

TWO INTRODUCED MOSQUITO SPECIES

(From the CDC web site: www.cdc.gov/ncidod/dvbid/arbor/)

THE ASIAN TIGER MOSQUITO -- *Aedes albopictus*

DISTRIBUTION

Aedes albopictus, an Asian mosquito, probably was introduced into Hawaii late in the last century. Until its discovery in Houston, Texas, in August 1985, this species was unknown in the New World. It is believed to be established in 866 counties in 26 states in the continental US. (See map).

The northernmost established infestation in the US is Chicago, Illinois, although an infestation was found in Minnesota in 1997. In the Northeast, it has been reported from New Cumberland (York County), Pennsylvania and, in 1995, from Cumberland, Salem, and Monmouth counties in New Jersey. It has been found as far south as Cameron County, Texas, and Monroe County, Florida. In the West, it occurs in Del Rio (Val Verde County) and Lubbock (Lubbock County), Texas, and Omaha (Douglas County), Nebraska. Limited focal infestations in at least three northern states, Indiana, Minnesota, and Ohio, apparently have been eliminated through persistent control efforts by state and local agencies, perhaps coupled with severe winter temperatures. Nonetheless, other areas in Indiana and Ohio continue to be infested. During 1994, Georgia became the first state to document *Ae. albopictus* in all counties of the state and has since been joined by Florida, South Carolina, and Tennessee.

In 1989, one specimen of *Aedes albopictus* was intercepted at the Sunport International Airport in Albuquerque, New Mexico and was subsequently destroyed. Follow up surveys in the area disclosed its absence. However, in 2005, a second finding of *Ae. albopictus*, in Carlsbad (Eddy County), New Mexico was documented. Follow up surveillance disclosed this mosquito was found at several locations in the immediate area. Therefore it may be establishing or is established. In addition this mosquito has been recorded in California, but was isolated and eradicated. Recently, it has been reported as established in Colorado.

BIONOMICS

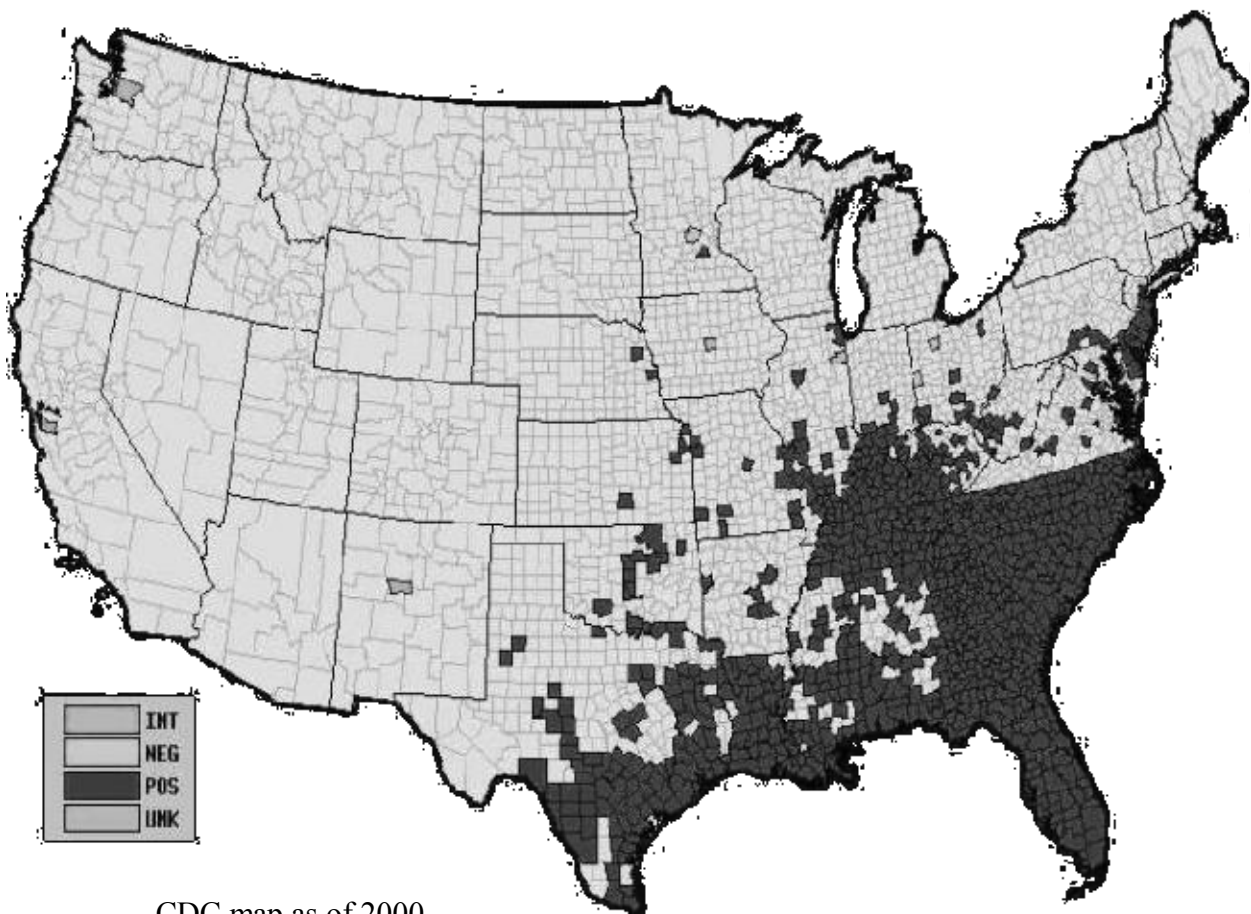
Aedes albopictus is a forest fringe species naturally breeding in tree holes, bamboo stumps, leaf axils, rock pools, etc. Peridomestic (“around the home”) sites include vehicle tires, catch basins, containers of all kinds, appliances, etc. In New Orleans, it is known to breed in plastic floral baskets in cemeteries and in exotic bromeliads. *Ae. albopictus* moves easily from artificial breeding sites such as tires to natural breeding sites. It prefers clean water with low organic content. *Ae. albopictus* out-competes *Ae. aegypti* for breeding sites and blood meals. *Ae. aegypti* is dependent on artificial containers whereas *Ae. albopictus* utilizes natural breeding sites also.

Ae. albopictus feeds in mid-morning and mid-afternoon in shaded situations. In general, they prefer to feed on mammals, especially humans, but will also feed on birds. They are not attracted to light traps and must be collected by hand. Their flight range is short – often 500 yards or less from breeding sites.

DISEASE CONSIDERATIONS

Aedes albopictus is a maintenance (occasionally epidemic) vector of dengue viruses in parts of Asia and is a competent vector of several other viruses under experimental conditions. Since the discovery of *Ae. albopictus* in the United States, six arboviruses (eastern equine encephalomyelitis, West Nile, Keystone, Tensaw, Cache Valley, and Potosi) have been isolated from this mosquito. Of these six viruses, three -- EEE, West Nile and Cache Valley -- are known to cause disease in humans.

Ae. albopictus is a potential vector of epidemic dengue. It is unclear what effect the presence of this species might have on transmission dynamics in the Americas. *Ae. albopictus* may also affect the disease potential for yellow fever in Brazil by bridging the ecological niche between jungle and urban transmission cycles. The Division of Vector Borne Infectious Diseases of the CDC maintains a national database (under construction for web posting) on the distribution of *Ae. albopictus*, with particular emphasis on detecting its spread in areas in which La Crosse and eastern equine encephalitis viruses are enzootic. DVVID also studies the biology and vectorial capacity of *Ae. albopictus* and is the primary source of information about its distribution, vector competence, biology, and control in the Americas.



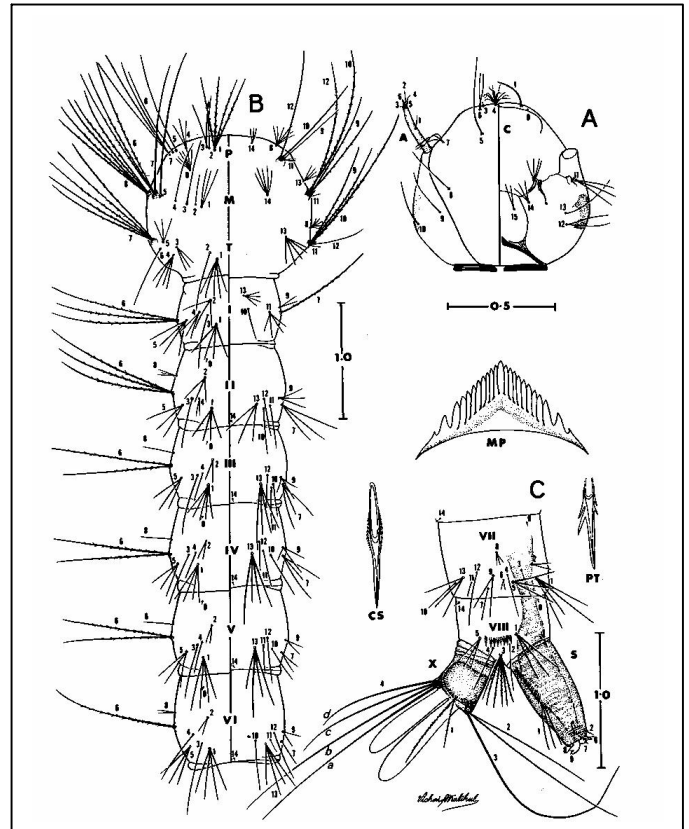
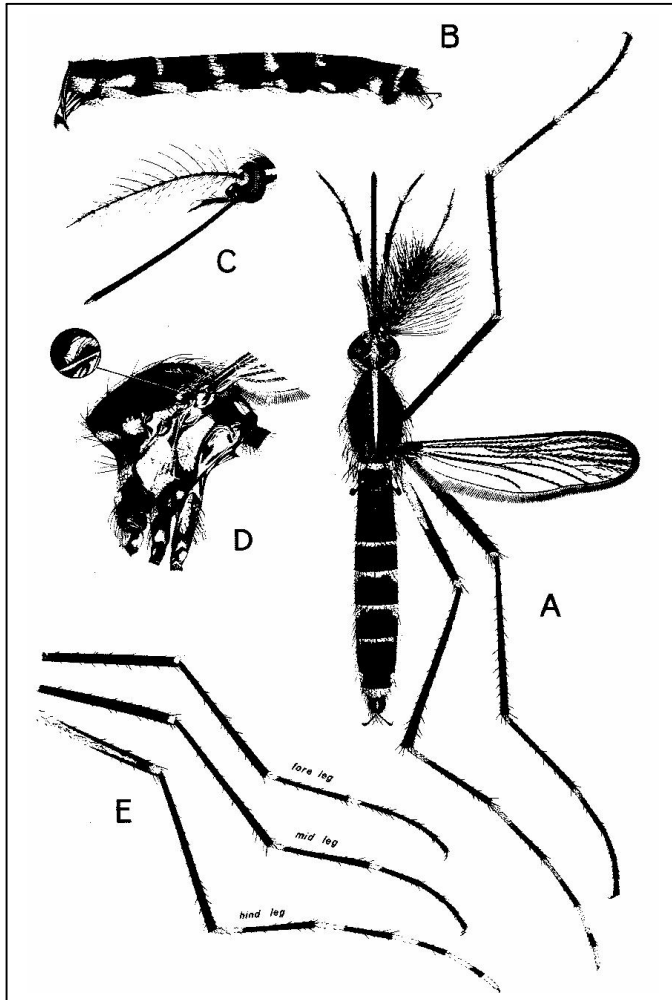
IDENTIFICATION OF *AEDES ALBOPICTUS*

Adult

1. Black mosquito with broad stripe of white scales extending lengthwise on median part of scutum, becoming pointed posteriorly
2. Legs black with broad white crossbands on tarsi of all six legs, these bands overlapping tarsal joints; proboscis black
3. Abdominal tergites black with separated basolateral spots

Larva

1. Siphon short, no acus on siphonal base; lateral hair on saddle of anal segment double and barbed
2. Head seta 7-C double or shorter than seta 5-C



AEDES JAPONICUS

ORIGIN

Aedes japonicus is an Asian species of mosquito generally found in Japan, Korea, the Ryukyu Archipelago (Okinawa and associated islands), Taiwan, South China, and Hong Kong. In 1998, the subspecies *Ae. japonicus japonicus* was first detected in the United States in New York and New Jersey. By the end of 2003, *Ae. japonicus* had been collected from 19 states in the USA (CT, DE, GA, MA, ME, MD, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA, VT, WA, and WV).

APPEARANCE

The adult female of *Ae. japonicus* is a medium-sized mosquito of dark- to blackish-brown appearance, with white scales on the body and legs.

BREEDING AREAS

Larvae are found in a wide variety of natural and artificial containers, including rock holes and used tires. Preferred sites usually are shaded and contain water rich in organic matter. The similarity of breeding habitats used by *Ae. japonicus* to those of other *Aedes* species suggests that the transport of eggs, larvae, and pupae in used tires may be an important mechanism for introducing the species into previously uninfested areas. Eggs are resistant to desiccation and can survive several weeks or months under dry conditions. *Aedes japonicus* overwinters as eggs in the more northern parts of its range. However, it is found throughout the winter as larvae as far north as Tokyo (37° N), which is equal in latitude to Norfolk, Virginia.

DISEASE ASSOCIATIONS

Although few studies have been done to assess the public and veterinary health importance of *Ae. japonicus*, this species is suspected of being a vector of Japanese encephalitis (JE) virus to swine in northern Japan. Under experimental conditions it has been shown to transmit JE virus to mice and also to transmit the virus to its progeny through the eggs. Unpublished studies conducted at the United States Army Medical Research Institute of Infectious Diseases in Fort Detrick, MD, indicate that *Ae. japonicus* is also a competent experimental vector of West Nile virus, a flavivirus closely related to JE and St. Louis encephalitis viruses.

BEHAVIOR

Adult species of *Ae. japonicus* rest in wooded areas and prefer to bite during the daytime. In the laboratory, they feed readily on chicks and mice, but not on reptiles or amphibians. Further studies on *Ae. japonicus* are needed to more clearly define their feeding preferences in a variety of situations.

PROTECTION

As with other biting insects, the use of protective clothing (i.e., long-sleeved shirts and long pants) and insect repellent is recommended to prevent bites.