

OCCURRENCE OF *Euplatypus parallelus*, *Euplatypus* sp. (COL.: EUPLATYPODIDAE) AND *Xyleborus affinis* (COL.: SCOLYTIDAE) IN *Pinus* sp. IN RIBAS DO RIO PARDO, MATO GROSSO DO SUL, BRAZIL¹

José Cola Zanuncio², Marcos Franklin Sossai², Laércio Couto³ and Rosenilson Pinto²

ABSTRACT - Wood borer species of the families Euplatypodidae and Scolytidae were observed attacking trees of *Pinus* sp. in the Municipality of Ribas do Rio Pardo, state of Mato Grosso do Sul, Brazil, in March 2000. This plantation had been previously burned in an accidental fire in January 2000, causing the trees to become partially or totally unhealthy, rendering them more susceptible to attack of these pests. Galleries of these wood borers were opened with a chisel to observe parameters such as their direction and form of these galleries. Species observed as wood borers of *Pinus* sp. were *Euplatypus parallelus*, *Euplatypus* sp. (Coleoptera: Euplatypodidae) and *Xyleborus affinis* (Coleoptera: Scolytidae).

Key words: Forest pest, ambrosia beetles, woodborers.

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RESUMO - Foi observada a presença de coleobrocas das famílias Euplatypodidae e Scolytidae atacando árvores de *Pinus* sp. no município de Ribas do Rio Pardo, Mato Grosso do Sul, em março de 2000. Este plantio havia sido queimado em incêndio acidental em janeiro daquele ano, o que tornou as árvores parcial ou totalmente estressadas e mais suscetíveis ao ataque dessas pragas. As galerias de ambas as espécies de coleobrocas foram abertas com formão, para observar parâmetros como o seu direcionamento e a sua forma. As espécies broqueadoras observadas foram *Euplatypus parallelus*, *Euplatypus* sp. (Coleoptera: Euplatypodidae) e *Xyleborus affinis* (Coleoptera: Scolytidae).

Palavras-chave: Praga florestal, besouro-ambrósia e coleobrocas.

Among many insect groups considered pests in forest plantations, wood borers of the families Euplatypodidae and Scolytidae, order Coleoptera, are important, especially in conifer plantations, due to the damage they cause as bark and ambrosia beetles. In Brazil, species of this order are included as the most important group of pests in forest plantations, along with leaf cutting ants and Lepidoptera. Actually, these wood borers are more important than the latter two groups as pests in conifer plantations.

The majority of the species of Euplatypodidae and Scolytidae spend most of their life inside plant structures such as roots, trunks, branches, fruits or seeds. They only leave their host plants to colonize others and they are one of the most developed Coleoptera groups, due to their habit of growing fungi (Flechtmann, 1995). Euplatypodidae and Scolytidae include many species, which are known as bark or ambrosia beetles. Although species of these families can account for economic losses in forest plantations and native areas, many of them are

¹ Recebido para publicação em 29.1.2001.

Aceito para publicação em 20.6.2002.

² Dep. de Biologia Animal/BIOAGRO, Universidade Federal de Viçosa – UFV, 36571-000 Viçosa-MG. <zanuncio@mail.ufv.br>; <mfssossai@bol.com.br>; <gribeiro@alunos.ufv.br>. ³ Dep. de Eng. Florestal, UFV. <lcouto@mail.ufv.br>.

ecologically important because they start decomposition of dead or decadent trees, helping to incorporate nutrients into the soil (Kuhnelt, 1957; Zanuncio, 1981, Shore et al. 1987). Thus, species of Euplatypodidae and mainly those of the Scolytidae contribute significantly to the maintenance of vigorous growth of plants through nutrient recycling. However, this activity goes against industry needs when forest products are needed during a planned period of time (Wood, 1982).

Most Euplatypodidae and Scolytidae species are secondary pests in nature because they depend on trees damaged by lightning, fire or diseases or decadent trees, due to diseases or excess or lack of water for their development (Fredericks & Jenkins, 1988; Waldschutz, 1984).

Reports on losses caused by Euplatypodidae and Scolytidae have shown different damage levels by these insects. Ninety per cent of tree mortality and 60% of wood losses can be attributed to bark beetles. *Dendroctonus frontalis* (Coleoptera: Scolytidae) was responsible for losses of 14 million cubic meters of wood in the Southern United States of America between 1948 and 1975 (UNITED STATES, 1985). Besides, about two million cubic meters of wood are destroyed annually in the USA by *Dendroctonus brevicornis* and, approximately one million cubic meter by each one of the following species: *Dendroctonus ponderosae*, *Dendroctonus rufipennis* and *Dendroctonus frontalis* (Coleoptera: Scolytidae) (Wood, 1982).

Habit and alimentary specificity among Euplatypodidae and Scolytidae species are closely related. Xylomicetophagous species present polyphagia because their main food component is represented by conids of fungi, which they grow (Wood, 1982). These fungi seem to be relatively nonspecific and they need basically moist wood for their development. Species that grow fungi in galleries are called ambrosia beetles and they are dominant in tropical areas (Flechtmann, 1995).

The purpose of this research was to collect and identify species of wood borers, which were found to damage trees in a plantation of *Pinus* sp. in the Municipality of Ribas do Rio Pardo, Mato Grosso do Sul, Brazil, in March 2000. This plantation underwent an accidental fire in January 2000. Damage by these insects was described after removing 5 cm wood disks from attacked trees with a chain saw and opening galleries in them with a chisel. These disks were removed from different trees and brought to the Department of Animal

Biology of the Federal University of Viçosa, Minas Gerais, Brazil. Samples presented a higher incidence of wood borer galleries and 13 of them were opened. Damage observed was characterized by galleries going through the bark into the sapwood and eventually into the pith. Damaged wood presented a large number of galleries with darkened walls as result of the action of fungi cultivated by these beetles. This also affects aesthetic characteristics of saw wood and reduces its commercial value. Adult beetles found inside these galleries were identified as *Euplatypus parallelus*, *Euplatypus* sp. (Coleoptera: Euplatypodidae) and *Xyleborus affinis* (Coleoptera: Scolytidae).

The occurrence of fire in the *Pinus* plantation where damaged trees were found could have been responsible for the attack of these wood borers. This can be explained by the fact that it reduces tree health, rendering them more susceptible to wood borers, due to lower sap translocation (Fredericks & Jenkins, 1988, Waldschutz, 1984). This is worth noticing since vigorous trees have higher resistance to wood borers through sap exudation.

Galleries of these insects opened with a chisel showed that they penetrated into the sapwood with a single branch in most cases (41.6%) with a mean depth of 1.6 cm. In other cases, galleries of these bugs showed two (25.0% of them), three (25.0% of them) or five (8.4% of them) branches in different directions with a mean depth of 1.96, 1.92 and 0.8 cm, respectively. Even though galleries of these insects were not very deep, their damage is considerable, especially if logs are to be converted into saw log or plywood. In the latter case, damage is even higher because the best portion of the log for plywood is destroyed. Also this damage can hinder export of wood material, which is not accepted in many countries if it shows signs of ambrosia beetle attack.

Problems in reforested areas caused by wood borers of Euplatypodidae and Scolytidae families could be reduced by maintaining a vigorous tree growth and by removing any trees affected by problems such as fire, disease, etc. This could prevent the buildup of populations of these insects in the area, thus reducing their damage potential.

ACKNOWLEDGEMENTS

We want to thank “Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)”, “Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG)” and “Federação das Indústrias do

Estado de Minas Gerais (FIEMG)” for their financial support and Prof. Carlos Flechtmann, USP, São Paulo, Brasil for the identification of the insects.

REFERENCES

- BROWNE, F. G. The biology of Malayan Scolytidae and Platypodidae. **The Malayan Forest Records**, n. 22, v. 1, p. 255, 1961.
- FLECHTMANN, C. A. H. **Scolytidae em reflorestamentos com pinheiros tropicais**. Piracicaba: IPEF, 1995. 201 p. (Manual de pragas em florestas, 4)
- FREDERICKS, S. E.; JENKINS, M. J. Douglas-fir beetle (*Dendroctonus pseudotsuga* Hopkins, Coleoptera: Scolytidae) brood production on Douglas-fir defoliated by Western spruce budworm (*Choristoneura occidentalis* Freeman, Lepidoptera: Tortricidae) in Logan Canyon, Utah. **Great Basin Naturalist**, n. 48, v. 3, p. 348-351, 1988.
- KÜHNELT, W. **Biología del Suelo**. Madrid: Consejo Superior de Investigaciones Científicas, 1957. 267 p.
- SHORE, T. L.; McLEAN, J. A.; ZANUNCIO, J. C. Reproduction and survival of the ambrosia beetle *Trypodendron lineatum* (Oliv.) (Coleoptera: Scolytidae) in Douglas-fir and Western Hemlock logs. **The Canadian Entomologist**, n. 109, p. 131-139, 1987.
- UNITED STATES. Department of Agriculture. Forest Service. **Insects of Eastern Forests**. Washington: 1985. 608 p.
- WALDSCHUTZ, A. **Überwachung und Bekämpfung von Borkenkäfer der Nadelbaumarten**. Bonn: AID, 1984. 23 p. (AID, 15).
- WOOD, S. L. The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. **Great Basin Naturalist Memoirs**, v. 6, p. 1300-1359, 1982.
- ZANUNCIO, J. C. **Biology of *Gnathotrichus sulcatus* (Le Conte 1868) (Col.: Scolytidae) with special emphasis on host colonization and brood production**. Canada: University of British Columbia, 1981. 118 p. Tese (Ph.D.) – University of British Columbia, 1981.