

COLONIZATION OF *ANOPHELES OCCIDENTALIS* AND *ANOPHELES HERMSI*¹

KENN K. FUJIOKA, A. R. BARR, PENSRI GUPTAVANIJ AND DORA M. MENCHACA

School of Public Health, University of California, Los Angeles, CA, 90024

ABSTRACT. The colonization of *Anopheles occidentalis* is described and contrasted with colonization of a related species, *An. hermsi*. The latter species formerly was considered to be conspecific with the former, but the 2 species differ considerably in biological characteristics.

Three of the 5 species comprising the North American *Anopheles maculipennis* complex occur in California: *An. occidentalis* Dyar and Knab, *An. freeborni* Aitken and *An. hermsi* Barr and Gupta vanij. The latter species was described only recently (Barr and Gupta vanij 1988). *Anopheles freeborni* was colonized by Hardman (1947), but he was not able to colonize *An. occidentalis*. *Anopheles occidentalis* was maintained for 6 generations by Baker and Kitzmiller (1965) by forced mating. Both *An. hermsi* (as "southern *occidentalis*") and *An. occidentalis* were colonized by Christensen, the former with ease and the latter with difficulty; *An. occidentalis* was maintained for a few generations without forced mating.

Anopheles freeborni and *An. hermsi* were reared in more or less standard ways (Trembley 1955, Gerberg 1970). A colony of *An. freeborni* was obtained from R. K. Washino at the University of California Davis; it had been established from material collected in the Davis area in 1982. *Anopheles hermsi* larvae were collected from the type locality in Malibu Canyon, Los Angeles Co., California, in 1981. Larvae were reared in tap water in small lots, about 125 in a surface area of 585 cm², at ambient laboratory temperature and daylight. They were fed a 4:2:2:2:1:1 mixture of alfalfa pellets, high protein baby cereal, instant oatmeal, wheat germ, powdered infant formula and liver powder, which was ground fine and sifted. Adults were kept in 1-gal (3.8-liter) cardboard containers covered with moist toweling and supplied with sugar cubes. Five-day old females were allowed to engorge on mice, and 3–4 days later they laid eggs

on tap water in paper cups (118-ml) lined with filter paper. The eggs hatched within 3 days.

Anopheles occidentalis larvae were collected in Coyote Hills Regional Park, Alameda Co., California, in 1981 and reared as the other species. Females did not feed readily on mice and thus were fed on humans. Adults did not mate in the containers provided; therefore, forced mating was necessary. The adults were anesthetized, males were impaled on minuten needles and their wings and hindlegs removed; a male was used for mating no more than 3 females. The females had been allowed to engorge before mating. Females would not oviposit in paper containers; therefore, they were placed over water in pans covered with bobbinet, the pans being lined with filter paper to prevent stranding of eggs.

The laboratory characteristics of *An. occidentalis* indicate that it is biologically rather different from *An. freeborni* and *An. hermsi* and support the placement of the latter much closer to *An. freeborni* than to *An. occidentalis*.

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² Christensen, H. A. 1968. Biology of *Anopheles occidentalis* Dyar and Knab. Ph.D. dissertation, Univ. Calif., Davis.