

**CONTRIBUTIONS TO THE STUDY BIOLOGY CHESTNUT
MOTH *CAMERARIA OHRIDELLA* DESCHKA & DIMIČ,
UNDER CONDITIONS IN THE HUSI AREA, VASLUI
COUNTY**

**CONTRIBUȚII LA STUDIUL BIOLOGIEI MOLIEI MINIERE A
FRUNZELOR DE CASTAN *CAMERARIA OHRIDELLA* DESCHKA &
DIMIČ ÎN ZONA HUȘI, JUDEȚUL VASLUI**

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Abstract. Through this study bring the new contributions to the knowledge of the biology chestnut leaf mining moth. These observations were made in terms of Husi, Vaslui area and consisted of systematic recording of data on the conditions of the studied area, appearance and flying insect oviposition, completing the larval stage, the transformation in pupa stage and re-start every generation, observations what we've done using pheromone traps, "Atra-CAM" and using the Agroexpert program we calculated the sum of effective temperatures required at each stage of development. Order to better establish during each stage in the field I chose trees that have below branches, so as to be able to reach them and chose 10 whole leaves that we meant by a thread, and on them we follow all stages from egg to pupa and adult. We watched practically the egg stage, larva and pupa to butterfly leaving the mine by the same leaves and folioles.

Key words: *Cameraria ohridella*, "Atra-CAM", leaf mining moth.

Rezumat. Prin acest studiu se aduc noi contribuții la cunoașterea biologiei moliei miniere a frunzelor de castan. Aceste observații s-au realizat în condițiile zonei Huși, județul Vaslui și au constat în înregistrarea sistematică a datelor privind condițiile ecologice din zona studiată, apariția și zborul insectei, depunerea pontei, parcurgerea stadiului larvar, împuparea și reluarea ciclului fiecărei generații, observații ce s-au realizat cu ajutorul capcanelor cu feromoni "Atra-CAM" și cu ajutorul programului Agroexpert am calculat suma temperaturilor efective necesară fiecărui stadiu de evoluție. Pentru a stabili cât mai bine durata fiecărui stadiu în câmp s-au ales arborii care aveau ramurile mai jos, astfel încât să se poată ajunge la ele și, de pe aceste ramuri, am selectat 10 frunze întregi pe care le-am marcat cu un fir de ață, iar pe ele s-au urmărit toate stadiile de la ou până la pupă și adult. În mod practic am urmărit stadiul de ou, larvă și pupă, până la părăsirea minei de către fluture pe aceleași frunze și foliole.

Cuvinte cheie: *Cameraria ohridella*, "Atra-CAM", molia miniera a frunzelor

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INTRODUCTION

In Romania the mining moth *Cameraria ohridella* Deschka & Dimic have first appeared in the west of the country, in Timisoara, in 1996, in 1998 is seen in the center of the country of Cluj-Napoca (Ianovici, 2012; Perju T, 2001), and in 2005 the insect was appeared in Vaslui.

MATERIAL AND METHOD

The purpose of the research subject of this paper was to know the biological cycle, flight dynamics, effective temperature sum necessary stages of development of chestnut mining moth *Cameraria ohridella* Deschka & Dimic, according to the Husi area, Vaslui county.

A view to achieving research on species bioecology *Cameraria ohridella* Deschka & Dimic, pheromone traps were used adhesive type "atra-CAM" by their reading of 3 in 3 days. It was used by a trap / location, and change baits were made monthly from May to September and out of 2012 to 2016.

Life cycle of the species have been established based on observations in the field, both visually where they were chosen 10 leaves that were marked with a thread and, and on the leaves of "observation" 3 in 3 days, I followed and I note laying and still other stages: larva, pupa and adult (Beratlief, 1998; Perju, 2004).

Observations on chestnut mining moth *Cameraria ohridella* Deschka & Dimic were performed in parks and chestnut alignments.

RESULTS AND DISCUSSIONS

In the mining moth flight dynamics has been found that many insect has three flights, one for each generation, with one or two maximum one (fig. 1, fig. 2).

The first flight of the generation G3 large (hiemal) II begins decade of May until the end of May - early June and lasts between 15 and 25 days and maximum flight between 7 and 10 days.

The second flight numerous corresponding generation I, G1, takes place in late June - early July to the second decade of July for 17 - 24 days.

The third flight of the insect large corresponds generation II, G2, occurs in the first and second decade of August and lasts between 10 and 23 days and the maximum flight between 6 and 10 days.

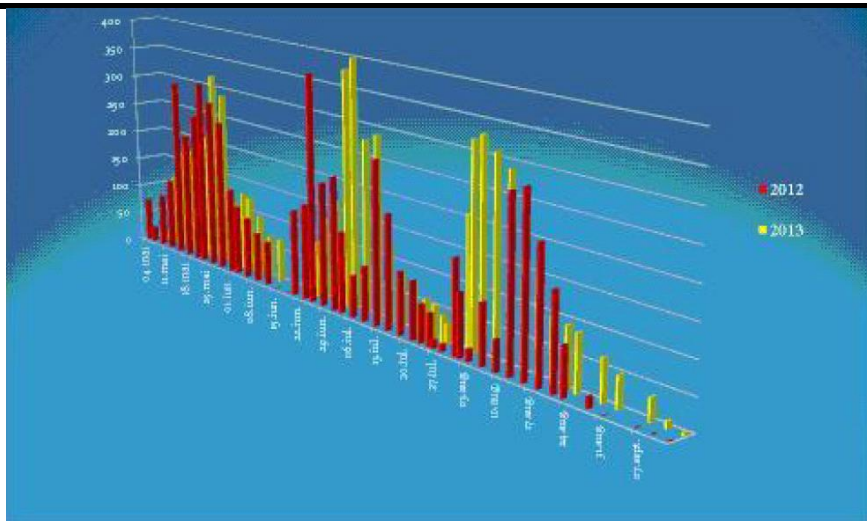


Fig. 1 The flight dynamics species *Cameraria ohridella* Deschka & Dimic 2012-2013

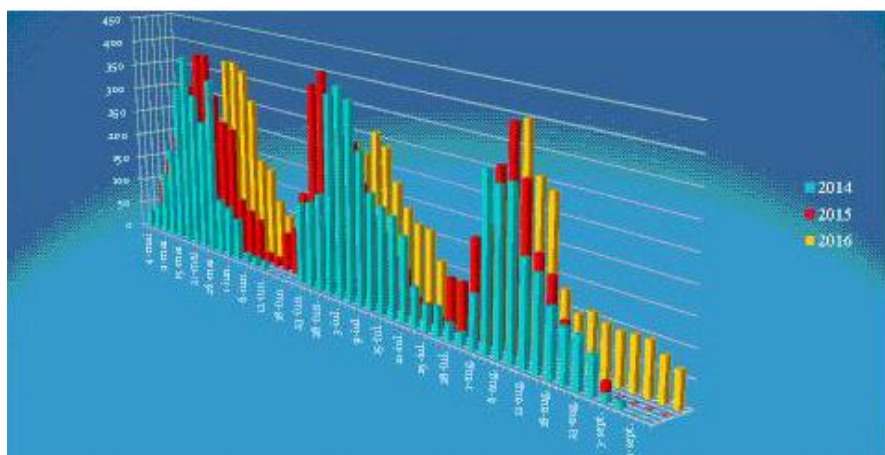


Fig. 2 The flight dynamics species *Cameraria ohridella* Deschka & Dimic 2014-2016

The investigations carried out between 2012 - 2016 on the biological cycle, each year insect that has three generations per year (tab. 1) and winter in the pupa in a cocoon silky, made from the leaf epidermis.

After the appearance, butterflies climbs the trunks of trees where mating takes place. Sexual maturation and copulation duration is between 7 and 10 days.

Oviposition occurs on the surface of the lamellae between the leaf veins. According to the literature a female produces an average of 20-40 eggs (Georgescu, 2005).

Eggs are always deposited on the leaves normally developed, mature.

Incubation lasts 3 -10 days depending on temperature and humidity. After hatching larva immediately penetrates between the epidermis leaflet starts to feed. At first larval gallery is small and round, then it becomes erratic and extends between the ribs leaflet.

Larva in its development passes through five age, and two phase feeding: a phase-consuming and one unconsumer plant tissue, which occurs in the cocoon made in leaf.

Larval stage lasts depending on the temperature between 20 and 25 days.

Having reached complete development larva builds a mine between the leaf epidermis (cocoon) covered with a whitish below which turns into pupa. Pupal stage lasts about 8 to 10 days.

Table 1

The life cycle of *Cameraria ohridella* Deschka & Dimic the mining moth of chestnut

| Year | Generation | | |
|------|--------------------|---------------------|--------------------|
| | I | II | III |
| 2012 | 12 may – 20 june | 28 june - 31 iulie | 10 august – 5 may |
| 2013 | 12 may – 17 june | 29 june – 04 august | 08 august – 10 may |
| 2014 | 20 may – 29 june | 05 july – 11 august | 17 august – 08 may |
| 2015 | 15 may – 21 i june | 27 june - 01august | 09 august – 09 may |
| 2016 | 19 may – 26 june | 01 july– 03 august | 10 august - |

$\Sigma(tn-t_0)$

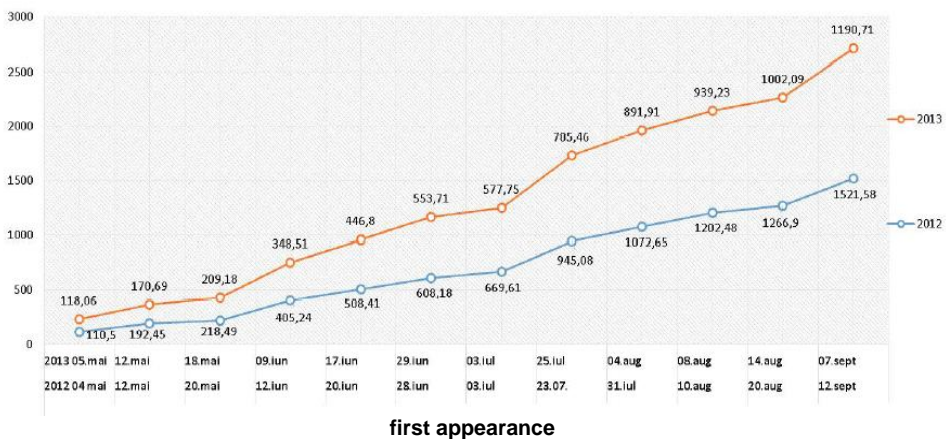


Fig. 3 The graphical representation of the first appearances of the development stages of mining moth *Cameraria ohridella* Deschka & Dimic, in 2012 – 2013



Fig. 4 The graphical representation of the first appearances of the development stages of mining moth *Cameraria ohridella* Deschka & Dimic, in 2014 – 2016

First generation adult emergence occurs at temperatures carry amount, $\Sigma (t_n - t_o) = 400 \pm 500C$, and for adults to II- generation of $\Sigma (t_n - t_o) = 850 \pm 500C$ (fig. 3, fig. 4).

The length of a generation in weather conditions in the area Napa, is between 33 and 40 days. Usually it takes longer generation I of 38-40 days, and the second generation of shorter than 33-35 days, depending on temperature and humidity.

CONCLUSIONS

Following comments made on species *Cameraria ohridella* Deschka and Dimic in terms of area Vaslui Huși- find the following conclusions:

- Under the conditions the area Husi in the four years of observations *Cameraria ohridella* species Deschka & Dimic, has three generations per year and overwinters in the pupal stage.
- The length of a generation ranged from 40 days to generation I and 33-35 days in generation II.
- The first generation adult emergence occurs at temperatures carry amount, $\Sigma (t_n - t_o) = 400 \pm 500C$, and for adults to II- generation of $\Sigma (t_n - t_o) = 850 \pm 500C$.
- Incubation takes between 3-10 days depending on temperature and humidity.
- The last larval stage, depending on the temperature and the relative humidity between 20 and 25 days, and pupated 8-10 days.
- In the flight dynamics mining moth it was found that numerous insect has three flights, one for each generation, with 1 or 2 maximum flight.

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