DISTRIBUTION AND ECOLOGY OF *HAEMAGOGUS AERITINCTUS* IN BELIZE, CENTRAL AMERICA

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ABSTRACT. Immatures of *Haemagogus aeritinctus* are reported from a black mangrove (*Avicennia germinans*) tree hole on an offshore key in the Belize barrier reef. This is the first report of this species from other than coastal mainland sites in Central America. The high salinity (10,000 ppm) recorded in the tree hole water suggests that this species has a tolerance, or possibly a requirement, for soluble salts that may explain its affiliation solely with mangrove habitats.

The genus *Haemagogus* is widely distributed in Central and South America, but the bionomics of this group is poorly known (Arnell 1973). The following species of *Haemagogus* have been reported as adults from mangrove swamps and include some species observed to develop in mangrove rot and tree holes: *Haemagogus lucifer* (Howard, Dyar and Knab), *Hg. chalcospilans* Dyar, *Hg. regalis* Dyar and Knab, *Hg. iridicolor* Dyar, *Hg. boshelli* Osorno-Mesa, *Hg. aeritinctus* Galindo and Trapido, *Hg. celeste* Dyar and Nunez Tovar, and *Hg. equinus* Theobald (Galindo and Trapido 1967, Arnell 1973). Four of these species (*Hg. regalis, Hg. aeritinctus, Hg. boshelli* and *Hg. chalcospilans*) typically occur in mangrove habitats, but *Hg. aeritinctus* is the only species that exclusively inhabits mangroves (Galindo and Trapido 1967, Arnell 1973). The distribution of this species is limited geographically to the Atlantic coasts of Belize, Guatemala and northern Honduras (Arnell 1973).

Mangroves would seem ideal habitats for tree hole mosquitoes, due to ample rainfall in tropical coastal regions and heavy leaf litter production by mangrove trees (Odum et al. 1982). However, some species of mangroves actively secrete NaCl from the leaves or glands at the base of the leaves (Odum et al. 1982), causing increased salinity in tree holes.

The ecology of mangrove tree holes has not been surveyed. Chapman (1964), in a study of 2 species of North American deciduous trees supporting populations of *Orthopodomyia californica* Bohart and *Aedes sierrensis* (Ludlow), found levels of soluble salts as high as 8,960 ppm. Petersen and Chapman (1969) found soluble salts ranging from 74 to 6,400 ppm in Louisiana, USA tree holes containing culicid larvae. The report below describes a collection of immature *Hg. aeritinctus* from a high salinity tree hole in a mangrove swamp from the Belize barrier reef.

In March 1992, the author collected 50 immatures (2nd-instar to pupae) from a black mangrove, *Avicennia germinans* Linn., tree hole located on the Belize barrier reef 20 km off the coast from the mainland city of Dangriga, Belize. The tree hole cavity was 16 cm diam × 31 cm deep and 20 cm above the ground. Salinity in the cavity water was measured at 10 ppt (10,000 ppm) with an optical refractometer. The water was heavily tinted and large amounts of sediment were present in the bottom of the cavity. Twenty-one larvae were successfully reared to adults and subsequently identified as *Hg. aeritinctus*. All individuals were female.

The Belize barrier reef system (a series of coral rubble islands, reefs and mangrove swamps) is 200 km long and ranges from 12 to 40 km east of the mainland. This collection represents the first offshore collection for this species throughout its range. Also of interest is the high salinity of the breeding site. A heavy rainfall (which broke a dry spell of several weeks) was reported several days before the collection, and the recorded salinity may actually represent a lower figure than what may potentially occur.

The only other tree hole collection of *Hg. aeritinctus* in which the species of mangrove was reported was that of Galindo and Trapido (1967) in their original description of the species. That collection was from a red mangrove, *Rhizophora mangle* Linn., a species that excludes salt at the root zone. Thus salinities in tree holes of this mangrove species are likely to be considerably lower than that encountered in *A. germinans*, in which leaves are frequently heavily encrusted with salt. Since *Hg. aeritinctus* has never been collected inland (Arnell 1973), its distribution may be related to requirements of the larvae of this species for soluble salts or the inability of potential conspecifics to tolerate these same salinities.

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Voucher specimens have been placed with the Florida State Collection of Arthropods, Gainesville, Florida.

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