

# OPERATIONAL AND SCIENTIFIC NOTES

## EFFECT OF MECHANICAL BARRIER MESH SIZE ON LIGHT TRAP COLLECTIONS IN HARRIS COUNTY, TEXAS

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The Harris County Mosquito Control District operates 20 standard New Jersey type light traps with 50 watt vibration service bulbs and one pint Mason jars with DDVP resin strips for a killing agent. Laboratory workers noticed that some collections contained fewer beetles and moths, which have a tendency to physically damage collections in killing jars before they are themselves rendered immobile. Investigation showed that these traps were equipped with 1/4 inch mesh hardware cloth as a mechanical barrier to large insects as opposed to 5/16 inch mesh which was standard on most of the traps.

In order to see if mosquito collections were also affected by this variance in mesh size, two traps equipped with the two wire sizes were operated within 50 feet but not within visual sight of each other. Each night the trap positions were reversed. Table 1 shows the numbers of mosquitoes caught in the two traps.

Of the species caught, only *Psorophora ciliata* appeared to be affected by the decreased mesh size. The collections in the smaller mesh trap were in much better physical condition. As a result, all traps were modified by changing to the 1/4 inch mesh hardware cloth. This method has proven satisfactory in Harris County. Other Districts should study effects on their local mosquito population sampling before adopting this mesh size.

TABLE 1.

Date	Mesh Size	<i>Psorophora confinnis</i>	<i>Psorophora ciliata</i>	<i>Culex quinquefasciatus</i>	<i>Culex salinarius</i>	<i>Anopheles crucians</i>	Total Mosquitoes
5-19-66	5/16	39	46	4	11	..	100
	1/4	42	7	2	17	..	68
5-20-66	5/16	53	29	7	9	3	101
	1/4	41	6	1	21	..	69
5-21-66	5/16	107	13	11	25	..	156
	1/4	94	1	3	14	2	114
5-23-66	5/16	81	26	..	20	7	134
	1/4	119	8	..	41	..	168

## ADDITIONS TO THE LIST OF *Aedes* SPECIES IN PENNSYLVANIA

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The last published distribution records of Pennsylvania mosquitoes were by Wills and Beaudoin, 1965, listing 41 species; however, *Psorophora ciliata* (Fabricius) was omitted and the distribution of this species was not included, which would have made the total 42. The addition of three new species of *Aedes*, in Pennsylvania, brings the list to 45 species.

On April 22, 1966, at a collection station in the Pocono Mountain Region of northeast Pennsyl-

vania, Little Mud Pond, Porter Township, Pike County, 12 third instar larvae of *Aedes decticus* Howard, Dyar and Knab, were collected and returned to the laboratory. Several were preserved and the rest were reared to 4th instar at which time they were killed and mounted. This collection station is a sphagnum bog surrounding a lake and is a prolific area for many species of mosquitoes throughout the year. At the time of this collection the larvae of *Aedes decticus* were associ-

ated with 4th instar larvae of *Aedes abserratus* (Felt and Young) and 1st instar larvae of *Aedes canadensis* (Theobald). The observation and associations of *Aedes detritus* follow those of Smith 1952 in Massachusetts.

During a mosquito survey of Wayne County, also in the Pennsylvania Pocono's, eight 3rd instar larvae of *Aedes diantaeus* Howard, Dyar and Knab were collected from a clear, cold, shaded, semi-permanent pool at the edge of Lake Como, Buckingham Township, Wayne County on June 6, 1967. This collection was mixed with 4th instar *Aedes stimulans* (Walker). A second collection of 4th instar larvae of the same species was taken from the same type of habitat on July 20, 1967 from Rose Pond, Camp Rose Lake, Buckingham Township, Wayne County. These larvae were a lone collection and not associated with any other species. Both collections were deposited in the Entomology Laboratory, Department of Health, Harrisburg.

On June 12, 1965 two female *Aedes grossbecki* Dyar and Knab were submitted to the entomology laboratory in Harrisburg by Mr. Richard Sivel. These adults were taken in a biting collection near New Hope, Solebury Township, Bucks County, Pennsylvania.

#### References Cited

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- WILLS, WILLIAM, and BEAUDOIN, RICHARD L. 1965. Proc. of the Pennsylvania Academy of Science, Vol. 39: pages 166-169.

#### THE SUCCESSFUL INDUCED COPULATION OF *Culiseta melanura* (Coquillett)<sup>1</sup>

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There has been considerable interest in the laboratory colonization of *Culiseta melanura* (Coquillett), due to its incrimination as a possible vector of eastern and western equine encephalomyelitis. A successful colony would allow studies of its biology, and its ability to transmit various disease

producing agents. The lack of fertilization of the female has, until now, been one of the most important barriers to successful colonization of *C. melanura*. Modified techniques for maintaining adults plus a preliminary report of successful fertilization through the induced copulation method are presented here.

Larvae were collected at weekly intervals from Pokomoke Cypress Swamp near Pokomoke, Maryland. During the months of December 1966, January and February 1967, 630 larvae were collected and brought into the insectary. The larvae were transferred to white enamel pans along with swamp water, rotted leaves, and peat collected at the larval breeding sites. The rearing pans were kept in a room at a temperature of  $80.6^{\circ}\text{F} \pm 1^{\circ}$ . Larval food consisted of finely ground monkey chow and sheep pellets. Larval food was replenished whenever necessary. Pans were checked daily for scum and water evaporation. Water level in the pans was maintained by adding tap water (Rutledge and Ward, 1965). As pupation occurred, pupae were picked, transferred to a dark green quart jar and placed in a screen cage of approximately 8 cubic ft. capacity. After emergence, the adults were offered sliced apples and 4 percent solution of sugar water three times weekly. The adults were held in a room with a relative humidity of 76-84 percent and a temperature of 78-80° F. The lighting in this room is controlled by an automation system for insectaries, as described by Levin *et al.* (1958), producing 15 hours of daylight, dawn and dusk.

At first it was extremely difficult to obtain uniform larval development and pupation. The larvae were apparently in a state of diapause, causing pupation to occur slowly and intermittently. However, between December 1966 and late March 1967 a total of 294 pupae were picked with subsequent adult emergence. At first the females were induced to take a blood meal by introducing a human arm into the cage. This procedure was repeated for several days and two females fed. On other occasions, rabbit, guinea pig and chick were used.

An attempt was made to inseminate the two females that fed on humans, by using the artificial mating method described by Yang Ow *et al.* (1963), for maintaining a laboratory colony of *Anopheles maculatus* (Theobald). One female died and the other produced an infertile egg raft. It was observed that if the adults were kept in the dark they fed better on the sugar water solution as evidenced by an abundance of fluid in their abdomen. The cage was darkened by covering the entire structure with black construction paper.

In a later attempt to induce the females to take a blood meal, all of the females were grouped together and placed in a cage, as described by Eldridge and Gould (1960), on top of which a 4-5 day old chick was taped. This cage was kept in the dark on all feeding attempts. Using this

<sup>1</sup>This material has been received by the Office of The Surgeon General, Department of the Army, and there is no objection to its presentation and/or publication. This review does not imply any indorsement of the opinions advanced or any recommendation of such products as may be named.