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AN OCCURRENCE AND SOME ELEMENTS OF ECOLOGY OF *CINARA TUJAFILINA* (DEL GUERCIO, 1909) (*HEMIPTERA, APHIDINEA*) IN POLAND

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Abstract: The third record of *Cinara tujafilina* occurrence in Poland is given. The population dynamics of the species is presented.

Key words: *Hemiptera, Aphidinea, Cinara* sp., ornamental shrubs

INTRODUCTION

There are 30 species of *Cinara* sp. that occur in Europe and 27 are known in Poland (Szelegiewicz 1978). The species are connected with conifers trees and shrubs, also ornamental shrubs, which are an element of urban green areas. Only 3 species of *Cinara* sp. are connected with *Thuja* sp.: *Cinara cupressi* (Buckton 1881), *Cinara tujafilina* (Del Guercio 1909), *Cinara louisianensis* (Boundreaux 1949), of which only two were observed in Poland.

The occurrence of *Cinara cupressi* was noticed on *Thuja occidentalis* L. The aforementioned species was observed relatively often also on the other host plants belonging to the Cupressaceae family (*Chamaecyparis* spp., *Cupressus* spp., *Juniperus* spp.) (Soika and Łabanowski 2001).

The species *Cinara tujafilina* is connected with *Thuja orientalis* L. Until 1978 *C. tujafilina* was found once only in Warsaw (Szelegiewicz 1978) and singular individuals were observed in Skierniewice in 1996, 1998 and 2001 (Soika and Łabanowski 2001). The aphids were observed on the branches of old shrubs and foliage young plants protected by a foil tunnel.

C. tujafilina is widespread in Japan where it reproduces parthenogeneticly throughout the year, settling the branches of *T. orientalis* also in winter (Furuta 1988). In Italy

it was observed on branches in spring and autumn, whereas in winter it migrated to shrub roots. (Colombo and Parisini 1984).

The studies were performed to examine the number and dynamics of *C. tujafilina* populations on the shrubs.

MATERIALS AND METHODS

The material from *Thuja orientalis* was collected on two plots in public gardens in Rzeszów and one in arboretum at Bolestraszyce. Five shrubs of *Thuja* were chosen in selected areas. Those plants were not subjected to any protective treatments. Material was collected from the beginning of May to the end of February at the interval of 14 days. Sampling took place by means of sweeping net.

RESULTS AND DISCUSSION

The populations of *C. tujafilina* were found in Rzeszów and Bolestraszyce (Fig. 1) in the years 2004–2005. It is the third record of this species occurrence. The total number of collected apterous viviparous females in the years 2004–2005 was 3516 and of alate viviparous females was 87 (leg., coll. R. Durak). *C. tujafilina* is apparently entirely anholocyclic and monoecious species on *Cupressacae* (Blackman and Eastop 1988). Only anholocyclic forms were observed on *T. orientalis* in Poland. Apterae are reddish-brown with a dorsal pattern of white wax and two dark divergent curved bands. *C. tujafilina* differs in colour of femora from *C. cupressi* (Fig. 2). Distal part of femora is pale. Tibia is dark only at apices. Body is over 3.5 mm long (Blackman and Eastop 1988).

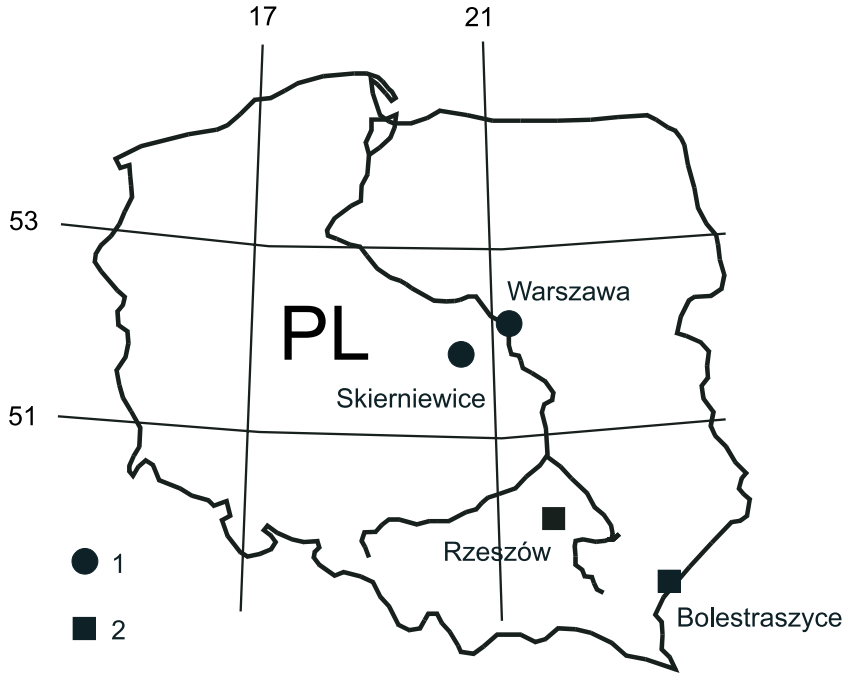

Fig. 1. Distribution of *Cinara tujafilina* in Poland: 1 – records before 2001, 2 – new record

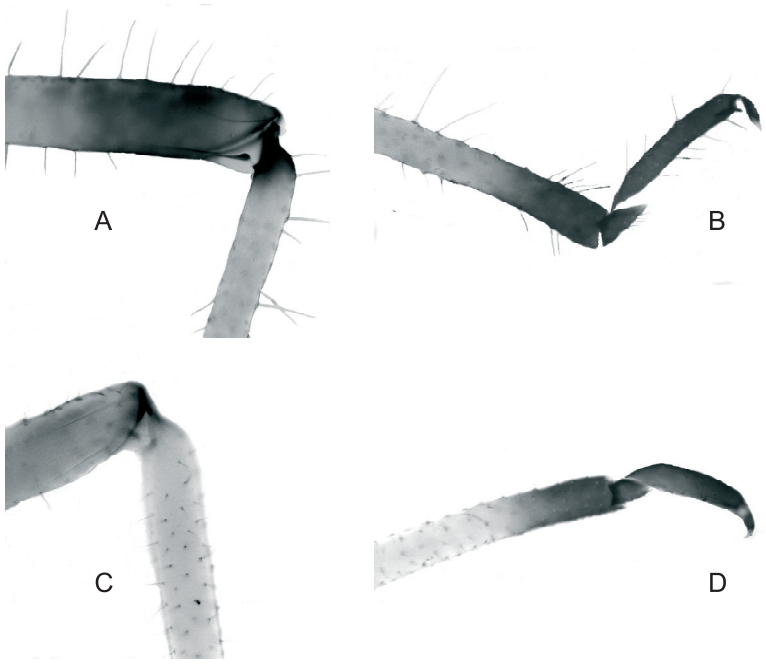

Fig. 2. Distal parts of femora and apices of tibia of apterous vivipara: *Cinara cupressi*: A, B; *Cinara tujafilina*: C, D

The number and dynamics of *C. tujafilina* were examined on designated plots (Fig. 3). Changes were in their number were analogous in each plot. The individuals were being observed starting from the end of August to the beginning of February. The main observations were focused on the apterous parthenogenetic females and larvae. The colonies were frequently visited by ants. The species demonstrated the maximum occurrence in the middle of September. The alate females were sparse and occured in September and most numerously in October. In the middle of October a part of the population migrated to the plant roots. The rest of the population was still present on *T. orientalis* branches being able to survive in the temperatures down to –13°C. Individuals from none of the populations were observed in spring. However, singular apterous viviparous females and larvae were found in June 1998 and in May 2001 and alate viviparous females at May 2001 in Skierniewice (Soika and Łabanowski 2001). All of the individuals found in spring and early summer were collected from the shrubs protected by a foil tunnel, which perhaps influenced the occurrence of the species in spring.

C. tujafilina has a different life cycle in the South-Eastern part of Poland than in Japan (Furuta 1988) and Italy (Colombo and Parisini 1984). Weather conditions have an effect on the dynamics of aphid population and dates of occurrence (Leszczyński 1990; Jaśkiewicz B. 2000). Once of the important factors is temperatures in the spring period. Too low temperature in the spring and winter caused the absence of the aphid population. Aphid species *C. tujafilina* is colonizing the area and adjusting its cycle to weather conditions.

Adults and larvae suck plant juices from the phloem tissue. The damage caused by *C. tujafilina* lowered the ornamental value of shrubs and foliage discoloration.

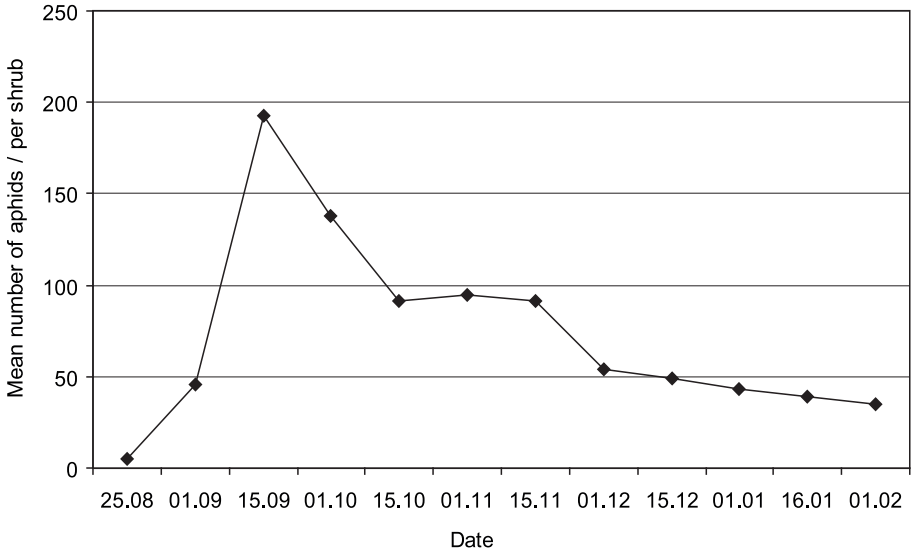

Fig. 3. Dynamics of the *Cinara tujafilina* population in 2004–2005 in Poland

CONCLUSIONS

1. It is the third record of *Cinara tujafilina* occurrence in Poland.
2. *C. tujafilina* is a new and important aphid pest of *T. orientalis*, mainly in gardens and nurseries.
3. The highest numbers of aphids were observed in the middle of September in Poland.

ACKNOWLEDGEMENTS

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POLISH SUMMARY

WYSTĘPOWANIE I EKOLOGIA MSZYCY *CINARA TUJAFILINA* (DEL GUERCIO, 1909) (*HEMIPTERA, APHIDINEA*) W POLSCE

W latach 2004–2005 znaleziono populacje mszycy *Cinara tujafilina* w Rzeszowie i Bolestraszycach, żerujące na krzewach ozdobnych tui (*Thuja orientalis*). Jest to do tej pory trzecie stwierdzone stanowisko tego gatunku w Polsce. Gatunek ten znaleziony został w Polsce do roku 1978 tylko raz w Warszawie. Pojedyncze osobniki były obserwowane w latach 1996, 1998 i 2001 w Skierniewicach. Została zbadana dynamika liczebności *C. tujafilina*. Osobniki były obserwowane od końca sierpnia do początku lutego. Głównie obserwowano bezskrzydłe dzieworodne samice i larwy. Kolonie były licznie odwiedzane przez mrówki. Gatunek wykazał maksimum występowania w połowie września. Uskrzydlone samice były w populacjach nieliczne i pojawiały się we wrześniu, najliczniej były obserwowane w październiku. W połowie października większość osobników populacji migrowała na korzenie roślin. Dynamika liczebności *C. tujafilina* występujących w Polsce różni się od ich cyklu życiowego w Japonii i Włoszech. Jest to gatunek kolonizujący nasz teren a jego cykl życiowy ulega przystosowaniu do panujących warunków klimatycznych. Zbyt niska temperatura zimą i wczesną wiosną powoduje nieobecność tego gatunku na roślinach wiosną w warunkach naturalnych, natomiast możliwa jest w warunkach szklarniowych. Jest to mało znany, ale ważny gatunek związany z tujami. Powoduje zmiany zabarwienia liści a nawet zasychanie całych pędów.

Review of book of Szpaar D. 2005 – continued from page 268

Appendix 5. "Infectious diseases and pests of vegetables, fruits and grapes" (p. 240–291) in the tabulated form contains the Latin and Russian names of pests and pathogens that may damage various cultivated plants.

Appendix 6. "Taxonomic classification of pathogens and pests of vegetables, fruits and berry crops" contains large lists of the following noxious organisms attacking plants: viruses and viroids (p. 292–301), bacteria (p. 302–308), phytoplasmas (p. 309), fungi (p. 310–328), nematodes (p. 329–331), mites (p. 332–335), insects (p. 336–357).

Appendix 7. "Organisms of domestic and international quarantine in Europe and Russia" (p. 358–369) contains several tables listing quarantine organisms prohibited to be present in imported or exported commodities in Russia, Ukraine, Belarus and Germany.

Appendix 8. "Economic thresholds for noxious plant pests in Russia, Ukraine, Byelorussia and Germany" (p. 370–387) contains ten tables giving detailed information on occurrence, density and number of pests that justify performance of plant protection treatments.

Appendix 9. "Natural enemies of main plant pests of vegetable, orchard and vineyard crops and their practical use in Germany, Russia, Ukraine and Byelorussia" (p. 388–416)contains three tables listing entomophagous species being commercially available and practically used in Germany, Russia, Ukraine and Belarus against main pests of cultivated plants.

Appendix 10. "Microbial biopesticides used to control pests in gardens, orchards and vineyards"(p. 417–430) contains five tables listing biopesticides registered in Russia, Ukraine and Belarus and used to control various plant pathogenic microorganisms and plant pests.

Appendix 11. "Law acts and regulations concerning plant quarantine and plant protective treatments in Russian Federation, Ukraine, Belarus, Germany and in the European Union" (p. 431–437).

Appendix 12. "Methods for diagnostic of virus and virus-like diseases of apple trees evaluated and recommended by the International Working Group on Fruit Tree Viruses" for use in laboratory, greenhouse and field conditions (p. 438–439).

The book terminates part "Used and recommended literature" (p. 440–502) that contains an impressive number of 1173 references.

I strongly recommend this two-volume treatise to all plant protection specialists as an excellent source of information how to develop, implement and practice programmes of ecological plant protection in various crops systems.

Jerzy J. Lipa
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