

DISCOVERY OF A BROMELIAD-INHABITING *CULEX (MICRAEDES) SP. IN SOUTH FLORIDA*

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ABSTRACT. Immatures of a *Culex (Micraedes)* sp. were collected from bromeliads at 6 sites in Dade County, FL. This discovery represents the first time a member of this subgenus has been detected in the continental United States. The *Cx. (Micraedes)* sp. was found in both native and exotic bromeliads, and at some sites this *Culex* occurred in these plants as frequently as *Wyeomyia* spp.

In recent years, 2 nonindigenous mosquito species were found for the first time in south FL (Pafume et al. 1988, O'Meara et al. 1995a), where immatures of both *Aedes bahamensis* Berlin and *Aedes albopictus* (Skuse) inhabit water accumulations in various containers, especially used tires. The movement and improper disposal of used tires has contributed to the spread of these mosquitoes to new locations (Reiter and Darsie 1984; Hawley et al. 1987; O'Meara et al. 1989, 1992). In Hawaii, another container-dwelling mosquito, *Wyeomyia mitchellii* (Theobald), probably was introduced in a shipment of ornamental bromeliads (Shroyer 1981). It is likely that the weevil *Metamasius callizona* (Chevrolat) became established by a similar pathway in FL, where it has devastated populations of the indigenous bromeliad *Tillandsia utriculata* L. in some parts of the state (Frank and Thomas 1994).

Exotic bromeliads with colorful flowers and leaves are popular landscape plants in FL. Unfortunately, many of these plants trap water in their leaf axils, thereby providing aquatic habitats for several mosquito species (Frank 1994). *Wyeomyia mitchellii* and *Wyeomyia vanduzeei* Dyar and Knab generally are the dominant mosquito species in both native and exotic bromeliads in south FL (Frank et al. 1988). However, at some north FL locations, *Ae. albopictus* is the most common mosquito in some species of exotic bromeliads (O'Meara et al. 1995b). During a survey to assess the incidence of *Ae. albopictus* in various microhabitats, immatures of a *Culex (Micraedes)* sp. were collected from bromeliads in Dade County, FL. This discovery represents the first time a member of this subgenus has been detected in the continental United States.

Using a larval key developed by Berlin (1969), this mosquito was identified tentatively as *Culex (M.) antillumagnorum* Dyar. Yet, larval and adult specimens from south FL differed in some characters from the descriptions given by Berlin (1969) for *Cx. (M.) antillumagnorum*. Hence, until the taxonomic significance of these differences is resolved, this recently discovered inhabitant of bromeliads should be referred to as *Culex (Micraedes)* near *antillumagnorum* or as *Culex (Micraedes)* sp.

This *Cx. (Micraedes)* sp. was found for the first time in Florida at the Fairchild Tropical Garden on May 7, 1996, when immatures of this species were collected from 21 of 23 mosquito-positive plants. Between May 15 and June 26, 1996, water-holding bromeliads at 9 additional south FL sites were sampled for immature mosquitoes using either a bulb pipette or a meat baster. Overall, 6 sites were found to be positive for the *Cx. (Micraedes)* sp., and they were clustered along or near Old Cutler Road in Dade County (Fig. 1). At 3 of these sites (sites 1-3), the newly discovered *Culex* was collected from epiphytic, native bromeliads; at the 3 other sites (sites 4-6), this mosquito was found in ground-dwelling, exotic bromeliads.

At the Fairchild Tropical Garden (site 4) and the Matheson Hammock County Park (site 3), nearly all the mosquito-positive bromeliads contained immatures of both the *Cx. (Micraedes)* sp. and *Wyeomyia* spp. (Table 1). At Matheson Hammock, the *Cx. (Micraedes)* sp. was found in both *Tillandsia utriculata* and *Tillandsia fasciculata* Swartz, 2 species of native bromeliads that are common throughout south FL. The *Cx. (Micraedes)* sp. was also very common in the exotic bromeliads at the Parrot Jungle and Gardens (site 5). By contrast, this mosquito was found less frequently in the bromeliads at site 6 (private residence) than were *Wyeomyia* mosquitoes (Table 1).

Immature *Cx. (Culex) quinquefasciatus* Say were collected at sites 4, 5, and 6 and at 3 of the 4 locations where the *Cx. (Micraedes)* sp. was not found. During May 1996, immatures of the *Cx. (Micraedes)* sp. and *Cx. quinquefasciatus* were found together in some of the bromeliads at sites 4, 5, and 6. Generally, *Cx. quinquefasciatus* invade ground-dwelling bromeliads with putrid water caused by the accumulation of lawn grass clippings (Frank et al. 1988). In the field, it is easy to distinguish 4th-instar larvae of *Cx. quinquefasciatus* and *Cx. (Micraedes)* sp., since larvae of *Cx. quinquefasciatus* are larger, have a shorter siphon, and typically are more lightly pigmented than those of the *Cx. (Micraedes)* sp. However, to accurately distinguish early-instar larvae of the 2 species, they must be examined using a stereoscopic microscope.

In 1992 Hurricane Andrew destroyed many of

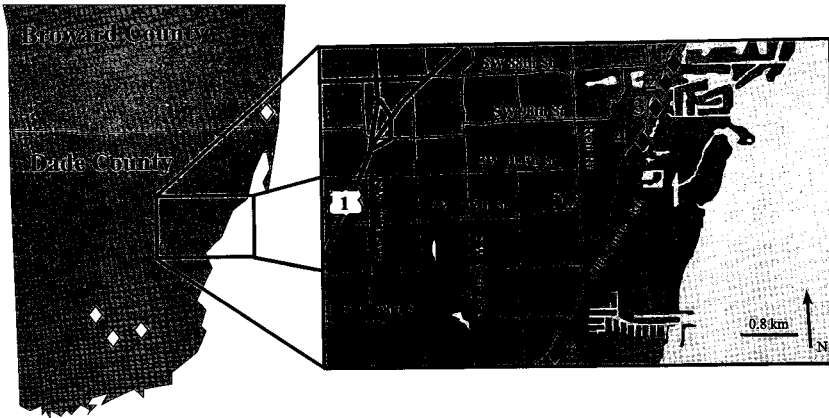


Fig. 1. Locations in south FL (Dade and Broward counties) where bromeliads were sampled for immature mosquitoes in 1996. Numbered sites indicated by a filled diamond (◆) were positive for the *Cx. (Micraedes)* sp. Unnumbered sites indicated by an open diamond (◇) were negative for this mosquito.

the bromeliads in the Fairchild Tropical Garden and in the nearby Parrot Jungle and Gardens. The *Cx. (Micraedes)* sp. may have invaded south FL when these gardens restocked their exotic bromeliad exhibits. However, until the taxonomic status of this bromeliad-inhabiting *Culex* in south FL is determined, it would be premature to consider this mosquito a nonindigenous species. There is a possibility that we are dealing with a native species that until now has escaped detection.

One week after our discovery of the *Cx. (Micraedes)* sp., the annual bromeliad sale (a major fund-raising event) took place at the Fairchild Tropical Garden. Some of the bromeliads purchased at the sale may have contained immatures of the *Cx. (Micraedes)* sp. Ornamental horticulture is a major industry in south FL, where many commercial operations specialize in the importation, production, and/or sale of exotic bromeliads. Commerce involving bromeliads offers an excellent pathway for spreading the *Cx. (Micraedes)* sp. and other mosquito species to new locations.

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Table 1. Occurrence of immatures of a *Culex (Micraedes)* sp. and *Wyeomyia* spp. in bromeliads at 6 sites in Dade County, FL.

Site no.	Sample date(s) (1996)	Type of plants	No. of mosquito-positive plants	No. of plants with immature		
				<i>Cx. (Micraedes)</i> sp.	<i>Wy. mitchellii</i>	<i>Wy. vanduzeei</i>
1	May 15	Native	3	3	3	0
2	May 15	Native	2	1	2	0
3	May 15 and July 17	Native	16	15	16	0
4	May 7, July 17, and Oct. 9	Exotic	60	54	43	13
5	May 29	Exotic	13	10	4	1
6	May 15 and Oct. 9	Exotic	43	3	34	9

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