

The Distribution of *Haemagogus* Mosquitoes on Small
Islands off Trinidad, W. I.¹

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ABSTRACT: Three mosquito species belonging to the genus *Haemagogus* were collected from Monos, Huevos, Chacachacare and Gaspar Grande Islands, located off the northwestern peninsula of Trinidad, West Indies. The collection of *Haemagogus celeste* on Gaspar Grande and Chacachacare represents new island records. *Haemagogus equinus* were also collected from Gaspar Grande for the first time. The distribution and habits of the *Haemagogus* mosquitoes are also discussed.

INTRODUCTION

There are many small islands located off the northwestern peninsula of Trinidad between 61° 45' and 61° 30' north longitude and 10° 45' to 10° 40' West Latitude (Fig. 1). These islands, Monos (7.0 km²), Huevos (2.5 km²), Chacachacare (8.07 km²) and Gaspar Grande (2.75 km²), are situated in the area of the sea known as the Dragon's Mouth, that is between the Gulf of Paria in the south and the Caribbean Sea in the north. Gaspar Grande Island has the typical Trinidad northern range soil type of highly fissured tabular limestone, often without soil but regularly capped by crumbly clay. The three other islands are composed of mostly stiff clay with low porosity and permeability which were probably formed through compaction which restricts the perviousness of the top soil or subsoil or depressed topography (Beard 1946).

The islands represents a very interesting area from the zoogeographical standpoint as the Protium-Tabebuia ecotone flora is identical to Point Gourde on the mainland and the lower slopes of the northwestern peninsula. The mosquito fauna of these islands, with the exception of Monos and Huevos, has not been previously studied (Manuel 1966, Heinemann et al. 1980).

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During the period 1981-83, a mosquito survey on all four islands was conducted using larval surveys, ovitraps, mice-baited Trinidad No. 17 traps (Davies 1971) and human bait captures to maximize the collection of biting mosquitoes on the various islands. The following report is a compilation of notes and collection records of the distribution of *Haemagogus* mosquitoes on these islands. Voucher specimens of *Hg. celeste* from Gaspar Grande and Chacachacare Islands and *Hg. equinus* from Gaspar Grande Island were deposited in the Insect Reference Collection at the Caribbean Epidemiology Centre (CAREC), P. O. Box 164, Trinidad, West Indies.

RESULTS AND DISCUSSION

Haemagogus (Haemagogus) celeste Dyar and Nunez Tovar 1927.

Specimens collected and examined: *Monos Island*: 10 females, 2 males, 10 September 1982, E. C. Peru and R. Persad; 4 females, 1 male, 17 September 1982, N. Andalcio and R. Persad; 6 larvae, 1 female reared from larva, 24 September 1982, E. Peru and N. Andalcio; 3 females, 3 June 1983, re: Trinidad No. 17 traps, D. Chadee. *Huevos Island*: 3 females, 4 November 1982, N. Andalcio. *Chacachacare Island*: 4 females, 7 males, 13 October 1982, R. Persad and N. Andalcio; 3 females, 4 males, 19 October 1982, D. Chadee; 3 females, 2 males, 20 October 1982, W. Ramdath; 2 females, 29 October 1982, N. Andalcio. *Gaspar Grande Island*: 13 females, 10 November 1982, W. Ramdath; 8 larvae, 2 females and 4 males reared from larvae, 10 November 1982, R. Persad.

Haemagogus celeste was the most common *Haemagogus* mosquito collected during this study and is distributed on all four islands surveyed. The larvae of this species were found in a variety of breeding habitats, such as the bottom of rockholes containing clear water with decaying vegetation on Gaspar Grande Island and from rocky beds on mountain streams on Monos Island. Specimens were also collected from an iron pipe 6.4 mm in diameter projecting about 51 mm above ground level on Gaspar Grande Island. On Monos and Huevos Islands, *Hg. celeste* were collected from treeholes, cut bamboo and bamboo internodes (Manuel 1966). Recently, Chadee (1983) also reported the collection of *Hg. celeste* from tires and rockhole habitats on Monos Island.

The results of the study leads to speculation about the possible movement or adaptation of *Hg. celeste* from the forest environment to peridomestic situations. Adults were collected from all four islands. The collections of *Hg. celeste* on Gaspar Grande and Chacachacare Islands represent new island records, thus, forming a continuous link of the species distribution from the Venezuelan mainland through these four islands to the northwestern peninsula and throughout the north and central plains of Trinidad and ending in Tobago, W. I. *Haemagogus celeste* has not been reported north of Tobago, W. I. (Heinemann et al. 1980, Arnell 1973).

Haemagogus celeste has been shown to transmit yellow fever in the laboratory (Anderson and Osorno-Mesa 1946), but it is not known to be a vector under natural conditions. Its wide distribution on these islands does not seem to pose problems as a potential vector for the yellow fever virus.

DISTRIBUTION: Colombia, Venezuela, Trinidad (Chacachacare Island, Huevos Island, Monos Island, Gaspar Grande Island) and Tobago. W. I.

Haemagogus (Haemagogus) equinus Theobald 1903.

Specimens collected and examined: *Monos Island*: 13 eggs collected from ovitrap, D. Chadee; 5 females, 4 males, 9 larvae, 17 September 1982, R. Persad. *Gaspar Grande Island*: 2 females, 10 November 1982, W. Ramdath and R. Persad; 1 larva, 10 November 1982, R. Persad.

The distribution of *Hg. equinus* was limited to Monos Island and Gaspar Grande Island. No immature or adult mosquitoes of *Hg. equinus* were collected on Huevos and Chacachacare Islands. Eggs and larvae of *Hg. equinus* were collected from the conventional ovitraps (Fay and Eliason 1969) at Morris Bay, Monos Island, while larvae have been collected from a limestone rock hole on Gaspar Grande Island. The associated mosquito breeding with *Hg. equinus* was *Hg. celeste*. The collection of *Hg. equinus* on Gaspar Grande Island represents a new island record. However, the presence of *Hg. equinus* on Monos Island, is well known and has been previously reported by Manuel (1966) and Chadee (1983). The utilization of peridomestic situations/habitats by *Hg. equinus* has also been previously reported not only on Monos Island but also in Tobago, W. I. (Chadee et al. 1981). Adults were also collected from various localities on Monos and Gaspar Grande Islands. *Haemagogus equinus* is a proven laboratory and forest vector of yellow fever (Waddell and Taylor 1945, 1947; Waddell 1949; Galindo, de Rodaniche and Trapido 1956; de Rodaniche and Galindo 1957; Arnell 1973). However, during the yellow fever outbreak in 1979-80, in Trinidad, the yellow fever virus was not isolated from this species, despite its presence in areas where yellow fever activity was known to occur.

DISTRIBUTION: Texas, U. S. A., Mexico, Central America, Colombia, Venezuela, Guyana, Trinidad (Monos Island and Gaspar Grande Island), Tobago, Jamaica, Brazil and Bolivia.

Haemagogus (Haemagogus) janthinomys Dyar 1921.

Specimens collected and examined: *Monos Island*: 5 females, 10 September 1982, R. Persad; 1 female, 17 September 1982, D. Chadee; 1 female, 23 September 1982, R. Persad; 4 larvae, 1 male reared from larvae, 29 September 1982, W. Ramdath.

Of the *Haemagogus* mosquitoes collected during this study, *Haemagogus janthinomys* has the most limited distribution, that is, on Monos Island. Previously, Manuel (1966) reported the collection of larvae from treeholes, cut bamboo and bamboo internodes on Monos Island. During the present study larvae were collected from rockholes on Monos Island and the associated breeding included larvae of *Hg. celeste*, *Hg. equinus*, *Limatus durhamii* Theobald and *Culex originator* Gordon and Evans. Adults were collected off human bait in the forest on Monos Island. The collections of *Hg. janthinomys* from rockholes

represent a new habitat utilized by this species. However, the collection of *Hg. janthinomys* on Monos Island has been recorded by Manuel (1966), Heinemann et al. (1980) and Chadee (1983). *Haemagogus janthinomys* is the most efficient vector of the yellow fever virus because of its ability to harbor and transmit the virus (Arnell 1973).

DISTRIBUTION: Mexico, Central America, Argentina, Bolivia, Peru, Colombia, Brazil, Ecuador, Venezuela, Guyana, Suriname, French Guiana, Trinidad (Monos Island) and Tobago.

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FIG. 1. MAP OF THE ISLANDS OFF THE NORTH-WESTERN PENINSULA OF TRINIDAD SHOWING HAEMAGOGUS MOSQUITOES COLLECTION SITES.

