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Short Communication

A new trap for capturing Scolytidae (Coleoptera), based on primary attraction

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Beetles of the family Scolytidae are ubiquitous in Brazilian forests. However, the damage they inflict is significantly lower than the damage caused in temperate forests (FLECHTMANN et al., 1995).

For many scolytid species, host location is attributed to volatile compounds produced by their hosts (CHARARAS et al., 1982; FATZINGER, 1985; MOECK and SIMMONS, 1991); this process is termed primary attraction. For other scolytid species, a secondary attraction to the host occurs. This secondary attraction is elicited by pheromones produced by pioneer beetles, which results in a stronger response than that produced by primary attraction (WOOD, 1982).

For the majority of native Brazilian scolytids, little is currently known about the influence of odours released by host trees on insect attraction. For the bulk of these beetles, it is also unknown if there is any pheromone production (FLECHTMANN et al., 1995).

The main objectives of this experiment were to build a trap that: (i) uses tree logs as a bait; (ii) efficiently releases odours from the bait logs; (iii) captures attracted beetles and prevents any contact between insects and logs; (iv) installs and maintains easily; and (v) resists to damage.

The trap, here designated as 'tent-trap', comprises basically a modified ESALQ-84 trap (BERTI FILHO and FLECHTMANN, 1986), to which a transparent plastic sheet, forming a pyramid base, is attached (fig).

On the upper part there is a protective cover (# 3, fig), to exclude leaves and rainwater from a collecting vial (# 5, fig). Beetles, attracted to released log volatiles, collide with plexiglass panels (# 1 & 2, fig) and drop through a collecting funnel (#4, fig) into the collecting vial. The top of the collecting vial fits into a pipe (# 6, fig), to which a transparent plastic sheet (# 7, fig) is connected.

Bait logs are placed on the soil surface, and the base of the pyramid is fixed to the ground with four hooks. The basal borders of the plastic pyramid are covered with soil to exclude arthropods, mainly scolytids.

There are two openings on opposite sides of the pyramid, near the base, each covered with fine plastic screen (fig.). Eight other triangular openings are also covered with plastic screen on the collecting funnel (# 4, fig).

A convection current is formed as hot air inside the tent-trap goes upward, carrying the volatiles outside, through the funnel openings. Cooler air enters the tent-trap through the lower openings. The constant air flow reduces the potential for mold to form on the logs.

The tent-trap described here has several advantages over previously described models. For some of these traps, there was no device to exclude insect access to the bait logs (CHAPMAN, 1976; TUNSET et al., 1988). For those traps which did exclude insects from bait logs became a problem excessive moisture buildup (CHAPMAN, 1962, 1966). This excessive humidity resulted in fungal and bacterial growth, which undoubtedly influenced log attractiveness.

In other models, the logs were protected with metal screens, which were covered with a sticky glue (CHAPMAN, 1962; SVIHRA and KOEHLER, 1981; BOUTZ et al., 1985; ATKINSON et al., 1988). The disadvantages of this type of trapping system is the delay in removing, counting, cleaning and identifying the trapped insects. Moreover, many larger insect species are strong enough to escape the glue.

CHAPMAN (1963) designed an efficient trapping system, but used glass as the trap material, and electricity to promote air circulation from inside the traps. For the majority of field conditions, such a design is not feasible. The selection of the trap material is an important aspect, and the use of glass (CHAPMAN, 1962; TUNSET et al., 1988) is expensive, besides being prone to breakage due to falling branches.

In summary, the model described here met our five objectives. The tent-trap was tested and used in tropical pine stands (*Pinus oocarpa* Schiede and *Pinus caribaea* Morelet) in Agudos, São Paulo State, Brazil, for more than 2 years. The traps were used in experiments to evaluate pine species attractiveness to scolytid species and provided satisfactory results. During this period, no repairs on the traps had to be made and more than 9200 scolytids were trapped, in as many as 44 species (FLECHTMANN, unpub. data).

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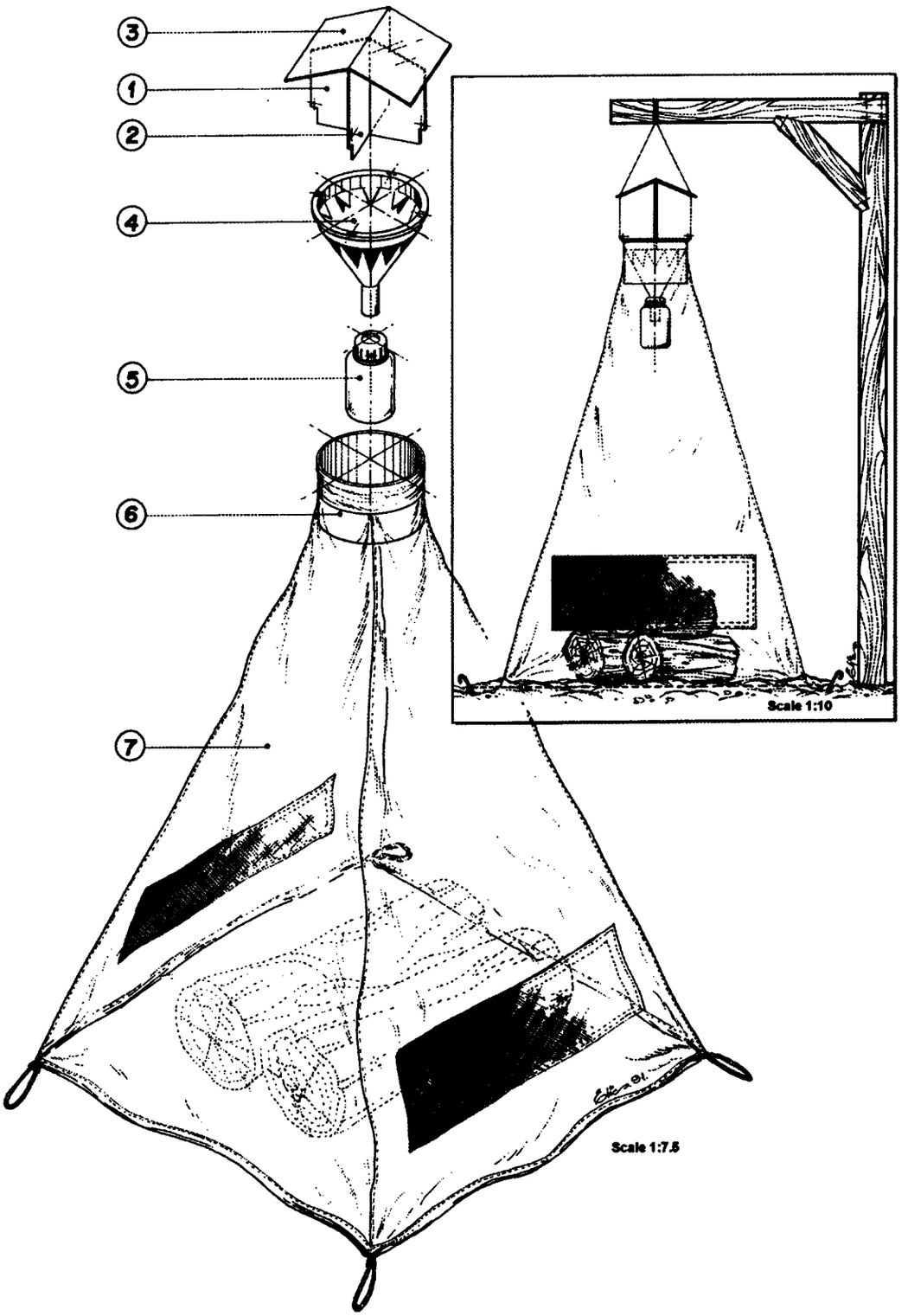

Fig. *General overview of the tent-trap. 1 and 2: panel, 3: cover, 4: collecting funnel, 5: collecting vial, 6: pipe, 7: transparent plastic sheet*

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