Pacific Insects Vol. 18, no. 3-4: 215-216 25 September 1978

A SORTING DISH WITH SILICONE SEALANT BARRIERS FOR RAPID SORTING OF MICROARTHROPODS PRESERVED IN FLUID

By Francis G. Howarth

Sorting collections of small arthropods preserved in fluid under a dissecting microscope is often a tedious and time-consuming process. The specimens often shift with convection currents in the fluid and are either missed altogether or are in view more than once. Since conventional sorting dishes are unmarked, it is often necessary to search the same material several times to be sure something has not been missed.

During routine sorting for biting midges from light-trap collections preserved in alcohol, a petri dish with silicone caulking compound barriers was developed which has greatly facilitated sorting any small organisms preserved in fluid. Since its original use, additional dishes have been constructed and used with great success for sorting ectoparasites, Berlese funnel extractions, pitfall trap and other collections. The dish is especially suited to picking out or counting arthropods both quickly and accurately from collections where the organisms must be quantified, and from Berlese funnel extractions where numerous tiny particles of soil and other extraneous material obscure the sought-after organisms.

To make the dish (FIG. 1). Any convenient-sized, clean, shallow glass dish, such as a standard petri dish bottom (9 cm inside diameter), is inverted, and the outside bottom surface marked with 3 or more parallel lines. The distance between the lines should be equal to the diameter of the field of view at the magnification that is commonly used for sorting under a dissecting microscope. Then the dish is righted, and a continuous bead of white silicone bathtub sealant (both GE Silicone Bathtub Seal® and Dow Corning Silicone Rubber Bathtub Caulk® have been used with success) is applied 3 to 5 mm high along the floor on the inside surface corresponding to each line drawn on the outside surface. The silicone walls act as barriers which prevent movement of specimens and fluid between the troughs. Any excess sealant or irregularities in the barrier which might obscure an organism from view should be removed, either immediately with a clean tissue or with a razor blade after curing. The height of the barrier is determined by the size of the organism but I have found that 3 to 5 mm is convenient for most organisms. The sealant adheres tightly to glass and cures on contact with air in several days to a smooth, tough, rubbery surface which is virtually inert to most commonly-used laboratory chemicals. The directions for use supplied with the sealant by the manufacturer can be followed.

Since the usable width of the troughs at the desired magnification is slightly less than the field of view, the specimens do not migrate from the searched area to a nonsearched area or vice versa; thus one knows where and what he has searched. Collections may be spread thinly

1. Bishop Museum, P. O. Box 6037, Honolulu, Hawaii 96818, U.S.A.

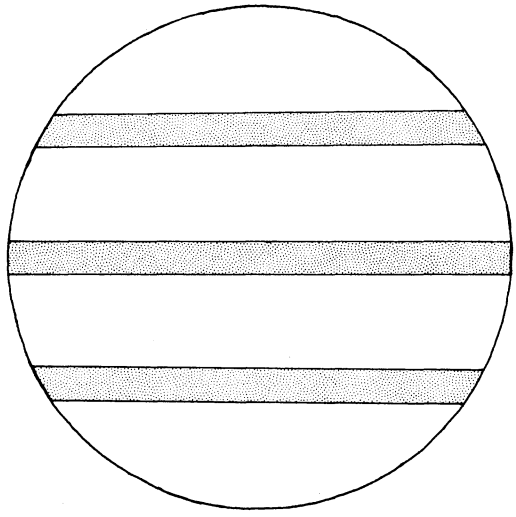

FIG. 1. Petri dish, with silicone barriers stippled, for sorting small arthropods. Distance between each silicone barrier should be equal to or slightly less than diameter of the commonly-used field of view under dissecting microscope.

throughout the dish and the desired organisms picked out or counted as the demarcated troughs are searched in turn, or smaller collections can be placed in only 1 of the center troughs and 1 taxon transferred "up" to the adjacent trough and another taxon transferred "down" to the other adjacent trough. This latter method allows sorting and transferring of the collection without taking the eyes off the microscope or the field of view. To prevent distortion due to a meniscus, the barriers should be slightly submerged. If the organisms to be sorted float, such as do many Collembola, the fluid level should be slightly below the top of the barriers.

These dishes have been in use for about 4 years for collections stored in alcohol, formalin, and picric acid without any noticeable effects on the silicone barriers. The silicone in 1 dish remained highly adhesive to arthropod integument and had to be discarded. Although the problem has not reoccurred, it is believed that the failure was due to adding alcohol prematurely so that some of the chemicals necessary for curing were leached out.