AG-FO-0719---1978

The Collection and Preservation of Moths, Butterflies and Other Insects

C. Richard Biege, principal laboratory technician, and D.M. Noetzel, assistant professor and extension entomologist, Department of Entomology, Fisheries, and Wildlife

Minnesota Extension Service University of Minnesota

Insects are an interesting and remarkable group of animals. They occur almost everywhere and make up more than half of the living things on earth. Collecting insects can be an intriguing, inexpensive, and rewarding hobby.

I. EQUIPMENT YOU WILL NEED

A. Collecting net
B. Collecting bottle
C. Relaxing jar
D. Mounting box
E. Spreading board
F. Insect pins and labels

II. WHERE TO PURCHASE EQUIPMENT

A. Carolina Biological Supply Co., Burlington, NC 27215
B. Wards Natural Science Establishment, P.O. Box 1712, Rochester, NY 14603
C. Trans-Mississippi Biological Supply, 892 W. Co. Rd. B, St. Paul, MN 55113

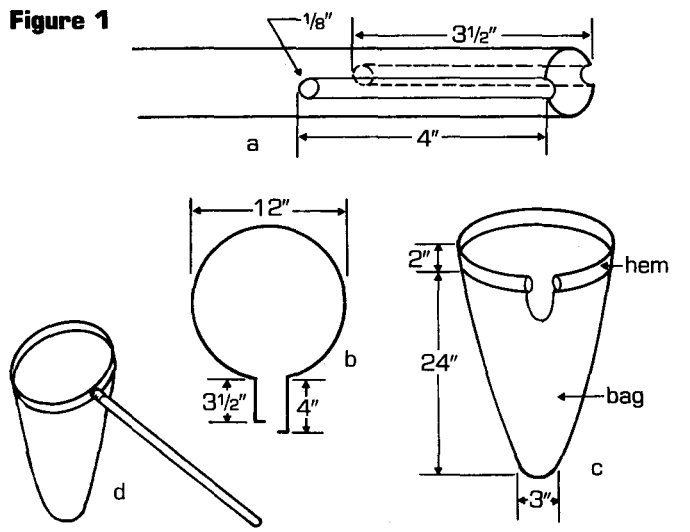
III. HOW TO MAKE EQUIPMENT

A. Collecting net

Materials

Broom handle, 2-4 feet long
Piece of heavy wire, 3 feet 8 inches long, 1/8 inch diameter (heavy coat hanger)
Fine copper wire
Fine mesh fabric such as cheesecloth or nylon marquisette, for net bag
Heavy material for net hem

Figure 1



Cut groove 1/8 inch wide, 4 inches long on one side and one end of broom handle. Opposite to this, cut a groove 3 1/2 inches long as in figure 1-a. Bore a 1/8-inch hole at each end of the groove on the inner side of the handle. Bend heavy wire as shown in fig. 1-b. Make the net bag according to specifications of fig. 1-c. When constructing the net, measure and fit the hem to the wire hoop before attaching the bag. Thread the wire hoop through the hem of the completed bag and place the ends of the wire hoop into the bored holes of the handle. Bind the hoop to the handle with the fine copper wire. The finished product should look like 1-d.

B. Collecting bottle

Materials

Wide mouth pint or quart jar with a screw-type lid

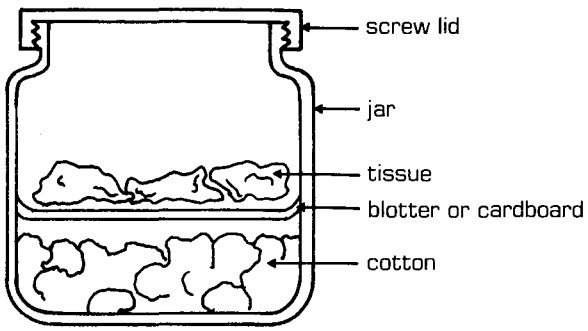
Cotton

Circular cut blotter or cardboard to fit inside dimensions of jar

Tissue paper or kleenex

Ethyl acetate or ether (car starting fluid)

Figure 2



Place a layer of cotton in the bottom of jar as in figure 2. Soak cotton with ethyl acetate. Avoid excessive inhaling of fumes. Place a blotter over the cotton and crumble some tissue paper and place this on the blotter. Seal the jar tightly. Replace ethyl acetate as needed. Wrapping at least the lower half of the jar with tape will prolong the effectiveness of the chemical as all of the chemicals above break down quickly in sunlight.

C. Relaxing jar

Relaxing jars are used to relax and soften dried insects so that they may be pinned without breaking legs, antennae, or wings. The relaxing jar is similar to a killing jar. Instead of ethyl acetate, use a 1 to 1 combination of rubbing alcohol and water. Do not add any tissue paper to this jar. Do not leave insects in the relaxing jar more than 48 hours or they may develop a fungus growth.

D. Mounting box

Materials

Cigar box or other small box

Sheet cork, corrugated cardboard, or styrofoam

Preservative (moth balls)

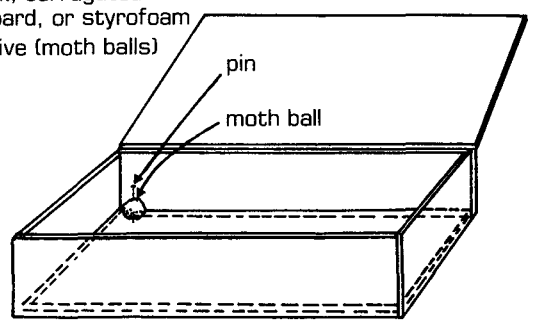


Figure 3

Obtain a box and cut the sheet cork or cardboard to fit snugly into the bottom of the box. A small amount of napthalene flakes or moth balls should be placed in each box as a preservative. The preservative should be placed in a small cloth bag or container. Moth ball pins can be made by heating insect pins and forcing these into the moth balls (figure 3). Several of these are placed in each box.

E. Spreading board

Materials

Two soft pine or balsa boards, 1 7/8 × 12 × 3/8 inch

Flat strip of cork, cardboard, balsa, or styrofoam 1/4 × 1 × 11 inches

Base end pieces, 1/2 × 3/4 × 4 inches

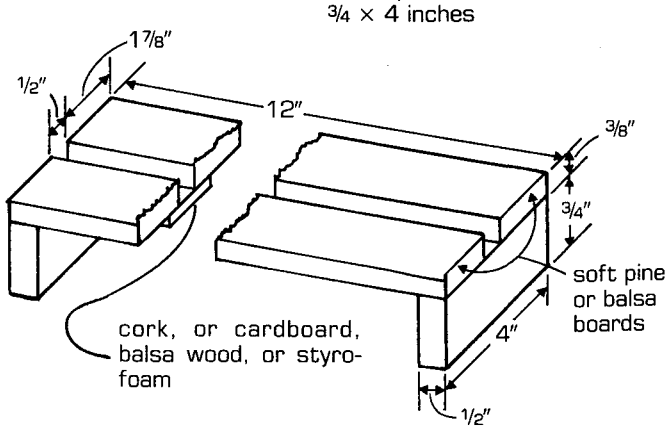


Figure 4

Spreading boards are specifically designed to spread and set the wings of moths and butterflies. Make the board from the materials listed according to specifications in figure 4.

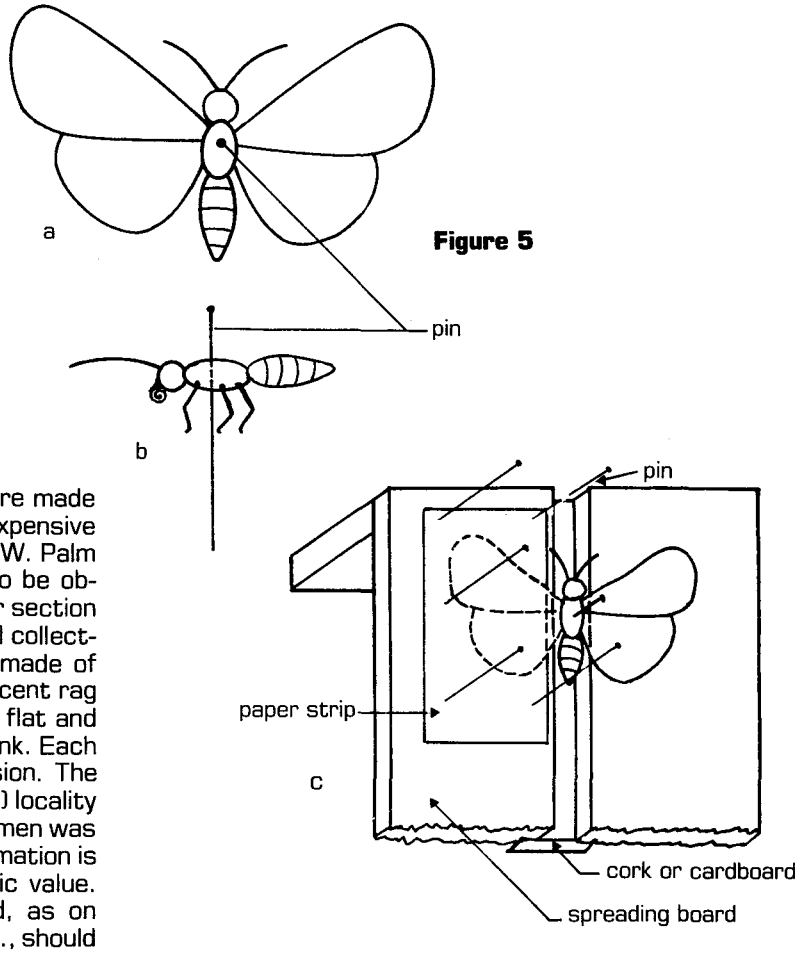


Figure 5

F. Insect pins and labels

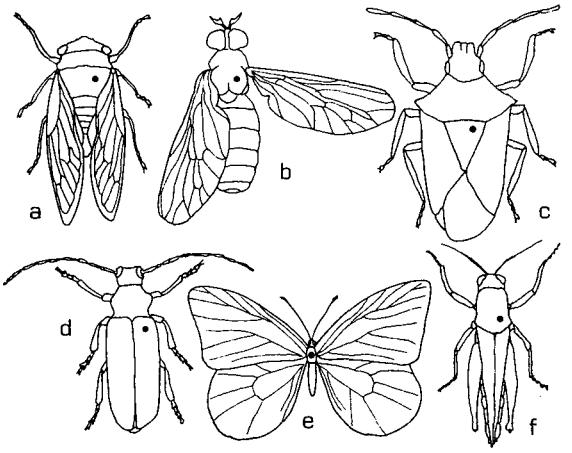
Insect pins are long, slender pins which are made specifically for mounting insects. The least expensive source of pins in the U.S. is Clair Armin, 191 W. Palm Avenue, Reedley, CA 93654. These can also be obtained from any of the places mentioned under section II. Size #2 and #3 are most useful for general collecting. Labels for pinned specimens should be made of good quality paper such as 20# bond, 75 percent rag content paper. Paper of this quality will stay flat and provide a good surface for printing with India ink. Each label is approximately 3/8 × 3/4 inch in dimension. The following information should be on one label: (1) locality (nearest town); (2) day, month, year the specimen was collected; (3) name of the collector. This information is essential for the specimen to be of scientific value. Other information such as where collected, as on trees, around lights or flowers, under logs, etc., should be on a second label.

IV. COLLECTING AND PREPARING MOTHS AND BUTTERFLIES

Moths and butterflies commonly can be collected on flowers, vegetables, shrubs, and trees both during day and night hours. Bright lights which attract some moths and butterflies may serve as collecting sites. You can also entice moths and butterflies to traps by using baits. Baits can be made with sugar water or syrup, mixed with some fermenting fruit pulp or juice such as orange juice, or apple cores. One also can collect caterpillars which will later develop into butterflies. Caterpillars collected for this purpose are placed in a large jar to which is added leaves from the plant they were found on. Moths and butterflies which are caught should be immobilized before they are put into killing jars. This is done by lightly pinching, between the thumb and forefingers, that portion of the body from which the wings originate (called the thorax). They may also be placed alive in envelopes with the wings folded above the body. The envelopes containing the butterflies can be placed in a freezer and stored until it is convenient to spread them. When removed from the freezer and allowed to thaw, they will be relaxed and ready to be pinned.

After the collecting trip is over, the moths and butterflies are mounted on pins and their wings spread. Mounting follows this procedure. Place the pin through the thorax as shown in figure 5-a. The pin should be pushed through the thorax so that at least 1/2 to 3/4 inch of the top of the pin is still exposed (figure 5-b). Next thrust the pin through the cardboard of the spreading board until the wing bases are level with the top of the board. Then carefully bring the wings forward using an insect pin. The back margin of each front wing should be at right angles to the body. The hind wings should also be drawn forward until the front margin of each hind wing is just under the hind margin of the front wing. A pin inserted at the base of each front wing will hold them until strips of paper laid lengthwise across the wings are set in place. This should be done as pictured in figure 5-c. Pin the strips down securely with additional pins. Don't place pins through the wings themselves. Allow the moths and butterflies to remain in this position for at least two to three weeks. The wings should be completely dry at the end of this period. Each moth and butterfly should then be labeled with the information given under III-F. Butterflies and moths are then stored in insect boxes with a preservative (III-D). Section V lists the books which can be used to identify moths and butterflies.

V. COLLECTING AND PINNING OTHER INSECTS



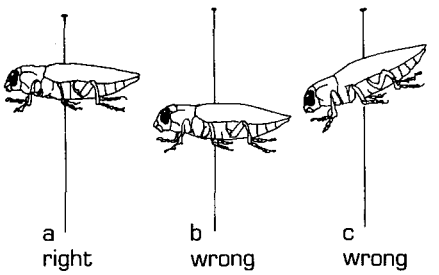


Figure 6

Almost any hard bodied insect may be collected, killed, and pinned using methods similar to those described for moths and butterflies. Figure 6 shows the correct pinning procedure for a wide variety of insects. Soft bodied insects and caterpillars should be preserved in vials using 70 percent ethyl or rubbing alcohol.

The correct place to pin several orders of insects is indicated at left. The small round dot in the thorax indicates the position of the pin. Figure a is the cicada or dog-day harvestman, Homoptera; b, horsefly, Diptera; c, stink bug, Hemiptera; d, long-horned beetle, Coleoptera; e, butterfly, Lepidoptera; f, grasshopper, Orthoptera.

VI. BOOKS USEFUL IN IDENTIFYING INSECTS

A. Field books
   1. Borror, D. J., and White, Richard E. **A Field Guide to the Insects**. Boston: Houghton, Mifflin and Co., 1970.
   2. Klots, A. B. **A Field Guide to the Butterflies of North America East of the Great Plains**. New York and Boston: Houghton, Mifflin and Co., 1951.
   3. Lutz, F. E. **Field Book of Insects**. New York and London: G. Putnam's Sons, 1935.
   4. Zim, H. S., and Cottam, C. **Insects, A Guide to Familiar American Insects**. New York: Simon & Schuster, 1951.

B. Reference books
   1. Edwards, W. H. **The Butterflies of North America**. New York and Boston: Houghton, Mifflin and Co., 1897.
   2. Holland, W. T. **The Butterfly Book**. New York: Doubleday & McClure Co., 1901.
   3. Holland, W. T. **The Moth Book**. New York: Doubleday, Page & Co., 1903.
   4. Borror, D. J., and DeLong, Dwight M. **An Introduction to the Study of Insects**. New York: Holt, Rinehart and Wilson, 1971.

(P-548A)