

BRONTOCORIS TABIDUS (HETEROPTERA: PENTATOMIDAE) PREYING ON PODALIA WALKERI (LEPIDOPTERA: MEGALOPYGIDAE) ON EUCALYPT PLANTS IN BRAZIL

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Eucalyptus spp. (Myrtales: Myrtaceae: Eucalyptaceae) are intensively cultivated in Brazil to produce raw materials for industry and construction, and products such as wood, coal, cellulose, and oils (Zanuncio et al. 2010). Lepidopteran defoliators are found in eucalyptus plantations whose importance is increasing (Soares et al. 2009a). Integrated Pest Management (IPM) can reduce the use of pesticides (Pires et al. 2011a; Souza et al. 2012) and conservation of natural enemies is essential for IPM programs to manage lepidopteran pests in eucalyptus plantations (Lacerda et al. 2004).

Caterpillars recorded damaging eucalyptus in Brazil includes *Automeris* sp. (Walker), *Eacles imperiales* (Walker) and *Hylesia* sp. Hübner (Lepidoptera: Saturniidae), *Eupseudosoma aberrans* (Schaus) and *Eupseudosoma involuta* (Sepp) (Lepidoptera: Arctiidae), *Oxydia vesulia* (Cramer), *Sabulodes caberata* (Guenée) and *Thyrintina arnobia* (Stoll) (Lepidoptera: Geometridae), *Euselasia eucerus* (Hewitson) (erroneously reported as *Euselasia apisaon*) and *Euselasia hygenius* (Stoll) (Lepidoptera: Riodinidae) (Zanuncio et al. 1998; Soares et al. 2009b,c).

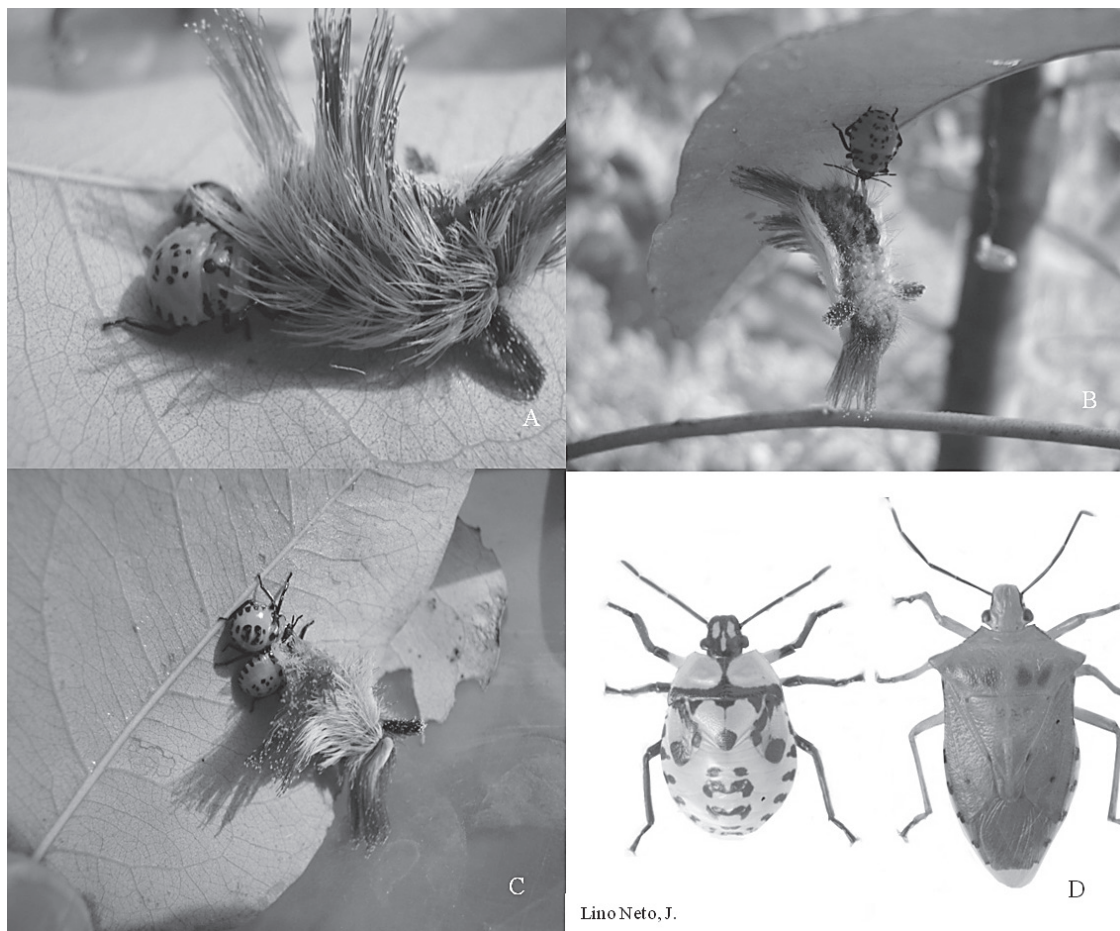
Podalia walkeri (Berg) (Lepidoptera: Megalopygidae) was reported to be a significant defoliator in eucalyptus plantations in Minas Gerais State, Brazil (Zanuncio et al. 1998); hence the necessity of studying natural enemies of this pest as part of IPM programs.

The objective of this study was to record and to elaborate the preying of *Brontocoris tabidus* (Signoret) (Heteroptera: Pentatomidae) on *P. walkeri* caterpillars on eucalyptus plants. In Jan 2012 fourth instar nymphs of *B. tabidus* were observed feeding on *P. walkeri* caterpillars (Fig. 1A, B, C and D) on *Eucalyptus urophylla* S. T. Blake in Diamantina (S 18° 18' W -43° 36', mean annual rainfall 1082 mm, mean annual temperature of 19.4 °C and 1250 m asl), Minas Gerais State, Brazil.

Monitored eucalyptus trees were 4 yr old. Immature *B. tabidus* were collected and sent to the Laboratory of Biological Control of Insects of the Federal University of the Jequitinhonha and Mucuri Valleys (UFVJM). These insects were reared on eucalyptus seedlings with *Tenebrio molitor* L. (Coleoptera: Tenebrionidae) pupae until the adult stage, when they could be identified at the species level.

The preying of *B. tabidus* on *P. walkeri* caterpillars is important for the IPM of this pest in eucalyptus plantations. Preliminary studies indicate that nymphs of *B. tabidus* can dominate and kill a caterpillar of *P. walkeri* in 16 min, and may consume several *P. walkeri* caterpillars before eclosing into the adult. Caterpillars of *P. walkeri* have previously been reported to damage this plant in Minas Gerais State (Zanuncio et al. 1998) and Rio Grande do Sul State (Bernardi et al. 2011). This pest is a significant defoliator of eucalyptus plants, and there are no effective strategies for its control in commercial plantations. Besides, the stinging hairs of *P. walkeri* caterpillars can cause health problems in humans (Cardoso & Haddad Júnior 2005; De Roodt et al. 2000).

Brontocoris tabidus is a generalist predator that naturally controls defoliating insects in *Eucalyptus* plantations in Brazil. This species is the first to arrive in areas infested by defoliating caterpillars, followed by other predator species, especially *Podisus nigrispinus* Dallas (Pentatomidae); and these natural enemies build large populations in the field (Zanuncio et al. 2011). Moreover, *B. tabidus* is easily reared in the laboratory and has potential for biological control programs (Pires et al. 2011b; Zanuncio et al. 2011). Thus, studies on the biology and mass rearing of *B. tabidus* and its predation rate on *P. walkeri* both in the laboratory and the field are being conducted in order to allow the use of this natural enemy in biological control programs of *P. walkeri* caterpillars.



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Fig. 1. Nymphs of *Brontocoris tabidus* (Signoret) (Heteroptera: Pentatomidae) preying on *Podalia walkeri* (Berg) (Lepidoptera: Megalopygidae) (A, B and C) on eucalyptus plants in Diamantina, Minas Gerais State, Brazil. Fourth instar nymph preying in the field and *B. tabidus* adult (D).

This is the first report *B. tabidus* preying on *P. walkeri* in Brazil. Our observations suggest that *B. tabidus* has the potential to suppress *P. walkeri* caterpillars as a component of IPM programs in eucalyptus plantations. This predator appears able to keep populations of *P. walkeri* below the economic injury level, and thereby preclude the excessive use of pesticides, and minimize losses in eucalyptus production as well as accidents involving workers in eucalyptus plantations.

SUMMARY

There are many *Eucalyptus* spp. of commercial importance in Brazil. However, plants of this genus can be damaged by lepidopteran defoliators, which necessitates the development of Integrated Pest Management (IPM) programs against these pests. We observed significant levels of predation of *Podalia walkeri* (Berg) (Lepidoptera: Megalo-

pygidae) caterpillars by *Brontocoris tabidus* (Signoret) (Heteroptera: Pentatomidae) on eucalyptus plants in Diamantina, Minas Gerais State, Brazil. Our observations suggest that *B. tabidus* has the potential to suppress *P. walkeri* caterpillars as a component of IPM programs in eucalyptus plantations.

Key Words: Asopinae, biological control, caterpillars, IPM, Pentatomidae

RESUMO

Eucalyptus spp. possui várias espécies de interesse comercial no Brasil. No entanto, plantas desse gênero podem ser danificadas por lepidópteras desfolhadoras, o que torna necessário o Manejo Integrado de Pragas (MIP) para esses insetos. Foi relatada, neste trabalho, a predação da lagarta *Podalia walkeri* (Berg) (Lepidoptera: Megalopygidae) pelo percevejo predador *Brontocoris tabi-*

us (Signoret) (Heteroptera: Pentatomidae), em plantas de eucalipto no município de Diamantina, Minas Gerais, Brasil.

Palavras Chave: Asopinae, controle biológico, lagartas, MIP, Pentatomidae

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REFERENCES CITED

- BERNARDI, O., GARCIA, M. S., SILVA, E. J. E., ZAZYCKI, L. C. F., BERNARDI, D., AND FINKENAUER, E. 2011. Levantamento populacional e análise faunística de Lepidoptera em *Eucalyptus* spp. no município de Pinheiro Machado, RS. *Ciência Florestal* 21: 735-744.
- CARDOSO, A. E. C., AND HADDAD JÚNIOR, V. 2005. Acidentes por lepidópteros (larvas e adultos de mariposas): estudo dos aspectos epidemiológicos, clínicos e terapêuticos. *An. Brasileiros Dermatol.* 80: 571-578.
- DE ROODT, A. R., SALOMON, O. D., AND ORDUNA, T. A. 2000. Accidents due to Lepidoptera with special reference to *Lonomia* sp. *Medicina-Buenos Aires* 60: 964-972.
- LACERDA, M. C., FERREIRA, A. M. R. M., ZANUNCIO, T. V., ZANUNCIO, J. C., BERNARDINO, A. S., AND ESPINDULA, M. C. 2004. Development and reproduction of *Podisus distinctus* (Heteroptera: Pentatomidae) fed on larvae of *Bombyx mori* (Lepidoptera: Bombycidae). *Brazilian J. Biol.* 64: 237-242.
- PIRES, E. M., MOREIRA, I., SOARES, M. A., FERREIRA, J. A. M., PINTO, R., AND ZANUNCIO, J. C. 2011a. *Oxymerus aculeatus* (Coleoptera: Cerambycidae) causing damage on corn plants (*Zea mays* L.) in Brazil. *Rev. Colombiana Entomol.* 37: 85-86.
- PIRES, E. M., ZANUNCIO, J. C., AND SERRÃO, J. E. 2011b. Canibalism of *Brontocoris tabidus* and *Podisus nigripinus* during periods of pre-release without food or fed with *Eucalyptus cloezian* plants. *Phytoparasitica* 31: 27-34.
- SOARES, M. A., ZANUNCIO, J. C., LEITE, G. L. D., WERMELINGER E. D., AND SERRÃO, J. E. 2009a. Does *Thyrintina arnobia* (Lepidoptera: Geometridae) use different defense behaviours against predators? *J. Plant Dis. Prot.* 116: 30-33.
- SOARES, M. A., TORRES-GUTIERREZ, C., ZANUNCIO, J. C., PEDROSA, A. R. P., AND LORENZON, A. S. 2009b. Superparasitismo de *Palmistichus elaeisis* (Hymenoptera: Eulophidae) y comportamiento de defensa de dos hospederos. *Rev. Colombiana de Entomol.* 35: 62-65.
- SOARES, M. A., ZANUNCIO, T. V., ZANUNCIO, J. C., MIELKE O. H. H., AND SERRÃO, J. E. 2009c. *Euselasia mys lara* (Stichel, 1919) (Lepidoptera: Riodinidae) a potential pest on *Eucalyptus* in Brazil? *J. Res. Lepid.* 41: 80-82.
- SOUZA, G. K., PIKART, T. G., PIKART, F. C., SERRÃO, J. E., WILCKEN, C. F., AND ZANUNCIO, J. C. 2012. First record of a native heteropteran preying on the introduced pest, *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae), in Brazil. *Florida Entomol.* 95: 517-520.
- ZANUNCIO, T. V., ZANUNCIO, J. C., MIRANDA, M. M. M., AND MEDEIROS, A. G. B. 1998. Effect of plantation age on diversity and population fluctuation of Lepidoptera collected in *Eucalyptus* plantations in Brazil. *Forest Ecol. Mgt* 108: 91-98.
- ZANUNCIO, A. J. V., PASTORI, P. L., KIRKENDALL, L. R., LINO-NETO, J., SERRÃO, J. E., AND ZANUNCIO, J. C. 2010. *Megaplatypus mutatus* (Chapuis) (Coleoptera: Curculionidae: Platypodinae) attacking hybrid *Eucalyptus* clones in southern Espirito Santo, Brazil. *Coleopt. Bull.* 64: 81-83.
- ZANUNCIO, J. C., FERREIRA, A. M. R. M., TAVARES, W. S., TORRES, J. B., SERRÃO, J. E., AND ZANUNCIO, T. V. 2011. Rearing the predator *Brontocoris tabidus* (Heteroptera: Pentatomidae) with *Tenebrio molitor* (Coleoptera: Tenebrionidae) pupa on *Eucalyptus grandis* in the field. *American J. Plant Sci.* 2: 282-288.