

USE OF OVITRAPS IN MONITORING *HAEMAGOGUS EQUINUS* POPULATIONS

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ABSTRACT. *Haemagogus equinus* which normally breed in tree-holes have been shown to deposit their eggs in paddles of ovitraps, placed at ground level. In a 23-month study in Tobago, West Indies, 6,678 paddles were ex-

amined of which 69 were positive for *Hg. equinus* eggs. More traps were positive in the rainy season when compared to the dry season. The ovitraps have been shown to be a useful device in *Haemagogus* population studies.

INTRODUCTION

In 1977 an extensive epidemic of dengue occurred in the Caribbean and most countries were affected (Pan American Health Organization 1979). The epidemic reached Trinidad in December 1977 and continued in 1978 (Hamilton 1979). Prior to the epidemic the Government of Trinidad and Tobago had embarked on an *Aedes aegypti* (Linnaeus) eradication program in Trinidad. Tobago is reportedly free of *Ae. aegypti*. Part of this intensified campaign consisted of monitoring of the airports, (Piarco, Trinidad and Crown Point, Tobago) for breeding of *Ae. aegypti* using ovitraps which were developed by Fay and Eliason (1966). The usefulness of these traps as a sensitive technique for the surveillance of ovipositional activities of *Ae. aegypti* was confirmed by other workers (Tanner 1969, Jakob and Bevier 1969a, 1969b; Furlow and Young 1970). More recently, Mortenson et al. (1978) used ovitraps to monitor populations of *Ae. sierrensis* (Ludlow) mosquitoes which breed in tree holes in the western United States. During the surveillance program in Trinidad and Tobago it was discovered that *Haemagogus (Hag.) equinus* Theobald, a mosquito which has been shown to

transmit yellow fever virus in the laboratory (Waddell and Taylor 1945, Galindo et al. 1957), would also deposit their eggs in ovitraps at ground level on the island of Tobago. Subsequently, the ovitraps were used to collect eggs for experimental purposes from *Hg. (Hag.) janthinomys* Dyar and *Hg. (Con.) leucocelaneus* (Dyar and Shannon) in Moruga, South Trinidad during an epizootic of yellow fever in monkeys. The results of the Trinidad study which is still in progress will be published subsequently. The objective of the present report is to present the results obtained for *Hg. equinus* during 1978 and 1979 in Tobago, which showed the ovitrap to be a successful device for collecting eggs and monitoring *Haemagogus* populations.

MATERIALS AND METHODS

The ovitraps were similar to the ones described by Fay and Eliason (1966). Placement of the jars followed the criteria suggested by Evans and Bevier (1969).

A total of 71 traps was placed on the ground at several localities in Tobago including the island's capital and the airport. The traps were serviced weekly, usually on the same day. Each exposed paddle was placed in a separate plastic bag and brought back to the PAHO/WHO Caribbean Epidemiology Centre (CAREC) for microscopic examination for eggs. Unidentified eggs were hatched and reared to adults for identification.

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RESULTS

A total of 6,678 paddles was examined of which 69 were positive and contained 2,445 *Hg. equinus* eggs from February 1978 through December 1979. While the average number of eggs deposited per paddle over the 23-month period was 35, the range was between 1 and 150 eggs (Table 1).

Table 1. Results of ovitrap paddles examined for *Haemagogus equinus* eggs in Tobago, W.I. in 1978 and 1979.

	1978	1979	Total
No. paddles examined	3,128	3,550	6,678
No. positive	39	30	69
No. eggs deposited	1,327	1,118	2,445
Mean no. eggs/pos. trap	30.0	37.3	35.0

Eggs were laid singly on the rough side of the hardboard and above the water line. During the early part of the program the eggs were mistaken for those of *Ae. aegypti* because of their similar morphology. Nevertheless, technical staff soon learned to differentiate between the 2 species of eggs.

The seasonal activity of ovipositing females of *Hg. equinus* is shown in Fig. 1. Peak activity was associated with the rainy season and declined towards the end of

the year and early in the new year corresponding to the onset of the dry season. The short dry season in September 1978 appeared not to have affected breeding when peak densities were recorded.

DISCUSSION

Previous workers (Causey and dos Santos 1949, Galindo et al. 1951) used cut sections of bamboo as traps to study the ovipositional activities of *Haemagogus* and other mosquitoes. A wide variety of larvae of container-breeding species was collected from these bamboo pots. However, considerable efforts could be expended in the identification of the larvae collected from the bamboo pots. Eggs were not collected.

In the present ovitrap study, *Limatus durhamii* Theobald larvae were collected twice. Only on one occasion did another species, *Ae. taeniorhynchus* (Wiedemann), deposit eggs on the paddle, making the trap highly selective for *Haemagogus* in the localities where they were operated. Subsequent studies in Moruga, South Trinidad (Tikasingsh, unpublished data) with ovitraps have confirmed that only a few mosquito species deposit their eggs on the paddles making identification comparatively easy with a minimum amount of work.

Haemagogus equinus is a widely distrib-

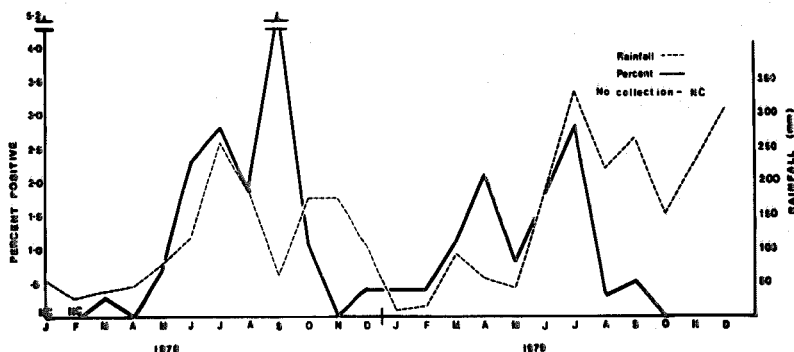


Fig. 1. Seasonal activity of ovipositing females of *Haemagogus equinus* in Tobago, W.I., Feb. 1978-December 1979.

uted species in central and northern South America, but in Trinidad and Tobago it has only been found on Monos island off the northwestern peninsula of Trinidad and in Tobago (Arnell 1973). Since Tobago is free of *Ae. aegypti* and *Hg. equinus* has been shown to transmit yellow fever virus in the laboratory (Waddell and Taylor 1945, Galindo et al. 1957), further studies on this species should be conducted.

The ovitrap could be a useful device in such studies in that it is not only selective and sensitive, but can reduce the considerable amount of man-hours required in traditional sampling methods for immature stages.

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