susceptibility may be used as a method for periodic assessment of quality control of colonized *C. variipennis.*

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A MULTI-PADDLE OVITRAP FOR COLLECTING *HAEMAGOGUS* AND *AEDES AEGYPTI* EGGS

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During studies on the natural history of yellow fever virus in Trinidad, it became necessary to collect large numbers of *Haemagogus* eggs for transovarial transmission experiments. Earlier, Tikasingh and Laurent (1981) had demonstrated the usefulness of the traditional ovitrap developed by Fay and Eliason (1966) for collecting *Hg. (Hag.) equinus* Theobald eggs in Tobago. These traps were also used to collect *Hg. (Hag.) janthinomys* Dyar and *Hg. (Con.) leucocelaenus* (Dyar and Shannon) in the forests of Trinidad. A multi-paddle ovitrap was also developed and used successfully in collecting *Haemagogus* eggs; its usefulness for collecting *Aedes aegypti* (Linn.) eggs was later demonstrated.

The modified ovitrap made from a 1.5 liter plastic ice cream container was approximately 165 mm in diameter and 100 mm deep, being brick red in color. Later collections were also made from containers painted black (Fig. 1). This size container can hold 12 hard-board paddles each measuring approximately 25 × 130 mm and 4 mm thick[1]. In order to maintain the paddles in an erect position, wire loops were woven around the top of the container. The numbered paddles were placed with the rough side facing the center of the container to which was added 3 cm of water. Each ovitrap was set between 1 to 3 m above ground in the forest. Servicing was done at weekly intervals and consisted of replacing the exposed paddles with new ones and replenishing the water, if necessary. In the laboratory, the paddles were examined, under the low power of a dissecting microscope and eggs present were counted.

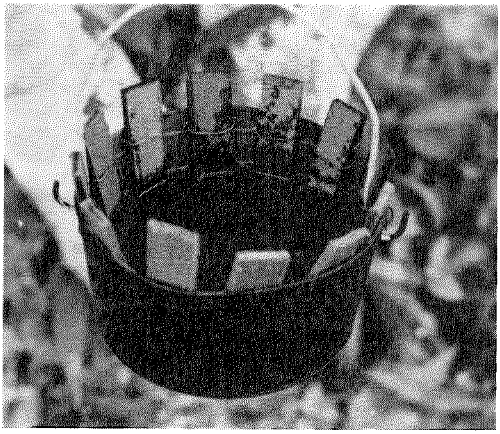

Fig. 1. A multi-paddle ovitrap *in situ.*

Four multi-paddle traps were operated in the Chaguaramas forest, Trinidad from 18th May 1981 through 12th February 1982. During this period 936 paddles were examined and 148 (15.8%) were positive. A total of 1013 eggs was collected giving a mean of 6.8 eggs per positive paddle. When a trap was positive, eggs were found on as many as 10/12 cohort paddles in any one week.

Since the containers were manufactured in a red color, one was painted (inside and outside) black and set approximately 4 m from the red one. The results obtained with these containers in which each held 12 paddles and which were

[1] Commercially available in the USA as Masonite™, a wood-fiber material, pressed in sheets and used for partitions, etc. The product used should have one surface with cross-hatched indentations about 1 mm apart (Editor).

operated for a total of 14 wk are shown in Table 1. There appears to be little difference between oviproductivity of the two colors. However, it should be noted that in both instances, the same number of eggs were collected and that between 17 and 20 percent of the paddles were positive. The highest number of paddles positive for any one week was 9 for the black painted trap during the week of 21 May 1982 and 10 for the red container obtained during the week of 9th July 1982.

The multi-paddle ovitraps were set by Dr. A. B. Knudsen (personal communication) near coral rock holes in Anguilla, W. I. to determine whether the *Aedes aegypti* breeding in the cavities could be induced to oviposit in artificial containers (Parker et al. 1983).

Table 1. Results obtained for two multi-paddle ovitraps one painted black and the other red over a period 14 weeks at Chaguaramas, Trinidad, 1982.

	Black ovitrap	Red ovitrap
No. paddles examined	168	168
No. paddles positive	28	34
No. eggs collected	321	321
Percent paddles positive	16.7	20.0
Mean no. eggs per positive paddle	11.5	9.4

Four traps, each containing 12 paddles were exposed for 72 hours. One of the traps was overturned, but the other 3 contained *Ae. aegypti* eggs. In one of the traps 6 of the 12 paddles yielded eggs. The number of eggs recovered per paddle ranged from 4 to 20 or more.

These multi-paddle ovitraps very considerably increase the surface area for egg deposition and thus possibly mimic more closely a real tree hole. They can be very useful in collecting large quantities of eggs with less effort than the conventional ovitrap.

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ABDOMINAL PULSES IN NEWLY EMERGED MOSQUITOES, *AEDES AEGYPTI*

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Extracardiac pulsatile organs have been known in insects for about 150 years (Wigglesworth 1953, Jones 1964). Hitherto, however, such organs have been found only in the head and thoracic regions, where they aid in the circulation of haemolymph in particularly active sites such as the antennae, legs and wings, and at particularly critical times as when the wings are expanding after eclosion. I now report the finding of what appear to be two *abdominal* pulses in the newly emerged mosquito, *Aedes (Stegomyia) aegypti* (L). These were discovered during a study of the highly vulnerable stage of transition from an aquatic to an aerial mode of life. The pulses, which were present in all of the 240 insects studied, are active only during the first minute of adult life; they are presumably associated in some way with the vital redistribution of fluid at this critical time.

Two pulsatile organs are already known in mosquitoes: Jones's scutellar organ in the thorax (Jones 1954), which is similar to the scutellar organs previously described in higher Diptera (Thomsen 1938) and Clements's paired antennal ampullae in the head (Clements 1956), which are similar to the antennal pumps in certain other insects. The newly discovered pulses can be seen clearly at two discrete points on the posterior margin of the VIIIth abdominal segment, ventral to the midline; this segment, like the rest of the abdomen, is greatly swollen at the time of eclosion. The two pulses, which have a frequency of >5 sec^{-1}, may be active continuously or pulsate in bursts of a few seconds at a time. Occasionally the left or right pulse is more active than the other (Fig. 1).

As an essential part of the mechanism of eclosion, the emerging adult inflates itself with air and water which allows the insect to expand itself free from the unyielding pupal integu-