

## MONITORING THE ATTACK PRODUCED BY THE SPECIES *CAMERARIA OHRIDELLA* DESCHKA-DIMIĆ IN CRAIOVA AREA

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### ABSTRACT

*Cameraria ohridella* Deschka-Dimić is an invasive, monophagous species, extremely dangerous for the ornamental chestnut trees.

Following the observations we made, it can be concluded that the southern exhibition is preferred by the larvae of the species *Cameraria ohridella* Deschka-Dimić, so for observation made in July 2019 the values were 3.6 mines/leaf and 8.7 mines/leaf in August, and this year it was 3.9 mines/leaf for July, reaching 8.9 mines/leaf in August, an indicator that increased rapidly over the time between the two observations and followed by the leaves with eastern exposure and western.

We also noticed that the lowest values of the average number of mines/leaf/foliole were reached on the leaves with northern exposure.

### INTRODUCTION

The chestnut tree is an ornamental species, often a key element in urban areas, parks and gardens.

*Cameraria ohridella* Deschka-Dimić has become one of the best known invasive species in Europe due to the damage caused to the species *Aesculus hippocastanum* L.

The chestnut leaf mining moth was first observed in Macedonia in the 1970s, attacking the species *Aesculus hippocastanum* L., and in 1986 it was described as a new species (Deschka and Dimic, 1986; Simova-Tosic and Filev, 1985).

In 1987 it was found in Serbia (Petkovic, 1989) and in 1989 in Austria (Puchberger, 1990), from where has spread to most of Europe (Maceljski and Bertic, 1996; Pelov et al., 1993; Kenis and Forster, 1998; Sandru, 1998; Prins and Puplesiene, 2000; Stigter et al., 2000; Hellrigl, 2001; Guichard and Augustin,

2002; Akimov et al., 2003; Svensson, 2003; Tilbury et al., 2004; Cebeci and Acer, 2007).

The origin of this species has caused controversy because it has been first suggested that it is a relict species that survived the ice age with its host in southeastern Europe (Deschka and Dimic, 1986; Grabenweger and Grill, 2000), while, according to Holzschuh (1997) and Kenis et al., (2005), was more likely an extra-European species recently introduced to the Balkans.

Recent molecular studies and observations of ancient herb collections now suggest that the moth came from natural chestnut groves far from the Balkan mountains of Macedonia, Albania and Greece and moved to urban areas in these countries in the second half of the twentieth century (Valade et al., 2009; Lees et al., 2011).

## MATERIAL AND METHOD

The monitoring of the species *Cameraria ohridella* was carried out in the period 2019-2020 by analyzing the attack produced to the leaves of the species *Aesculus hippocastanum* L. from the Botanical Garden "Al. Buia" from Craiova.

To monitor this pest, observations and determinations were made in field conditions, and to determine the number of mines/leaf/foliole, samples of 10 leaves were collected from different areas of the crown.

## RESULTS AND DISCUSSIONS

The larvae attack the leaves of chestnut trees and grow in the parenchymal tissue of the attacked leaf, causing small, discolored, almost circular spots, and over time they enlarge, elongate and merge with each other, forming a favorable microclimate for the pest.(Fig.1)



Figure 1. Larvae of *Cameraria ohridella* Deschka-Dimić (Original)

At first the mines are small and yellow, later becoming brown and can cover the entire surface of the leaf, producing a

considerable depreciation of the aesthetic appearance of the trees. (Fig 2.)



Figure 2. Mines on the leaves of *Aesculus hippocastanum* L. (original)

In places where dead leaves containing hibernating pupae are not removed in the fall, the trees are usually defoliated, year after year. In addition to aesthetic damage, the activity of this pest

affects the function of photosynthesis, causing premature leaf fall and shortening the life of the leaves (Fig.3)



Figure 3. *Aesculus hippocastanum* L. affected by premature leaves fall (original)

On the ornamental chestnut trees from Botanical Garden "Al. Buia" we monitored the attack produced by the larvae of species *Cameraria ohridella* by making observations and determinations in the first decade of July and the third decade of August.

Table 1. shows the results of the observations made in 2019, regarding the dynamics of the average number of mines/ leaf/foliolate.

**Table 1**

**Dynamics of average number of mines/leaf/foliolate with exhibition (Craiova, 2019)**

Exposure	08.07.2019		26.08.2019	
	No. of mines		No. of mines	
	Leaf	Foliolate	Leaf	Foliolate
South	3,6	0,51	8,7	1,23
East	3,5	0,49	8,2	1,15
West	3	0,42	7,9	1,12
North	2,9	0,40	7,7	1,11

At the observation from first decade of July on the leaves with southern exposure, the chestnut leaf mining moth developed an average number of 3.6 mines/leaf and 0.51 mines/foliole. Since this date, the average number of mines has increased rapidly, so at the observation made in August it was reached an average number of 8.7 mines/leaf and 1.23 mines/foliole.

On the leaves with western exposure, at the observation in July were recorded values of 3 mines/leaf and 0.49 mines/foliole. In August, the final evaluation reported a rapid increase, with an average number of 7.9 mines/leaf and 1.12 mines/foliole.

In July, the number of mines on the leaves with eastern exposure was 3.5

mines/leaf and 0.49 mines/foliole and in August it reached values of 8.2 mines/leaf and 1.15 mines/foliole.

Values of 2.9 mines/leaf and 0.40 mines/foliole were recorded on the leaves with northern exposure at the observation in July. By the next observation, the number of mines/leaf/foliole reached 7.7 mines/leaf and 1.11 mines /foliote.

It can be concluded that the southern exposure is preferred by larvae, therefore on these leaves were reached the highest values of the average number of mines/leaf/ foliote, an indicator that increased rapidly over the time between two observations.

Table 2. shows the results of the observations made for this year, regarding the dynamics of the average number of mines/leaf/foliote.

**Tabel 2**

**Dynamics of average number of mines/leaf/foliote with exhibition (Craiova, 2020)**

Exposure	06.07.2020		25.08.2020	
	No. of mines		No. of mines	
	Leaf	Foliote	Leaf	Foliote
South	3,9	0,55	8,9	1,26
East	3,7	0,52	8,3	1,18
West	3,3	0,46	7,6	1,08
North	3,1	0,43	7,3	1,04

This year, for the observation made July, the species showed on the leaves with southern exposure an average number of mines of 3.9 mines/leaf and 0.55 mines/foliote.

Since this date the number of mines/leaf /foliote has suddenly increased, so on the observation from the third decade of August the attack reached values of 8.9 mines/leaf and 1.27 mines/foliote.

On the leaves with eastern exposure, at the first observation, the average number of mines was 3.7 mines/leaf and 0.52 mines/foliote. To the

next observation, the number of mines had increased, so that in August the number was 8.3 mines/leaf and 1.18 mines/foliote.

At the observation made in July, the average number of mines on the leaves with western exposure was 3.3 mines/leaf and 0.46 mines/foliote and increased in until August to 7.6 mines/leaf and 1.08 mines/foliote.

On the leaves with northern exposure, for observation made in July, was reported a number of 3.1 mines/leaf and 0.43 mines/foliote and on the third decade of August, a significant increase

was reported up to 7.3 mines/leaf and 1.04 mines/foliole.

We also noticed that the lowest values of the average number of mines/leaf/foliole were reached on the leaves with northern exposure.

## CONCLUSIONS

Following the observations we made, it can be concluded that the southern exhibition is preferred by the larvae of the species *Cameraria ohridella* Deschka-Dimić followed by the leaves with eastern exposure and western.,

On these leaves were reached the highest values of the average number of mines/leaf/foliole, an indicator that increased rapidly over the time between the two observations. So in 2019 for observation made in July the values were 3.6 mines/leaf and 8.7 mines/leaf in August, and this year it was 3.9 mines/leaf for July, reaching 8.9 mines/leaf in August,

We also noticed that the lowest values of the average number of mines/leaf/foliole were reached on the leaves with northern exposure.

In the absence of chemical control, the values of the average number of galleries on leaves increased rapidly over the time interval between two observations, producing a considerable depreciation of the aesthetic appearance of the trees.

In addition to aesthetic damage, the activity of this pest affects the function of photosynthesis, causing premature leaf fall, shortening the life of the leaves.

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