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Aphids (Hemiptera: Aphidomorpha) of the Botanic Garden of the Jagiellonian University, Kraków*

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ABSTRACT. The paper presents results of faunistic investigations of aphids (Aphidomorpha) in the Botanic Garden of the Jagiellonian University, Kraków, in the Kraków – Wieluń Upland. During two seasons of research (2011, 2012) two aphid species from the family Adelgidae and 50 species from the family Aphididae, associated with 66 host plants were recorded. The following species – *Eriosoma anncharlotteae* DANIELSSON, 1979, *Capitophorus elaeagni* (DEL GUERCIO, 1894), *Rhopalosiphoninus* (*Neorhopalosiphoninus*) *staphyleae staphyleae* (KOCH, 1854), *Eulachnus brevipilosus* BÖRNER, 1940 and *E. cembrae* BÖRNER, 1950 – are new for the Kraków – Wieluń Upland. Seven of the species recorded are regarded as alien to Poland.

KEY WORDS: aphids, botanical garden, faunistic study, Kraków – Wieluń Upland.

INTRODUCTION

Botanic gardens are classified as green areas and, along with parks, are the oldest form of urban greenery. In addition to parks and gardens, urban green areas include allotments, cemeteries, sports grounds, roadside vegetation and hedges – artificial creations designed for recreational, aesthetic and educational purposes (WALKOWICZ 2001).

* The paper is dedicated to Prof. Wacław WOJCIECHOWSKI in recognition of his great contribution to the taxonomy and faunistics of Hemiptera.

Established in 1783, the Jagiellonian University's Botanic Garden is situated in the Wesoła district of Kraków. The Garden, of the French Baroque type, was originally situated in the valley of the River Wisła (Vistula) and occupied an area of about 2.4 ha (LANKOSZ-MRÓZ 2006). At the present time, the Kraków Botanic Garden (9.6 ha in area) is the oldest garden of its kind in Poland with a very large variety of plant species, usually from very distant lands. One can therefore assume that its insect fauna is rich, too.

To date, aphid research in the Jagiellonian University's Botanic Garden has only been done on aphids associated with potted and greenhouse plants (ACHREMOWICZ 1978, ACHREMOWICZ et al. 1986); some aspects of the population dynamics of four aphid species feeding on shrubs have also been reported (WOJCIECHOWICZ-ŻYTKO & JANKOWSKA 2011). An aphid species new to the Polish fauna – *Periphyllus californiensis californiensis* (SHINJI, 1917) – considered to be an alien and invasive species, was also found there (JUNKIERT et al. 2011).

The study area consists of diverse plant communities from around the world. The aim of this research was to ascertain the number of aphid species (including alien ones) infesting plants in the Botanical Garden and to assess whether the species richness of aphids increase in parallel with the increase in the number of plant species in a relatively small area.

Acknowledgements

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MATERIAL AND METHODS

This faunistic study of aphids in the Botanic Garden of the Jagiellonian University, Kraków took place from 15 April to 15 November in 2011 and 2012. The aphids were collected directly from their host plants; plants in greenhouses were not included in the research. After preservation in 70% ethanol, the material was prepared after KANTURSKI & WIECZOREK (2012) and identified to species level. Names and classification follow NIETO NAFRÍA & FAVRET (2011). The aphid material is deposited in the collection of the Department of Zoology, University of Silesia, Katowice, Poland (UŚ).

To discover the number of alien species, we used the lists of Alien Aphididae in Europe and in Poland, respectively drawn up by COEUR D'ACIER et al. (2010) and WIECZOREK (2011). Trophic relations and chorology are characterized according to WIECZOREK (2010).

Abbreviations: * – species new to the Kraków – Wieluń Upland; ! – species alien to Poland.

RESULTS

During the two seasons of faunistic research in the Jagiellonian University's Botanical Garden 52 aphid species (Table 1) were recorded on 66 host plants (Table 2). The aphids belong to two families within Aphidomorpha: Adelgidae and Aphididae. Adelgidae is represented by two species, and Aphididae by 50 species belonging to eight subfamilies: Eriosomatinae, Anoeciinae, Drepanosiphinae, Calaphidinae, Phyllaphidinae, Chaitophorinae, Aphidinae and Lachninae (Fig. 1). Aphidinae, the most numerous subfamily, was represented by 15 genera and 26 species. The richest in species were the genera *Aphis* LINNAEUS, 1758, *Rhopalosiphum* KOCH, 1854 (Aphidini) and *Brachycaudus* VAN DER GOOT, 1913 (Macrosiphini) (Fig. 2). The subfamily Calaphidinae (11 species) was most frequently represented by species belonging to the tribe Panaphidini; the species most often recorded were from the genus *Myzocallis* PASSERINI, 1860 (Fig. 3). The fewest species were from the subfamilies Anoeciinae, Drepanosiphinae and Phyllaphidinae (Fig. 1). Chorological analysis showed that most species have a worldwide or Holarctic distribution (Fig. 4). Trophic analysis showed that the aphids collected in this Botanic Garden are mainly 1st degree monophagous or oligophagous (Fig. 5). Five species were recorded for the first time in the Kraków – Wieluń Upland, and seven are regarded as alien to the Polish aphid fauna (Table 1).

DISCUSSION

Previous studies in the Botanic Garden of the Jagiellonian University, conducted in greenhouses and focused mainly on the aphids of potted plants, yielded 12 species of aphids (ACHREMOWICZ 1978, ACHREMOWICZ et al. 1986). The present study in 2011 and 2012 did not include greenhouses; only *Rhopalosiphum nymphaeae* among the species listed by ACHREMOWICZ was confirmed. Research into the population dynamics of four species of aphids – *Aphis* (*Aphis*) *fabae*, *Cryptomyzus ribis* (LINNAEUS, 1758), *Rhopalosiphum padi* and *Liosomaphis berberidis* – was also conducted in this Botanic Garden (WOJCIECHOWICZ-ŻYTKO & JANKOWSKA 2011). Of these species, only *Cryptomyzus ribis* was not observed during the present study. *Periphyllus californiensis californiensis* was also confirmed, as was the occurrence of oviparous females and winged males of this species. Sexual morphs were not identified in previous studies (JUNKIERT et al. 2011).

Table 1. Aphids collected in the Botanic Garden of the Jagiellonian University, Kraków. Host alternation: Mon – Monoecious, Het – Heteroecious; Chorology character: Alp – Alpine, Eur – European, Eus – Euro-Siberian, Ww – worldwide, Hol – Holarctic, Pal – Palaearctic, W Pal – Western Palaearctic; Trophic relations: M – Monophagous, O 1 – 1st degree oligophagous, O 2 – 2nd degree oligophagous, P – Polyphagous; * – species new for the Kraków – Wieluń Upland; ! – species alien to Poland.

No.	Species	Host alternation	Chorology character	Trophic relations	Material
Family: Adelgidae					
1.	*Adelges* (*Adelges*) *laricis* VALLOT, 1836	Het	Eur	O 1	1 al. viv. ♀
2.	*Adelges* (*Sacchiphantes*) *viridis* (RATZENBURG, 1843)	Het	W Pal	O 1	2 al. viv. ♀
Family: Aphididae **Subfamily: Eriosomatinae**					
3.	**Eriosoma anncharlotteae* DANIELSSON, 1979	Het	Pal	O 1	1 al. viv. ♀
4.	*Colopha compressa* (Koch, 1856)	Het	Eus	O 1	2 al. viv. ♀
5.	*Thecabius* (*Thecabius*) *affinis* (KALTENBACH, 1843)	Het	Hol	O 1	1 al. viv. ♀
Subfamily: Anoeciinae					
6.	*Anoecia* (*Anoecia*) *corni* (FABRICIUS, 1775)	Het	Ww	O 1	39 al. viv. ♀
Subfamily: Drepanosiphinae					
7.	*Drepanosiphum platanoidis* (SCHRANK, 1801)	Mon	Ww	O 1	3 al. viv. ♀, 2 larvae
Subfamily: Calaphidinae					
8.	*Euceraphis betulae* (KOCH, 1855)	Mon	Ww	O 1	2 al. viv. ♀
9.	*Euceraphis punctipennis* (ZETTERSTEDT, 1828)	Mon	Ww	O 1	1 al. viv. ♀
10.	*Eucallipterus tiliae* (LINNAEUS, 1758)	Mon	Ww	O 1	5 apt. viv. ♀, 3 ovip. ♀
11.	*Myzocallis* (*Myzocallis*) *carpini* (KOCH, 1855)	Mon	Ww	M	2 al. viv. ♀
12.	*Myzocallis (Myzocallis) coryli* (GOEZE, 1778)	Mon	Ww	M	4 apt. viv. ♀
13.	*Myzocallis* (*Agrioaphis*) *castanicola* BAKER, 1917	Mon	Ww	O 2	3 al. viv. ♀

Table 1. Continued.

No.	Species	Host alternation	Chorology character	Trophic relations	Material
14.	*Panaphis juglandis* (GOEZE, 1778) !	Mon	Hol	M	5 apt. viv. ♀, 2 al. viv. ♀, 3 larvae
15.	*Therioaphis* (*Rhizoberlesia*) *riehmi* (BÖRNER, 1949)	Mon	Hol	O 1	4 al. viv. ♀
16.	*Tinocallis* (*Sappocallis*) *saltans* (NEVSKY, 1929) !	Mon	Eus	O 1	2 al. viv. ♀
17.	*Tuberculatus* (*Tuberculatus*) *querceus* (KALTENBACH, 1843)	Mon	W Pal	O 1	1 al. viv. ♀
18.	*Tuberculatus* (*Tuberculoides*) *annulatus* (HARTIG, 1841)	Mon	Ww	O 1	6 al. viv. ♀
Subfamily: Phyllaphidinae					
19.	*Phyllaphis fagi* LINNAEUS, 1767	Mon	Ww	M	7 al. viv. ♀, 2 apt. viv. ♀
Subfamily: Chaitophorinae					
20.	*Periphyllus acericola* (WALKER, 1848)	Mon	Eur	M	5 apt. viv. ♀, 1 ovip. ♀
21.	*Periphyllus aceris* (LINNAEUS, 1761)	Mon	Hol	M	5 apt. viv. ♀
22.	*Periphyllus californiensis californiensis* (SHINJI, 1917) !	Mon	Ww	O 1	15 al. viv. ♀, 6 apt. viv. ♀, 5 ovip. ♀, 3 al. ♂
23.	*Periphyllus testudinaceus* (FERNIE, 1852)	Mon	Ww	O 1	36 al. viv. ♀, 13 apt. viv. ♀, 1 larva
Subfamily: Aphidinae					
24.	*Aphis* (*Aphis*) *craccivora craccivora* KOCH, 1854	Mon	Ww	O 2	1 apt. viv. ♀, 1 larva
25.	*Aphis* (*Aphis*) *fabae fabae* SCOPOLI, 1763	Het	Ww	P	1 apt. viv. ♀, 10 al. viv. ♀
26.	*Aphis* (*Aphis*) *fabae solanella* THEOBALD, 1914	Het	Ww	P	1 apt. viv. ♀, 1 al. viv. ♀
27.	*Aphis* (*Aphis*) *spiraephaga* MÜLLER, 1961 !	Mon	Eus	P	5 al. viv. ♀, 3 apt. viv. ♀
28.	*Aphis* (*Aphis*) *viburni* SCOPOLI, 1763	Mon	Hol	M	2 al. viv. ♀, 1 apt. viv. ♀
29.	*Rhopalosiphum maidis* (FITCH, 1856)	Het	Ww	P	6 apt. viv. ♀, 2 larvae
30.	*Rhopalosiphum nymphaeae* (LINNAEUS, 1761)	Het	Ww	P	4 al. viv. ♀, 1 apt. viv. ♀
31.	*Rhopalosiphum padi* (LINNAEUS, 1758)	Het	Ww	P	1 apt. viv. ♀

Table 1. Continued.

No.	Species	Host alternation	Chorology character	Trophic relations	Material
32.	*Acyrthosiphon* (*Acyrthosiphon*) *caraganae caraganae* (CHOLODKOVSKY, 1907) **!**	Mon	Ww	O 2	1 apt. viv. ♀, 1 al. viv. ♀
33.	*Brachycaudus* (*Acaudus*) *populi* (DEL GUERCIO, 1911)	Mon	Eur	M	2 al. viv. ♀, 2 apt. viv. ♀
34.	*Brachycaudus* (*Prunaphis*) *cardui* (LINNAEUS, 1758)	Het	Ho	O 1 / P	3 apt. viv. ♀, 1 larva
35.	*Brachycaudus* (*Appelia*) *prunicola prunicola* (KALTENBACH, 1943)	Mon	Ww	O 1	1 apt. viv. ♀,1 larva
36.	**Capitophorus elaeagni* (DEL GUERCIO, 1894)	Het	Ww	O 1 / O 2	3 al. viv. ♀, 1 apt. viv. ♀
37.	*Capitophorus similis* VAN DER GOOT, 1915	Het	W Pal	O 2	6 al. viv. ♀, 2 apt. viv. ♀
38.	*Chaetosiphon* (*Pentatrichopus*) *tetrarhodum* (WALKER, 1849)	Mon	Ww	O 1	2 apt. viv. ♀
39.	*Corylobium avellanae* (SCHRANK, 1801)	Mon	Ww	M	10 apt. viv. ♀
40.	*Dysaphis crataegi crataegi* (KALTENBACH, 1843)	Het	Ww	O 1	1 al. viv. ♀, 1 apt. viv. ♀
41.	*Hyadaphis foeniculi foeniculi* (PASSERINI, 1860)	Het	Ww	O 1	1 al. viv. ♀, 2 apt. viv. ♀
42.	*Hyperomyzus* (*Hyperomyzus*) *lactucae* (LINNAEUS, 1758)	Mon	Eur	M	1 al. viv. ♀
43.	*Hyperomyzus* (*Hyperomyzus*) *pallidus* HILLE RIS LAMBERS, 1935	Het	Hol	O 1	3 apt. viv. ♀
44.	*Liosomaphis berberidis* (KALTENBACH, 1843)	Mon	Pal	O 2	2 al. viv. ♀, 1 apt. viv. ♀
45.	*Macrosiphum* (*Macrosiphum*) *euphorbiae* (THOMAS, 1878) **!**	Mon	Ww	O 1	2 apt. viv. ♀
46.	*Macrosiphum* (*Macrosiphum*) *rosae rosae* (LINNAEUS, 1758)	Het	Ww	O 1	9 al. viv. ♀, 20 apt. viv. ♀
47.	*Myzus (Nectarosiphon) persicae* SULZER, 1776 **!**	Het	Ww	P	3 apt. viv. ♀
48.	*Rhopalomyzus* (*Judenkoa*) *lonicerae* (SIEBOLD, 1839)	Het	Hol	O 1	3 al. viv. ♀
49.	**Rhopalosiphoninus* (*Neorhopalosiphoninus*) *staphyleae staphyleae* (KOCH, 1854)	Het	Hol	P	1 al. viv. ♀

Table 1. Continued.

No.	Species	Host alternation	Chorology character	Trophic relations	Material
Subfamily: Lachninae					
50.	**Eulachnus brevipilosus* BÖRNER, 1940	Mon	Pal		2 apt. viv ♀
51.	**Eulachnus cembrae* BÖRNER, 1950	Mon	Alp		1 apt. viv ♀
52.	*Eulachnus rileyi* (WILLIAMS, 1912)	Mon	Pal		5 apt. viv. ♀

Table 2. Host plant index and associated aphid species collected in the Botanic Garden of the Jagiellonian University, Kraków.

No.	Host plant	Aphid species
1.	*Acer buergerianum* MIQ.	*Periphyllus testudinaceus*
2.	*Acer cappadocicum* GLED.	*Periphyllus testudinaceus*
3.	*Acer carpinifolium* SIEB. et ZUCC.	*Periphyllus testudinaceus*
4.	*Acer circinatum* PURSH.	*Periphyllus californiensis californiensis*, *Periphyllus testudinaceus*
5.	*Acer monspessulanum* L.	*Periphyllus testudinaceus*
6.	*Acer negundo* L.	*Drepanosiphum platanoidis*, *Periphyllus aceris*, *Periphyllus testudinaceus*
7.	*Acer palmatum* (THUNB.) "Atropurpureum"	*Periphyllus californiensis californiensis*
8.	*Acer palmatum* var. thunbergii PAX. f. crispum	*Periphyllus californiensis californiensis*, *Periphyllus testudinaceus*
9.	*Acer platanoides* L. "Schledreri"	*Periphyllus aceris*, *Periphyllus californiensis californiensis*
10.	*Acer platanoides* L.	*Periphyllus testudinaceus*
11.	*Acer pseudoplatanus* L. "Purpurescens"	*Drepanosiphum platanoidis*, *Periphyllus californiensis californiensis*, *Periphyllus testudinaceus*
12.	*Acer pseudoplatanus* L.	*Drepanosiphum platanoidis*, *Periphyllus testudinaceus*
13.	*Acer saccharinum* L.	*Periphyllus testudinaceus*
14.	*Acer saccharum* MARSH.	*Periphyllus acericola*, *Periphyllus californiensis californiensis*, *Periphyllus testudinaceus*
15.	*Berberis koreana* PALIB.	*Liosomaphis berberidis*
16.	*Betula obscura* KOTSCHY.	*Euceraphis punctipennis*
17.	*Betula verrucosa* EHRH. "Youngii"	*Euceraphis betulae*
18.	*Borago officinalis* L.	*Brachycaudus* (*Prunaphis*) *cardui*
19.	*Calyanthus fertilis* WALT.	*Rhopalosiphum padi*
20.	*Caragana arborescens* LAM. "pendula"	*Therioaphis (Rhizoberlesia) riehmi*, *Acyrthosiphon* (*Acyrthosiphon*) *caraganae caraganae*
21.	*Caragana microphylla* LAM.	*Therioaphis* (*Rhizoberlesia*) *riehmi*
22.	*Carpinus turczaninovii* HANCE.	*Myzocallis* (*Myzocallis*) *carpini*
23.	*Cornus mas* L.	*Anoecia* (*Anoecia*) *corni*
24.	*Cornus sanguinea* L.	*Anoecia* (*Anoecia*) *corni*
25.	*Cornus walteri* WANGERIN	*Anoecia (Anoecia) corni*
26.	*Corylus avellana* L. Var. Pontica	*Myzocallis* (*Myzocallis*) *coryli*
27.	*Corylus avellana* L. "Warszawski"	*Corylobium avellanae*
28.	*Corylus avellana* L.	*Corylobium avellanae*
29.	*Crataegus monogyna* JACQ.	*Dysaphis crataegi crataegi*
30.	*Elaeagnus umbellate* THUNB.	*Capitophorus elaeagni*
31.	*Euonymus hamiltoniana* WALLICH.	*Aphis* (*Aphis*) *fabae fabae*
32.	*Fagus grandifolia* J.F.EHRH. f. pubescens FERN. et REHD.	*Phyllaphis fagi*
33.	*Fagus sylvatica* L. "pendula"	*Phyllaphis fagi*
34.	*Fagus sylvatica* L.	*Phyllaphis fagi*
35.	*Hibiscus syriacus* L.	*Aphis (Aphis) craccivora craccivora*
36.	*Hippophae rhamnoides* L.	*Capitophorus similis*
37.	*Juglans ailanthifolia* CARR.	*Panaphis juglandis*
38.	*Larix gmelinii* (RUPR.)RUPR. ex KUZEN (= *L. kurilensis* MAYR.)	*Adelges* (*Adelges*) *laricis*
39.	*Lilia* sp.	*Aphis* (*Aphis*) *fabae fabae*

Table 2. Host plant index and associated aphid species collected in the Botanic Garden of the Jagiellonian University, Kraków.

No.	Host plant	Aphid species
40.	*Lonicera caerulea* L.	*Rhopalomyzus* (*Judenkoa*) *lonicerae*
41.	*Lonicera korolkowii* STAPF.	*Myzus* (*Nectarosiphon*) *persicae*
42.	*Lonicera xylosteum* L.	*Hyadaphis foeniculi foeniculi*
43.	*Picea abies* (L.) H.KARST.	*Adelges* (*Sacchiphantes*) *viridis*
44.	*Pinus cembra* L	*Eulachnus cembrae*, *E. rileyi*
45.	*Pinus nigra* ARN.	*Eulachnus rileyi*
46.	*Prunus ceracifera* EHRH.	*Brachycaudus* (*Acaudus*) *populi*
47.	*Prunus padus* L.	*Rhopalosiphum maidis*
48.	*Prunus tenella* BATSCH.	*Brachycaudus* (*Appelia*) *prunicola prunicola*
49.	*Quercus robur* L. "Concordia"	*Myzocallis (Agrioaphis) castanicola*
50.	*Quercus robur* L.	*Tuberculatus* (*Tuberculoides) annulatus*
51.	*Ribes nigrum* L. "Titania"	*Hyperomyzus* (*Hyperomyzus) lactucae*
52.	*Ribes nigrum* L.	*Hyperomyzus* (*Hyperomyzus) pallidus*
53.	*Rosa floribunda*: La palome	*Macrosiphum* (*Macrosiphum) rosae*
54.	*Rosa lambertiane*: Hybrid musk	*Macrosiphum* (*Macrosiphum) rosae*
55.	*Rosa* "La Polonia"	*Macrosiphum*(*Macrosiphum) rosae*
56.	*Rosa borbonica*	*Macrosiphum* (*Macrosiphum) rosae*
57.	*Rosa polyatha* hybrida	*Macrosiphum* (*Macrosiphum) rosae*
58.	*Rosa rugosa* THUNB.	*Chaetosiphon* (*Pentatrichopus) tetrarhodum*
59.	*Spiraea japonica* L.F. "Anthony waterer" Pl. cult.	*Aphis* (*Aphis*) *spiraephaga*
60.	*Staphylea pinnata* L.	*Rhopalosiphoninus* (*Neorhopalosiphoninus*) *staphyleae staphyleae*
61.	*Tilia cordata* MILL.	*Eucallipterus tiliae*
62.	*Tilia euchlora* C. KOCH.	*Eucallipterus tiliae*
63.	*Tilia platyphyllos* SCOP.	*Eucallipterus tiliae*
64.	*Ulmus pumila* L. var. arborea LITW.	*Eriosoma anncharlotteae*
65.	*Ulmus glabra* HUDS.	*Colopha compressa*, *Tinocallis* (*Sappocallis*) *saltans*
66.	*Viburnum opulus* L. "Boul de Neige"	*Aphis* (*Aphis*) *viburni*

Various kinds of studies, including faunistic research, have been conducted in botanic gardens. As far as Aphidoidea diversity is concerned, only the Botanic Garden in Poznań (WILKANIEC 2004), the Dendrology Garden of the Poznań Agricultural University (SZTUKOWSKA & WILKANIEC 2005) and the Kórnik Arboretum (RATAJCZAK & WILKANIEC 2011) have been investigated up till now. These studies found that the species richness of aphids increased with increasing numbers of plant species in a relatively small area. The research done during four growing seasons in the Kórnik Arboretum confirmed the presence of 186 species or groups of species of aphids. However, these results are scarcely comparable with those of the present study, which was shorter (only two growing seasons).

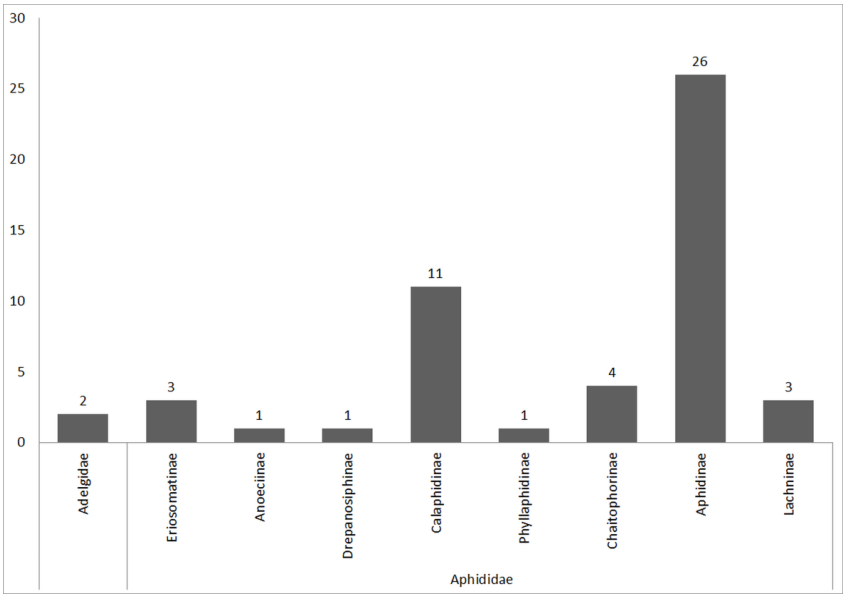

Fig. 1. Number of species from the family Adelgidae and subfamilies within Aphididae collected in the Botanic Garden of the Jagiellonian University, Kraków.

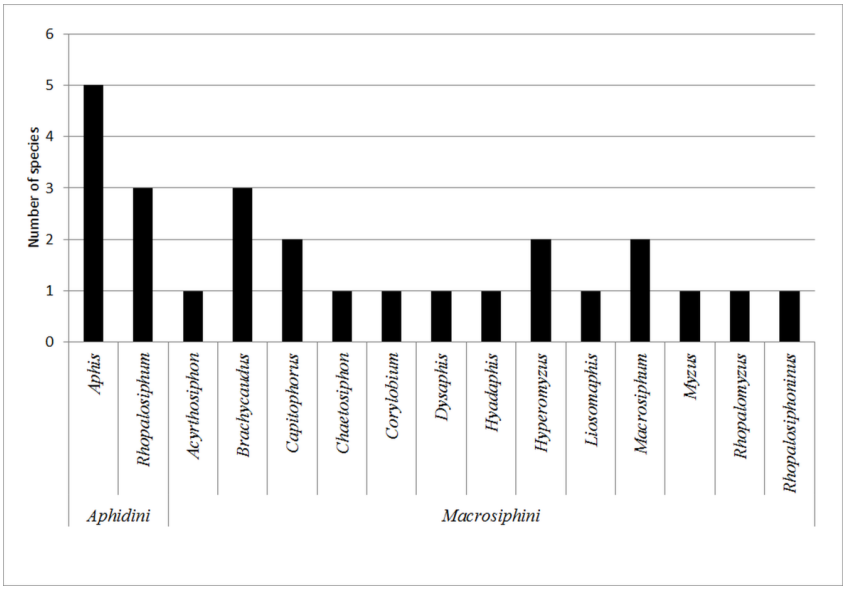

Fig. 2. Number of species in particular genera within Aphidinae collected in the Botanic Garden of the Jagiellonian University, Kraków.

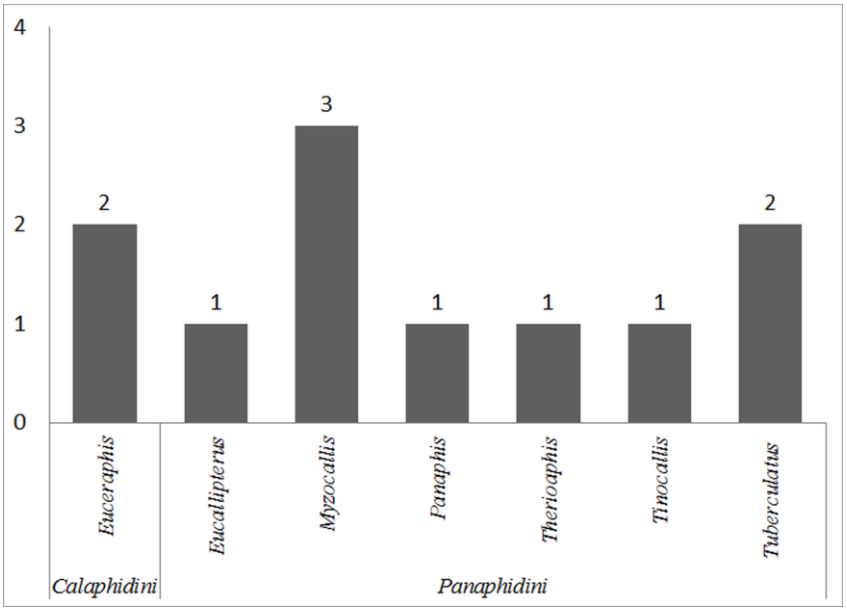

Fig. 3. Number of species in particular genera within Calaphidinae collected in the Botanic Garden of the Jagiellonian University, Kraków.

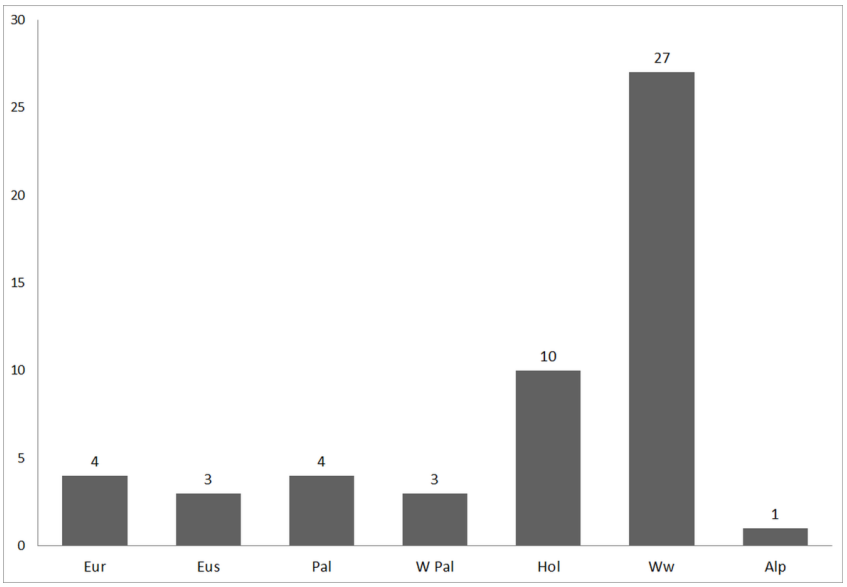

Fig. 4. Participation of chorological characters of aphids in the Botanic Garden of the Jagiellonian University, Kraków. Chorology character: Alp – Alpine, Eur – European, Eus – Euro-Siberian, Ww – worldwide, Hol – Holarctic, Pal – Palaearctic, W Pal – Western Palaearctic.

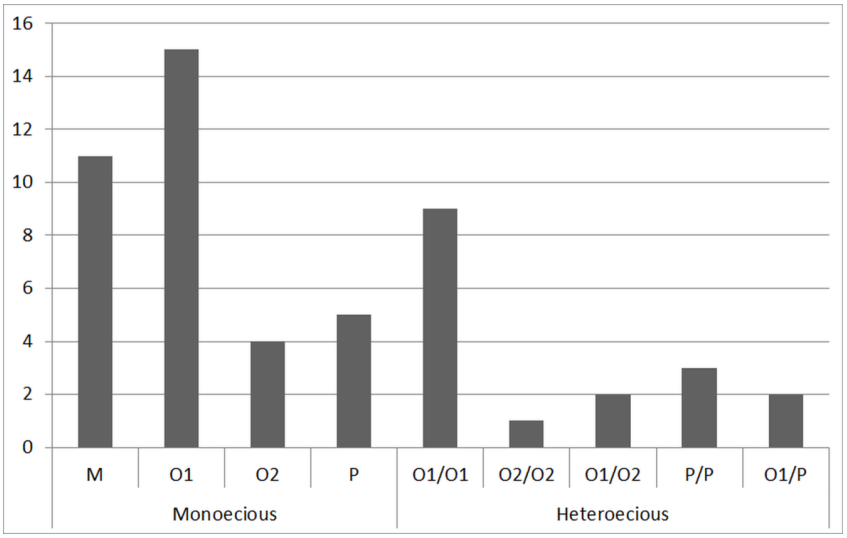

Fig. 5. Trophic structure of aphids in the Botanic Garden of the Jagiellonian University, Kraków. Trophic relations: M – Monophagous, O1 – 1st degree oligophagous, O2 – 2nd degree oligophagous, P – Polyphagous.

In addition, a variety of collecting methods were used – aphids were taken directly from their host plants as against a combination of two methods – direct collection from the host plants and Moericke traps. Using the direct method SZTUKOWSKA & WILKANIEC (2005) collected 47 species of aphids from two families (Adelgidae and Aphididae) in the Dendrology Garden of the Poznań Agricultural University. Among Aphididae there were nine subfamilies: Anoeciinae, Aphidinae, Chaitophorinae, Drepanosiphinae, Lachninae, Myzocallidinae, Pemphiginae, Phyllaphidinae and Thelaxinae, which inhabited 26 species of trees and 38 species of shrubs. During the two seasons of research in the Poznań Botanic Garden, a total of 107 species of aphids representing the families Adelgidae, Phylloxeridae and Aphididae were collected. 36 of these species, collected directly from 82 taxa of trees and shrubs, were recorded (WILKANIEC 2004). The numbers of identified taxa in both the Poznań Botanic Garden and the Poznań Agricultural University's Dendrology Garden are similar to that in our study in the Jagiellonian University's Botanical Garden. The collection time and method were also similar, as was the number of identified host plants. However, our study did not demonstrate that there might be more species of aphids in a relatively small area with a rich floristic composition. For example, about 40 taxa of maples (*Acer* spp.) from various parts of the world grow in the Kraków Botanical Garden. Despite the richness of potential host plants, the dominant species associated with maples was *Periphyllus testudinaceus*, which was recorded in 19 samples from 13 taxa of plants

from the genus *Acer* spp. Moreover, only 7 species alien to the Polish fauna were recorded: *Panaphis juglandis*, *Tinocallis* (*Sappocallis*) *saltans*, *Periphyllus californiensis californiensis*, *Aphis* (*Aphis*) *spiraephaga*, *Acyrthosiphon* (*Acyrthosiphon*) *caraganae caraganae*, *Macrosiphum* (*Macrosiphum*) *euphorbiae* and *Myzus* (*Nectarosiphon*) *persicae*. On the other hand, the present study yielded data on five species previously known from only one or a few localities in Poland: *Eriosoma anncharlotteae*, *Tinocallis* (*Sappocallis*) *saltans*, *Brachycaudus* (*Acaudus*) *populi*, *Rhopalosiphoninus* (*Neorhopalosiphoninus*) *staphyleae staphyleae*, including rarely collected species of the genus *Eulachnus* – *E. brevipilosus* and *E. cembrae* (KANTURSKI & WIECZOREK 2014).

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