

Original Article

Anadenanthera colubrina (Fabaceae) logs in the Atlantic Forest biome: first host plant for *Thoracibidion lineatocolle* (Col.: Cerambycidae) and a new host for *Temnopsis megacephala* (Col.: Cerambycidae)

Troncos de *Anadenanthera colubrina* (Fabaceae) no bioma da Mata Atlântica: primeira planta hospedeira de *Thoracibidion lineatocolle* (Col.: Cerambycidae) e uma nova planta hospedeira para *Temnopsis megacephala* (Col.: Cerambycidae)

C. A. Corrêa^{a,b} , L. J. Migliore^{a,c} , B. P. Brügger^{b,d,*} , A. J. V. Zanoncio^e , J. C. Zanoncio^b  and S. P. Ribeiro^a 

^a Universidade Federal de Ouro Preto – UFOP, Núcleo de Pesquisas em Ciências Biológicas – NUPEB, Laboratório de Ecologia do Adoecimento e Florestas – LEAF, Ouro Preto, MG, Brasil

^b Universidade Federal de Viçosa – UFV, Departamento de Entomologia/BIOAGRO, Laboratório de Controle Biológico de Insetos – LCBI, Viçosa, MG, Brasil

^c Universidade de São Paulo – USP, Departamento de Entomologia – MZUSP, Laboratório de Coleoptera, São Paulo, SP, Brasil

^d Universidade Federal de Juiz de Fora – UFJF, Laboratório de Ecologia Comportamental e Bioacústica – LABEC, Juiz de Fora, MG, Brasil

^e Universidade Federal de Viçosa – UFV, Departamento de Engenharia Florestal – DEF, Viçosa, MG, Brasil

Abstract

Wood-boring beetles develop in live trees and dead wood, performing ecological services such as decomposition and regulation of forest resources. Species of the Cerambycidae family, widely distributed in the world, bore into the trunks of trees and dead wood in native and cultivated areas. The objective is to report the first host plant for *Thoracibidion lineatocolle* (Thomson, 1865) (Coleoptera: Cerambycidae) and a new host plant for *Temnopsis megacephala* (Germar, 1824) (Coleoptera: Cerambycidae) in the Brazilian Atlantic Forest biome. Three logs, with one-meter-long by 20 cm in diameter, were cut from the trunk of a healthy *Anadenanthera colubrina* (Fabaceae) tree in October 2013 and tied in the understory at 1.5m high in the Rio Doce State Park, Minas Gerais State, Brazil. The logs, exposed in the forest, were each removed after 40, 80 and 120 days and stored individually in a cardboard box in the “Laboratório de Campo do Projeto de Ecologia de Longa Duração (PELD-CNPq)” in the Rio Doce State Park. A total of 94 individuals of *T. lineatocolle* and 228 of *T. megacephala* emerged from the *A. colubrina* logs. This is the first report of a host plant for *T. lineatocolle* and a new host plant for *T. megacephala*.

Keywords: Cerambycidae, host tree, Rio Doce State Park, saproxylic insects.

Resumo

Besouros broqueadores se desenvolvem em árvores vivas e madeira morta, realizando serviços ecológicos como decomposição e regulação de recursos da floresta. Espécies da família Cerambycidae, amplamente distribuídas no mundo, perfuram o caule de árvores e madeira morta em áreas nativas e cultivadas. O objetivo é relatar a primeira planta hospedeira de *Thoracibidion lineatocolle* (Thomson, 1865) (Coleoptera: Cerambycidae) e uma nova planta hospedeira para *Temnopsis megacephala* (Germar, 1824) (Coleoptera: Cerambycidae) no bioma da Mata Atlântica brasileira. Três toras, com um metro de comprimento por 20 cm de diâmetro, foram cortadas de uma árvore sadia de *Anadenanthera colubrina* (Fabaceae) em outubro de 2013 e amarradas no sub-bosque a 1,5m de altura no Parque Estadual do Rio Doce, estado de Minas Gerais, Brasil. As toras, expostas na floresta, foram removidas, cada uma, após 40, 80 e 120 dias e armazenadas, individualmente, em caixas de papelão no “Laboratório de Campo do Projeto de Ecologia de Longa Duração (PELD-CNPq)” no Parque Estadual do Rio Doce. Um total de 94 indivíduos de *T. lineatocolle* e 228 de *T. megacephala* emergiu das toras de *A. colubrina*. Esse é o primeiro registro de uma planta hospedeira para *T. lineatocolle* e o de uma nova planta hospedeira para *T. megacephala*.

Palavras-chave: Cerambycidae, árvore hospedeira, Parque Estadual do Rio Doce, insetos saproxílicos.

*e-mail: brunopb2002@yahoo.com.br

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The Atlantic Forest biome has a high biodiversity (Rocha et al., 2005; Colombo and Joly, 2010), which results in several ecosystem services (Alho, 2008). Wood-boring beetles colonize living trees and dead wood, where their larvae form galleries as they develop (Silva Neto et al., 2011; Ferreira-Filho et al., 2014; Fujihara et al., 2020). The activity of these insects favors ecological services such as decomposition (Ulyshen et al., 2016) and regulation of forest resources (Seaton et al., 2015; Pereira and Ferreira, 2017). The Cerambycidae family (Insecta: Coleoptera), widely distributed in the world and with high diversity in the tropics (Wang, 2017), colonizes tree species in different forest strata (Lee et al., 2014; Li et al., 2017). These insects bore into tree branches, trunks and roots (Wang, 2017) in native (Lee et al., 2014; Li et al., 2017) and cultivated areas (Zanuncio et al., 2009; Ferreira-Filho et al., 2014).

Anadenanthera colubrina (Vell.) Brenan (Fabaceae), pioneer to initial secondary tree in dry tropical forests, occurs in Argentina and Brazil, with heights of up to 30 meters and more than 23 cm in diameter (Carvalho, 2002; Nunes et al., 2007). The *A. colubrina* wood is suitable for charcoal production, fences, firewood, houses, and the handicraft manufacturing, mainly in rural communities (Monteiro et al., 2006).

The objective is to report the first host plant for *Thoracibidion lineatocolle* (Thomson, 1865) (Coleoptera: Cerambycidae) and a new host plant for *Temnopsis megacephala* (Germar, 1824) in the Brazilian Atlantic Forest biome.

The study was carried out in the Rio Doce State Park, an Atlantic Forest remnant in the Minas Gerais State, southeast Brazil (19° 46' 48.36" S and 42° 36' 02.93" W) (Carvalho and Ribeiro, 2018). The area has 36,000 ha with 44 natural lakes and, predominantly, composed of semideciduous forest (Costa e Silva, 2001; Fonseca-Silva et al., 2015). This area has a tropical humid mesothermic climate, with well-defined dry and rainy seasons (Antunes, 1986).

A healthy *Anadenanthera colubrina* (Fabaceae) tree was cut down and three logs with one-meter-long by 20 cm in diameter were cut from its trunk in October 2013 (rainy season) in a secondary forest area of the Rio Doce State Park, Atlantic Forest biome, Brazil. The logs were tied with light spinning as a rope and placed in the forest understory at 1.5 m from the ground. The logs were removed from the forest after 40, 80 and 120 days (one each time) and stored in an individual cardboard box in the field laboratory. Each cardboard box had two transparent plastic jars, with one on each side, as a source of light to attract adults that emerged from the wood. These boxes were opened monthly, when the adult beetles were collected and the logs were wetted and placed back into the boxes. Inspections were carried out on each log until February 2015, when all boxes were opened and the material was discarded.

A total of 94 and 228 individuals of *T. lineatocolle* and *T. megacephala*, respectively, was collected (Figure 1), with distinct temporal distribution (Table 1). The wood-boring beetle succession in the logs can explain this temporal colonization pattern, since certain species depends on previous colonization by others to invade the log (Calderón-Cortés et al., 2011; Victorsson, 2012).



Figure 1. *Temnopsis megacephala* (A) and *Thoracibidion lineatocolle* (B) (Coleoptera: Cerambycidae) adults emerged from *Anadenanthera colubrina* (Fabaceae) logs harvested in the Atlantic Forest biome.

Table 1. Number of *Temnopsis megacephala* and *Thoracibidion lineatocolle* (Coleoptera: Cerambycidae) adults emerged from *Anadenanthera colubrina* (Fabaceae) logs at different exposure times in the Atlantic Forest biome

| Days | <i>Temnopsis megacephala</i> | <i>Thoracibidion lineatocolle</i> |
|------|------------------------------|-----------------------------------|
| 40 | 205 | 11 |
| 80 | 22 | 68 |
| 120 | 1 | 15 |

The occurrence of *T. lineatocolle* in *A. colubrina* logs represents the first record of a host plant for this beetle. *Thoracibidion lineatocolle* occurs in Argentina, Brazil (Bahia, Espírito Santo, Maranhão, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina and São Paulo States) and Paraguay (Monné, 2019).

A new host plant, *A. colubrina*, is now registered for *T. megacephala*, a normally abundant beetle (Maia et al., 2003), reported in Argentina, Brazil (Alagoas, Bahia, Ceará, Espírito Santo, Goiás, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Santa Catarina, São Paulo and Sergipe States) and Paraguay (Maia et al., 2003; Monné, 2019). This beetle colonized *Acacia melanoxylon* R.Br. (Fabaceae) branches girdled by *Oncideres* sp. (Di Iorio, 1994) and non-girdled ones of *Acacia decurrens* Willd., *Piptadenia* sp. (Fabaceae) and *Miconia sellowiana* Naudin (Melastomataceae) (Monné, 2019).

The knowledge about *T. lineatocolle* and *T. megacephala* life history is scarce, since the studies focus mainly on passive collections, with light (Nascimento et al., 2017; Corrêa et al., 2020) and malaise (Guedes et al., 2019) traps, wood colonization (Di Iorio, 1994; Corrêa et al., 2020) reviewing material deposited in the museums (Martins, 1971). Consequently, more studies are needed to better understand the life history of these species.

The record of *Thoracibidion lineatocolle* and *Temnopis megacephala* in fresh-cut *Anadenanthera colubrina* logs, presented here, expands the knowledge of the life history for these boring insects, with new host tree information.

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