First Record of Chalcodemus bicolor (Coleoptera: Curculionidae) Enemies in South America

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First record of *Chalcodemus bicolor* (Coleoptera: Curculionidae) enemies in South America

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Weevils (Coleoptera: Curculionidae) are an ecologically and economically important group of eucalypt pests, and outbreaks have increased in the recent years, mainly of species in the subfamily Molitínae (Garlet et al. 2011; Souza 2011; Cedeño & Flowers 2012; Sweeney et al. 2012; Mafia et al. 2013). Damage by Molitínae weevils in general includes defoliation and chewing holes and pruning the apical sprout and lateral branches, which affects tree growth and wood quality.

The Brazilian eucalypt pruner, *Chalcodermus bicolor* Fiedler (Coleoptera: Curculionidae), causes high levels of damage to the Brazilian eucalypt plantations (Souza et al. 2011). After the female has cut through main and lateral tree sprouts, further damage is caused when the female oviposits in the branch tips.

Chemical insecticide treatment is required to control this species, but pesticides cannot be used by eucalypt producers because many forest enterprises are certified by international forest regulations (e.g., Forest Stewardship Council), which restrict pesticide use. The aim of this work was to find natural enemies affecting *C. bicolor* immature stages.

This study was carried out in Mucuri County, in the southern region of Bahia State, Brazil. To survey for natural enemies of the eucalypt pruner, we collected 440 tips from hybrid *Eucalyptus urophylla* × *E. grandis* (Myrtaceae) trees that had been pruned by the weevils. Samples from the approximately 1 ha site were collected in 2011 on 24 Feb, 4 Mar, and 19 Mar. In the laboratory, branch tips were stored in 18 cm Petri dishes until parasitoids emerged, which were collected daily.

Age of adult parasitoid emergence from the sampled branch tips were: 63.2% (n = 120; 24 Feb), 57.0% (n = 87; 4 Mar), and 50.0% (n = 50; 19 Mar), which suggests an estimate of the natural parasitism level in *C. bicolor* populations of 56.7%, mainly caused by the 3 *Euderus* species.

In summary, we report for the first time that 3 *Euderus* species and 1 species in the genus *Eurydinoteloides* are acting as natural enemies of *C. bicolor* in Brazilian eucalypt plantations. We suggest that *Euderus* species should be studied further as candidates for biological control.

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**Figs. 1–3.** Hymenoptera natural enemies of *Chalcodermus bicolor*. 1 and 2: *Euderus* spp. (Eulophidae), scale bars = 1.33 mm; and 3: *Eurydinoteloides* sp. (Pteromalidae), scale bar = 1.40 mm.
programs against the eucalypt pruner. Mass rearing and inundative release of adults of *Euderus* may be a useful strategy against this important weevil in the Brazilian eucalypt plantations.

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**Summary**

Chalcodemus bicolor Fiedler (Coleoptera: Curculionidae) is the most recent pest in Brazilian Eucalyptus (Myrtaceae) plantations. Sampling in 2011 for parasitoids of this weevil recovered 4 Hymenoptera species, 3 in the genus *Euderus* (Eulophidae), comprising 98.4% of specimens, and *Eurydinoteloides* sp. (Pteromalidae). This is the first report of natural enemies of *C. bicolor*.

Key Words: forest entomology; eucalypt pruner; biological control; *Euderus*; *Eurydinoteloides*

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