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**MIKE CAPRIO**

*By Bonnie Coblenz*

Scientists at Mississippi State University engaged in the battle against mosquitos and mosquito-borne diseases have found clues in the wingbeats of different species.

Primarily, there are three species of the *Anopheles quadrimaculatus* mosquitos found in Mississippi. One is found in the rice lands of the Delta, while two others typically inhabit the woodlands.

Mike Caprio, associate professor of insect genetics with the Mississippi Agricultural and Forestry Experiment Station, said the three species look identical. Previously, the only way to identify the species was to analyze the proteins or use radioactive DNA probes.

“We found we were able to tell them apart in terms of wingbeats for males,” Caprio said. “The next question we wanted to answer is whether it is a genetic trait, and we found that it is.”

Caprio shined a light beam through a vial containing a mosquito and recorded with a sensor the wingbeat frequency.

“We could record the changing pattern in the light beam

## Mosquito wings may yield clues for control

to identify the species,” Caprio said. “In theory, researchers in the field could run a narrow light beam and detect anything flying through that light beam to identify the species.”

He found that males of these species have different, identifiable patterns in the fluttering of their wings. The females do not have similar wingbeats. The research also found that each male’s wingbeat pattern was something it inherited, and so was genetically determined.

The project ended before researchers were able to determine whether females use this wingbeat pattern in mate identification and locating appropriate swarms of males.

“We were trying to decide if we could somehow create some mating confusion in females,” Caprio said.

Males of these mosquito species form mating swarms. One of the questions left unanswered was whether researchers could develop males with offbeat wingbeat patterns, or project the correct wingbeat sound to confuse females. A species that is unable to mate effectively will find its numbers greatly reduced.

Potential of this research could lead to the replacement of a mosquito species that is an effective disease carrier with one that is less effective at transmitting a disease.

“We might not be able to solve the mosquito nuisance problem in an area, but it could reduce the disease threats they present,” Caprio said.



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