

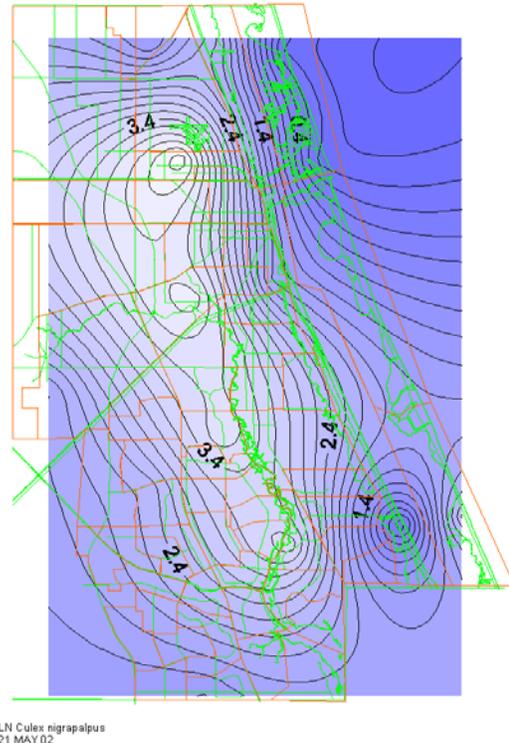
## The Mosquito Control Inspection Department

Checking and treating mosquito breeding areas, responding to complaints, and deploying fog trucks are the standard duties of the inspection department. The department also handles the arbovirus (encephalitis) monitoring program. This involves raising chickens and deploying them to sites throughout the county. Weekly blood samples are taken from the birds and sent to a state lab where they are tested for encephalitis. This information is useful in determining the level of risk for arbovirus diseases.

The district operates a fleet of 14 fog trucks. The inspection department, not only deploys the trucks, but also makes sure that the machinery is in good working order. This includes the calibration and repair of the fogging equipment and associated instrumentation. Trucks are equipped with small computers which can calculate the speed of the vehicle by using satellite data. Once the speed is calculated, the data is sent to a variable speed pump which can meter the mosquito spray to the fog motor. This assures that the proper amount of insecticide is applied, no matter what speed the truck is traveling.

Adult mosquito population data is collected from a network of 18 New Jersey Light Traps located at various sites around the district (roughly the part of the county east of Header Canal). Captured mosquitoes are identified and tallied on a daily basis. This information, along with number of complaints, rainfall, temperature and mosquito landing rate counts from over 40 sites in the district are used to determine where mosquito control operations will be concentrated.

The inspection department has developed an Access database which presently contains over a million records quantifying mosquito collections, weather information, inspections, complaints, water quality, fogging, impoundment structures such as locations of culverts and pumps, and employee data such as wages, overtime, and other information. This data is linked to a GIS (mapping) application which allows us to make “smart” maps of areas such as impoundments, fog zones and other features of interest to the district. For example, the GPS data from the spray plane can be superimposed on impoundment maps to see exactly where spray was deposited. The GIS information is also interfaced with a contouring and surface mapping application which is helpful in determining where various species of mosquitoes are concentrated. The figure shows that the distribution of *Culex nigrapalpus*, a suspected vector of Encephalitis (light color means more mosquitoes), was concentrated in the North Fork area of the St. Lucie River in mid May. By using these maps and a series of mathematical algorithms, one can actually plot changes in mosquito densities over time, allowing us to determine where to treat and predict where new problems may appear.



In order to maintain effective mosquito control and high water quality in mosquito impoundments, pumping regimes, culvert placements and tide gate settings must be precise. To assure that these optimal conditions are maintained, members of the inspection department regularly monitor water quality and water levels in the mosquito impoundments and adjacent Indian river. This assures that the managed impoundments will continue to support a healthy mangrove community and a high diversity of aquatic fauna.