# STUDIES RELATED TO THE BARK PESTS DYNAMICS IN THE FORESTS OF THE DORNE AREA

# STUDII PRIVIND DINAMICA DĂUNĂTORILOR DE SCOARȚĂ ÎN PĂDURILE DIN ZONA DORNELOR

**OLTEAN I.**


## ABSTRACT

The areas with forest species arrived at the exploitation age are frequently attacked by the species which damage the bark and the wood, especially by *ipidae*. The adults of those species place themselves usually on the trees which are affected by different pathogen agents or have suffered the attack of other species of phytophagous insects. Trees attacked by caries witness a decline, they dry prematurely and often the wooden material is affected in terms of its industrialization quality.


**KEY WORDS: Ipidae, Buprestidae, Cerambycidae, ATRATYP**


## REZUMAT

Materialul forestier adesea este atacat de un grup de dăunători cunoscuți subdenumirea generică de carii, care pot fi carii de scoarță sau carii de lemn, insecte care aparțin de obicei ordinului Coleoptera (familiile:Ipidae, Buprestidae etc.). Adulții acestor specii se instalează preferențial pe arborii care sunt afectați de diferiți agenți patogeni sau au suferit din cauza atacului altor specii de insecte fitofage. Arborii atacați de carii intră în declin, se uscă prematur şi adesea materialul lemnos este afectat şi din punct de vedere al calității de industrializare. Pagube similare prodic şi croitorii, insecte care aparțin familiei Cerambycidae (1,2,3,4).
Pentru acest grup de dăunători în cadrul Ocolului Silvic Dorna Candrenilor, în perioada 2001-2002 s-au efectuat următoarele acțiuni:
Monitorizarea a 12384 ha de pădure, în vârstă cuprinsă între 40-100 de ani şi alcătuită preponderent din molid, brad şi fag.
Monitorizarea focarelor de ipide în cele 5 districte şi a arborilor din focare care s-au uscat.
Urmărirea arborilor cursă amplasați în cele 5 districte, prin care s-a încercat şi inventarierea nivelului populațional (s-a urmărit densitatea maximă a populației pe un metru pătrat de suprafață afectată).
În anul 2001 carii de scoarță au fost semnalați pe 2894 ha. Toată suprafața atacată prezenta un atac foarte puternic. Cele mai mari suprafețe atacate de carii sunt situate în cadrul districtului Roşia. La Voroava atacul a fost semnalat pe 170 ha , la Dornişoara pe 371 ha iar la Negrişoara pe 970 ha. În cadrul districtului Strunior nu au fost semnalate suprafețe atacate.
În anul 2002 atacul a fost semnalat pe o suprafață de 3276 ha. Se constată o diminuare a suprafețelor atacate în cadrul districtelor Negrişoara, Roşia şi Dornişoara. Dinamica suprafețelor atacate de ipide, în perioada 2001, 2002 este redată în tabelul 1.
Situația focarelor în perioada 2001-2002 este redată în tabelul 2. Pe ansamblul ocolului silvic se semnalează o creştere a numărului de focare precum şi a numărului de arbori uscați. Astfel, dacă în anul 2001 s-au semnalat 90 de focare cu 5332 arbori uscați, în anul 2002 au fost inventariate 116 ha cu 7346 arbori uscați în focare.
Pentru urmărirea dinamicii populaționale şi a densității populației pe unitatea de măsură în cadrul ocoalelor silvice se utilizează arborii cursă. Aceştia provin din doborâturile accidentale şi instalează în cadrul arboretelor. Adesea acest material este puternic populat de gândaci şi se impune apoi scoaterea materialului din parcelă.


**CUVINTE CHEIE: Ipidae, Buprestidae, Cerambycidae, ATRATYP**

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## DETAILED ABSTRACT

The areas with forest species arrived at the exploitation age are frequently attacked by the species which damage the bark and the wood, especially by *Ipidae,Buprestidae* and *Cerambycidae.* In the graduation areas, mass multiplication of pests is produced locally, as a result of the multiplication of individuals which form the "iron generation" due to favourable conditions which may occur. This mass multiplication which appears locally and which manifests itself by a slow increase of the number of individuals, is the so-called native multiplication. The primary hotbeds appear through native multiplication.
In 2001, bark caries were found on 2,894 hectares. In 2002, the attacked was seen on a surface of 3,276 hectares.
In the forest range as a whole one could notice an increase of the number of hotbeds as well as of that of dried trees. Within the Voroava and Strunior districts, an increase of the number of hotbeds was noticed , a situation also reflected by the dynamics of the areas attacked by the *ipidae.*

## INTRODUCTION

The forest material is often attacked by a group of pests known under the generic denomination of caries, which may be bark caries or wood caries, insects which usually belong to the order of *Coleoptera* (families *Ipidae, Buprestidae, etc).* The adults of those species place themselves usually on the trees which are affected by different pathogen agents or have suffered the attack of other species of phytophagous insects. Trees attacked by caries witness a decline, they dry prematurely and often the wooden material is affected in terms of its industrialization quality. Similar damages produce also the tailors, insects which belong to the *Cerambycidae* family (1,2,3,4).

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These hotbeds individualize in about 2-3 years subsequent to the beginning of the graduation and constitute the main element of study for the prognosis of the graduation development. Mass multiplication may occur also by insects migration from other bushes. Due to insects over-multiplication in primary hotbeds which begins even in the second year of the phase of numerical increase, an insects spreading occurs in the bushes around the primary hotbed. This insects spreading also called proximity infestation usually gives way to the appearance of the secondary hotbeds (1,3).

## MATERIAL AND METHOD

Within the Dorna Codrenilor Forest Range, the following actions were performed between 2001-2002 for this group of pests:

- the monitoring of 12,384 hectares of forest of an age between 40-100 years and composed mainly of spruce fir, fir tree and beech
- the monitoring of the *ipidae* hotbeds in the 5 districts and of the trees from the hotbeds which dried
- the follow up of the trap trees placed in the 5 districts by which was made an attempt to inventory the population level (the population maximum density was surveyed on a suqre meter of affected surface)

## RESULTS AND DISCUSSION

The areas with forest species arrived at the exploitation age are frequently attacked by the species which damage the bark and the wood, especially by *ipidae*. In 2001, bark caries were found on 2,894 hectares. The entire attacked surface showed the signs of a very powerful attack. The largest areas attacked by caries are located within the Roşia district where, out of the 2,178 hectares inventoried, the attack was seen on 1,383. In Voroava, the attack was seen on 170 ha, in Dornişoara, on 371 ha and in Negrişoara on 970 ha. Within the Strunior district no attacked surfaces were observed.

In 2002, the attacked was seen on a surface of 3,276 hectares. A decrease of the attacked surfaces could be witnessed within the Negrişoara, Roşia and Dornişoara districts. Thus, at Negrişoara, the surface attacked by the *ipidae* decreased from 970 ha to 153 ha at the same time with a decrease of the attack degree. At Roşia, the attacked surface decreased from 1,383 hectares to 956, the phenomenon being also accompanied by a decrease of the attack degree. The most restricted areas attacked by caries in 2002 were in the Dornişoara district where only 33 hectares were found attacked by the *ipidae*. In the other two districts, Voroava and Strunior, neighbouring districts, a prominent increase of the attacked surfaces was reported. At Voroava, the attacked surface increased from 170 hectares in 2001 to 1,358 ha in 2002, and at Strunior in 2002, 777 hectares were attacked by the *ipidae*, the attack being from the very beginning a very strong one.

The dynamics of the areas attacked by the *ipidae* during the period 2001-2002 is shown by table 1.

Taking into consideration the fact that within the Dorna Candrenilor Forest Range were noticed quite large areas attacked by the *ipidae*, the hotbeds and the number of dried trees in a hotbed were inventoried. The situation of the hotbeds between 2001-2002 is shown by table 2. In the forest range as a whole one could notice an increase of the number of hotbeds as well as of that of dried trees. Thus, if in 2001 we found 90 hotbeds with 5,332 dried trees, in 2002, 116 hectares were inventoried with 7,346 dried trees in the hotbeds.

Table1: Forest range surfaces attacked by bark caries (*Ipidae*). Dorna Candrenilor Forest Range

| Districts | Surfaces. He | The attacked surfaces by 2001 | | The attacked surfaces by 2002 | |
|---|---|---|---|---|---|
| | | he | The attack degree | he | The attack degree |
| Negrişoara | 4265 | 970 | Very powerful | 153 | Powerful |
| Roşia | 2178 | 1383 | Very powerful | 956 | Powerful |
| Voroava | 2261 | 170 | Very powerful | 1358 | Powerful |
| Strunior | 1653 | - | - | 777 | Very powerful |
| Dornişoara | 2027 | 371 | Very powerful | 33 | Powerful |
| **TOTAL** | 12384 | 2894 | | 3276 | |

In the 3 districts (Negrişoara, Roşia and Dornişoara) in which we found a decrease of the total surfaces attacked by the *ipidae*, we also found a decrease of the number of hotbeds. The most important hotbeds decrease was seen in the Negrişoara district where in 2002 were found 15 hotbeds as compared to 26 in 2001. Within the Voroava and Strunior districts, an increase of the number of hotbeds was noticed (5 hotbeds in 2001 as compared to 32 in 2002 in Voroava and the appearance of 14 hotbeds in Strunior), a situation also reflected by the dynamics of the areas attacked by the *ipidae.*

Table 2: Situation of bark caries hotbeds (*Ipidae*). Dorna Candrenilor Forest Range

| Districts | By 2001 | | By 2002 | |
|---|---|---|---|---|
| | Number of hotbeds | Number of dried trees | Number of hotbeds | Number of dried trees |
| Negrişoara | 26 | 1814 | 15 | 1276 |
| Roşia | 47 | 3287 | 45 | 3860 |
| Voroava | 5 | 120 | 32 | 1085 |
| Strunior | - | - | 14 | 987 |
| Dornişoara | 12 | 111 | 10 | 138 |
| **TOTAL** | 90 | 5332 | 116 | 7346 |

Trap trees are used to track the population dynamics and the population density by measure unit within the forest ranges. These trees come from accidental cuts and are installed within the bushes. Often this material is strongly populated by bugs and the removal of the material from the lot is then imposed.
Table 3 shows the number of trap trees used between 2001-2002 in the 5 districts. In 2001, 2,914 trap trees were installed and in 2002, 3,093. For the assessement of the population density the maximum number of existing galleries was calculated for a square meter of analyzed material. In 2001 the attack in the Strunior district was almost insignificant but next year an explosive increase of the *ipidae* population was noticed. An alarming situation was also found in the Voroava district where both years the highest numerical density of *ipidae* was noticed. This reflected in the dynamics of the *ipidae* hotbeds (table 2) as well as in the dynamics of the surfaces attacked by caries (table 1).

Table 3: Situation of bark caries (*Ipidae*) captures with the aid of the tree traps. Dorna Candrenilor Forest Range

| Districts | Year 2001 | | Year 2002 | |
|---|---|---|---|---|
| | Number of the tree traps | Max. number galleries/ square meter | Number of the tree traps | Max. Number galleries/ square meter |
| Negrişoara | 306 | 76 | 382 | 112 |
| Roşia | 311 | 62 | 409 | 93 |
| Voroava | 276 | 189 | 325 | 173 |
| Strunior | 1955 | 4 | 1790 | 148 |
| Dornişoara | 66 | 56 | 187 | 93 |
| **TOTAL** | 2914 | | 3093 | |

## CONCLUSION

In forests which in 2001 were at the exploitation age the bark caries attack was noticed on 23.37% of the surface and in 2002, on 26.45% with increase tendencies for the following years.

In order to establish ipidae fight strategies it is obligatory the inventory and follow up of the ipidae hotbeds in all the forest districts and cantons.

Trees coming from accidental chutes may also be used to follow the dynamics of the ipidae populations by their use as trap trees.

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