

Procedure for the Removal of Insect Specimens from Sticky-trap Material

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ABSTRACT Correct identification of specimens is crucial to the cost-effective operation of insect population studies and biological control programs. Traps containing sticky materials are often used to detect and allow the quantification of populations of certain kinds of insects. Removal of insect specimens from such materials is frequently necessary for accurate identification. Provided here are instructions for removing insects from the most widely used sticky material, polyisobutylene, by use of specific solvents, as well as for washing and preparing cleaned specimens for microscopic examination.

INSECTS OFTEN must be removed from sticky traps in a condition suitable for subsequent examination with a microscope. Specimens of many groups, particularly those with hard exoskeletons such as beetles and wasps, may be removed from sticky materials with little difficulty by the methods described below. Removal of intact specimens of soft-bodied or scaly insects such as aphids or caddisflies is somewhat more difficult. Specimens of certain groups such as the moths and butterflies cannot be removed intact without serious damage to scale patterns important in identification. With such specimens it is best if the identification is attempted with the specimen still in place on the sticky trap; the part bearing the specimen may be cut out and removed. If the specimen still cannot be identified through examination of the external morphology, it should be freed from the sticky material with a solvent and cleaned according to the methods below.

Polyisobutylene is the most widely used sticky material in sticky traps. This substance is nonpolar and is, thus, poorly dissolved by acetone and other polar solvents. Effective and preferred solvents for specimen removal are toluene, heptane, hexane, xylene, ethyl acetate, and various combinations of these, all of which can be obtained readily. Two other effective, readily obtained, but less preferred solvents are fingernail polish remover (ethyl acetate with other aromatic hydrocarbons) and methylchloroform (1,1,1-trichloroethane), the modern replacement for carbon tetrachloride for home cleaning use. Also effective, but not preferred, are petroleum (mineral) spirits, which leave a short-term residue, and gasoline and kerosene, which linger on specimens for days or weeks. All these solvents are flammable and toxic to humans and should be handled carefully outdoors or under a hood.

Methods

In most studies involving trapping, one must decide how many specimens to remove from the

sticky traps. If a general survey is intended, the sticky surface may be immersed in a shallow pan containing the solvent until the sticky material is dissolved. The trap surface is removed, leaving the intact insects behind for further treatment as described below. If only a few insects are to be examined, small areas of the trap may be cut out and immersed in the solvent. Sticky material may persist in protected crevices or on particularly hairy body parts of some insects. In any case, the specimens should be immersed until free of the sticky material but no longer, as most solvents tend to make the specimens brittle.

After all sticky material has been dissolved from the specimens, they must be washed in ethylene glycol ethyl ether (cellosolve) to remove the solvent; the cellosolve is subsequently removed with xylene. After the excess solvent has been removed from the specimens with absorbent paper, they should be immersed in a bath of cellosolve for 1 h or longer (or overnight if unavoidable); if many specimens are being prepared simultaneously, the diluted cellosolve should be replaced after half an hour. The cellosolve should then be drained off and replaced with xylene for 0.5–1 h, after which the specimens should be placed on absorbent paper and allowed to dry. Caution—all insects become brittle, and some, especially minute flies, may be permanently damaged by prolonged immersion in xylene. If the specimens are manipulated with fine insect pins or a camel's-hair brush while drying, the wings, body hairs, and bristles will assume their natural positions. The specimens may then be carefully pinned or point-mounted. Because the solvents remove body fluids that normally serve to glue fresh specimens to pins or points, a small amount of an adhesive such as gelva resin should be applied to the insect/pin juncture.

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