IMMATURES OF ANOPHELES QUADRIMACULATUS S.S. COLLECTED FROM ATYPICAL HABITATS

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ABSTRACT. Two unusual habitats for the immatures of Anopheles quadrrimaculatus s.s. are described: a highly polluted sewage retention pond and an artificial container.

KEY WORDS Anopheles quadrrimaculatus s.s., immature habitats

Anopheles quadrrimaculatus (Say) sensu stricto (s.s.) has been collected as immatures from a variety of freshwater habitats, typically among vegetation along the margins of permanent or semipermanent sites such as ponds, lakes, streams, canals, and roadside ditches and they have been taken in association with other members of the Quadrimaculatus Complex (i.e., Anopheles diluvialis Reinert, An. inundatus Reinert, and An. smaragdinus Reinert) (Reinert et al. 1997).

Imatures of Anopheles quadrrimaculatus s.s. were collected from the following 2 atypical habitats at Gainesville, Alachua County, FL. Adults were reared from some of the larvae from each of the 2 collection sites. Identifications were based on adults, their associated pupal and 4th-stage larval exuviae, and 4th-stage larvae.

Specimens from the 1st site were collected at the margins of a sewage retention pond that received liquid and solid effluent from a swine farm. This habitat contained highly polluted, odoriferous water with sparse amounts of duckweed, numerous floating elderberry leaves, and green filamentous algae along the margin, which was partially shaded by large, blooming, elderberry plants. Analysis of the water quality taken on October 21, 1996, was temperature: 20.5°C; pH = 8.2; dissolved solids = 1,141; and conductivity = 1,725 μmhos. Immatures of An. quadrrimaculatus s.s. were collected from this site on 5 dates in 1996: October 4, three 4th- and one 3rd-stage larvae; October 17, one 4th- and four 2nd-stage larvae; October 21, three 2nd-stage larvae and 1 pupa; October 28, three 3rd- and one 2nd-stage larvae; and November 4, one 2nd-stage larva. Numerous specimens (>150/1-pint dipper) of Culex nigripalpus Theobald, which included egg rafts, larvae (1st- through 4th-stage), and pupae, were collected (October 4, 17, and 21, but noticeably fewer on November 4) from this habitat in association with specimens of An. quadrrimaculatus s.s. Also, immatures of Culex quinquefasciatus Say (October 21, two 4th-stage larvae; October 28 and November 4, approximately 500 4th-stage larvae per day) and a few immatures of Uranotaenia towii Theobald (October 17, six 3rd- and two 2nd-stage larvae; October 21, eleven 3rd- and two 2nd-stage larvae, and 1 pupa; and November 4, two 4th- and three 3rd-stage larvae) were taken in association with the above 2 species. Larval An. quadrrimaculatus sensu lato (s.l.) have been reported a few times from polluted water sites. For example, Fletcher (1946) recorded larvae collected from a pool polluted by the effluent from a broken sewer in Georgia, Johnson (1959) found larvae breeding in heavily polluted septic tank effluents in Louisiana, Shroyer and Siverly (1971) collected larvae from waste lagoons in Indiana, and Carlson (1982) and Carlson et al. (1986) reported low numbers of larvae in wastewater evaporation-percolation ponds in Florida.

The 2nd habitat was a plastic 5-gal bucket containing approximately 3 gal of rainwater, with several floating pine leaves and many submerged pine and oak leaves, located in an area partially shaded by trees and near a building. Fifty-five 2nd- to 4th-stage larvae were collected on November 3, 1995, from this bucket, all of which were An. quadrrimaculatus s.s. The following references pertain to An. quadrrimaculatus s.l. collected from artificial containers. Mulrennan and Beck (1955) found larvae in rain barrels and watering troughs in Florida, Johnson (1959) collected larvae from artificial containers in Louisiana, Eads et al. (1961) reported finding immatures in fire barrels in Texas, and Wilmot et al. (1992) reported collections from artificial containers in Michigan. With the discovery that An. quadrrimaculatus is a complex of 5 sibling species, designated An. quadrrimaculatus (A), An. smaragdinus (B), An. diluvialis (C), An. inundatus (C'), and An. maverlis Reinert (D) (Kaiser et al. 1988a, 1988b; Lanzaro et al. 1988; Narang et al. 1989, 1990; Reinert et al. 1997), it cannot be determined which species of the complex were involved in the above-mentioned literature records of An. quadrrimaculatus s.l.

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