

[1919] RESPONSE OF BRAZILIAN AMBROSIA BEETLES (COLEOPTERA, SCOLYTIDAE) TO KAIROMONES AND PHEROMONES

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Reforestation in Brazil is relatively new, as establishment for most of the plantations began in the mid 60's. For years pine plantations remained surprisingly free of pests, and to this date few insects constitute any regular, economically important pests. Yet, scolytid beetles, constituted mainly by xylomycetophagous ambrosia beetles, are growing in abundance and diversity in pine stands over the years, demanding constant monitoring. The main lure (if not the only one) used in traps to monitor these beetles in Brazil is the kairomone ethanol. However, it is well known that many species respond little or do not respond at all to this attractant. The objective of this experiment was to evaluate, for a Brazilian reforested stand, the attractiveness of scolytids to some semiochemicals widely used in temperate forests in North America and Europe. Multiple funnel traps (Lindgren) were baited with the kairomones \square -pinene and ethanol and the pheromones sulcatol (racemic) and (+)-sulcatol (retusol), plus a control (blank). Traps were deployed in a mature *P. taeda* stand (owned by Klabin do Paraná Papéis, and located in Telêmaco Borba, Paraná state) in 3 lines (5 traps/line); traps were 5 m apart within each line, and lines were spaced 20 m apart. Beetles trapped were collected every 7 d, at which time traps were randomized within each line to reduce positional effects. The experimental design was a randomized complete block design. In 11 wk of trapping, a total of 9,031 scolytid specimens were trapped, distributed in 35 species. The kairomone \square -pinene proved unattractive to all scolytid beetles; however, it was highly attractive to an unidentified predator *Tenebrionidae*. *H. eruditus*, *H. obscurus* (Cryphalini), *X. gracilis*, *X. linearicollis*, *X. ferrugineus* and *X. retusus* (Xyleborini) were significantly more trapped in ethanol-baited traps over other treatments. Despite the fact that it is assumed (however never proved) that there is no pheromone production in Xyleborini, *X. adelographus* and *X. affinis* were surprisingly clearly attracted to sulcatol- and retusol-baited traps over other semiochemicals; no *X. adelographus* specimens were trapped in ethanol-baited traps. Results show that monitoring can be improved with the use of lures other than ethanol, and that \square -pinene could perhaps be used in pine stands as a way of concentrating scolytid natural enemies to a certain area.

Index terms: response to kairomones and pheromones, *Xyleborus adelographus*, *Xyleborus affinis*, *Pinus taeda*, Brazil.

[1920] DISTRIBUTION AND ABUNDANCE OF MONOCHAMUS SPECIES ON PINES IN ITALY

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4 species of longhorn borers are present in Italy, *Monochamus sutor* (Linnaeus), *M. sartor* (Fabricius), *M. saltuarius* (Gebler) and *M. galloprovincialis* (Olivier), the last with two subspecies, *M. g. galloprovincialis* and *M. g. pistor* (Germar). *M. sartor* and *M. saltuarius* develop on *Picea abies*, *Abies alba*, *Pinus sylvestris* and *P. nigra*, *M. sutor* also on *P. mugo* while *M. g. pistor* lives on *Pinus sylvestris* and *P. nigra*; all these cerambycids are widespread in alpine and prealpine zones with continental climatic conditions. Moreover, *M. g. galloprovincialis* lives on *P. pinaster*, *P. halepensis*, *P. pinea* and *P. sylvestris* in Mediterranean regions. Attacks of this longhorn beetle are common also on exotic pine timber plantations (i.e., *P. strobus*, *P. radiata* and *P. insignis*). In the last years, the occurrence in our country of hot-dry summers causing many fires especially in the N-W and, in the same time, an outbreak of the maritime pine bark scale *Matsucoccus feytaudi* Duc, have led to a progressive decline of pine stands in those areas causing an epidemic increasing of native populations of *M. g. galloprovincialis*. The possible implications for the pine stand health of the recent introduction in Europe (Portugal) of the pine wood nematode (PWN) *Bursaphelenchus xylophilus* (Steiner & Buhre) which causes pine wilt diseases as well as the possibility that indigenous *Monochamus* can be its main vectors, lead the control of *M. g. galloprovincialis* populations to be attempted. Management practices aimed to the cerambycid population reduction have to be carried out mainly on the coastal zones where the climatic conditions are more favourable to the PWN possible development.

Index terms: longhorn beetles, vectors, phytopathogen nematodes.

[1921] COMMUNITIES OF SOILS INSECTS ON FRENCH GUYANA INSELBERGS : A SYNCRONIC STUDY THROUGH VEGETATION DYNAMICS

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Inselbergs are very common in French Guyana (FG), as well as rocky outcrops, and host a mosaic of vegetation types with floristic singularities ("savane roche"). On two average altitude granitic inselbergs in center of FG, (Le Mont Chauve and Savane Dashine) studied by a pluridisciplinary team (faunistic and floristic surveys) specially dropped by helicopter, communities of soil arthropods were studied with emphasis on insect community, as preliminary results (during the rainy season). Adaptation of a Berlese-Tullgren extraction method was used in the field, using a glasshouse-like device to insure light and dry. Vegetation dynamics is studied through soils insects from several plots at different stages, from epiphytic bromeliad mats to forest, using ordination. Formicidae are dominant, and sometimes soils termites, who plays certainly a important role in soils dynamics.

Index terms : insect community, dynamics, ordination

[1922] RESIN-COLLECTING BEES (HYMENOPTERA, APIDAE) ON *CLUSIA PALMICIDA* (CLUSIACEAE) IN A RIPARIAN FOREST IN BRAZIL

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Primary flower resources to bees, i.e. those that satisfy the basic needs such as feeding and reproduction, include pollen, nectar, oil, resin and gums. Although resin provides an essential resource for the reproduction of a large number of bees in tropical communities, there are few studies about resin-collecting bees on *Clusia* spp. This system was studied with monthly collects made during a year (July 1992 to June 1993) in a riparian forest, in Alcântara ($2^{\circ}23'00''S$ and $44^{\circ}25'00''N$), State of Maranhão (Northeastern Brazil). An amount of 178 bees belonging to 5 genera and 9 species of Apidae were collected both in pistillate and staminate plants of *Clusia palmicida* (Clusiaceae). The most abundant species were *Trigona fuscipennis*, *T. pallens*, and *T. fulviventris*. The other species, *Euglossa piliventris*, *Partamona* sp., *Eufriesea surinamensis*, *Eulaema cingulata*, *Euglossa* sp. and *Partamona pearsoni* had less than seven specimens captured. Bee activity was checked from 0600 to 1800 h, and the highest bee activity occurred from 0600 to 1000 h. The smallest abundance of bees occurred from 1200 to 1500 hours, when the temperature was too high for bee activity. Along the year, bees were more frequent from February to June (rainy season) and the highest number of bees was obtained in the end of the rainy season and the beginning of the dry season (in July). The smallest abundance was in October. We also found a positive correlation between number of individuals and number of bees species along the year (Pearson's correlation index = 0.69, $P < 0.05$). The highest frequency of large bees, such as *Eulaema*, *Eufriesea* and *Euglossa*, was observed in the staminate flowers of *C. palmicida* that have a greater load of resin. Visits of larger bees on pistillate flowers were less frequent. In addition, the meliponine bees (smaller bees) were frequently observed on two flower sexes. As larger bees can transport larger loads of resin in their corbiculae and in some cases these bees prefer to visit bigger inflorescence than smaller ones, we argue that this behavior is advantageous energetically. Index terms: Meliponinae, Euglossinae, social bees, foraging behavior, flower resources, resin.