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MONITORING OF PHYTOPHAGOUS HEMIPTERAN SPECIES FROM THE MAIN PARKS OF TIMISOARA

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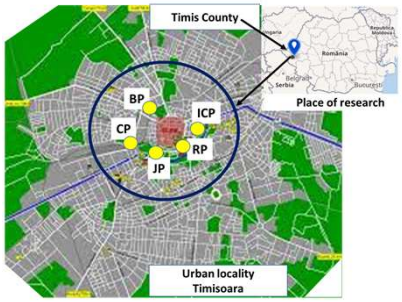
Abstract: *Based on the observations from the last two years, on the plants present in the parks near the central area of Timisoara, we decided to focus on phytophagous insect species of the order Hemiptera. This order considered in this paper are represented by stink bugs, seed bugs from Coreidae, aphids and flatid planthoppers. The reason why we focused on this category of insects was primarily based on the analysis of recent years and implicitly their increasing evolution, also on the attention paid to dangerous invasive species. Lately, they have started to be more and more present in big cities and especially in green spaces, parks and gardens, usually near people's houses or near buildings.*

Introduction

Every year new pests spread rapidly and cause great damage in public parks. The trade in ornamental plants plays an important role and this is the main cause of the spread of invasive insects in Europe, so we must consider especially those species that do not have natural enemies in the new areas (ROQUES ET AL., 2010; SALVATORE B., 2014). Among the invasive species present in the parks in Europe, we can mention especially those of the order Hemiptera, which have become very present in recent years, due to the movements from one country to another of ornamental plants (CVETKOVSKA-GJORGIEVSKA ET AL., 2019).

Material and method

The observations that are the object of the present work were made in five parks located near the central area of the urban locality Timisoara from Timis county (located in western Romania). These are the following: Botanical Park, Central Park, Roses Park, Ion Creanga Park and Justice Park.

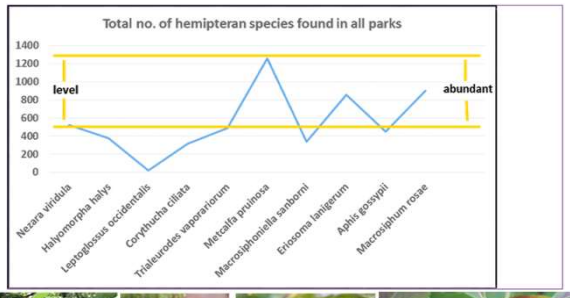


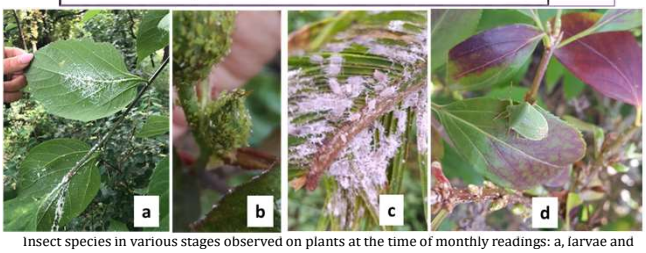
Representation of the locations of the parks from Timisoara (Timis county, Romania) where the monitoring observations were made: BP-Botanical Park, CP-Central Park; RP-Roses Park, ICP- Ion Creanga Park, JP-Justice Park

The monitoring activity consisted of movement to the aforementioned parks, then direct observations (or readings) and the collection of materials/samples of plants (plant parts) and insects (in various stages). The readings were made monthly (April-September), in all sectors of each park, in the period 2019-2020.

Results and discussions

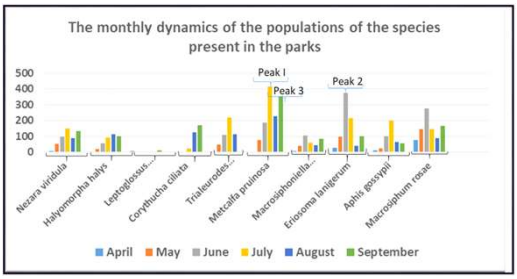
Of all the species observed, the species *Metcalfa pruinosa* (like in figures of bellow) was noted to be abundant (a total of 1260 individuals) in almost all parks subject to monitoring (4 out of 5). Also in the category of abundant hemipteran species falls *Macrosiphum rosae* (about 900 individuals), *Eriosoma lanigerum* (855 individuals) and *Nezara viridula* (about 525 individuals).





Insect species in various stages observed on plants at the time of monthly readings: a, larvae and nymphs of Metcalfa pruinosa; b, larvae and adult forms of Aphis sp.; c, larvae and adult forms of Eriosoma lanigerum; d, adult of Nezara viridula (original photo taken in 2019 and 2020)

In the insect activity curve three peaks were observed, the maximum in July, the second maximum in June and the third in September. Basically, the population evolution starting with April was one with a gradual increase, progressive until June-July-August, then gradually a decrease started. However, an analysis of each species shows a particular dynamic. For example, for *Metcalfa pruinosa* it registered a gradual increase until July, then a sudden decrease in August, and finally a sudden increase in September.



Conclusions

The presence of numerous species of hemipteran insects in the parks located near the historical centre of the urban locality Timisoara is obvious. Of these species, some are even invasive for Europe and implicitly Romania and probably require more attention in the future. Park monitoring, as a result of this work, is a first step in the management strategy, by identifying the species present and those that cause obvious damage to ornamental plants.

Acknowledgement: We would like to thank the park managers who allowed us to carry out the activity in the parks. The information presented is the result of work in the doctoral studies of the first author under the coordination of the second one.