AN OMNIDIRECTIONAL FLIGHT TRAP FOR ASCENDING AND DESCENDING INSECTS[1]

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A study currently under way required non-attractant traps to collect and preserve for taxonomic identification flying insects inhabiting the crown and shrub layers of a slash pine (*Pinus elliottii* var. *elliottii* Engelm.) and pondcypress (*Taxodium distichum* var. *nutans* (Ait.) Sweet) forest. We concluded that an omnidirectional flight trap was appropriate. After failing to find a satisfactory design in the literature, we developed the trap illustrated in Fig. 1. Our design combines an original upper collecting unit with a modification of the trap described by Hines and Heikkenen (1977).

The trap was constructed as shown in Fig. 2. We assembled the upper and lower collecting units and subsequently attached them to the panes. The stem of the upper collecting funnel was shortened to accommodate the bottle, and the lid for the lower collecting jar was secured to the funnel by heated staples pushed through the stem from beneath. A small screened hole was made in the lid to allow overflow from rainfall without loss of trapped material. Greater length in the plexiglass panes may be desirable; we selected the illustrated length because it allowed us to cut 18 panes from a standard 4×8 ft (1.22×2.44 m) sheet with minimal waste. The simplicity of this design allows for rapid and inexpensive construction from standard hardware: less than 3 man-hours of labor and about U.S. $25 in material per trap.

The traps were suspended by nylon cord from wooden support arms bolted to trees near the base of the crown. Designs of these arms are available from the authors.

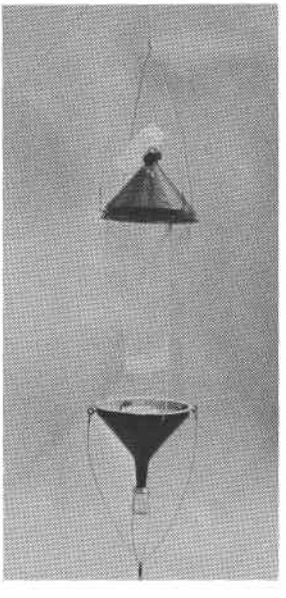

FIG. 1. Omnidirectional flight trap suspended by nylon cord. The funnels have been sprayed with brown and green paint and the collecting chambers have been filled with isopropanol. Note the upper collecting bottle seated snugly upon the foam rubber collar and held tightly in place by the elastic band.

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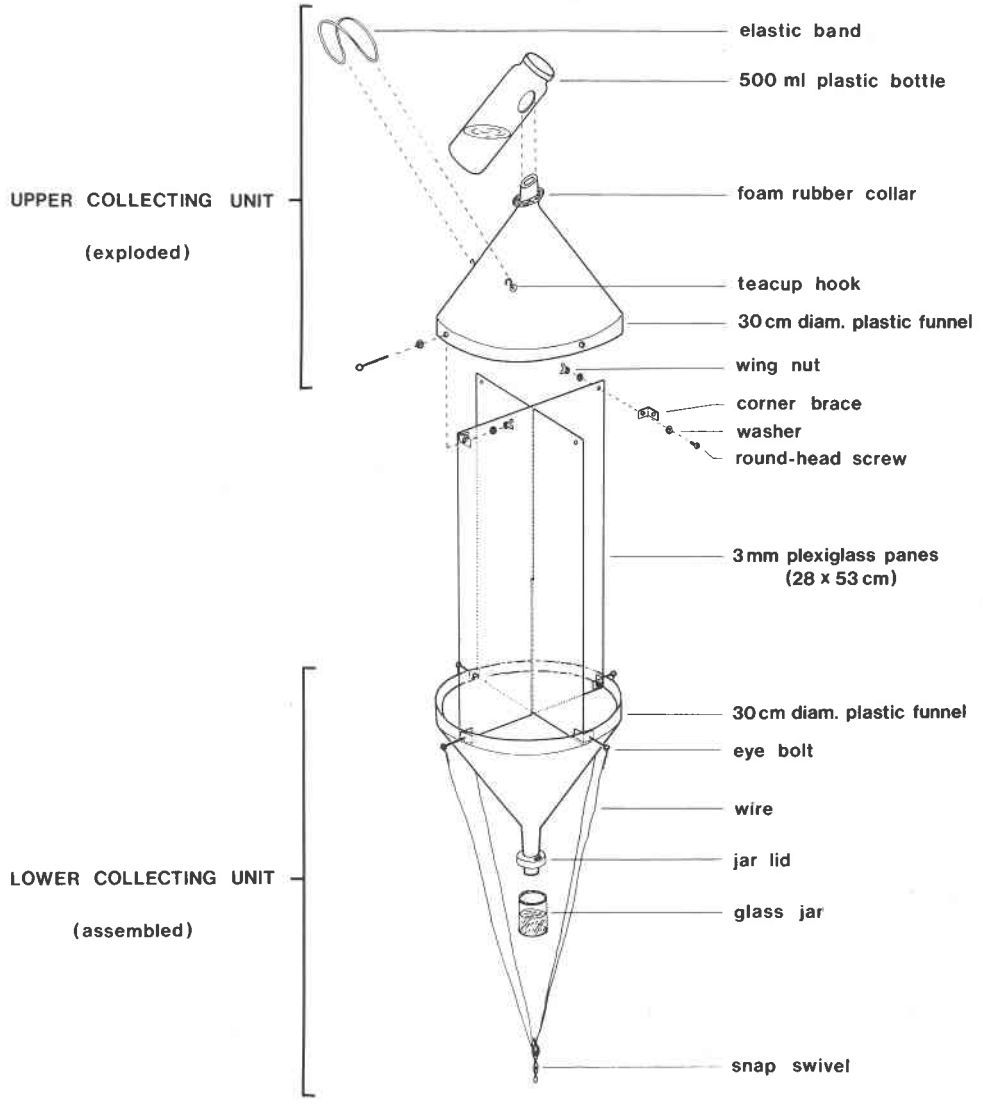

FIG. 2. Design of the omnidirectional flight trap for rising and falling insects. Hardware for attaching the upper unit to the panes is incompletely depicted. The wire yoke for suspending the trap is omitted.

Whereas the lower chamber collects those larger or fast-flying insects which are stunned and drop upon impact (groups such as the Vespidae and Buprestidae), the upper chamber captures mostly slow-flying insects which rise when obstructed (groups such as the Chalcidoidea, Microlepidoptera, and Chrysopidae). In addition to insects, many collembolans, mites, and spiders were collected, the spiders constituting an occasional nuisance by webbing over the chamber openings.

Isopropanol[2] (80%) was used as the trapping preservative in the collecting chambers. Mold became a problem in the lower chamber when specimens remained

[2]Other trapping preservatives were considered and rejected. Ethanol is a known attractant to certain bark beetles (Coleoptera: Scolytidae), and various petroleum derivatives (kerosene, xylenes, glycols, etc.) cause trapped material to become brittle. We know of no studies implicating isopropanol as an attractant (or repellent) to any group of insects.

in rain-diluted preservative for over 4 days. Frequent servicing is therefore recommended.

Routine maintenance involves periodic washing of the panes and replacement of worn hardware as needed. In certain circumstances it may be advisable to spray the outside of the funnels with brown and green paint to make the traps less conspicuous to vandals.

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Hines, J. W. and H. J. Heikkenen. 1977. Beetles attracted to severed virginia pine (*Pinus virginiana* Mill.). *Environ. Ent.* **6:** 123–127.

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