ON THE OCCURRENCE OF *AEDES PURPUREIPES* ALONG THE LOWER COLORADO RIVER[1]

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On the night of September 15, 1986, 4 female *Aedes* (*Kompia*) *purpureipes* Aitken were collected by a CO_2 trap that was operated on the Havasu National Wildlife Refuge ca. 3 km S of the headquarters building and 0.5 km E of the Colorado River, Mohave County, Arizona. The location is approximately the middle distance between Needles, San Bernardino County, CA and Topoc, AZ. Previously, adult females of *Ae. purpureipes* were collected by Jakob et al. (1985) using CDC miniature light traps baited with dry ice at Parker (1 specimen), La Paz County, AZ and at the Yuma Proving Ground (3 specimens), Yuma County, AZ, between August 2 and October 3, 1984. Thus 8 known specimens have been collected to date at 3 scattered locations along the east side of the lower Colorado River, between Needles, CA, and Yuma, AZ. More extensive sampling on the western side of the river should reveal the presence of *Ae. purpureipes* and extend the range of the species into California (Bohart and Washino 1978).

The occurrence of *Ae. purpureipes* along the lower Colorado River in association with microphyll vegetation that is characteristic of arid desert departs radically from the typical ecological association of this species with the lush Sierra Madrean and Sonoran macrophyll plant communities found to the southeast. In southeastern Arizona (Cochise, Pima and Santa Cruz counties), larvae of *Ae. purpureipes* develop in the water that collects in tree holes and rot cavities in hackberry (*Celtis*), sycamore (*Platanus*), cottonwood (*Populus*), oak (*Quercus*) and occasionally palo verde (*Cercidium*) (Zavortink 1972). The tree hole sources being exploited by *Ae. purpureipes* along the lower Colorado River have yet to be established. Vegetatively, the lower Colorado River drainage system supports, in addition to the typical microphyll flora (Barbour and Major 1972), dense thickets of mesquite (*Prosopus*), willow (*Salix*) and salt cedar (*Tamarix*) with interspersed stands of cottonwoods, palo verde, and desert ironwood (*Acacia*). All of these species form rot cavities to some extent; however, the senior author has observed "tree hole formation" more commonly in willows.

All specimens of *Ae. purpureipes* collected along the lower Colorado River were captured between early August and early October. This period is coincidental with the duration of the summer rainy season when parts of the region receive from 3–10 cm of rainfall from afternoon thundershowers (Mallery 1936). Therefore, flooding of colonized tree holes would be expected to be greatest at this time. Whether or not a spring brood is produced following an unusually wet winter is unknown. Larvae of *Ae. purpureipes* have been collected on numerous occasions from various tree hole sources sampled during the winter months in southeastern Arizona (Zavortink 1972).

It is unlikely that *Ae. purpureipes* was introduced into the lower Colorado River drainage system by man. Extensive field collections from southeastern Arizona by the senior author and Zavortink (1971) indicate that *Ae. purpureipes* breeds exclusively in tree holes and rot cavities with no records from artificial containers, (i.e., tires, metal cans, etc.) that could be transported by man and result in a fortuitous introduction.

Aedes purpureipes has yet to be collected from the Gila River drainage system between Yuma and the nearest (300 km) recorded eastern colonies in the Baboquivari Mountains of south-central Pima County, AZ. Within the Gila River system, there exist wide gaps in the continuum of phreatophytes (i.e., plant species capable of either retaining/maintaining water in rotholes and cavities) that could support populations of *Ae. purpureipes* and link Colorado River populations with those of southeastern Arizona. Until populations are discovered along the Gila River, the distribution of eastern and western elements must be considered disjunct.

In the recent geologic past, *Ae. purpureipes* and perhaps other Sonoran tree hole breeding mosquitoes (i.e., *Aedes muelleri* Dyar and *Aedes papago* Zavortink) probably were more widely distributed in western Arizona and eastern California (Colorado Desert). This region was once covered with extensive thorn forests and most likely supported isolated pockets of typical Sierra Madrean riparian vegetation (Axelrod 1950). Increasing aridity within the last 250,000

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years has resulted in the replacement of this vegetation type by drought tolerant microphyll species better adapted to survive desert conditions (Shreve 1964). The *Ae. purpureipes* that have persisted along the lower Colorado River probably represent relict populations that have managed to survive the predominately arid climate by taking ecological refuge where suitable conditions persist.

Two of the 4 specimens of *Ae. purpureipes* collected at the Havasu National Wildlife Refuge have been deposited in the Richard M. Bohart Museum at the University of California, Davis.

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