

## PREDATORS OCCURRING IN *MYZOCALLIS CORYLI* GOETZE (*HOMOPTERA*, *APHIDODEA*) COLONIES ON HAZEL (*CORYLUS* L.)

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**Abstract:** During the years of observations predatory arthropods of *Arachnida*, *Chrysopidae*, *Heteroptera*, *Coccinellidae*, and *Syrphidae* were collected from *Myzocallis coryli* Goetze colonies. *Arachnida* constituted the most numerous group followed by predatory bugs of *Heteroptera*.

**Key words:** *Myzocallis coryli*, predators, hazel

### INTRODUCTION

The filbert aphid – *Myzocallis coryli* Goetze is a serious pest of hazel shrubs. It usually appears in small populations, but in the years of heavy infestation it decreases yields through direct feeding on leaves as well as the honeydew production leading to growth of dark mould on leaf blades (Gantner 2000; Messing and Aliniáze 1985; Naem and Compton 2000; Wojciechowicz-Żytko and Wojciechowicz 2002; Wojciechowicz-Żytko 2003).

Aphid colonies are controlled by many predators, the most important and best known of which are *Coccinellidae*, *Miridae*, *Aphidiidae*, *Arachnida* (Cichocka 1996; Messing and Aliniáze 1985; Niemczyk 1963; 1966; 1968).

Although the species composition of beneficial insects occurring in aphid colonies in apple orchards is well recognised (Cichocka 1996; Karczewska 1965; Niemczyk 1963; 1966; 1968; Korcz 1967; 1970) the information about their role in reducing aphids on hazel shrubs is rather insufficient (Gantner and Jaśkiewicz 2001).

The aim of this work was to determine the numbers and species composition of predatory insects and arachnids associated with *M. coryli* colonies on hazel.

### MATERIAL AND METHODS

The experiment was carried out in the years 2001 and 2002 on hazel plantation in Mydlniki near Kraków on five cultivars: Kataloński, Warszawski Czerwony,

Webba Cenny, Długi Wczesny, and Olbrzymi z Halle. The orchard in which observations were made consisted of 8–9-year old shrubs, with grass growing underneath. Hazel shrubs were surrounded by apple and plum orchard. No insecticide treatments were applied.

The observations were conducted at weekly intervals and afterwards at two, three week intervals during the vegetative season.

The *Coccinellidae*, *Heteroptera*, *Arachnida* were collected by shaking them off from hazel branches, placed into tubes and next classified in laboratory (using the key by Bielawski 1959; Southwood and Leston 1959).

Syrphid larvae were reared separately in Petri dishes and daily fed with aphids until emergence. Adults were classified to species based on Bańkowska (1963) key.

## RESULTS AND DISCUSSION

A total of 573 specimens of *Arachnida*, 403 individuals of *Chrysopidae*, 516 specimens of *Heteroptera*, 156 specimens of *Coccinellidae* and 43 individuals of *Syrphidae* were collected in the years 2001–2002 (Tab. 1).

Predators from the most numerous group – *Arachnida* are polyphagous and prey upon many pest species occurring in orchards. Karczewska (1965) working on aphids appearing on apple trees found out that *Arachnida* limited the population of alated aphids especially during the late summer period. Cichocka (1996) observed non-web spiders preying on aphid apterous females and larvae. Koślińska (1967) noted that *Arachnida* constituted 45%–55% of all predators occurring in orchards.

Table 1. Number and species composition of predatory arthropods on different hazel cultivars (Mydlniki 2001, 2002)

	Kataloński		Warszawski Czerwony		Webba Cenny		Długi Wczesny		Olbrzymi z Halle		Total
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	
<i>Arachnida</i>	63	83	59	56	51	56	53	55	40	57	573
<i>Heteroptera</i>	60	48	53	51	43	56	70	38	43	54	516
<i>Miridae</i>	52	39	48	39	37	45	65	31	35	48	439
<i>Anthocoridae</i>	8	5	4	8	6	9	5	3	6	6	60
<i>Nabidae</i>	0	4	1	4	0	2	0	4	2	0	17
<i>Chrysopidae</i>	50	33	57	48	33	37	42	36	36	31	403
<i>Coccinellidae</i>	13	12	11	23	10	23	12	15	14	23	156
<i>Coccinella septempunctata</i> L.	6	5	4	12	5	10	4	5	9	15	75
<i>Propylaea quatuordecimpunctata</i> (L.)	4	5	4	5	3	10	4	4	3	7	49
<i>Adalia bipunctata</i> (L.)	1	1	0	3	0	2	2	3	0	0	12
<i>Coccinula quatuordecimpustulata</i> (L.)	2	1	3	3	2	1	2	3	2	1	20
<i>Syrphidae</i>	5	4	3	5	5	3	4	4	5	5	43
<i>Episyrphus balteatus</i> (Deg.)	3	2	2	2	3	1	2	3	3	2	23
<i>Epistrophe eligans</i> (Fabr.)	1	0	0	2	0	2	0	1	1	1	8
<i>Syrphus ribesii</i> L.	0	1	1	0	1	0	2	0	0	2	7
<i>Syrphus vitripennis</i> Meig.	1	1	0	1	1	0	0	0	1	0	5

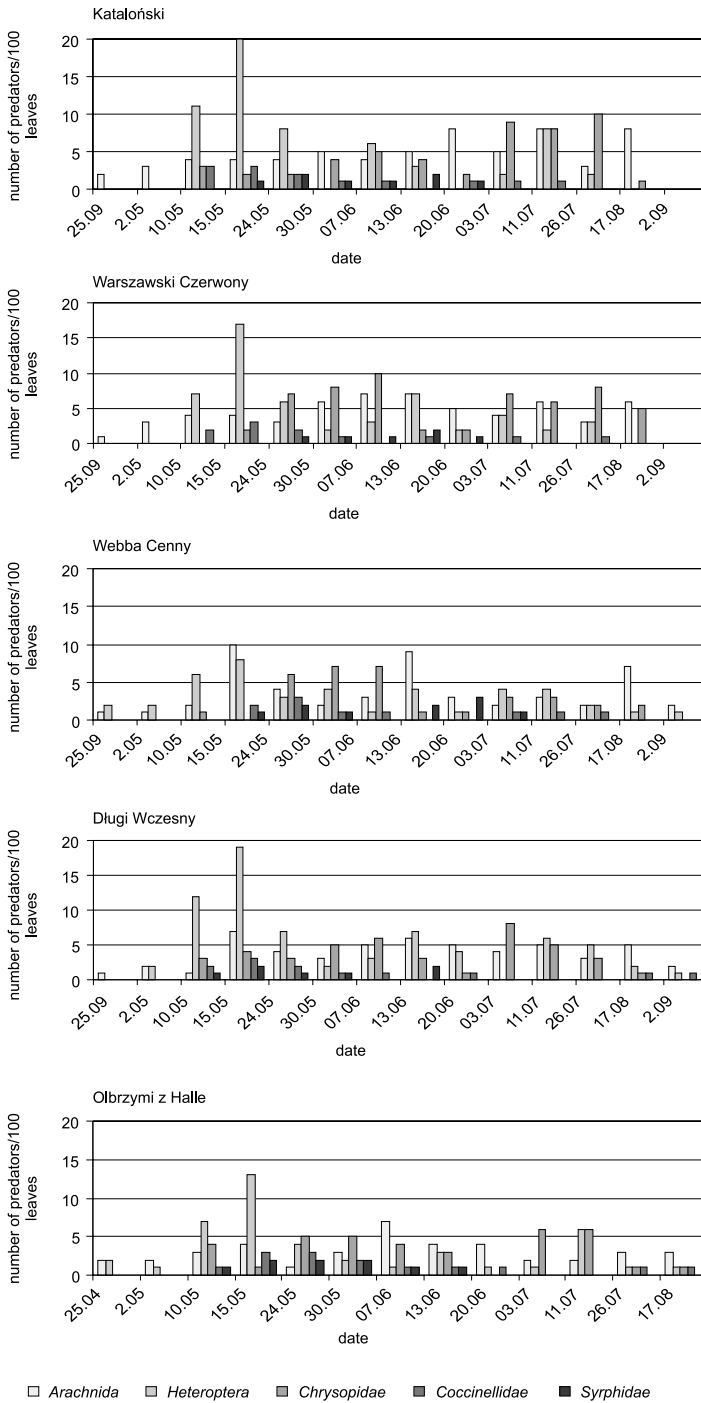


Fig. 1. The occurrence of beneficial arthropods (Mydlniki 2001)

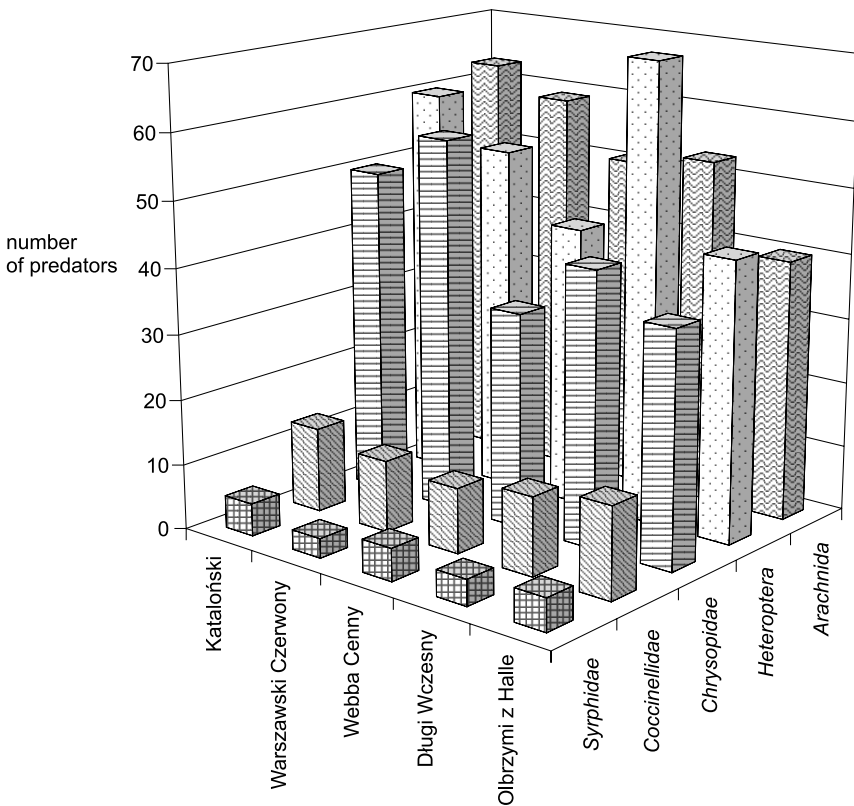


Fig. 2. The occurrence of predators in *M. coryli* colonies on different hazel cultivars (Mydlniki 2001)

*Heteroptera* were represented by 3 families – *Miridae*, *Anthocoridae* and *Nabidae*. *Miridae* were the most numerous family reaching 85% of all the *Heteroptera* gathered during the investigation. They were followed by *Anthocoridae* (60 individuals) (Tab. 1).

Most species of the order *Heteroptera* are leading a predatory life, feeding on many species of orchard pests. Most of them also suck leaves, shoots and buds or fruits (Niemczyk 1963; 1968).

Bugs from the families *Miridae* and *Anthocoridae* are reported to be the natural enemies of aphids and mites. They were recorded by many authors to occur in apple orchards, several of them were noted to be associated with hazel shrubs (Harizanova and Lecheva 1999; Korcz 1968; 1970; Niemczyk 1963; 1966; 1968).

Among the *Coccinellidae* the most numerous species was *Coccinella septempunctata* (48.1%), less abundant was *Propylea quatuordecimpunctata* (49 specimens) (Tab. 1). According to Ganter and Jaśkiewicz (2001) ladybirds, especially *Propylea quatuordecimpunctata* and *Coccinella septempunctata* play a significant role in controlling the number of hazel aphids in early spring.

*Syrphidae* constituted the smallest group of predatory insects occurring in *M. coryli* colonies. 43 specimens of syrphid belonging to 4 species were collected.

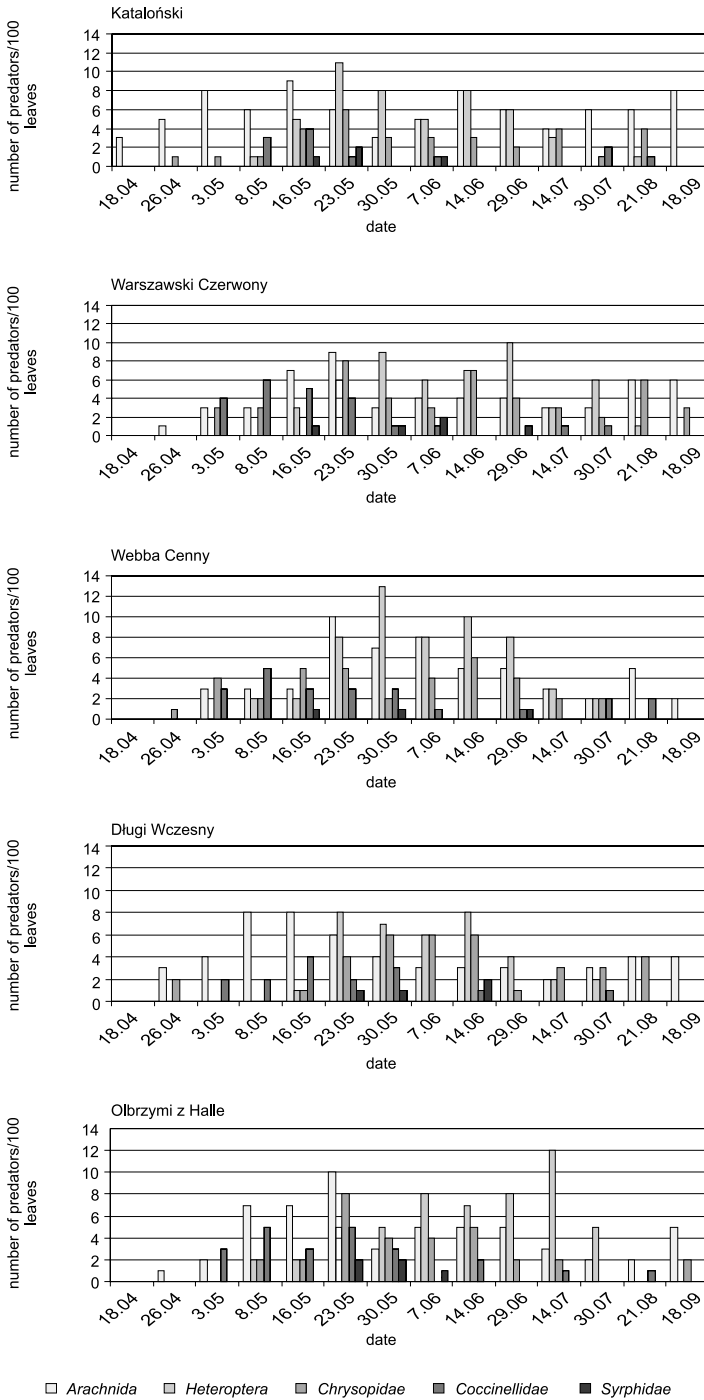


Fig. 3. The occurrence of beneficial arthropods (Mydlniki 2002)

The dominant species were *Episyrphus balteatus* (23 specimens), followed by *Epistrophe eligans* and *Syrphus ribesii* (Tab. 1). Studies carried out by Niemczyk (1966) confirmed that syrphid larvae play a insignificant role in reduction aphid colonies on apple trees.

Figures 1, 2, 3, 4 present the occurrence of beneficial arthropods associated with *M. coryli*.

The most substantial *Heteroptera*, *Arachnida* and *Chrysipidae* accompanied aphids all the time. Bugs appeared most numerous in mid May (2001) and end of May and June (2002). *Arachnida* and *Chrysipidae* were present within aphid colonies from April till September in similar amount. Chrysopids initially were found mainly as eggs, later (till mid-August) also as larvae. Karczewska (1965) found only single *Chrysipidae* among aphids in apple orchards.

Coccinellids, although not as numerous as bugs, spiders and chrysopids, in both years of investigation, were found in *M. coryli* colonies all the time, being most abundant in May. Other authors (Gantner and Jaśkiewicz 2001; Karczewska 1965) present similar results.

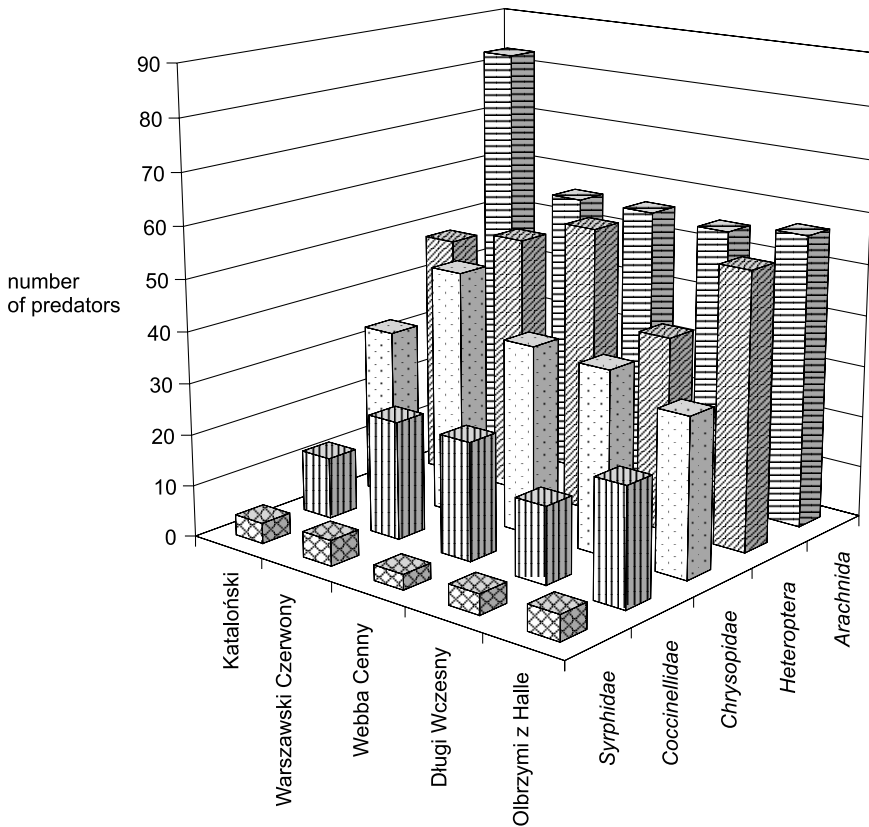


Fig. 4. The occurrence of predators in *M. coryli* colonies on different hazel cultivars (Mydlniki 2002)

The least numerous group-syrphids were noted throughout the whole vegetation period.

The occurrence and the number of predatory arthropods collected from *M. coryli* colonies were similar on all investigated hazel cultivars during both years of study.

It appears that the predators of *Heteroptera* and *Arachnida* played the most important role in reduction *M. coryli* colonies. However *Coccinellidae*, and *Syrphidae*, owing to their smaller numbers, could not be of much importance, they could play an important role as a part of the complex of beneficial insects related to *M. coryli*.

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## POLISH SUMMARY

### DRAPIEŻCE WYSTĘPUJĄCE W KOLONIACH *MYZOCALLIS CORYLI* GOETZE (*HOMOPTERA, APHIDODEA*) NA LESZCZYNIE (*CORYLUS* L.)

W koloniach *Myzocallis coryli* stwierdzono występowanie drapieżnych stawonogów należących do *Arachnida*, *Heteroptera*, *Chrysopidae*, *Coccinellidae*, i *Syrphidae*. Najliczniej występowały pająki i pluskwiaki. Rząd *Heteroptera* był reprezentowany przez trzy rodziny, wśród których najliczniejszą okazała się rodzina *Miridae*.

Wśród *Coccinellidae* dominowały *Coccinella septempunctata* i *Propylea quatuordecimpunctata*.

Najmniej liczną grupą organizmów drapieżnych występujących w koloniach *M. coryli* okazały się mszycożerne *Syrphidae*.