

**Parasitic Hymenoptera reared from *Callisto denticulella* (THNBG.)  
(Lepidoptera, Gracillariidae)**

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**ABSTRACT.** Ten hymenopteran species of the family Ichneumonidae (2 species) and superfamily Chalcidoidea (8 species) had been reared from cocoons of *Callisto denticulella* (THNBG.). Such parasitoids as *Gelis areator* (PANZ.), *Chrysocharis pentheus* WALK., *Pedobius saulius* WALK., *Dibrachys cavus* WALK., *Eupelmus fulvipes* FÖRSTER, *Eupelmus urozonus* DALMAN, *Eurytoma goidanichi* BOUČEK and *Parablastothrix montana* ERDÖS had not been reported from the host before. *E. fulvipes*, *E. goidanichi* and *P. montana* are species new to Poland.

**KEY WORDS:** *Callisto denticulella*, Lepidoptera, Hymenoptera parasitica, Ichneumonidae, Chalcidoidea.

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INTRODUCTION

Parasitoids associated with mining moths are discussed in some comprehensive papers dating back to the 90-ties of the 20<sup>th</sup> century. The works have presented 65 species of Chalcidoidea (VIDAL & BUSZKO 1990), 29 species of Braconidae (MARCZAK & BUSZKO 1993) and 34 species of Ichneumonidae (SAWONIEWICZ & BUSZKO 1994), many of which are species new to the Polish fauna. Papers of ZAJANČKAUSKAS et al. (1979), KADŁUBOWSKI (1981) and GÓRSKA-DRABIK (2007) also treat about some mining moth species of orchards. The above works together with the here presented study indicate that parasitoids of leaf-miners have not been overexploited yet and new works are still contributing with descriptions of new species.

The aim of the present study was to determine the species composition of parasitoid communities of *C. denticulella*.

#### MATERIAL AND METHODS

The study was conducted during 2001-2003 at two sites located near Lublin (Poland). The sites were free from any chemical plant protection treatments.

Leonów orchard (UTM FB 19) – the site of 14 km-distance from Lublin with about 25 year-old apple trees. The orchard has not been pruned or fertilized since 1993.

Private orchard – the site in Marynin (UTM FB 07), 16 km away from Lublin. Apple trees grown there are several-decade old and have big, branchy crowns.

A 25-cm-wide strip of corrugated cardboard was banded round the trunk, 30-60 cm above the ground. Bands were placed in May and removed in October. Over the study, a total number of 174 bands had been used.

The reared parasitoids were identified with the nomenclature following MEDVEDEV (1978, 1981).

The parasitoids reared are kept at the Department of Entomology, University of Life Science in Lublin.

#### RESULTS AND DISCUSSION

Rearing 1463 cocoons of *C. denticulella* resulted in obtaining 768 Hymenoptera parasitica individuals. They represented 10 species grouped in such families as Ichneumonidae (2 species), Eulophidae (2 species), Pteromalidae (2 species), Eupelmidae (2 species), Eurytomidae (1 species) and Encyrtidae (1 species) (Table 1).

##### **Ichneumonidae**

*Gelis ? areator* (PANZ.): 5 females, FB07, FB19. GÓRNY (1979) described the species from such leaf-miners as *Coleophora badiipennella* (DUP.), *Coleophora fuscedinella* ZELL., *Coleophora anatipennella* (HBN.). SAWONIEWICZ & BUSZKO (1994) have reared the hymenopteran from *Coleophora hemerobiella* (SCOP.), *Coleophora spiraeella* RBL., *Ocnerostoma friesei* SV., *Parornix anguliferella* ZELL. and *Parornix carpinella* (FREY). It had been reported from *C. denticulella* by GÓRSKA-DRABIK (2007).

*Diadegma lithocolletis* HORST.: 2 females, 2 males, FB07. The species has been reared from the following mining moths: *Perittia herrichiella* (H.-S.), *Bucculatrix nigricomella* (ZELL.), *Phyllonorycter emberizaepennella* (BOUCHÉ), and *C. denticulella* (SAWONIEWICZ & BUSZKO 1994).

**Table 1.** A list of Hymenoptera parasitica reared from *Callisto denticulella* (THNBG.) based on literature data and the results of own investigations.

| No.                             | Species   | References                                      | Own investigations |
|---------------------------------|---|---|--------------------|
| -1-                             | -2-   | -3-   | -4-                |
| <b>Ichneumonidae</b>            |   |   |                    |
| <b>Pimplinae (=Ephialtinae)</b> |   |   |                    |
| 1.                              | <i>Scambus calobatus</i> (GRAVENHORST)  | ZAJANČKAUSKAS et al. 1979<br>GÓRSKA-DRABIK 2007 |                    |
| 2.                              | <i>Scambus ? nucum</i> RATZEBURG  | ZAJANČKAUSKAS et al. 1979                       |                    |
| <b>Gelinae (=Cryptinae)</b>     |   |   |                    |
| 3.                              | <i>Gelis ? areator</i> (PANZER)   |   | +N                 |
| <b>Campopleginae</b>            |   |   |                    |
| 4.                              | <i>Diadegma lithocolletis</i> HORSTMANN   | SAWONIEWICZ & BUSZKO 1994                       | +                  |
| 5.                              | <i>Diadegma</i> sp. (aff. <i>germanica</i> HORSTMANN, aff. <i>rectificator</i> AUBERT)    | GÓRSKA-DRABIK 2007                              |                    |
| 6.                              | <i>Diadegma</i> sp. (aff. <i>neoapostata</i> HORSTMANN, aff. <i>crataegellae</i> THOMSON) | GÓRSKA-DRABIK 2007                              |                    |
| 7.                              | <i>Enytus appositor</i> AUBERT  | SAWONIEWICZ & BUSZKO 1994                       |                    |
| <b>Braconidae</b>               |   |   |                    |
| <b>Microgasterinae</b>          |   |   |                    |
| 8.                              | <i>Apanteles xanthostigma</i> HALIDAY   | ZAJANČKAUSKAS et al. 1979<br>GÓRSKA-DRABIK 2007 |                    |
| 9.                              | <i>Apanteles longicauda</i> WESMAEL   | GÓRSKA-DRABIK 2007                              |                    |
| 10.                             | <i>Apanteles bicolor</i> NEES   | ZAJANČKAUSKAS et al. 1979<br>GÓRSKA-DRABIK 2007 |                    |
| <b>Chalcidoidea</b>             |   |   |                    |
| <b>Eulophidae</b>               |   |   |                    |
| 11.                             | <i>Achrysocharoides latreillei</i> CURTIS   | GÓRSKA-DRABIK 2007                              |                    |
| 12.                             | <i>Chrysocharis pentheus</i> (WALKER)   |   | +N                 |
| 13.                             | <i>Cirrospilus diallus</i> WALKER   | GÓRSKA-DRABIK 2007                              |                    |
| 14.                             | <i>Cirrospilus pictus</i> NEES  | NOYES 2002 (in Gençer & SEVEN 2005)             |                    |
| 15.                             | <i>Elachertus inunctus</i> NEES   | GÓRSKA-DRABIK 2007                              |                    |
| 16.                             | <i>Pediobius saulius</i> WALKER   |   | +N                 |
| 17.                             | <i>Pnigalio pectinicornis</i> LINNAEUS  | GÓRSKA-DRABIK 2007                              |                    |
| 18.                             | <i>Pnigalio soemius</i> WALKER  | GÓRSKA-DRABIK 2007                              |                    |
| 19.                             | <i>Sympiesis acalle</i> WALKER  | ZAJANČKAUSKAS et al. 1979<br>GÓRSKA-DRABIK 2007 |                    |
| 20.                             | <i>Sympiesis gordius</i> WALKER   | ZAJANČKAUSKAS et al. 1979<br>GÓRSKA-DRABIK 2007 |                    |
| 21.                             | <i>Sympiesis sericeicornis</i> NEES   | ZAJANČKAUSKAS et al. 1979<br>GÓRSKA-DRABIK 2007 |                    |
| <b>Pteromalidae</b>             |   |   |                    |
| 22.                             | <i>Pteromalus semotus</i> (WALKER)  | GÓRSKA-DRABIK 2007                              | +                  |
| 23.                             | <i>Dibrachys cavus</i> (WALKER)   |   | +N                 |

| -1-                | -2-  | -3-                       | -4-    |
|--------------------|--|---------------------------|--------|
| 24.                | <i>Mesopolobus subfumatus</i><br>RATZEBURG | ZAJANČKAUSKAS et al. 1979 |        |
| <b>Eupelmidae</b>  |  |                           |        |
| 25.                | <i>Eupelmus fulvipes</i> FÖRSTER           |                           | +N, NP |
| 26.                | <i>Eupelmus urozonus</i> DALMAN            |                           | +N     |
| <b>Eurytomidae</b> |  |                           |        |
| 27.                | <i>Eurytoma goidanichi</i> BOUČEK          |                           | +N, NP |
| <b>Encyrtidae</b>  |  |                           |        |
| 28.                | <i>Parablastothrix montana</i> ERDÖS       |                           | +N, NP |

N- first record from *C. denticulella* (THNBG.)

NP- new species for the Polish fauna

### Eulophidae

*Chrysocharis pentheus* (WALK.): 532 females, 7 males, FB07, FB19. *Ch. pentheus* is a parasitoid of different leaf-miners, associated mainly with Lepidoptera from Nepticulidae, Gracillariidae families (HANSSON 1985, MEDVEDEV 1978). Reported from mining moths – *Stigmella floslactella* (HAW.) by SZCZEPAŃSKI (1983), *Fomoria septembrella* (STT.), *Leucoptera laburnella* (STT.), *Leucoptera lustratella* (H.-S.) and *Ectodemia agrimoniae* (FREY) by VIDAL & BUSZKO (1990). ADACHI (1998) reported the species from *Lyonetia clerkella* (L.). It has not been described from *C.denticulella*.

*Pediobius saulius* (WALK.): 2 females, 1 male, FB07. Larval endoparasitoid of species from Gracillariidae, Bucculatricidae, Gelechiidae or, occasionally hiperparasitoid (MEDVEDEV 1978). Reared from such mining moths as *Phyllonorycter blancardella* (FABR.) (KADŁUBOWSKI 1981, BALÁZS 1997), *Phyllonorycter platani* (STGR.) (VIDAL & BUSZKO 1990), *Phyllonorycter robiniella* (CLEMENS) (STOJANOVIĆ & MARKOVIĆ 2005), *Tischeria* sp. (NIKITENKO et al. 2005) and *Cameraria ohridella* (Deschka et DIMIĆ) (HORVÁTH 2006).

### Pteromalidae

*Pteromalus semotus* WALK. (syn. *Habrocytus semotus* (WALK.): 1 female, 1 male, FB19. Either primary or secondary parasitoid of Braconidae (*Apanteles* sp.). The species was reported from the leaf-miner *Ph. blancardella* (KADŁUBOWSKI 1981) as well as from *C. hemerobiella*, *Coleophora saponariella* HEEG. and *Tischeria heinemanni* WOCKE (VIDAL & BUSZKO 1990). It was reported from *C. denticulella* by GÓRSKA-DRABIK (2007).

*Dibrachys cavus* (WALK.): 74 females, 46 males, FB07, FB19. Either primary or secondary parasitoid. Reported from many families of moths (ZAJANČKAUSKAS et al. 1979, KADŁUBOWSKI & SZMIT 1985, WINIARSKA & ANASIEWICZ 1989, BALÁZS 1997, ANDRIESCU & MITROIU 2004). Obtained from *Apanteles glomeratus* L. as hiperparasitoid (WIĄCKOWSKI & WIĄCKOWSKA 1961).

### Eupelmidae

*Eupelmus fulvipes* Förster: 1 female, FB19. The parasitoid of Lepidoptera (Pieridae) (<http://www.nhm.ac.uk/jdsml/research-curation/research/projects/chalcidoids/>). It has not been reported from *C. denticulella*.

*Eupelmus urozonus* Dalman: 15 females, 8 males, FB07, FB19. Known either as primary or secondary parasitoid of Lepidoptera (GÓRNY, 1979). Reported from *C. ohridella* (GRABENWEGER, 2004).

### Eurytomidae

*Eurytoma goidanichi* BOUČEK: 35 females, 34 males, FB07, FB19. Known as hiper-parasitoid of *Ph. robiniella* (STOJANOVIĆ & MARKOVIĆ 2005) and other families of moths (<http://www.nhm.ac.uk/jdsml/research-curation/research/projects/chalcidoids/>). It has not been reported from *C. denticulella*.

### Encyrtidae

*Parablastothrix montana* ERDÖS: 2 females, FB07, FB19. The species obtained from the leaf-miner *Stigmella vimineticola* FREY (MEDVEDEV 1978). It has not been reported from *C. denticulella*.

A total number of 20 parasitic hymenopterans has been reported from *C. denticulella* (ZAJANČKAUSKAS et al. 1979, SAWONIEWICZ & BUSZKO 1994, GÓRSKA-DRABIK 2007). The present study contributed to the list with further 8 unrecorded species. *E. fulvipes*, *E. goidanichi* and *P. montana* are species new to Poland.

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