

## ABSTRACT

*Culex nigripalpus* is an important vector of diseases of man (St. Louis encephalitis — SLE), horses (Eastern equine encephalitis — EEE), dogs (dog heartworm — *Dirofilaria immitis*), wild turkeys (wild turkey malaria — *Plasmodium hermani* — and Avian poxvirus of wild turkeys) and is a major pest of livestock in rural south-central Florida. It is essentially a tropical species, and is present in the southern United States, Mexico, Central America, the northern part of the South American continent, and in the Caribbean Islands. However, it is abundant only in south-central Florida and in some of the Caribbean Islands.

In the tropics, where temperature is not the limiting factor during the breeding season, rainfall usually governs the abundance of this mosquito species. All aspects of the life cycle of *Cx. nigripalpus* are governed by rainfall. The number of broods and generations of this multivoltine species vary each year depending on the frequency of rainfall and/or artificial flooding. As many as 15 broods can be recorded, reflecting at least 8 to 10 generations a year. The main breeding season of *Cx. nigripalpus* is from June to November, with smaller populations occurring from December to May.

Eggs are laid in a wide range of aquatic habitats a day or two after rainfall or flooding. Decaying vegetative matter in the standing water emits certain attractant odors, such as those from hay-infusion. These eggs hatch within 2 days during the main breeding season in south-central Florida. Larval development under daily light-dark cycles culminates in pupation peaks, which are approximately 24 hours apart. The duration of larval development varies from 5 to 8 days and is affected mainly by the amount of available food, the salinity of the water, larval density, and temperature. All of these are influenced by the frequency of rainfall. The pupal stage lasts for 3 to 4 days, depending on temperature. These pupation peaks occur during the daylight hours and are followed by emergence peaks 2 to 3 days later during the early part of the night.

The energy reserves status of an adult at emergence is determined by richness of larval diet in the larval habitat, which is dependent on the amount of rainfall. Upon emergence, the adults move to woodland areas. At first their peaks of flight activity occur at sunset and sunrise. Then flight activity increases throughout the night as they become older. These adults have a good potential for dispersal, but seldom move out of their habitat readily. They prefer densely wooded areas of high humidity, and will disperse when the relative humidity is very high (usually 95% to 100%), such as after a late afternoon or early evening rainfall. At night, adults can disperse up to 2 km, but during the day they rest in shady woodland areas where the relative humidity is usually high.

Both sexes of newly emerged *Cx. nigripalpus* feed extensively on nectar. Females blood-feed in a distinct peak 2 to 3 days after emergence with a second