USE OF A HAND SPRAYER AS A COLLECTING TECHNIQUE[1,2]

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ABSTRACT: A method for collecting fast and agile arthropods in spiny plants that are difficult to reach using conventional collecting techniques is described. The method involves the use of an inexpensive hand sprayer and alcohol to immobilize the organism and long forceps for specimen retrieval.

During the past four years of collecting in Baja California, Mexico we have had difficulty with capture of various organisms in flowers and confined areas (i.e. in cactus spines, among *Agave* and *Yucca* leaves and among foliage of various shrubs). Speed and agility of spiders, flying Coleoptera, Diptera, Homoptera, Thysanura and other arthropods have necessitated the development of a method to immobilize the subject(s) until securing is possible. Such a method appears to have been overlooked by the standard works on the subject (for example: Beirne, 1955; Peterson, 1959; Knudsen, 1966; and Borror *et al.* 1976). Conventional methods in these situations have proven ineffective.

Materials and Methods

Using 70% isopropyl alcohol (strength can be altered depending on use) with a hand sprayer, we were able to immobilize organisms at a distance and then remove them from the plant surface with long forceps. These hand sprayers are inexpensive ($1-2, 1979) and are available in many stores and sold for use in cleaning automobile windshields, for misting and watering house plants, for spraying cleaning compounds, etc. The sprayer we found to be most useful in the field is one with a small, flat, "hip pocket" type of plastic bottle attached. This bottle will hold about 250 ml. of fluid and is approximately 8 x 13 cm in size with a maximum width of about 3.5 cm. The size and shape of the sprayer allows it to be carried in the hip pocket when not in use. Larger bottles may be attached to the sprayer if necessary. The adjustable nozzle of the sprayer allows for selection of either a steady stream or a spray mist, depending on particular requirements of the situation.

Results and Discussion

On past expeditions to Baja California we found the need for such a

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collecting technique. We found that dumping alcohol on certain insects in hard to reach places immobilized them. First we used any type of plastic bottle that we happened to have handy. These usually put out too large a stream of alcohol, and while giving some success they often washed the insects out of sight or reach. The range and acuracy of these bottles was also less than desirable.

We then decided to try the hand sprayer. In June-July 1979 this method proved very successful in collecting the above mentioned groups of insects in these hard to reach habitats. Topotypes of a new genus of pseudoscorpion were easily obtained from the area surrounding the basal portions of the central fruit stalks of *Yucca whipplei* compared with the very low capture efficiency of last year when collecting the type specimens. Small Buprestidae were collected from cactus flowers with ease by first spraying the flower with alcohol. All beetles within a flower could then easily be picked out with forceps. Only a fraction of the specimens could have been taken with more traditional collecting methods, as these beetles fly readily on disturbance and the flower is surrounded by cactus spines. The alcohol spray had no apparent ill effects on the cactus or other plants on which it was used. Various small and speedy insects, including leafhoppers and Diptera, have been collected on the leaves of the various *Yucca* species in Baja California and the southwestern U.S. with this method. These insects could not have been collected otherwise. The method worked well for insects on the various types of cacti present, as well as on other spiny plants. The method seems to work very well in these spiny environments where the traditional insect nets, beating sheets, forceps and aspirators can not reach and/or are too slow. The method may also prove useful in other less hostile habitats where especially fast and agile arthropods are a problem to collect.

Usually the liquid property of the alcohol mixture will hold the insect in place on a leaf, spine or stem even if it does not kill immediately. Occasionally the specimen may fall from its perch or slide down a main plant stem when hit with the spray. A small piece of fine mesh screen wire or a wire mesh strainer will help pick up the specimen. Once wet the specimen can usually be obtained with long (7 and 12") forceps.

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