

First report of *Ectinogonia buqueti* (Spin.) (Coleoptera: Buprestidae) in bioenergy plantations of *Eucalyptus camaldulensis* (Dehnh.) in Chile

Bernardo C. Valdebenito · Simón P. Sandoval · Edwin A. Esquivel ·
Eduardo A. Acuña · Miguel A. Espinosa · Jorge O. Cancino ·
Rafael A. Rubilar · Fernando E. Muñoz · Luis A. Cerda

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Abstract *Ectinogonia buqueti* (Spin.) (Coleoptera, Buprestidae) was identified as the agent causing damage on a *Eucalyptus camaldulensis* (Dehnh.) bioenergy plantation. Damage affected the principal apex and upper lateral branches and loss of lateral branches on *E. camaldulensis* due to complete ring-barking. *E. buqueti* is a coleopteron native to Chile, it preferably feeds on the wood of native species. A total of 205 individuals, all adults were found; 45% of the plants presented some type of damage.

Keywords *Ectinogonia buqueti* · *Eucalyptus camaldulensis* ·
Dendroenergetic plantations · Biomass · Bioenergy

Introduction

As part of a study whose goal is to develop new biomass production options for bioenergy using rapid-growth forestry species plantations, test plots were established in August 2007 in different geographic zones of the Bio Bio Region in southern Chile. The species *Eucalyptus camaldulensis*, *E. globulus*, *E. nitens* and *Acacia melanoxylon* were established at densities of 5,000, 7,500 and 10,000 plants per hectare following a randomized complete blocks design (RCBs). Eight months after beginning the trial, several individuals of *E. camaldulensis* presented with a partial debarking of branches in the upper crown, which in some cases affected the entire branch. We report here the causal agent and the number of plants damaged.

B. C. Valdebenito · S. P. Sandoval · E. A. Esquivel · E. A. Acuña (✉) ·
M. A. Espinosa · J. O. Cancino · R. A. Rubilar · F. E. Muñoz · L. A. Cerda
Facultad de Ciencias Forestales, Universidad de Concepción, Victoria 631,
Ciudad Universitaria, Concepción, Chile
e-mail: edacuna@udec.cl

Materials and methods

E. camaldulensis was surveyed in a bioenergy planting at one geographic zone (dry inner area in the Coastal Mountains, 36° 17'S 72° 22'E) on a *Pinus radiata* cut over site. The stumpless soil was prepared using a ripper at a deep of 80 cm. The trial was established in August 2007 with *E. camaldulensis*, *E. globulus*, *E. nitens* and *A. melanoxylon* at planting densities of 5,000, 7,500 and 10,000 plants per hectare at spacings of 1.41 × 1.41, 1.15 × 1.15 and 1 × 1 m, respectively, in plots of 25 × 25 m. Each spacing treatment was replicated three times in randomized complete blocks (RCBs). Each 25 × 25 m plot had a central square nucleus of 7 × 7 or 49 plants.

To identify the agent damaging the plants, a census was performed in the central nucleus of each plot in all densities to collect the insects in each plant with damage. Insects were collected for identification purposes.

Results

A total of 205 insects (53% females, identified morphologically and for genitalia), all adults were found with between two and four insects per plant and 45% of the plants surveyed presented some type of damage (Fig. 1; Table 1).

The insect was identified by the Entomology Laboratory, Facultad de Ciencias Forestales, Universidad de Concepción as *E. buquetti* (Spin.) (Coleoptera, Buprestidae) (Fig. 2).

Discussion

E. buquetti is a coleopteron native to Chile, belonging to the family Buprestidae, it preferably feeds on the wood of native species such as *Peumus boldus*, *Cryptocarya alba* and *Colliguaya odorifera*, generating galleries in the stem due to larval feeding (Gallegos 2005).

E. buquetti has also been found in exotics species plantations. In *Pinus radiata*, Gara et al. (1980) reported the presence of this insect's adult state, feeding on pine needles to complete their development and sexual maturation. This insect was also found in *Eucalyptus* sp. plantations with ages of 6–10 years in the most northern plantations for this species in Chile (33° South latitude)- (Piontelli et al. 2006). These authors indicate that this insect constitutes a possible plague of phytopathological importance due to the damage it inflicts on the roots of its hosts and because it is associated as a vector with the fungus *Ophiostoma stenoceras* (Robak) Melin and Nannf, which is fed upon by the larvae and produces the so-called blue stain on the wood.

The native wood borer *Chilecomadia valdiviana* has also been reported on *E. camaldulensis* in Chile (Cerdeña 1996b from Lanfranco and Dungey 2001). However, we found no evidence of this insect at our study site. Only incomplete information on the *E. buquetti* life cycle is available, although the adult phase is reported as being present between September and May with greater frequency in October and November (Gara et al. 1980). The absence of immature states (egg, larva or pupa) would indicate that



Fig. 1 a *E. camaldulensis* affected in its principal apex and upper lateral branches, b Loss of lateral branch due to the complete ring-barking of the branch

Table 1 Number of damaged *E. camaldulensis* plants according to plantation density

Plantation density (tree \times ha ⁻¹)	Plant surveyed (no.)	Damaged plants	
		(no.)	(%)
5,000	147	87	59.18
7,500	147	56	38.10
10,000	147	56	38.10
Total	441	199	45.12

E. camaldulensis may be only a supplementary food source in order to complete the mature cycle of its adult phase. The damage produced by *E. buquetti* on *E. camaldulensis*, even when recorded as a single event, is a variation in the natural behavior of the insect. Future surveys must determine if this attack was unique or if the association will become more widespread.



Fig. 2 *E. buquetti* adults in the *E. camaldulensis* plantation

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