

## OBSERVATIONS OF A LABORATORY COLONY OF *CULEX ERYTHROTHORAX*

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**INTRODUCTION.** *Culex erythrothorax* Dyar has been reported from Arizona, California, Idaho, Nevada, Utah, Texas and Mexico (Chapman, 1959). This species is a serious pest at times and has caused considerable annoyance at one military installation in Marin County, California. Females feed as well in the sunshine as on cloudy days or in the shade (Carpenter and LaCasse, 1955). They also bite readily during the evening. A laboratory colony of this species has been established at the Sixth US Army Medical Laboratory, Fort Baker, California.

**MATERIALS AND METHODS.** The colony was started during the late spring of 1961 with material collected in and around a pond in Marin County, Calif. Adult emergence began in a screened walk-in cage on May 1. A shaved rabbit was provided as a blood source for the first time on May 2, and engorged females were first noted on May 8. Inseminated females were found for the first time on May 13, and the first viable egg raft was produced on May 16, and hatched on May 18. On June 28, a subcolony was started in a small screened cage with pupae that developed from eggs that had been laid on June 15. Adult emergence began on July 1. A guinea pig was provided as a blood source for the first time on July 3 and the first engorged female was observed on July 8. The first viable egg rafts were collected on July 13 and hatched on July 15. During the first six generations of this colony, the time elapsing between the

production of the first viable egg raft one generation and the production of the first viable egg raft of the succeeding generation varied from 21 to 31 days, with an average of 26 days.

The main colony is housed in a screened walk-in cage which is located in a corner of the insectary. The cage is approximately 8 ft. long, 8 ft. wide and 10 ft. high. The subcolony is also maintained in the insectary in a screened cage approximately 4 ft. by 2 ft. by 2 ft. The insectary temperature and relative humidity fluctuate widely until the installation of adequate controls was completed on June 7. Subsequent to that date the temperature has been maintained at approximately 75° and the relative humidity between 60 and 75 percent. The insectary is illuminated by fluorescent ceiling lights and a 100-watt incandescent lamp. The lights are controlled by an automatic device similar to the one described by Levin, *et al.* (1958). The lighting schedule is designed to provide approximately a one-hour and 40-minute dawn period followed by a 13-hour and 20-minute daylight period and concluded by a one-hour and 40-minute dusk period.

Adults are provided cotton wads soaked in a 2 percent sugar solution, fresh apple slices and raisins. A rabbit is confined in the walk-in cage and a guinea pig in the 4 ft. by 2 ft. by 2 ft. cage on an average of four nights each week. Since this species also bites readily during the day, a rabbit is also maintained in the walk-in cage on an average of 5 days each week. No females less than four days old have been found to be inseminated.

Swarming and mating have been observed when the light intensity was less than 1 foot candle. Light intensity was measured with a Photovolt Photometer Model 501 M, equipped with Photo Tube Type "C." This instrument had been

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eviously calibrated in the least sensitive scale against a Weston Model 703 Type Light Meter (0-100 foot candles) at a level of 10 foot candles of light intensity. Most of the activity was concentrated in the center of the cage and was generally confined between a space approximately 6 inches above the cage floor and 6 inches below the cage ceiling.

The age at which the females take their first blood meal has been observed to vary between 3 and 7 days. The period between the first blood meal and the production of the first egg raft has varied between 8 and 12 days. The females have a tendency to oviposit on water surfaces that are not disturbed by aeration. They will also oviposit on small water collections that accumulate on the floor of the walk-in cage. Most oviposition occurs during darkness; however, as many as 10 percent of the egg rafts produced may at times be laid during the day.

Approximately 90 percent of the eggs produced by the colony in the walk-in cage, which is estimated to be in the ninth generation, have hatched. Approximately 90 percent of the egg rafts produced by the subcolony which is in its sixth generation have hatched. Hatching usually occurs within 48 hours when the eggs are maintained in a room at 75° F.

It has been prolonged to 3 days when the egg rafts are stored in a room in which the temperature has dropped at times to 60° F.

Considerable variation has been observed in the larval yield from individual egg rafts. In a random sample of 10 egg rafts produced by the second generation in the walk-in cage the number of larvae hatched varied from 21 to 169 with an average of 94 per raft. Larvae are reared in distilled water and are fed food pellets of high protein content and liver powder. The rearing medium originally also included powdered yeast and dried blood.

However, their use was discontinued after it was determined that vigorous mosquitoes could be produced without these materials. The medium, which is contained in pans 9 by 13 by 2½ inches, is aerated by bubbling compressed air through it. Approximately 150 larvae are reared per pan with the larval period lasting from 10 to 13 days.

The pupal stage lasts approximately two days.

**SUMMARY.** A colony of *Culex erythrorhox* has been successfully reared through an estimated 9 generations in the laboratory. The main colony is housed in a screened cage 8 ft. x 8 ft. x 10 ft. A subcolony has been reared through 7 generations in a screened cage 2 ft. x 2 ft. x 2 ft. Both colonies are maintained in an insectary where the temperature is maintained at 75° F. and the relative humidity between 60 and 75 percent. A light schedule is used that provides a one hour and 40 minute dawn period, a 13 hour and 20-minute day light period and a one hour and 40-minute dusk period. Sucrose, apples, raisins, a guinea pig and a rabbit are provided as food for the adults. Larvae are reared in aerated distilled water containing liver powder and high protein food pellets. During the first six generations of the subcolony the time elapsing between the production of the first viable egg raft of one generation and the first viable egg raft of the succeeding generation varied from 21 to 31 days with an average of 26 days.

#### Literature Cited

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