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PERIPHOBA HIRCIA (LEPIDOPTERA: SATURNIIDAE) DEFOLIATING PLANTS OF *ACACIA MANGIUM* IN THE STATE OF RORAIMA, BRAZIL

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A*cacia mangium* Willd. (Fabiales: Fabaceae: Mimosoideae), which originated from the Australian continent, fixes nitrogen in the soil and is adapted to well drained and degraded land. In Brazil, plantations of *Acacia* spp. rank third among cultivated forest species. This species is planted on 189,000 ha, mainly in the state of Rio Grande do Sul, where *Acacia mearnsii* De Willd. predominates (Associação Brasileira de Produtores de Florestas Plantadas 2008), and the state of Roraima, where *Acacia mangium* Willd is the most widely planted (Arco-Verde 2002).

Acacia mangium has rapid growth, high wood production, and may replace native plants as raw material for firewood (Souza et al. 2004), fences, construction, windbreaks (Balieiro et al. 2004), charcoal, medium density particle board (MDF) and plywood (Schiavo & Martins 2003). Also *A. mangium* produces extrafloral nectar (Balieiro et al. 2004) suitable for bees of the genus *Apis* (Barbosa 2002).

Plantation of *Acacia* spp. in the world and particularly in Brazil are increasing, and this favors pests and diseases, including introduced species migrating to or from acacia plants (Wingfield et al. 2011). Lepidopteran caterpillars can reduce leaf tissue (Barbosa 2002), growth and cause tree death.

The aim of this study was to identify the lepidopteran species whose larvae were found defoliating trees of *A. mangium* in plantations in the state of Roraima, Brazil from May to Jul 2010.

Leaves with larvae were detached from plants, placed in plastic pots and taken to the laboratory of Biological Control of Insects of the Institute of Biotechnology Applied to Agriculture (BIOAGRO) of the UFV in Viçosa, Minas Gerais State, Brazil. These larvae were placed in screen-covered wood-frame boxes (30 × 30 × 30 cm) in the laboratory and fed daily with *A. mangium* leaves at 25 °C ± 1.8, 70 ± 9% RH and 12:12 h L:D to obtain adults of this lepidopteran defoliator.

After identification, voucher specimens of adults were deposited in the Department of Zoology at the Federal University of Paraná (UFPR). They were identified as *Periphoba hircia* (Cramer) (Lepidoptera: Saturniidae) (Fig. 1); and this is the first report of this species defoliating *A. mangium* plants.

Larvae of *P. hircia*, fed on leaves of *A. mangium*, presented 6 instars, with the initial ones being light green pink and the older instars light green when they reached around 10 cm in length. They fed at night and young ones were gregarious and moved in processionary chains, but in the last 2 instars they are solitary. After this period, the larvae wove cocoons and turned into pupae in the soil at the bottom of the cages. The pupa period lasted 5 months.

Periphoba hircia larvae are adapted to feeding on different plant species, and its development on *A. mangium* was similar to that on *Fagus sylvatica* (Fagalus: Fagaceae) leaves as reported by Gardiner (1967). Also when *P. hircia* was reared on *F. sylvatica,* it had 6 instars, and the early instars were gregarious and fed in processionary groups, but the later instars were solitary and fed at night. Fully developed *P. hircia* caterpillars (Fig. 2) reached 7 to 10 cm in length with a blue-green dorsum and light green venter. Spiracles were orange, the false legs translucent green, and the body was green and densely covered with spines, especially on the back. These spines can inoculate urticating substances responsible for painful dermatitis like other Hemileucinae (Haddad & Cardoso 2003; Moraes 2003).

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Fig. 1. Male (A) and female (B) *Periphoba hircia* (Lepidoptera: Saturniidae).

Larvae of *P. hircia*, fed leaves of *A. mangium*, changed from green to pale pink near pupation – as had been observed when they were reared on *F. sylvatica* (Gardiner 1967). Near pupation, spines of the larvae became yellowish and shrank in size, making them almost imperceptible. After this period, the larva wove a cocoon on *A. mangium* leaves in the soil layer at the bottom of the cage, and then transformed into a pupa. The pupal period lasted 5 months when reared on *A. mangium* leaves in the laboratory - compared to 2.5 to 3 months when reared on *F. sylvatica* (Gardiner 1967).

Adults of *P. hircia* exhibited sexual dimorphism. The female (Fig. 1B) was larger than the male and the female's abdomen was more prominent and wider than that of the male (Fig. 1A). Each female laid about 200 eggs, which were slightly ovoid (2.5 × 2.3 × 2.5 mm) with a small white and black micropyle. Eggs were deposited in pairs in a straight line along the leaf.

Newly-emerged *P. hircia* adults had a persistent and unpleasant odor, previously reported for this species (Gardiner 1967) and other *Periphoba* species (Blest 1960). This odor may deter predators during the vulnerable period when the newly emerged adults are expanding and drying their wings (Gardiner 1967), but there is no empirical evidence to support this hypothesis.

Periphoba hircia is polyphagous feeding on leaves of *Carpinus betulus* L. (Fagales: Batulaceae), *Crataegus oxyacantha* L. (Rosales: Rosaceae), *Fagus sylvatica*, *Malus* sp. (Rasales: Rosaceae), *Prunus* spp. (Rasales: Rosaceae), *Quercus ilex* L. (Fagales: Fagaceae) and *Robinia pseudoacacia* L. (Fagales: Fagaceae) in the temperate region (Gardiner 1967). This insect defoliates plants of *Elaeis guineensis* Jacq. (Arecales: Arecaceae) in

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Fig. 2. Caterpillar of *Periphoba hircia* (Lepidoptera: Saturniidae).

an area of 500 ha in the Peruvian Amazon where it was considered a pest (Couturier & Kahn 1993). It was a secondary pest of *Eucalyptus urophylla* S. T. Blake (Myrtales: Myrtaceae) in San Carlos, Colombia with outbreaks in isolated areas during the rainy season (Rosales 2001).

The presence of *P. hircia* was observed for the first time defoliating *A. mangium* trees in the state of Roraima, Brazil, and the severity of this damage indicated that this species should be included in monitoring programs of acacia pests.

Summary

Larvae of *Periphoba hircia* (Cramer) (Lepidoptera: Saturniidae) defoliated *Acacia mangium* in the state of Roraima, Brazil. This is the first report of this species defoliating *A. mangium* in Brazil. The damage to the foliage was substantial and *P. hircia* should be monitored to ascertain its significance as pest of this plant. The larval stage of this species had 6 instars. Its cocoons were woven either on *A. mangium* leaves or in the soil. The pupal period of *P. hiricia* reared on *A. mangium* lasted 6 months. Its adults were dimorphic with females larger and having more prominent abdomens than males.

Key Words: defoliator, forest plantations, Lepidoptera, Saturniidae

Resumo

Larvas de *Periphoba hircia* (Cramer) (Lepidoptera: Saturniidae) desfolharam plantas de *Acacia mangium* no estado de Roraima, Brasil, sendo este seu primeiro relato nessa essencia florestal no Brasil. A desfolha foi substancial e essa espécie deve ser monitorada para determinar sua importância para esta planta. A fase de larva teve 6 ínstares. Seus casulos foram tecidos em folhas de *A. mangium* ou no solo. O estágio de pupa de *P. hiricia* em *A. mangium* durou 6 meses. Adultos dimórficos com fêmeas maiores e abdomen mais proeminente que os machos

Palavras-Chave: Desfolhador, plantios florestais, Lepidoptera, Saturniidae

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