

**OCCURRENCE OF *CAMERARIA OHRIDELLA* Deschka & Dimić
IN BOSNIA-HERZEGOVINA
Pojava *Cameraria ohridella* Deschka & Dimić u Bosni i Hercegovini**

Dautbašić Mirza* & Dimić Nenad**

* Faculty of Forestry Sarajevo;

** Institute for plan protection and environment, Belgrade

Abstract

The horse-chestnut leafminer *Cameraria ohridella* Deschka & Dimić, is a new species in Bosnia-Herzegovina, discovered in 1993 and distributed throughout almost the whole of the country today. The insect has spread from Macedonia (discovered for the first time in 1985) to other parts of Europe. This paper deals with the distribution of the leafminer in the country and the symptoms found on the attacked trees.

Key words: *Aesculus hippocastanum*, *Cameraria ohridella*, Horse-chestnut, leafminer.

1. Introduction

The leafminer (*Cameraria ohridella* Deschka & Dimić) on horse-chestnut (*Aesculus hippocastanum* L.) was discovered first in the area of Ohrid (Macedonia) in 1985 (Simova-Tošić & Filev, 1985). As a new species the insect was described in 1986 (Deschka & Dimić). *C. ohridella* spread fast from the place of its origin to the north and is already present in many countries in south and central Europe. In the south of Serbia the chestnut leafminer was found in 1986, and in the early 1990s spread throughout Yugoslavia (Dimić & Mihajlović, 1993). In Croatia the insect was discovered in the locality of Cmrok near Zagreb in 1989 (Maceljčki & Bertić, 1995) and the same year in Austria near Linz (Tomiczek, 1997). In northern Italy leafminer appeared in 1992 (Hellrigl, 1998) and a year later in Germany (Butin & Führer, 1994), Hungary (Szaboky, 1994) and the Czech Republic (Liška, 1997). In Slovakia it was found in 1994 (Sivicek at all., 1997), in Slovenia in 1995 (Milevoj & Maček, 1997), and in Switzerland in 1998 (Kenis & Forster, 1998).

The infestation of leafminer is followed with discoloration and early defoliation. The horse chestnut is considered to be one of the most likely species among the amenity trees grown in urban areas. Unfortunately, the tree species loses its qualities (esthetic and ecological first of all), as a consequence of such attacks. A severe attack may slowdown growth, prevent maturing of tissue, dieback or even the death of the tree (3).

C. ohridella has the body 3.5 mm long and a wingspan of 6-8 mm. Its forewings are shiny and basically orange-brown with a white design. On the basal part of the forewings there are two cross white strings, and on the front and back margins of the apical part of the forewings, there are three triangular white spots which not usu-

ally being linked - do not produce cross strings. The hindwings are grayish. The eggs are elliptic and transparent, 0.2-0.4 mm wide. Mature larvae have a maximum of 4 mm in length and a body which is dorsoventral, flattened, with very significant body segments. The larvae are apod during all stages of development. The pupae are 4-5 mm long, light-brown in color and in contrast to the species *Phyllonorycter*, they have no cremaster.

2. Materials and method

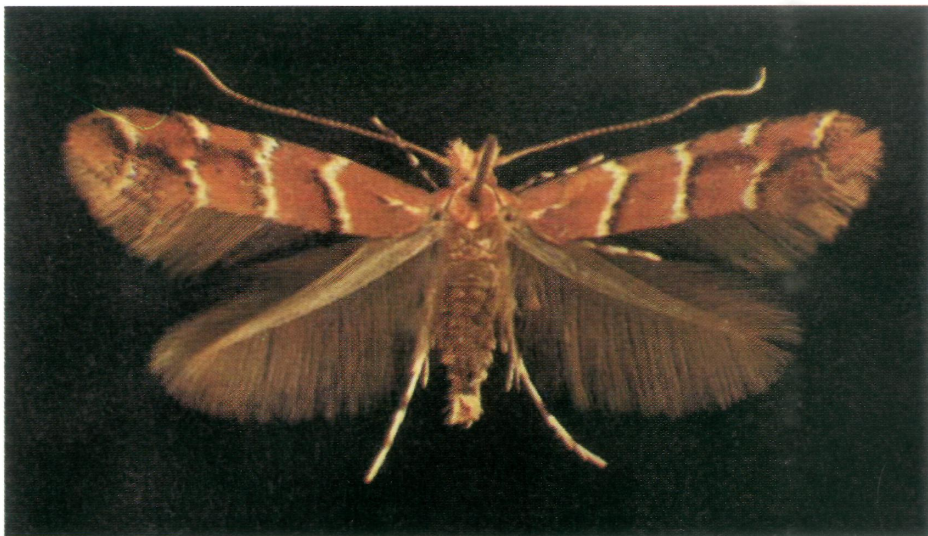
Horse-chestnut leaves with and without symptoms were collected during 1993-1999 in different localities in Bosnia-Herzegovina. The leaves were then analysed in the laboratory in order to find the symptoms of *C. ohridella*, which was important as similar symptoms on the chestnut leaves may have been caused by some other factors. At first sight the miner leaf necrotic damages look like those caused by the pathogenic fungus *Guignardia aesculi* Stewart. In order to distinguish these symptoms, it is possible to identify small dark fruiting anamorph bodies (pycnidia of *Phyllosticta sphaeropsoides* Ell. and Ev.) on the bottom side of the necrotic spots in the case of the fungal attack. The leafminer symptoms may also look like those caused by air-pollution along roadside avenues, as well as salt and drought damage. The insect mines are always on the upper leaf surface. At the beginning the mines are green-yellow and later they are necrotic and brown. A completely formed mine often has an atypical shape (rounded or elliptical more or less) and with the size varying in broad scope (Deschka & Dimić, 1986). However, the present of larvae or pupae in the leafmines is the sure sign for the final diagnosis of an attack of *C. ohridella*. The excrement within the mines that may be visible if leaves are exposed to transparent light, is also a good sign, which may be used in pest diagnosis.

3. Results

The first occurrence of *C. ohridella* in Bosnia-Herzegovina was registered in the northeast of the country (in the locality of Banja Dvorovi) in autumn 1993. However, further observation showed that the insect was also present in other northern regions of the country (Bijeljina, Bosanska Gradiška and Laktaši). Later investigation, carried out during 1996-1999, confirmed that leafminer is present in the following places: Banovići, Banja Luka, Bosanski Petrovac, Bosanski Šamac, Brčko, Breza, Bugojno, Donji Vakuf, Derвента, Gradačac, Hadžići, Jablanica, Kakanj, Kladanj, Ključ, Konjic, Modriča, Nova Bila, Olovo, Pazarić, Prnjavor, Sanski Most, Sarajevo, Semizovac, Tešanj, Travnik, Turbe, Tuzla, Vareš, Visoko, Vitez, Zavidovići, Zenica i Živinice (see map of BiH).

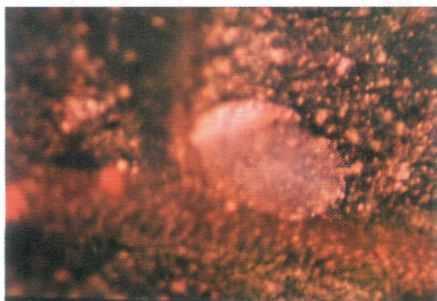
4. Discussion

The ways and mechanisms by which the leafminer spreads may be direct and indirect or active and passive, but are not yet fully understood as the insect is a new



Cameraria ohridella

Photo: Deschka



Egg of *C. ohridella*

Photo: Dautbašić



Comma mine of *C. ohridella*
on the chestnut leaf

Photo: Dautbašić



Pupa of *C. ohridella*

Photo: Dautbašić



Photo: Dautbašić

Attacked chestnut trees by *C. ohridella*
- view in the middle of June



Photo: Dautbašić

Symptoms of *C. ohridella*
on the chestnut leaf



Photo: Usčuplić

Non-parasitic marginal
necroses of the chestnut leaf

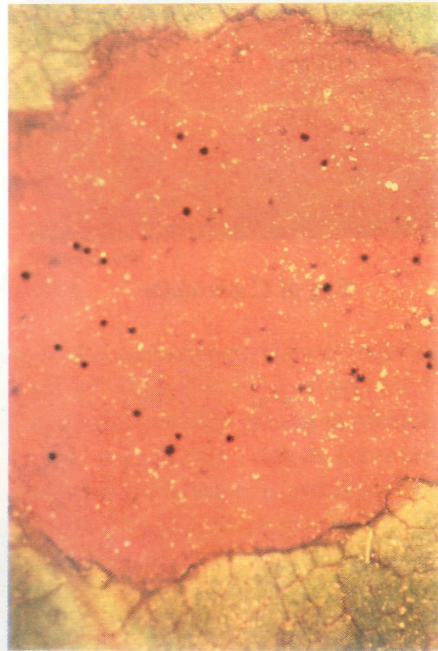


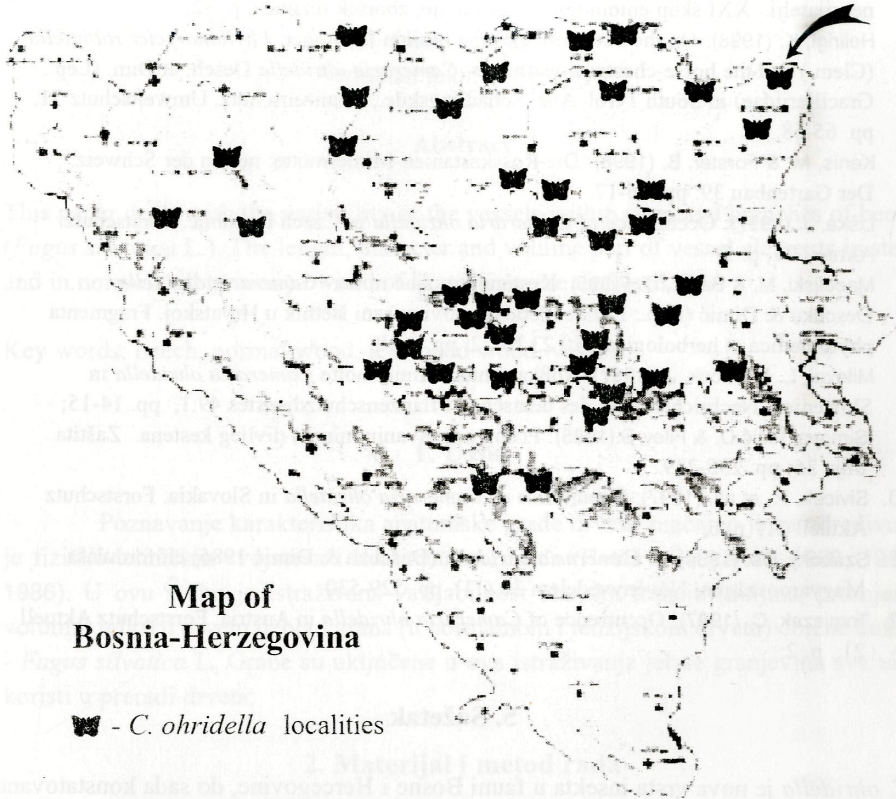
Photo: Usčuplić

Necrotic spot and pycnidia
of *P. sphaeropsoidea*
on the chestnut leaf

and insufficiently studied species. Further studies on the insects biology, and on the mechanisms and dynamics of its spread, should be carried out in order to complete the knowledge necessary for effective pest control (3).

The horse-chestnut leafminer in Bosnia-Herzegovina attacks only *A. hippocastanum* and on *A. glabra*, *A. carnea* and *A. pavia*, which are also cultivated as amenity trees it is not found yet.

First occurrence of *C. ohridella*
in Bosnia-Herzegovina, 1993



Summary

The horse-chestnut leafminer (*Cameraria ohridella* Deschka & Dimić) in Bosnia-Herzegovina has been present since 1993. The pest was determined to exist in northeast and northern parts of the country. Investigation carried out later showed that the insect attacks only *A. hippocastanum*, and today is present in the following places: Banovići, Banja Dvorovi, Banja Luka, Bijeljina, Bosanska Gradiška, Bosanski Petrovac, Bosanski Šamac, Brčko, Breza, Bugojno, Donji Vakuf, Derventa, Gradačac, Hadžići, Jablanica, Kakanj, Kladanj, Ključ, Konjic, Laktaši, Modriča, Nova Bila, Olovo, Pazarić, Prnjavor, Sanski Most, Sarajevo, Semizovac, Tešanj, Travnik, Turbe, Tuzla, Vareš, Visoko, Vitez, Zavidovići, Zenica i Živinice (see map of Bosnia-Herzegovina).

References:

1. Butin, H., Führer, E. (1994): The horse-chestnut miner (*Cameraria ohridella* Deschka & Dimić), a new parasite of *Aesculus hippocastanum*. Nachrichtenblatt des Deutschen Pflanzenschutzdienstes, 46(5), pp. 89-91;
2. Deschka, G. & Dimić, N. (1986): *Cameraria ohridella* sp.n. (Lep.: Lithocolletidae) aus Mazedonien, Jugoslawien. Acta entomologica Jugoslavica, Vol 22, No.1-2, pp. 11-23.
3. Dimić, N. & Mihajlović, Lj. (1993): Širenje areala minera lista divljeg kestena (*Cameraria ohridella* Deschka & Dimić, Lepidoptera: Lithocolletidae) i njegovi prirodni neprijatelji. XXI skup entomologa Jugoslavije, zbornik rezimeja, p. 32.
4. Hellrigl, K. (1998): On the occurrence of the robinia-leafminer, *Phyllonorycter robiniella* (Clem.) and the horse-chestnut- leafminer, *Cameraria ohridella* Desch. et Dim. (Lep., Gracillariidae) in South Tyrol. Anz. Schädlingsskde., Pflanzenschutz, Umweltschutz 71, pp. 65-68.
5. Kenis, M. & Forster, B. (1998): Die Rosskastanien-Miniermotte: neu in der Schweiz. Der Gartenbau 39: pp. 16-17.
6. Liška, J. (1997): Occurrence of *Cameraria ohridella* in Czech Republic. Forstschutz Aktuell 21, p. 5;
7. Maceljki, M. & Bertić, D. (1995): Kestenov moljac miner- *Cameraria ohridella* Deschka & Dimić (Lep.: Lithocolletidae)-novi opasni štetnik u Hrvatskoj. Fragmenta phytomedica et herbologica, Vol 23 No. 2, pp. 9-18.
8. Milevoj, L. & Maček, J. (1997): Rožkastanien-Miniermotte *Cameraria ohridella* in Slowenien. Nachrichtenblatt des deutschen Pflanzenschutzdienstes 49:1, pp. 14-15;
9. Šimova-Tošić D. & Filev S.(1985): Prilog poznavanju minera divljeg kestena. Zaštita bilja 36: pp. 235-239.
10. Sivček, P., et all. (1997): Occurrence of *Cameraria ohridella* in Slovakia. Forstschutz Aktuell 21, p. 6;
11. Szaboky, Cs. (1994): A *Cameraria ohridella* (Deschka & Dimić 1986) előfordulása Magyarországon, Növényvédelem 30 (11), pp. 529-530.
12. Tomiczek, C. (1997): Occurrence of *Cameraria ohridella* in Austria. Forstschutz Aktuell 21, p. 2;

5. Sažetak

C. ohridella je nova vrsta insekta u fauni Bosne i Hercegovine, do sada konstatovana jedino na listu *A. hippocastanum*. Uzrokuje mine (nekroze lista) i smanjenje estetske vrijednosti stabala, a posljedice mogu biti zastoj u rastu i eventualno sušenje biljaka. Kestenov moljac miner je rasprostranjen u gotovo cijeloj Bosni i Hercegovini (Banovići, Banja Dvorovi, Banja Luka, Bijeljina, Bosanska Gradiška, Bosanski Petrovac, Bosanski Šamac, Brčko, Breza, Bugojno, Donji Vakuf, Derвента, Gradačac, Hadžići, Jablanica, Kakanj, Kladanj, Ključ, Konjic, Laktaši, Modriča, Nova Bila, Olovo, Pazarić, Prnjavor, Sanski Most, Sarajevo, Semizovac, Tešanj, Travnik, Turbe, Tuzla, Vareš, Visoko, Vitez, Zavidovići, Zenica i Živinice). U toku su detaljna istraživanja ovog štetnika, radi boljeg upoznavanja njegove bionomije, načina širenja, štetnosti i kontrole.