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DENDROCOLOUS APHIDS (APHIDOMORPHA) IN ARBORETUM OF THE BOTANICAL GARDEN OF IMMANUEL KANT UNIVERSITY IN KALININGRAD (RUSSIA)

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Abstract

In the arboretum of the Botanical Garden of Immanuel Kant Baltic Federal University (Kaliningrad, Russia) 12 aphid species inhabiting trees and shrubs were recorded. In Kaliningrad province, there is an eastern border of the distribution range of *Tuberculatus neglectus* (Krzywiec, 1966), which inhabits sessile oak (*Quercus petraea* (Matt.) Liebl.). Among aphids recorded in 1995, the alien species to this region of Central Europe, which are commonly found at present, were total absent.

Key words: fauna, Insecta, Hemiptera, Sternorrhyncha, dendrocolous aphids, host plant, Königsberg

INTRODUCTION

Kaliningrad Province is a semi-exclave of Russian Federation located in Central Europe, on the Baltic Sea coast. This territory was formerly the northern part of the Prussian province of East Prussia, the southern part of which is today a part of the Warmian-Masurian Voivodeship in Poland. Kaliningrad (until 1946 Königsberg) is the largest city and the administrative center of the province. The University of Königsberg (Albertus-Universität Königsberg, Albertina) was founded in 1544. The first Albertina's botanical garden was inaugurated in 1811, but currently functioning Botanical Garden of Immanuel Kant Baltic Federal University was founded in 1904 by professor Paul Kober. Since 1968, the institution came under the authority of the University. Its total area has 16.5 ha, the arboretum is situated on 8.5 ha. Over 150 species of trees and shrubs in the collection of the arboretum are particularly valuable, rare or under threat of extinction (Botanical Garden of Immanuel Kant Baltic Federal University, 2020).

Aphids inhabiting trees and shrubs in parks and other green areas in Kaliningrad Province were investigated in 60-ies of the 20th century by professor Amand Rupais. In his article on insects and mites living on trees and shrubs in green areas of the province in 1962 (Rupais 1964), six species of Aphidomorpha were recorded in the Botanical Garden: *Acyrthosiphon caraganae* (Cholodkovsky, 1907), *Betulaphis quadrituberculata* (Kaltenbach, 1843), *Liosomaphis berberidis* (Kaltenbach, 1843), *Phyllaphis fagi* (Linnaeus, 1767), *Phylloxera coccinea* (von Heyden, 1837), and *Thelaxes dryophila* (Schrank, 1801).
The unpublished data on dendrocolous aphids in the arboretum of the Botanical Garden of Immanuel Kant Baltic Federal University are presented in this article.

MATERIAL AND METHODS

The paper is based on the material collected by the author in 1995. Microscope slides were prepared using Faure-Berlese mounting fluid. The material is deposited in the Department of Zoology of the Belarusian State University (Minsk). Aphid nomenclature follows G. Remaudière and M. Remaudière (1997) with subsequent additions (Blackman, Eastop 2020, Favret 2020). Aphid taxonomic classification follows Shaposhnikov (1964). In this nomenclature the family Drepanosiphidae (former Callaphididae) has devided into several subfamilies.

RESULTS AND DISCUSSION

In the arboretum of the Botanical Garden of Immanuel Kant Baltic Federal University (Kaliningrad, Russia) 12 aphid species inhabiting trees and shrubs were registered. The list of species is given below.

Family **ERIOSOMATIDAE**
Subfamily **ERIOSOMATINAE**
Eriosoma ulmi (Linnaeus, 1758). There were yellowish galls, which are formed on *Ulmus* sp. by downward curling of one of lateral leaf edges. Fundatrix and apterous fundatrigeniae are covered with wax; the wax remains in the galls after the migration of alatae.

Subfamily **PEMPHIGINAE**
Prociphilus* (*Stagona*) *xylostei (De Geer, 1773). Aphids are covered with wax, in colonies on bark of branches and twigs of *Lonicera* sp.
Thecabius affinis (Kaltenbach, 1843). Primary galls are formed by folding young leaves along midribs, but secondary galls are formed by folding of leaf edges of *Populus* sp.

Family **LACHNIDAE**
Subfamily **CINARINAE**
Cinara (Schizolachnus) pineti (Fabricius, 1781). Aphid form aggregations along the pine needles, aphids are covered in wax coating.

Family **DREPANOSIPHIDAE**
Subfamily **DREPANOSIPHINAE**
Drepanosiphum platanoides (Schrank, 1801). There were solitary individuals or aggregations on the underside of leaves of *Acer pseudoplatanus* L.

Subfamily **CALAPHIDINAE**
Calaphis flava (Mordvilko, 1928) There were solitary individuals or aggregations on the underside of leaves of *Betula* sp.
Euceraphis punctipennis (Zetterstedt, 1828). There were solitary individuals or aggregations on the underside of leaves and growing shoots of birches. Adult aphids are covered with wax.
Monaphis antennata (Kaltenbach, 1843). There were solitary individuals or aggregations on the underside of leaves of birches.
Myzocallis carpini (Koch, 1855). There were solitary individuals or aggregations on the underside of leaves of *Carpinus betulus* L.
Symydobius oblongus (von Heyden, 1837) Aphids in colonies on bark of branches and twigs of *Betula* sp.
Tuberculatus neglectus (Krzywiec, 1966). There were solitary individuals on the underside of leaves of *Quercus petraea* (Matt.) Liebl.

Family **APHIDIDAE**
Subfamily **APHIDINAE**
Tribe MACROSIPHINI
Subtribe MACROSIPHINA
Macrosiphum rosae (Linnaeus, 1758). On *Rosa* sp. Solitary individuals or aggregations on the underside of leaves and growing shoots.

All registered species have a wide geographical distribution in Europe and are known in Poland, the neighbouring country (Osiadacz and Hałaj 2009, Wojciechowski et al. 2015). In Kaliningrad province, sessile oak (*Q. petraea*) has its eastern range border (Zanetto et al. 1994), which is the same as the eastern border of the distribution range of the specialized phytophagous species, *T. neglectus*, inhabiting only *Q. petraea*. Among aphids recorded in 1995 there were no alien species that are presently common in Central Europe (for example, *Appendiseta robiniae* (Gillette, 1907).

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MSZYCE NADRZEWNE (APHIDOMORPHA) W ARBORETUM OGRODU BOTANICZNEGO UNIWERSYTETU IMMANUELA KANTA W KALININGRADZIE (ROSJA)

Streszczenie

Podczas wyprawy naukowej do obwodu kaliningradzkiego w roku 1995 w arboretum Ogrodu Botanicznego Bałtyckiego Uniwersytetu Federalnego im. Immanuela Kanta (Kaliningrad, Rosja) zarejestrowano 12 gatunków mszyc zasiedlających drzewa i krzewy. Obwód kaliningradzki jest wschodnią granicą zasięgu *Tuberculatus neglectus* (Krzywiec, 1966), zasiedlającego wyłącznie dąb bezszypułkowy (*Quercus petraea* (Matt.) Liebl). Spośród gatunków mszyc odnotowanych w roku 1995 nie ustalono obecności gatunków obcych, które obecnie powszechnie występują w tym regionie Europy Środkowej.

Słowa kluczowe: fauna, Insecta, Hemiptera, Sternorrhyncha, mszyce nadrzewne, roślina żywicielska, Kaliningrad