MedicalXpress

Florida Keys split on using genetically engineered mosquitoes to fight Zika

November 15 2016, by Rachel Bluth And Emily Kopp, Kaiser Health News

An Aedes Aegypti mosquito

Voters in a Florida county were at odds on a ballot referendum this past Tuesday about whether to allow the first trial of mosquitoes genetically engineered to reduce populations of the species that spreads Zika.

That species, the Aedes aegypti, lives in homes and is difficult to root

out with insecticides. In addition to Zika, they spread yellow fever, dengue and chikungunya.

In Key Haven, the town where the trial could be conducted, more than 65 percent of voters the rejected the plan. In Monroe County, which includes Key Haven, more than 57 percent of voters said yes to it.

The ballot measure, sometimes referred to as a "straw poll," is nonbinding. A decision on the question will be made by the Florida Keys Mosquito Control District Board, which is scheduled to meet Nov. 19 to discuss the poll results and the results of five other surveys the county has conducted.

Oxitec, the company that developed the experimental mosquito," is owned by Intrexon Corp., a biotechnology firm focused on synthetic biology.

If the trial proceeds, the Britain-based company's mosquitoes would be released three times a week over the small peninsula. Key Haven has just 1,000 residences and a single gas station. The native mosquito population is insulated by seawater and the island's main highway, making for a perfect trial location, Oxitec said.

In the trial, the mosquitoes will breed with native females, the ones that bite. Both the genetically engineered insects and their offspring carry a fatal gene, and die quickly. Over time, the population would thin out.

"We're very happy with the results," Mosquito Control Board Chairman Phil Goodman said of the Monroe County vote. He thought Key Haven voters got bad information about the safety of the trial and expects the board will approve a trial, but somewhere else in the county.

The referendum has implications beyond a tiny section of the Florida

Keys. Miami-Dade County, Florida's most populous county, has been watching closely and is considering using the genetically modified mosquitoes. But Key Haven is vastly different from the bustling tourist destination of Miami-Dade, home to 2.7 million people.

Since the genetically engineered mosquitoes do not by design produce offspring, the company would have to continually pump them into the environment.

"If you want to implement a male sterilization program, there are other ways to do that," said Durland Fish, a Yale University professor of microbial diseases, forestry and environmental studies, who questions the plan. "This is a business opportunity. This is expensive. And you can't stop doing it."

The Food and Drug Administration determined in August that the trial would have "no significant impact" on the environment. The World Health Organization and Pan American Health Organization have tentatively recommended expanding trials, with the caveat that more clinical data is needed.

But it may not be so straightforward, Fish said. Eliminating Aedes aegypti from one ecosystem could lead to a reinvasion, or an invasion of another disease-carrying species, he said.

Luke Alphey, who engineered the mosquitoes and co-founded Oxitec, has a very different view. "Part of the motivation for this research was using modern genetics to provide the striking benefits of this kind of approach (sterilizing mosquitoes)," including the avoidance of insecticides and being able to target a specific species without harming others.