

A COLLAPSIBLE DOG-BAITED MOSQUITO TRAP

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INTRODUCTION. Studies of the species and abundance of nocturnally active mosquitoes have depended largely upon the use of light trap collections. Although data provided by such studies were useful, they did not indicate which species of mosquitoes were attracted to dog hosts.

Magoon (1935) described a portable stable trap for capturing mosquitoes and Roberts (1965) constructed a steer-baited trap for sampling insects feeding on cattle. Bemrick and Sandholm (1966) described a modification of the Magoon trap in which the side panels were divided into two sections making the trap more portable. All of these traps were of the walk-in type, and the bait animals were not protected from bites of incoming mosquitoes.

In order to collect potential mosquito vectors of the dog heartworm, *Dirofilaria immitis* (Leidy), a dog-baited trap was designed which would (1) capture mosquitoes that were attracted to a dog host, (2) prevent captured mosquitoes from feeding on the bait animal, (3) prevent the bait animal from escaping, (4) allow ease in transport and (5) be economical of storage space.

The trap was composed of a "dog compartment" in which the bait animal was confined, with sides which served as trapping chambers for mosquitoes seeking the confined dog host. The outside measurements of an assembled trap (Fig. 1) were 36 × 46 × 30 in. width, length, and height, respectively. The inside measurements were approximately the same for length and height (.5 in. less). The inside width measured 30 in. When disassembled (Fig. 2), the trap measured

24 × 30 × 36 in. when the sections were stacked or laid adjacently and could be loaded and unloaded by one man. Two assembled traps could be placed in a one-half ton pick-up whereas four disassembled traps could be transported. The trap design allowed assembly or disassembly by one man in approximately 15 minutes.

DOG COMPARTMENT. The dog compartment was constructed in four sections designated the front, floor, roof and back. The front portion was composed of a 30 × 30 in. piece of ¼ in. plywood nailed on a 30 × 38⅞ in. rectangular frame of 2 × 2 in. lumber. The frame was fitted with a piece of 2 × 2 in. lumber which divided it into a 12 × 28⅞ in. and an 18 × 28⅞ in. rectangle within this one frame. An 18 × 18 in. door was cut in the 30 × 30 in. piece of ¼ in. plywood leaving 6 in. widths at the top and bottom of the door and a 12 in. width at the side. The 18 × 18 in. door was hinged with two 2 × 2 in. brass hinges. Two hook and eye safety latches were used to latch the door. When assembled, the front portion had an 1⅞ in. overlap at the bottom.

The floor was composed of a 30 × 36 in. piece of ¼ in. plywood nailed to a 30 × 36 in. rectangular frame of 2 × 2 in. lumber.

The roof consisted of ¼ in. plywood nailed to a 2 × 2 in. lumber frame. A 2 × 2 in. board was fitted into a 30 × 22¾ in. rectangle of 2 × 2 in. lumber to form two 15 × 32¾ in. rectangles within the roof frame. Two 15 × 36 in. pieces of ¼ in. plywood were nailed to the roof frame which formed a 30 × 36 in. plywood rectangular roof having a 1⅞ in. overlap on each side of the assembled trap.

The back portion was constructed of a

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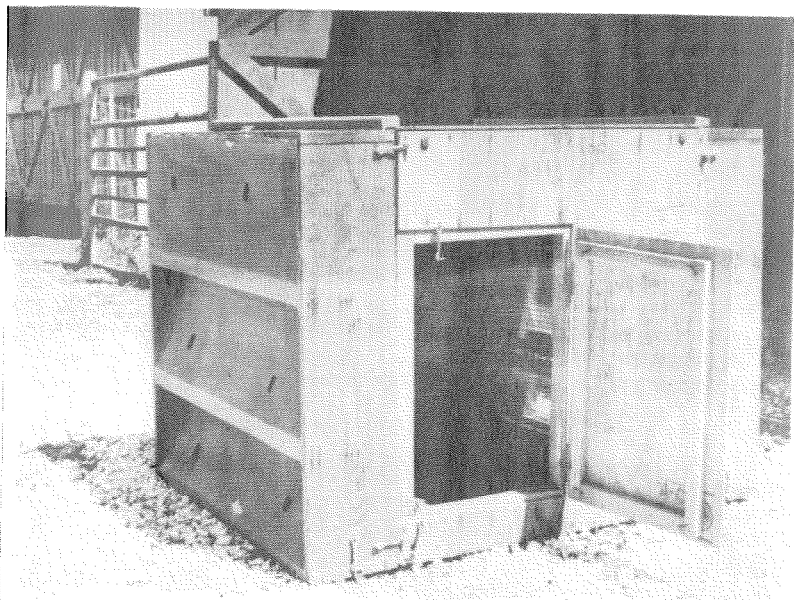


FIG. 1.—Dog baited trap. Assembled.

30 × 30 in. piece of $\frac{1}{4}$ in. plywood nailed on a 30 × 28 $\frac{3}{8}$ in. rectangular frame of 2 × 2 in. lumber. A 1 $\frac{1}{8}$ in. overlap was left on the bottom side of the back portion.

After the four sections of the dog compartment had been constructed they were assembled, frames to the inside, and temporarily nailed together. To facilitate assembly and disassembly, eight $\frac{7}{16}$ in. holes were drilled into the compartment horizontally through the plywood and 2 × 2 in. frames for insertion of machine bolts. One hole was drilled 1 in. down and 4 in. from the edge on each side of the front section and a $\frac{3}{8}$ × 4 in. machine bolt was inserted into each of these holes to secure the front section of the dog compartment to the top section. The same procedure was followed to secure the back to the top section.

From the inside a hole was drilled downward through the base 2 × 2 in. lumber of the front portion on each side about 3 in. from the inside edges of this 2 × 2. These holes also penetrated the front 2 × 2 in. piece of the floor section and a $\frac{3}{8}$ × 4 in. machine bolt was in-

serted in each hole to fasten the floor to the front. The same procedure was followed to fasten the back of the trap to the floor. The temporary nails were removed and the assembled sections of the dog compartment were coded so that assembly and disassembly could be easily and correctly accomplished.

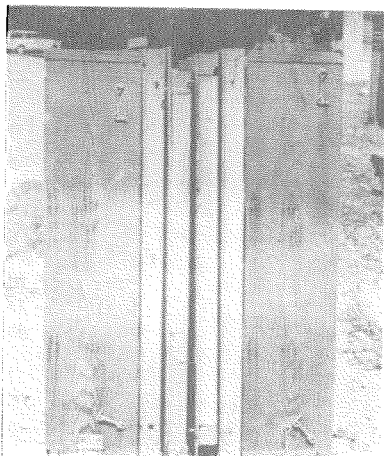


FIG. 2.—Dog baited trap. Disassembled.

MOSQUITO COLLECTION BOXES. Two mosquito collection boxes form the sides of the dog compartment. A 30×36 in. frame of 1×8 in. lumber was constructed to form one mosquito collection box. Prior to nailing the frame together, the 1×8 in. piece of lumber that was to be the bottom of the box was cut lengthwise into three smaller boards. The outer two boards (Fig. 3,A) measured $1 \times 1 \times 36$ in. and were nailed to the sides of the frame for rigidity. The remaining center board comprising the bottom (Fig. 3,B) (approximately $5\frac{1}{2} \times 1 \times 36$ in.) was located between the two outer boards with one end hinged to one side of the frame with a 2×2 in. brass hinge (Fig. 3,C). The other end was secured to the opposite side of the box frame with a hook and eye safety latch. Thus, the middle board of the bottom of the mosquito collection box served as a gate that opened for cleaning and for the removal of predaceous arthropods which may have entered the collecting chamber.

Next a $28\frac{1}{4}$ in. piece of 2×2 in. lumber was nailed vertically and flush with the inside of the mosquito box frame to provide a center brace and nailing surface for the screen wire and hardware cloth (Fig. 3,D). Sixteen mesh screen wire was stapled with $\frac{1}{4}$ in. staples, inserted by use of a hand-operated stapler, to the edges of the 1×8 in. frame and to the vertical piece of 2×2 in. lumber to enclose the inside or the side of the collection box that will be the side wall of the dog chamber (Fig. 3,E). A layer of $\frac{1}{2}$ in. hardware cloth (Fig. 3,F) was stapled with $\frac{3}{4}$ in. staples over the screen wire to prevent the dog from tearing the 16 mesh screen wire.

Two pieces of $34\frac{1}{2} \times 2 \times 2$ in. lumber were nailed horizontally on the outside of the mosquito box frame dividing it into three equal sections (Fig. 3, G). Two pieces of $34 \times 1 \times 2$ in. lumber were nailed 4 in. to the inside and on the same horizontal plane with the lower edge of each 2×2 in. piece (Fig. 3,H). Two additional 1×2 in. boards (Fig. 3,I) were then nailed approximately $\frac{1}{2}$ in.

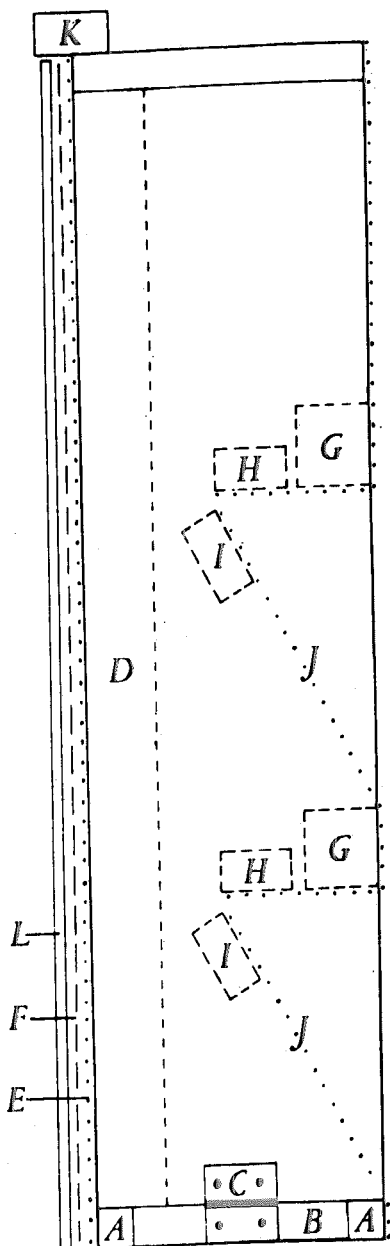


FIG. 3.—Mosquito collection box. End View.

from and on a 45° angle to the 1×2 in. board already secured to the frame. The 1×2 in. boards in this position formed two horizontal $\frac{1}{4}$ to $\frac{1}{2}$ in. mosquito entry slots.

Screen wire (Fig. 3, J) was fitted and stapled to the frame following the outline of the inserted 2×2 in. lumber so that the whole width of the frame was screened except for the mosquito entry slots formed by the 1×2 in. boards.

A strip of 1×2 was nailed across the top of each mosquito collection box leaving a 1 in. overlap when the box was attached to the dog compartment. This 1×2 strip was used to bear the weight of the mosquito boxes and to keep them on the same horizontal plane with the dog compartment (Fig. 3, K). Felt striping (Fig. 3, L) which measured $\frac{1}{4} \times \frac{1}{2}$ in. was stapled to the inside edge of each side forming a seal between the mosquito collection box and the dog compartment.

The mosquito collection boxes were then placed flush against the dog compartment and four hook and eye safety latches were used to fasten each box to the dog compartment. Two 1 in. square holes were cut into the outside screen of each section of the mosquito collection box so that all portions of the box could be reached with an aspirator similar to the modified clothes vacuum reported by Carver (1967). These holes were covered with masking tape during mosquito trapping periods.

Sixteen species of mosquitoes, *Culex*

pipiens quinquefasciatus Say; *Culex peccator* Dyar and Knab; *Mansonia perturbans* (Walker); *Psorophora confinnis*, Lynch-Arribálzaga; *Psorophora ferox* (Humboldt); *Aedes vexans* (Meigen); *Anopheles crucians* Wiedemann; *Aedes tormentor* Dyar and Knab; *Aedes scapularis* (Rondani); *Psorophora ciliata* (Fabricius); *Aedes triseriatus* (Say); *Aedes taeniorhynchus* (Wiedemann); *Aedes trivittatus* (Coquillett); *Aedes ventrovittis* Dyar; *Uranotaenia lowii* Theobald; *Psorophora varipes* (Coquillett) were collected in the dog-baited traps. These traps may provide a highly useful method for determining relative population densities of potential dog heartworm vectors. *Culex pipiens quinquefasciatus* Say were collected in relatively large numbers (60.9 per trapping night; 90 percent of total collections) thus these traps may provide a highly useful method for determining relative population densities of *C. p. quinquefasciatus* in urban areas.

Literature Cited

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CORRECTION

In the title of the paper by B. R. Berry and M. G. Maw, on page 690 of the December 1969 *Mosquito News* (Vol. 29, No. 4) the name of the Oligochaete should read *Aeolosoma*, not *Aeolosom*. The full title is "*Culex pipiens* L. Feeding on the Oligochaete *Aeolosoma hemprichi* Ehrenberg."