

Occurrence and feeding of hemipterans on common ragweed (*Ambrosia artemisiifolia*) in Hungary

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Abstract

Common ragweed is one of the most important adventive weeds in Central Europe. A faunistic survey, based on sweep netting and visual plant inspection, was carried out to reveal the dominance of hemipteran insects on homogenous ragweed patches in Hungary. The most abundant species were *Eupteryx atropunctata*, *Emelyanoviana mollicula*, *Philaenus spumarius* (Auchenorrhyncha), *Lygus rugulipennis*, *Adelphocoris lineoletus* (Heteroptera), *Brachycaudus helichrysi*, and *Aphis fabae* (Aphidoidea). *E. atropunctata*, *E. mollicula*, *B. helichrysi* and *A. fabae* were proved to be able to develop over several generations on pure ragweed monodiet in glasshouse conditions.

Key words: phytophagous, adventive, weed, Homoptera, Heteroptera.

Introduction

Common ragweed (*Ambrosia artemisiifolia* L.) was introduced from North America into Europe at the beginning of the last century. Since then, it became one of the most abundant weed of crop fields in the Carpathian basin. Despite that, common ragweed is reported as host plant only for very few phytophagous insect species in Europe. Our work presents the dominant hemipterous species occurring on ragweed in Hungary and in some cases we give some details about their possible or approved feeding activity on the plant.

Materials and methods

A faunistic survey, based on regular sampling in homogenous patches of common ragweed by sweep netting, was carried out from May to November in 2005 and 2006. Sweep netting was also completed by visual inspection of individual plants. Altogether 80 sweep net samples were taken at 22 sites, representing three dif-

ferent regions in Hungary. The ragweed patches were situated in sunflower fields (22 sampling occasions), cereals (27 occasions) or in out of crop territories (29). The survival and the reproduction of most frequently occurring Auchenorrhyncha species was tested in greenhouse on isolated ragweed seedlings.

Results and discussion

Hemipterans represented close to the half of the arthropods collected by sweep netting. Auchenorrhyncha were the most abundant group (2262 individuals belonging to 72 species) followed by Heteroptera (1280/60). For aphids and scales insects individual plant inspection was more informative than sweep netting.

Heteroptera

Dominance of Heteroptera species on common ragweed is displayed in table 1. Although we do not have any direct data on feeding of *L. rugulipennis* on common ragweed, its high abundance and the wide range of

Table 1. Dominance of Heteroptera species on common ragweed (species of relative frequency >1%).

	n	%	food specialisation
<i>Lygus rugulipennis</i> Poppius 1911	370	28.9	phyto-polyphagous
<i>Adelphocoris lineolatus</i> (Goeze 1778)	194	15.2	phyto-polyphagous
<i>Orius niger</i> (Wolff 1811)	90	7.0	zoophagous
<i>Chlamydatus pullus</i> (Reuter 1804)	86	6.7	phyto-oligophagous (<i>Hieracium</i> , <i>Achillea</i> , <i>Trifolium</i>)
<i>Lygus gemellatus</i> (Herrich-Schaffer 1835)	64	5.0	phyto-polyphagous
<i>Orius minutus</i> (L. 1758)	61	4.8	zoophagous
<i>Trigonotylus caelestialium</i> (Kirkaldy 1902)	39	3.0	phyto-oligophagous (Poaceae)
<i>Plagiognathus chrysanthemii</i> (Wolf 1804)	33	2.6	phyto-polyphagous
<i>Nysius ericae</i> (Schilling 1829)	30	2.3	phyto-oligophagous (Asteraceae)
<i>Nabis punctatus</i> A. Costa 1847	23	1.8	zoophagous
<i>Amblytulus nasutus</i> (Kirschbaum 1856)	22	1.7	phyto-oligophagous (Poaceae)
<i>Europiella artemisiae</i> (Becker 1864)	21	1.6	phyto-oligophagous (e.g. <i>Artemisia</i>)
<i>Orthotylus flavosparvus</i> (L. 1758)	21	1.6	phyto-oligophagous (Chenopodiaceae)
<i>Eurydema oleracea</i> (L. 1758)	14	1.1	phyto-oligophagous (Brassicaceae)

Table 2. Dominance of Auchenorrhyncha species on common ragweed (species of relative frequency >1%).

	n	%	food specialisation
<i>Eupteryx atropunctata</i> (Goeze 1778)	1070	47.3	phyto-polyphagous
<i>Emelyanoviana mollicula</i> (Boheman 1845)	282	12.5	phyto-polyphagous
<i>Philaenus spumarius</i> (L. 1758)	235	10.4	phyto-polyphagous
<i>Laodelphax striatella</i> (Fallén 1826)	109	4.8	phyto-oligophagous (Poaceae)
<i>Empoasca pteridis</i> (Dahlbom 1850)	81	3.6	Polyphagous
<i>Macrostelus laevis</i> (Ribault 1927)	44	1.9	phyto-oligophagous (Poaceae)
<i>Psammotettix alienus</i> (Dahlbom 1850)	38	1.7	phyto-oligophagous (Poaceae)
<i>Chlorita paolii</i> (Ossiannilsson 1939)	34	1.5	phyto-oligophagous (<i>Artemisia</i> , <i>Achillea</i>)
<i>Cicadella viridis</i> (L. 1758)	33	1.5	phyto-polyphagous

its known host plants suggest that the species uses common ragweed as food resource. *Ambrosia* spp. are reported as hosts for *A. lineolatus* in North America (Harris and Piper 1970). Maceljski and Igrc (1989) found that *E. oleracea* and *Coreus marginatus* (L.) are frequent on common ragweed in Yugoslavia and they can survive several weeks on isolated plant. We found the two species in relatively small number (14 individuals of *E. oleracea* and 4 individuals of *C. marginatus*).

Auchenorrhyncha

Dominance of Auchenorrhyncha species on common ragweed is displayed in table 2. Both *E. atropunctata* and *E. mollicula* were proved to be able to reproduce through several generations on common ragweed monodiet. *E. atropunctata* was proved to be able to reduce the biomass and seed production of ragweed seedlings. Our results supported that *Ph. spumarius* feeds and survives for weeks on common ragweed, which was shown earlier also by Maceljski and Igrc (1989). Cuckoo spits and larvae were also found on ragweed proving that some species of Cercopidae use the plant for egg-laying.

Aphidoidea

Two aphid species, *Brachycaudus helichrysi* (Kaltenbach) and *Aphis fabae* Scopoli were found in high numbers and relatively frequently on ragweed plants by visual inspection. *A. fabae* occasionally formed large colonies on the plants. Both species was reported by Maceljski and Igrc (1989) as being able to develop and reproduce on common ragweed. *Myzus persicae* Sulzer were found more rarely and in small densities. All the three aphids could develop over several generations on common ragweed seedlings in greenhouse (see Magyar *et al.*, 2007).

Psylloidea, Coccoidea, Aleyrodoidea

The polyphagous *Bactericera nigricornis* (Foerster) was the only psyllid occurring in a significant number (n=31) in sweep net samples of 2005. Two scale insects, *Peliococcus turanicus* (Kiritchenko) and *Parthenole-*

canium corni (Bouché), were found on common ragweed in the field, but both of them only at one site. For *P. turanicus* this is the first record for Hungary and also for ragweed. *P. corni* was found on common ragweed earlier also by Tjorebaev (1985, cited in Maceljski, 1989). Two other scale insect species were found on ragweed seedlings in greenhouse (*Saissetia coffea* Walker; *Planococcus citri* Risso). In greenhouse, ragweed seedlings were heavily attacked by *Trialeurodes vaporariorum* (Westwood), however no whiteflies were found on the plants in the field.

Acknowledgements

We thank Dr Zsuzsa Basky, Dr Géza Ripka and Dr Ferenc Kozár for the identification of Aphidoidea, Psylloidea and Coccoidea. Balázs Kiss was a Bolyai fellow of the Hungarian Academy of Sciences during the project. The project was financed by Hungarian state research grant GVOP-3.1.1-2004-05-0111/3.0.

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