

A NOTE ON COLLECTION OF HELEIDAE AND OTHER BITING DIPTERA IN SUITABLE CONDITION FOR DISSECTION

D. H. MURPHY, % Medical Research Council Laboratories, Fajara, Near Bathurst, Gambia

At present, it is standard technique in vector entomology, to age grade individuals on the basis of certain qualitative changes in the female genital tract. While for small scale work, hand catching of specimens is perfectly adequate, and for certain purposes essential, there are many investigations in which the use of less laborious collecting methods would be preferred, provided that they could be adapted to yield material in adequate condition for dissection. During the course of work on Heleidae in the Gambia (British West Africa), it was found that sticky trap material remained in good condition, and in the following notes are indicated the methods found satisfactory for preparing insects caught in this way for dissection, and for applying the principle to collecting at bait and light.

I. STICKY TRAPS

Heleid material has been collected in the Gambia by placing sticky traps covered with a proprietary tree-banding compound in the vicinity of cattle staked out in the open. Material so collected was soaked off the traps with kerosene which, unlike more volatile solvents such as benzene or Xylene, was found to prevent desiccation of the insects for up to twelve hours. After draining on filter paper, they could then be transferred to saline for dissection, and were found to be in excellent condition.

II. BAITED TRAP-HUTS

Trap huts of the type described by Bertram and McGregor (1956) in which mosquitoes are collected in ingress cages placed over the four windows of a baited, mobile hut, have been in regular use at this station for work with *Anopheles*. Traps in use for this purpose have been adapted to record heleids also by the simple device of pinning sticky traps to the inside of the hut (cf. Carpenter 1951). This method gives an indication of those species which, having penetrated the mosquito netting of the cages, rest in the vicinity of the bait either before or after biting. A single trap of 100 cm.² surface area inside a 5 x 2 ft. goat-baited hut has collected up to 800 *Culicoides* in a single night. Where stable traps can be devoted exclusively to collecting heleids they can be made more efficient at low biting densities by using inwardly inclined baffles of transparent plastic sheet coated on the inner side with adhesive, placed across the window openings. Heleids enter to bite without difficulty, through the partially blocked windows, but when flying towards the light on leaving, are trapped on the sticky surface.

III. A SIMPLE LIGHT TRAP

During the course of this work, it was found that conventional light trap material was usually dried out or otherwise unsuitable for dissection. It is therefore recommended that standard light traps be modified to collect insects into a non water pervious oil film, in order to prevent desiccation.

Satisfactory results were obtained by suspending a shallow, enamel dipping tray, containing a 5 mm. layer of liquid paraffin at a distance of about 20 cm. below any convenient size of electric light bulb, by means of a simple wire frame. A white enamel dish is preferable to glass as the reflection from the white surface attracts insects into the oil film. For field use, it has been found satisfactory to use a 6-volt bulb run from a heavy duty battery and in this case, the bulb should be suspended immediately above the oil surface, but preferably not actually immersed.

The liquid paraffin wets the insects immediately on contact, is nontoxic and protects the material completely from desiccation. Heleid material collected in this way was usually still found to have live tissues in the morning, with peristalsis of ovarian muscle and circulation of sperm in the spermatheca still clearly apparent.

For dissection, the insects were laid on filter paper until drained free of oil and then transferred directly to saline. The filter paper was found amply effective for removing the oil and no intermediate solvents were normally required. If desired, however, the draining can be speeded up by briefly washing the material in kerosene beforehand.

Material collected in this way has been found in all ways comparable with fresh material for age grading by ovarian dissection. Salivary gland dissections can also be performed, but since the insects tend to take oil into the crop, care must be taken to avoid compressing the abdomen if the dissection is not to be contaminated with oil globules. With experience this is no disadvantage.

Light trap material of Phlebotominae and *Culicidae* collected by the above technique, has also been examined and found in excellent condition for dissection.

These notes are published with the permission of Dr. I. A. McGregor, Director of the M.R.C. Laboratories in the Gambia. The author is also indebted to Prof. P. C. C. Garnham for his advice on the technique of salivary gland dissection.

References Cited

- BERTRAM, D. S. and MCGREGOR, I. A. 1956. Catches in the Gambia West Africa of *Anopheles gambiae* and *A. gambiae* var. *melas* Theobald in entrance traps of a baited portable wooden hut with special reference to the effect of wind direction. Bull. ent. Res. 47(4):669-681.
- CARPENTER, S. J. 1951. Studies of *Culicoides* in the Panama Canal Zone (Diptera, Heleidae). Mosq. News 11(4):202-208.