

# Bacteria-infected mosquitoes might be good thing for Miami

February 8 2018, by Jennifer Kay

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*Anopheles gambiae* mosquito, feeding on blood. Credit: James Gathany, Centers for Disease Control and Prevention

Mosquitoes are a year-round downside to living in subtropical Miami, but millions of bacteria-infected mosquitoes flying in a suburban

neighborhood are being hailed as an innovation that may kill off more bugs that spread of Zika and other viruses.

Miami-Dade County Mosquito Control and Habitat Management Division is releasing non-biting male mosquitoes infected with naturally occurring Wolbachia bacteria to mate with wild female mosquitoes.

The bacteria are not harmful to humans, but will prevent any offspring produced when the lab-bred mosquitoes mate with wild female mosquitoes from surviving to adulthood. This drives down the population of *Aedes aegypti* mosquitoes that thrive in suburban and urban environments and can spread Zika, dengue fever and chikungunya.

During a six-month field trial approved by the U.S. Environmental Protection Agency, over half a billion of the mosquitoes bred by Kentucky-based MosquitoMate will be released in a suburban neighborhood split by long, narrow canals near the University of Miami, said South Miami Mayor Philip Stoddard.

Miami-Dade County is testing MosquitoMate's insects as a potential mosquito-control method about 10 miles (15 kilometers) southwest of Miami's hip Wynwood neighborhood, where health officials confirmed the first local Zika infections spread by mosquitoes on the U.S. mainland in July 2016.

Stoddard, a zoology professor at Florida International University, said he volunteered his city for the trial, wanting to keep the outdoor cafes in his city from becoming another ground zero for a mosquito-borne virus outbreak.

"All those diseases are still a concern. They're still in the Caribbean and could move to the mainland to cause problems," Stoddard said.

By the end of 2016, Florida health officials had confirmed 1,456 Zika infections in the state, including 285 cases spread by mosquitoes in Miami-Dade County. Just two local Zika infections were reported in Florida last year, including one Miami-Dade case.

If MosquitoMate's bugs perform well in South Miami, Wolbachia could be added to regular mosquito control operations as a long-term preventative strategy, said Bill Petrie, Miami-Dade County's mosquito control chief.

"It's not a silver bullet. You'd want to integrate it into your existing methods," Petrie said.

It would not replace naled, the pesticide sprayed from airplanes during the 2016 outbreak, angering Miami residents concerned the chemicals were more dangerous than Zika. Health officials credited naled among other aggressive response efforts with stopping the outbreak.

MosquitoMate's technology appears low-tech in the field. Infected mosquitoes are shipped weekly in cardboard tubes—similar to ones used in power towel rolls—from Lexington, Kentucky.

Each tube contains a thousand mosquitoes. In a demonstration Thursday in a city park, a cloud of mosquitoes burst from one end when a black netting cover was removed; a firm shake sent any stragglers flying out.

The trial will study how far the mosquitoes fly, how long they live in the area, and how many *Aedes aegypti* eggs hatch compared to untreated areas, MosquitoMate founder Stephen Dobson said in a phone interview last week.

Results from a similar trial near Key West last year are awaiting publication, Dobson said.

Last year, the EPA approved permits for MosquitoMate to sell a related mosquito species, known as the "Asian tiger mosquito," infected with Wolbachia as a pest control service in 20 states and Washington, D.C. Those mosquitoes also can carry viruses, but experts consider them less of a threat for triggering outbreaks than *Aedes aegypti*.

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