

100% control of *A. triseriatus* for 23 days, while San I 201 provided 95% control for 40 days.

As a residual, NRDC-147 was effective 3 times longer than resmethrin. These data indicate that NRDC-147 is superior to resmethrin for residual treatments. Provided it was cost competitive, this pyrethroid could be used for residual treatments against many mosquitoes.

This residual effectiveness of the organophosphate chemicals tested was longer than for the pyrethroids. Knockdown time for the pyrethroid compounds was shorter (<1 hr) than for the organophosphate materials (>1 hr). It can be seen that of the compounds tested, we have not

as yet found pyrethroids that equal the organophosphates in residual life. However, NRDC-147 does represent the type of compound we are beginning to receive in the pyrethroid class. It appears that we may soon have relatively "long life" pyrethroids available for insect control.

Reference Cited

- Haskins, J. R., R. H. Grothaus, R. Batchelor, W. N. Sullivan and M. S. Schechter. 1974. Effectiveness of three synthetic pyrethroids against mosquitoes. *Mosquito News* 34(4): 385-388.

A GYNANDROMORPH OF *Aedes vexans*

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Minson (1969) reported an *Aedes vexans* (Meigen) gynandromorph having a male head and female abdomen. The following is appar-

ently the second sexually aberrant example of this species reported.

A bipolar form of *A. vexans* (Fig. 1) was col-

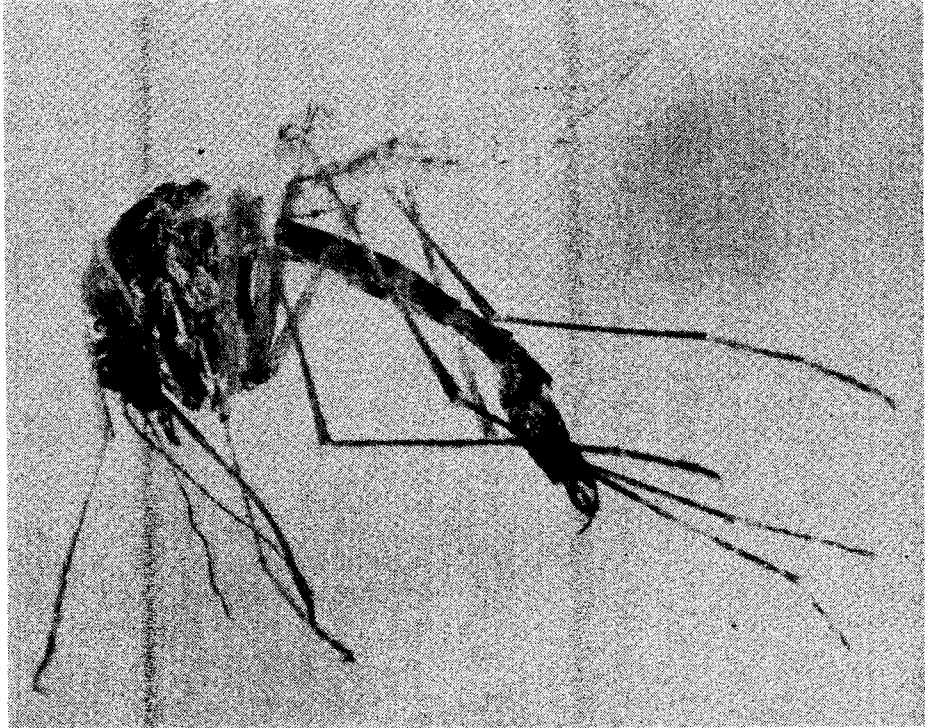


Fig. 1. Bipolar form of *A. vexans*.

lected east of Elgin, Illinois (Cook County, Hanover Township, Section 8, just west of Brenner Road on Shoe Factory Road), July 2, 1975 in a New Jersey light trap. The light trap hung 6 feet above the ground from the northern overhang of a backyard shed. Chickens were kept in the south end of the shed and 2 horses grazed in an area behind it.

The head was entirely female in appearance, with normal antennae and palpi. The terminal abdominal segments and the tarsal claws had male characteristics. Collected along with the above form in the same trap that night were 774 female and 9 male *A. vexans*. This was the highest *A. vexans* count for any of our 10 traps for the 1975 season.

A. vexans is the most abundant mosquito species in the Northwest (Ill.) District. For the past 19 years (1957 through 1975), the time the District has been in operation, a total of 423,119 male and female *A. vexans* mosquitoes have been collected in light traps. The form described here is the first aberrant type of any species collected in our traps to date.

Literature Cited

- Minson, Kenneth L. 1969. An *Aedes vexans* gynandromorph. *Mosquito News* 29:135.

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QUANTITATIVE REARING OF SMALL NUMBERS OF MOSQUITO LARVAE¹

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The deleterious effects of chemical pesticides on human and wildlife populations have revived interest in the use of entomogenous agents for controlling insects of agricultural and medical importance. A simple and inexpensive, yet readily standardized and reproducible, system would facilitate laboratory assessment of potential insect pathogens. Ignoffo and Boening (1970) described a system for rearing larvae of house flies and phytophagous insects on solidified media held in

miniature compartments of disposable clear plastic trays. In this report, we describe a system using a multiple well tray to rear 1 to 2 mosquito larvae/well in a liquid medium developed for use in these trays.

The inexpensive (ca. \$0.04 each) disposable clear polystyrene rearing tray (Champion Packages Co., Belvidere, Ill. 61008) has 5 rows of 5 wells/row, each individual well measuring 2.8 x 4.1 x 1.6 cm with a capacity of ca. 15 μ l. A Plexiglas® sheet (19 x 26 x 0.6 cm) is provided with 2 plastic dowels positioned at diagonal corners; these dowels pass through preformed holes in the tray lip (Fig. 1). Another tray is inverted over the first to retard evaporation and also provide additional air space for each well. The inverted tray is weighed down with another piece of Plexiglas of the same dimensions as the bottom piece. This stabilized tray unit facilitates handling, counting and observation of the larvae (2 persons can feed and accurately count up to 10,000 larvae/day). Ten similar units are held at 25° C. in a slotted clear Plexiglas storage rack. This minimizes space requirements during use.

Larval diets suitable for many species of mosquitoes reared in large numbers in a single container were described by Gerberg (1970). Finely-ground Laboratory Rabbit Chow (Ralston Purina, St. Louis, Mo. 63188) is the standard larval diet used in our insectary, but it was unsuitable for rearing larvae singly or in pairs in the miniature wells. It was difficult and time-consuming to administer a consistent amount of the dry food into each well, and growth of larvae was not uniform on this diet. After preliminary trials, we decided to use basic growth medium suspension prepared by blending (for 2 min) 0.8 g Laboratory Rabbit Chow pellets, 0.8 g Spur® pellets (Albers, Div. of Carnation Co., Van Nuys, Calif. 91412) and 16 g fresh or frozen alfalfa foliage in 300 ml distilled water. The mixture is autoclaved at 1.4 kg/cm² for 45-60 min, cooled, then filtered through coarse glass wool to remove large particulate matter. This suspension has a pH of ca. 7.2 and can be stored at 4° C for 1 wk.

Earlier experiments with different stock suspensions had indicated the necessity of infusing the sterilized medium with a mixture of bacteria that was nutritionally adequate for larval development to the pupal stage and that prior autoclaving of the medium was necessary for maintenance of a controlled flora in the wells. This led to the adoption of a 2 part feeding schedule using (1) a bacteria-inoculated basic growth medium followed by (2) a yeast-supplemented medium. A mixed culture of nonsporeforming bacteria, present in an incubated, unsterilized basic medium suspension, was isolated on nutrient agar plates and used initially in aqueous suspension to inoculate the sterilized basic medium. No steps were taken to identify the bacteria added to the medium but examinations were made at regular intervals to ensure exclusion of sporeforming,

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