; *P. humuli-P. cerasifera*, 2f, 17.6.1993, Novi Beograd, leg. OP; *P. humuli-P. cerasifera*, 1♀, 7.5.1995, Beograd, leg. OP; *P. humuli-Humulus lupulus*, 5♂, 27.5.1995, Beograd-Dušanovac, leg. ŽT; *Rhopalosiphum nymphaeae-Alysmplatagoaquatica*, 2♂, 9.6.1997, Beograd-Ratno ostrvo, leg. NM.

*Lysiphlebus fabarum* (Marshall)-*B. cardui-Carduus sp.*, 1♂, 6.7.1990, Gornjan-Bor, leg. OP; *B. cardui-P. cerasifera*, 1♂, 12.8.1993, Durmitor-Donja Bukovica, leg. OP; *B. cardui-Carduus sp.*, 2♂, 18.7.1991, Aljinovići, leg. OP; *B. cardui-Carduus sp.*, 3♀, 20.6.1996, Zrenjanin, leg. ŽT; *B. cardui-Carduus sp.*, 1♀ 9♂, 23.7.1996, Užice-Trešnjica, leg. ŽT; *B. cardui-Carduus sp.*, 13♀ 9♂, 3.8.1996, Beqanica, leg. OP; *B. cardui-Carduus acanthoides*, 4♀ 12♂, 23.6.1997, Bečej, leg. ŽT; *B. cardui-C. acanthoides*, 2♀ 11♂, 23.6.1997, Perlez, leg. ŽT; *B. cardui-C. acanthoides*, 1♀, 23.6.1997, Sefkerin; *B. cardui-C. acanthoides*, 6♀ 3♂, 23.6.1997, Mol, leg. ŽT; *B. cardui-C. acanthoides*, 10♀ 7♂, 23.6.1997, Rusko selo, leg. ŽT; *B. cardui-Carduus sp.*, 6♀ 6♂, 16.7.1997, Suva planina-Glogovac, leg. ŽT; *B. cardui-Cirsium eryophorum*, 32♀ 5♂, 17.7.1997, Suva planina-Korube, leg. ŽT; *B. cardui-C. acanthoides*, 11♀ 12♂, 20.7.1997, Stara planina-Balta Berilovac, leg. ŽT; *B. cardui-Carduus sp.*, 10♀ 9♂, 22.7.1997, Stara planina-Čuštica, leg. ŽT; *Brachycaudus schwartzi-P. persica*, 2♂, 28.4.1995, Beograd, leg. OP; *B. schwartzi-P. persica*, 1♀ 17♂, 2.5.1995, Beograd, leg. OP; *B. schwartzi-P. persica*, 4♀ 18♂, 24.5.1995, Lugavčina, leg. OP; *B. schwartzi-P. persica*, 12♀ 10♂, 5.10.1995, Beograd-Radmilovac, leg. OP; *B. helichrysi-P. persica*, 12♀ 2♂, 5.10.1995, Beograd-Radmilovac, leg. OP; *H. pruni-Phragmites communis*, 1♀, 5.10.1995, Beograd-Radmilovac, leg. OP; *H. pruni-P. cerasifera*, 23♀ 6♂, 8.6.1996, Beograd-Karađorđev park, leg. ŽT; *M. persicae-Polygonum aviculare*, 1♀ 2♂, 19.7.1997, Suva planina-Toponički put, leg. ŽT; *P. humuli-P. cerasifera*, 1♀, 17.6.1993, Novi Beograd, leg. OP.



*Lipolexis gracilis* Förster-*M. cerasi*-*P. avium*, 1♂, 20.5.1993, Beograd-M.M. Lug, leg. MB; *M. cerasi*-*P. avium*, 2♀, 21.5.1995, Lugavčina, leg. OP; *M. cerasi*-*P. avium*, 6♀ 7♂, 6.6.1995, Beograd-Dušanovac, leg. ŽT.

*Binodoxys angelicae* (Haliday)-*Brachycaudus* sp.-*P. persica*, 1♀, 20.6.1996, Zrenjanin, leg. ŽT.

### Key for identification aphid parasitoid species based on females

- 1 [7] Pterostigmal cell closed
- 2 [8] Both interrarial veins developed. Antennae 11- segmented. Mummified aphids black. *Ephedrus* Haliday
- 3 [4] Radial abscissa 2 shorter than interrarial vein 1 (Fig. I, 4). Third valvulae as in Fig. I, 5. *E. persicae* Froggat
- 4 [3] Radial abscissa 2 longer than interrarial vein 1.
- 5 [6] First flagellar segment (F1) predominantly yellow and considerably longer than second flagellar segment (F2), with one short rhinaria (Fig. I, 3). Third valvulae as in Fig. I, 6. *E. cerasicola* Starý
- 6 [5] First flagellar segment (F1) predominantly dark and somewhat longer than second flagellar segment (F2) with several rhinaria. *E. plagiator* (Nees)
- 7 [1] Pterostigmal cell open
- 8 [2] Both interrarial veins effaced (Fig. I, 2). Antennae 17-19 segmented. Pupa- tion under parasitized aphid. Mesoscutum densely pubescens with small hairless areas (Fig. I, 1). *Praon* Haliday  
*P. volucre* (Haliday)
- 9 [12] Radial and median cells confluent (Fig. II, 3). Medial vein present. Areola on propodeum narrow. *Aphidius* Nees
- 10 [11] Maxillary palps 3-segmented. Antennae 14-15 segmented (Fig. II, 8). Ante- rolateral area of petiolus costulate (8-11) (Fig. II, 4) *A. matricariae* Haliday
- 11 [10] Maxillary palps 4-segmented. Antennae 17-18 segmented. Anterolateral area of petiolus costate (2-6) *A. avenae* Haliday
- 12 [9] Radial and median cells opened. Only a remanant of medial vein present, just under the second interrarial vein (Fig. II, 2). Areola on propodeum

not developed. Antennae 12-13-segmented.

Petiolus wide (Fig. II, 6).

*Lysiphlebus* Förster

*L. fabarum* Marshall

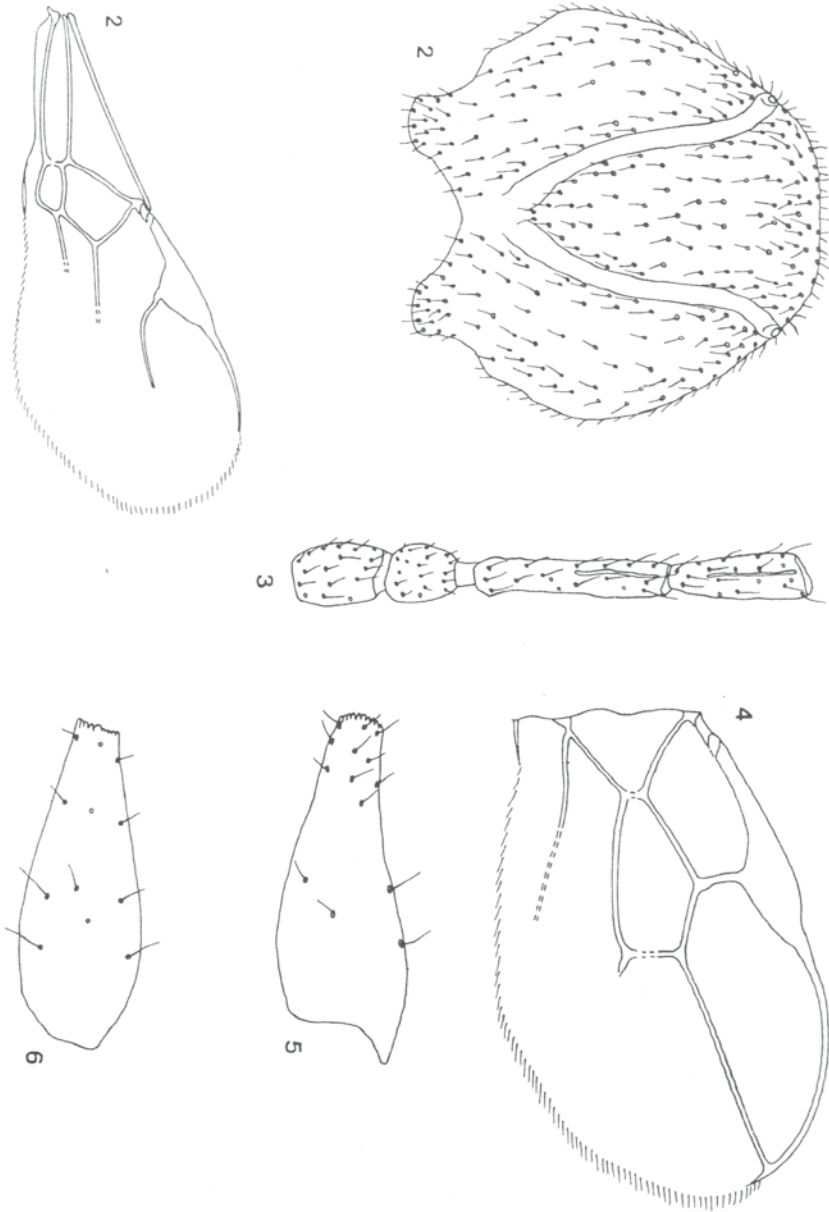
- 13 [14] Radial vein very long, parallel of metacarpus, nearly reaching the wing margin (Fig. II, 1). Last abdominal sternite without prongs. Antennae 12-segmented, flagellar segments considerably elongated (Fig. II, 7).

*Lipolexis* Förster

*L. gracilis* Förster

- 14 [13] Radial vein short. Last abdominal sternite with two prongs. Antennae 11-12 - segmented, flagellar segments not elongated. Petiolus as in *Bino-*  
*doxys* Mackauer Fig. II, 5.

*B. angelicae* (Haliday)



**Fig. I** (All figures drawn in different sizes):

1. *Praon volucre*, mesoscutum.
2. *Praon volucre*, forewing.
3. *Ephedrus cersicola*, first and second flagellar segments.
4. *Ephedrus persicae*, a part of forewing.
5. *Ephedrus persicae*, third valvulae.
6. *Ephedrus cersicola*, third valvulae.

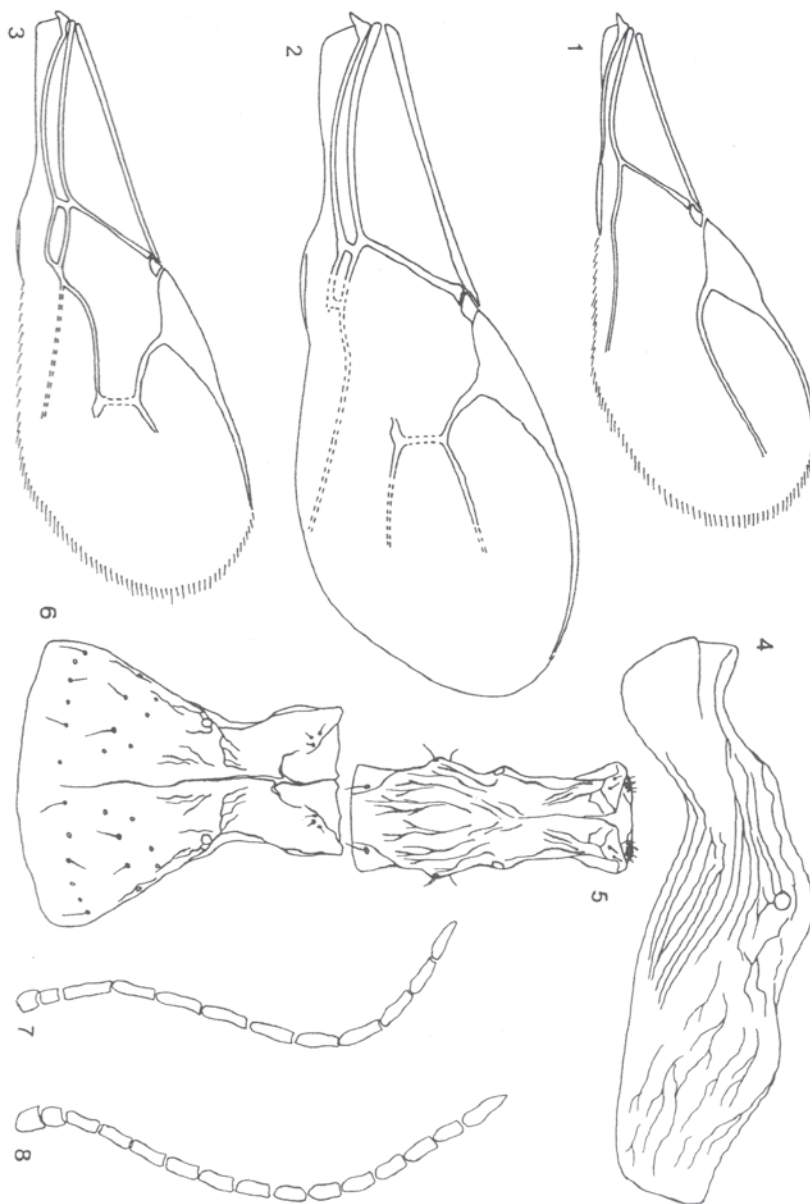


Fig. II (All figures drawn in different sizes):

1. *Lipolexis gracilis*, forewing.
2. *Lysiphlebus fabarum*, forewing.
3. *Aphidius matricariae*, forewing.
4. *Aphidius matricariae*, anterolateral are of petiolus.
5. *Binodoxys angelicae*, petiolus.
6. *Lysiphlebus fabarum*, petiolus.
7. *Lipolexis gracilis*, antennae.
8. *Aphidius matricariae*, antennae.

A total of 9 parasitoid species was registered, of which two species are polyphagous (*Praon volucre* and *Lysiphlebus fabarum*), the remaining ones being oligophagous. According to STARY (1970) the species *Ephedrus cerasicola*, *Binodoxys angelicae* and *Praon volucre* belong to the faunistic complex of the European Deciduous Forest, while *Ephedrus persicae* and *Ephedrus plagiator* belong to the complex of the Far Eastern Deciduous Forest. Four species, *Aphidius avenae*, *Aphidius matricariae*, *Lipolexis gracilis* and *Lysiphlebus fabarum*, belong to the Eurasian Steppes. The species *Ephedrus cerasicola*, is registered for the first time in Yugoslavia.

#### ACKNOWLEDGMENTS

We wish to thank Mrs Olivera Petrović (Department of Entomology, Faculty of Agriculture, Zemun) for aphid determination and a part of material and Mr Nenad Lazarević (Institute of Zoology, Faculty of Biology, Belgrade) for drawings. We also extend our thanks to the Ministry of Sciences and Technology Republic of Serbia on financial support (Grant application No. 03E04).

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НЕКЕ БИОСИСТЕМАТСКЕ КАРАКТЕРИСТИКЕ  
ПАРАЗИТОИДА АФИДА НА *PRUNUS* ВРСТАМА У  
ЈУГОСЛАВИЈИ (HYMENOPTERA: APHIDIIDAE)

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**Извод**

Фауна паразитских оса (Hymenoptera: Aphidiidae) биљних вашију гајених и негајених врста рода *Prunus* у Србији до сада није истраживана и поред тога што се ради о економски значајним врстама. Највећи део истраживаног материјала је сакупљен у околини Београда и у Војводини у периоду 1995-1997. Нађено је укупно 9 врста паразитских оса: *Aphidius matricariae* Haliday, *Aphidius avenae* Haliday, *Ephedrus cerasicola* Starý, *Ephedrus persicae* Froggat, *Ephedrus plagiator* (Nees), *Lipolexis gracilis* Förster, *Lysiphlebus fabarum* (Marshall), *Praon volucre* (Haliday) и *Binodoxys angelicae* (Haliday). У раду је дат кључ за идентификацију ових 9 регистрованих паразитоида биљних вашију рода *Prunus* у Југославији. Врста *Ephedrus cerasicola* је први пут забележена у нашој фауни.

Received November 17, 1998

Accepted March 10, 1999