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# DISTRIBUTION, ABUNDANCE AND BIONOMICS OF *AEDES ALBOPICTUS* IN SOUTHERN TEXAS

MICHAEL L. WOMACK

*Division of Natural Science and Mathematics, Macon College, Macon, GA 31297*

ABSTRACT. A survey was conducted for *Aedes albopictus* in southern Texas during the summer of 1992. Thirty-five new county records were added to the distribution of this imported mosquito in Texas. *Aedes albopictus* was widely distributed throughout the ecological regions in the survey area, but its abundance decreased in counties adjacent to the Rio Grande River. However, these counties had high densities of *Aedes aegypti.*

In 1986, the U.S. Centers for Disease Control (CDC) initiated a program to delineate the distribution of the Asian tiger mosquito, *Aedes albopictus* (Skuse), in the United States following the discovery of a breeding population in Houston (Sprenger and Wuithiranyagool 1986). Additional surveys by various agencies have documented the presence of *Ae. albopictus* in 42 of 254 Texas counties (CDC, unpublished data). *Aedes albopictus* was reported in 2 Lower Rio Grande Valley counties (Hidalgo and Cameron) and in Matamoros, Mexico, in 1988 (Francy et al. 1990). In 1991, another Valley county, Willacy, was found to have *Ae. albopictus* populations (CDC, unpublished data).

Hawley (1988) extensively reviewed the biology of adult and larval stages of *Ae. albopictus.* The importation from northern Asia and the interstate movement of tires is generally accepted as the origin and the primary mechanism for the rapid dispersal of the Asian tiger mosquito within the United States (Francy et al. 1990).

The presence of this vector near areas of dengue fever in Mexico suggested that a survey was needed to update the prevalence of *Ae. albopictus* in southern Texas. A summer faculty research proposal to accomplish this project was approved by a United States Air Force research agency. Armstrong Laboratory at Brooks AFB, TX, served as both support facility and sponsor during the June and July 1992 fellowship period. This report documents the findings of the above survey.

Counties with unreported infestations of *Ae. albopictus* (C. Moore, personal communication) were selected for sampling. Adults of *Ae. albopictus* were collected with hand aspirators from resting sites at tire retailing enterprises, auto and truck repair shops, cemeteries, parks and plant nurseries located in southern Texas. Voucher specimens were prepared for each new county record. These are deposited in the entomology collection at Macon College. Larvae were not routinely collected as the primary purpose of this survey was to ascertain qualitatively the presence of *Ae. albopictus* in unreported counties. The northernmost collection point was at Fredericksburg (30°16.4′N, 98°11.8′W) and sampling continued southward to Brownsville (25°54.3′N, 97°30.2′W). Collections in southeast Texas began at Waelder (29°21.8′N, 97°30.2′W) and continued westward to Del Rio (29°21.8′N, 100°53.7′W). Ecological regions of Texas in this study included parts of the Edwards Plateau, the Gulf Coast and Blackland Prairies, the Coastal Sand Plains and the South Texas Brush Country. Natural drainage subsystems of these areas consisted of the Guadalupe, San Antonio, Nueces and Rio Grande rivers. Major metropolitan areas included San Antonio and the cities within the Lower Rio Grande Valley.

Thirty-five new county records were established for *Ae. albopictus* in Texas (Table 1). At 9 of the sampling points, both *Ae. albopictus* and *Aedes aegypti* were present in mixed populations.

*Aedes albopictus* was recovered from the McAllen, Harlingen and Brownsville areas from only 3 sites (Table 1). Two of these locations were identified in previous vector surveys (Francy et al. 1990). Larvae were recovered from a cemetery water container at the 3rd site as adults were not evident. The Asian tiger mosquito demonstrated limited extension into natural habitats beyond the local resale or shipment of used tires within the Lower Rio Grande communities. Unlike the limited distribution exhibited within the urbanized region of the Lower Rio Grande Valley, the San Antonio metropolitan area abounded with sites positive for *Ae. albopictus.* Adults were collected along streams and other shaded areas at Brackenridge, McAllister, Commanche, East Southside Lions and Schnabel parks. San Jose Burial Park, the nature trail at Mission San Juan Capistrano and the San Antonio Botanical Gardens were also positive. In contrast to the abundance of *Ae. albopictus* in San Antonio, *Ae. aegypti* has been reported to have an extremely limited distribution in San Antonio (McHugh 1992).

In conclusion, *Ae. albopictus* was widely dis-

Table 1. Distribution of *Ae. albopictus* and *Ae. aegypti* in counties surveyed in southern Texas.

| County | City/town | Site description | *Aedes* species |
|---|---|---|---|
| Atascosa | Pleasanton | Truck repair | *albopictus*[1] |
| Bandera | Medina | Stream/vegetation | *albopictus*[1] |
| Bee | Beeville | Tire dealership | *albopictus*[1] |
| Bexar | San Antonio | Brackenridge Park | *albopictus* |
| | San Antonio | McAllister Park | *albopictus* |
| | San Antonio | Schnabel Park | *albopictus* |
| | San Antonio | Commanche Park | *albopictus* |
| | San Antonio | Southside Lions Park | *albopictus* |
| | San Antonio | San Jose Burial Park | *albopictus* |
| | San Antonio | San Juan Capistrano Mission | *albopictus* |
| | San Antonio | Botanical garden | *albopictus* |
| Blanco | Johnson City | Service station | *albopictus*[1] |
| Brooks | Falfurrias | Service station | *aegypti* and *albopictus*[1] |
| Cameron | Harlingen | Tire dealership | *aegypti* |
| | La Feria | Used tires | *aegypti* |
| | La Feria | Used tires | *aegypti* |
| | San Benito | Tire dealership | *aegypti* |
| | San Benito | Cemetery | *aegypti* and *albopictus* |
| | San Pedro | Roadside dump | *aegypti* |
| | Olmito | Tire dealership | *aegypti* and *albopictus* |
| | Las Rusios | Used tires | *aegypti* |
| Comal | New Braunfels | Tire dealership | *aegypti* and *albopictus*[1] |
| Crawford | Luling | Tire dealership | *albopictus*[1] |
| Dewitt | Yorktown | Service station | *albopictus*[1] |
| Dimmit | Carrizo Springs | Service station | *aegypti* and *albopictus*[1] |
| Duval | Freer | Service station | *aegypti* |
| Fayette | Schulenburg | Tractor repair | *albopictus*[1] |
| Frio | Pearsall | Tire dealership | *aegypti* and *albopictus*[1] |
| Gillespie | Fredericksburg | Tire dealership | *albopictus*[1] |
| Goliad | Goliad | Tire dealership | *albopictus*[1] |
| Gonzales | Waelder | Nursery/tires | *albopictus*[1] |
| Guadalupe | Seguin | Truck repair | *albopictus*[1] |
| Hidalgo | Mercedes | Used tires | *aegypti* |
| | Donna | Used tires | *aegypti* |
| | Weslaco | Used tires | *aegypti* |
| | Hidalgo | Tire importer | *aegypti* |
| | Pharr | Used cars | *aegypti* |
| | McAllen | Tire dealership | *aegypti* |
| | McAllen | Tire importer | *aegypti* |
| | McAllen | Nursery | *aegypti* |
| | McAllen | Tire dealership | *aegypti* |
| | McAllen | Service station | *aegypti* |
| | La Joya | Used tires | *aegypti* |
| | Edinberg | Used tires | *aegypti* |
| Hays | Wimberly | Tire dealership | *albopictus*[1] |
| Jackson | Edna | Tire dealership | *albopictus*[1] |
| Jim Hogg | Hebbronville | Service station | *aegypti* |
| Jim Wells | Alice | Used car lot/tires | *albopictus*[1] |
| Karnes | Karnes City | Service station | *albopictus*[1] |

Table 1. Continued.

| County | City/town | Site description | *Aedes* species |
|---|---|---|---|
| Kendall | Boerne | Tire dealership | *albopictus*[1] |
| Kerr | Kerrville | Tire dealership | *albopictus*[1] |
| Kinney | Brackettville | Recreational area | *albopictus*[1] |
| Kleberg | Kingsville | Tire dealership | *albopictus*[1] |
| LaSalle | Cotulla | Service station | *aegypti* and *albopictus*[1] |
| Lavaca | Yoakum | Used car lot | *albopictus*[1] |
| Live Oak | George West | Service station | *albopictus*[1] |
| McMullen | Tilden | Service station | *aegypti* |
| Maverick | Quemado | Auto garage | *albopictus*[1] |
| Medina | Natalia | Service station | *albopictus*[1] |
| Refugio | Refugio | Tire dealership | *albopictus*[1] |
| San Patricio | Sinton | Truck repair | *albopictus*[1] |
| Starr | Rio Grande City | Tire dealership | *aegypti* |
| Uvalde | Uvalde | Tire dealership | *aegypti* and *albopictus*[1] |
| Val Verde | Del Rio | Truck repair | *albopictus*[1] |
| Victoria | Victoria | Tire dealership | *albopictus*[1] |
| Wilson | Floresville | Truck repair | *albopictus*[1] |
| Zapata | Zapata | Tire dealership | *aegypti* |
| Zavala | Batesville | Service station | *albopictus*[1] |

[1] New county record for *Ae. albopictus.*

tributed in southern Texas, but its greatest prevalence was in the San Antonio metropolitan area. Generally, the prevalence of *Ae. albopictus* decreased as collecting moved westward from the Gulf of Mexico toward the Rio Grande River. The Asian tiger mosquito was established in the counties of the Lower Rio Grande Valley, but *Ae. aegypti* was the dominant species of container-breeding mosquito.

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