

## NOTES ON COLONIZATION OF *DEINOCERITES CANCER* THEOBALD

JAMES W. GENTRY, EUGENE J. GERBERG AND THOMAS M. HOPKINS<sup>1</sup>

The mosquito genus *Deinocerites* has been given scant attention in the literature until recently. In their review of the genus, Belkin and Hogue (1959) revalidated two synonyms and described four new species, indicating the need for study of this group. The biology and habits of the species under consideration in this paper (*Deinocerites cancer*) has been studied by Haeger and Phinizee (1959) who colonized it in Florida. Downs (1966) and Provost and Haeger (1967) have studied the habits of this species in some detail. The latter two studies were specifically detailed regarding pupal attendance by the males and the odd mating habits.

The material for starting our colony was collected by Dr. E. J. Gerberg on Grand Cayman Island, B.W.I. in September 1968. This material consisted of 12 third and fourth stage larvae, which had been collected from crabholes in a mangrove swamp. The larvae were placed in a container with water and debris collected from the larval habitat. A small amount of water was added. Ground dog food<sup>2</sup> was added as deemed necessary. All of the original larvae pupated and adults subsequently emerged.

The oviposition container (Figure 1) is prepared by placing an inverted clay flower pot in a bowl containing about 1" of water. A small pinch of table salt (NaCl) and a small amount of 50 percent ground dog food and 50 percent porcine liver powder

is added to the water. The bowl is 5 inches in diameter and 2 inches deep. The flower pot is 3 inches in diameter and 3 inches high with an opening in the bottom, ½ inch in diameter. The pot and bowl are placed inside the adult cage where it serves as an oviposition site, a container for the hatching larvae and a resting site for the adults. The bowl is changed three times a week. The flower pot is removed from adult cages after one week and is replaced immediately by a fresh, clean pot. Pots removed from the adult cage are placed in a bowl with water for 3 days to allow any remaining eggs to hatch.

The eggs are deposited readily on the sides of the inverted, clay flower pot. Deposition is singly, and primarily on the inside just above the water line. Some eggs are deposited on the inside bottom of the pot and some on the outside near the water line. The eggs are killed by drying, but hatch when kept moist or

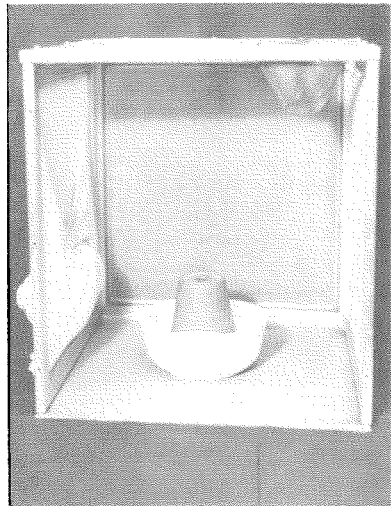


FIG. 1.—Oviposition container in cage.

<sup>1</sup> Insect Control & Research, Inc., 1111 No. Rolling Road, Baltimore, Maryland 21228.

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<sup>2</sup> Ralston Purina Company.

when completely submerged. Hatching occurs in 3 days at 80° F.

The eggs are described by Haeger and Phinizee (1958) as "bullet-shaped" and with the head of the embryo in the blunt end. Our observations on the shape of the eggs are in agreement. The eggs, upon superficial examination, resemble those of many species of *Aedes*. Closer examination reveals a similarity to individual eggs of *Culex*. The eggs are light in color when first deposited but turn dark brown or black during embryological development.

The newly hatched larvae are apparently capable of crawling down to, or dropping into, the water. Under natural conditions changing water levels, caused by tides, probably assist in this process.

The larvae are removed from the oviposition dishes three times a week. At this time they are placed in a plastic pan 10 x 13 x 2" in size, half-filled with water. Premoistened larval food (50 percent ground dog food and 50 percent porcine liver powder<sup>3</sup>) is initially added to the water, and as often as may be deemed necessary during larval development. Up to 200 larvae of various ages have been maintained per rearing pan.

Larval development is slow, requiring 3 to 4 weeks at 27° C (80° F). Development on dog food alone requires 4 weeks. The addition of 50 percent porcine liver powder to dog food, in the proportion shown above, decreases development time to 3 weeks.

At the time of hatching, the larvae are transparent except for the head. Their appearance is that of a small, dark particle moving through the water. Larvae in the second, or later instars, are seen easily although they remain light in color throughout their development. The larvae are comparatively slow moving and can stay submerged for several minutes. While submerged they are often active rather than lying quiescent on the bottom. They show a marked negative phototrophism.

When observations are attempted under intense light the larvae move continuously. Under dim light they become quiet after a short time.

Due to the peculiar development of the lateral head pouches, the basal and apical lobes of the mandibles and the rudimentary mental plate, efforts were made to observe larval feeding. The reaction of the larvae to light made it difficult to observe them in a quiet state. The position of the larvae, with the head down and bent slightly toward the venter, also hindered observation. The observations made indicated that the mouth brushes and other mouth parts were never in motion in the light. This, together with differences in development times with different larval diets, suggests an unusual method or time of feeding or a unique larval diet.

The pupal period is 4 days at 27° C (80° F). The peculiar position of the pupae, with the abdomen relaxing to a pendulous position, was observed by Haeger and Phinizee (1959).

The adults are held in an aluminum and screen cage,<sup>4</sup> 2 x 2 x 2' in size. The temperature is maintained at 27° C (80° F), and the relative humidity at 80 percent. A light schedule of 14 hours artificial light and 14 hours of darkness is maintained.

Food consists of 10 percent sucrose supplied on soaked cotton pads. The pads are changed daily. Bloodmeals are provided by a restrained chicken which is left in the cage 3 to 5 nights a week. In addition, a bared forearm has been offered on numerous occasions. The adults have been observed, on two occasions, to probe and apparently feed on chickens for a short time. No fully engorged mosquitoes have been observed. On four occasions bites have been received by the senior author. In each instance the bites occurred between 0800 and 0830. Those mosquitoes biting showed no hesitation in attacking. Little or no pain was experienced and no reaction occurred at the sites of the bites. The mos-

<sup>3</sup> Cornell Chemical and Equipment Co., Inc., Baltimore, Md. 21228.

<sup>4</sup> Gerberg Mosquito Cage GH-2, Cornell Chemical and Equipment Co., Inc., 1115 No. Rolling Road, Baltimore, Maryland 21228.

quitoes fed from 1 to 3 minutes and stopped voluntarily. None of these appeared engorged. It appears that this species may not take a full blood meal from some hosts, or that engorgement is not pronounced.

Haeger and Phinizee (1958) reported the Florida strain of this species to be autogenous. Our attempts to start an autogenous colony were disappointing. Approximately 50 mixed males and females were placed in a cage 1 x 1 x 1' in size, and fed only sucrose. Over a period of 20 days approximately 50 eggs were deposited. Of these only eight hatched, one larva being obtained on two occasions and six on another. All of these larvae died during the first instar.

Pupal attendance and other adult activities were reported by Haeger and Phinizee (1959), Downs (1966) and Provost

and Haeger (1967). Our observations agreed with those reported by these authors and interested readers are referred to their reports.

#### References

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