

## LABORATORY REARING OF *CULEX (MELANOCONION) PORTESI* SENEVET AND ABONNENC<sup>1</sup>

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*Culex (Melanoconion) portesi* Senevet & Abonnenc has been frequently collected in Bush Bush Forest, Nariva Swamp, Trinidad, W.I., where it is considered an important vector of arboviruses (see *Culex* sp. No. 9, Aitken *et al.*, 1963; Aitken and Galindo, 1966).

Attempts to colonize this species at the Trinidad Regional Virus Laboratory finally met with success in November 1963. Success was not achieved until a large number of blood-engorged females (about 200) were liberated together in an oviposition cage. These mosquitoes had been collected in mouse-baited traps (Worth and Jonkers, 1962) exposed in Bush Bush Forest. Rearing was accomplished in an outdoor insectary in the absence of light control and air conditioning at ambient temperatures varying between 68° and 88° F. The colony had surpassed 25 generations by the end of 1964 and continues to flourish.

**ADULTS.** The adults are housed in wooden-frame cages, 18 x 18 x 18 inches; these cages have white broadcloth walls and a glass top and front window. Inside the cage a special device is placed for adult survival and oviposition in the form of a brown clay flower pot (Figure 1). The inverted pot, with an additional entrance hole (1-inch diameter) bored on the side, stands in a white enamel dish containing water. The water serves to keep the pot moist and to increase the humidity.

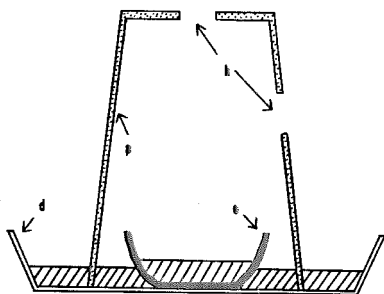


FIG. 1.—Oviposition chamber of *Culex (M.) portesi*. d, outer white enamel dish; o, black-painted glass jar for the oviposition; p, clay flower pot; h, entrance hole. Water is shown by the oblique lines.

Standing in the water beneath the pot is a black-painted glass oviposition jar. Newly emerged adults are particularly susceptible to desiccation. Drip cloths hung from a pan of water over the sides of the cage serve as an additional source of humidity. During the daytime, adults largely remain inside the pot where they probe the damp clay surface. They emerge from the pot at sunset and mating flights are observable at dusk.

Adults mate from 2 to 3 days after emergence. Bottles with wicks and containing 2 percent sugar water are kept in the cages except once a week when restrained Swiss albino mice are offered as an overnight blood meal source. Blood feeding activity at ambient temperatures (68–88° F.) commences about 8–10 days following female emergence from the pupa. Density of adult mosquitoes in the colony cage markedly affects adult activity. When densities are low, the oviposition rate is reduced. Conversely, if there is an excess of adults, the fertility rate of the females may be reduced because of interrupted mating. Generally speaking, about 400 adults should be adequate for a colony cage of 18 inches cube.

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**OVIPOSITION AND EGGS.** Eggs are laid as a raft on the water surface in the black oviposition jar; occasionally they are laid above the water on the jar wall. When oviposition activity is heavy, some rafts are found outside the jar in the water of the white pan under the flower pot. Maximum egg production at ambient temperatures occurs 1 week after the blood meal.

The shape of the raft, rather than being elongate as in the subgenus *Culex*, is subcircular. Figure 2 illustrates the variation

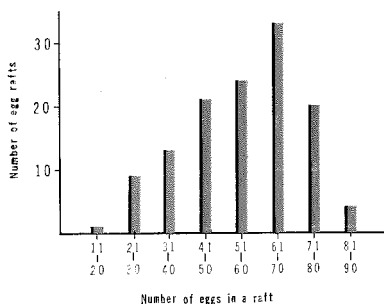


FIG. 2.—Size distribution of 125 egg rafts of *Culex (M.) portesi* laid between 26 February and 13 April 1964.

in size of 125 egg rafts deposited between 26 February and 13 April 1964 (mean size, 56 eggs; maximum, 89; minimum, 15). Oviposition was observed from early afternoon to early morning. The duration of the egg stage is about 40 hours at ambient temperatures (Table 1). Newly laid eggs

TABLE 1.—Minimal duration of immature stages of *C. portesi* at temperatures ranging between 68° and 88° F.

Stage and instar	Duration (days)
Egg	1.5
Larva I	4
II	2
III	3
IV	5
Pupa	3

are white in color but change to black with age. When harvesting eggs, the oviposition jar is filled to the brim with water which is then poured off. This is done to

avoid overlooking rafts which might adhere to the wall of the jar.

**LARVAE AND PUPAE.** Rain water was used for rearing larvae and powdered brewer's yeast was the food. Five to six dead (fallen) bamboo leaves (previously "cured" for about a month in a battery jar of water) were placed in each breeding pan (10 x 16 x 2½ inches deep) to reduce unfavorable changes in the growing medium. Mechanical aeration of the water was not successful with this species. About 500 larvae in a pan of 2,000 ml. of rain water treated with 2 gm. of yeast were adequate for successful rearing. The duration of the larval and pupal period is rather long, as indicated in Table 1.

Approximately three pans containing 1,500 ml. of water were set out weekly, each with eight average-sized egg rafts; each pan was provided with five to six bamboo leaves and one tablet of powdered yeast. The subsequent feeding schedule was as follows:

- 5th day: Add ½ tablet yeast.
- 7th day: " " " "
- 9th day: " " " "
- 11th day: Add 1 tablet yeast plus 500 ml. water.
- 13th day: Add ½ tablet yeast.
- 15th day: " " " " if still many larvae.

**DISCUSSION.** Although adults of *Culex portesi* are commonly collected in Bush Bush Forest, the bionomics of the immature stages in nature are poorly known. Relatively few larval collections have been made and these, for the most part, have come from the swamp margin. Oviposition behavior of colony mosquitoes suggests that this species lays eggs on the water surface or on wet fallen leaves in small dark root "caves" or in the root buttresses of swamp trees along the swamp margin where the water is shallow.

The relatively long duration of the larval stage of *Culex portesi* is interesting when compared with other *Culex*. Several species from Bush Bush were reared from eggs in 1963-1964 under similar con-

ditions. The duration of the larval stage was 7-8 days in *Culex (C.) infictus* Theobald and *Culex (C.) nigripalpus* Theobald; 9-11 days in *Culex (Eubonnea) amazonensis* (Lutz); and 13-15 days in *Culex (Melanoconion) spissipes* (Theobald) and *Culex (M.) crybda* Dyar. The 2-week larval period of *Culex portesi* might well be the usual figure for *Melanoconion* species.

**SUMMARY.** The laboratory colonization and maintenance of *Culex (Melanoconion) portesi* Senevet & Abonnenc is reported, along with a detailed description of equipment, temperature, and feeding require-

ments. The larval development period of 14 days is unusually long for a culicine mosquito.

#### References

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