

ANTAGONISTS AND POTENTIAL BIOLOGICAL CONTROL AGENTS

Larvae

The larvae of *Cx. nigripalpus* are attacked by both internal and external parasites. The internal parasites being evaluated as potential biological control agents for use in integrated mosquito control programs are: (a) a nematode parasite, *Romanomermis culicivorax* (Levy & Miller 1978), (b) a fungal pathogen, *Lagenidium giganteum L. (culicidum)* (McCray et al. 1973, Umphlett 1973), (c) a naturally occurring fungal pathogen, *Helicosporidium near parasiticum* (Fukuda et al. 1976), and (d) a bacterium, *Bacillus sphaericus* (Hertlein 1978).

External parasites collected along with *Cx. nigripalpus* larvae include the predaceous larvae of *Psorophora ciliata* and *Ps. howardii*. Mosquito-eating fish, such as *Gambusia* and guppies, also occur in the permanent waters where *Cx. nigripalpus* larvae are found.

Adult

There are numerous reports of predaceous vertebrates (particularly birds) finding and feeding on localized concentrations of adult mosquitoes. In addition, during a mark-release-recapture experiment, several species of dragonflies, such as, *Anax junius* (Drury) were observed feeding on *Ae. taeniorhynchus* as they were released from cages (Edman & Haeger 1974). Similar observations of feeding by dragonflies were made when *Cx. nigripalpus* were released during a study at Tiger Hammock during 1976 and 1978.

RESISTANCE TO INSECTICIDES

An insecticide resistance surveillance program against organophosphate insecticides in operation since 1964 at the West Florida Arthropod Research Laboratory, Panama City, Florida, indicates that the larvae of *Cx. nigripalpus* in the field do not show any difference in their susceptibility to malathion, naled, and fenthion from that of the susceptible laboratory strain (Boike & Rathburn 1972, Boike et al. 1978, 1979, Rathburn & Boike 1967). Laboratory selection of *Cx. nigripalpus* at the LD₈₀ level for 31 generations resulted in no significant increase in tolerance to Paris green when compared to an unselected laboratory colony (Rathburn & Boike 1973).

However, several adult populations of *Cx. nigripalpus* have become less susceptible (3X to 5X) to malathion than the colonized laboratory strain (Boike & Rathburn 1972, Boike et al. 1978, 1979, Rathburn & Boike 1967).