



**20<sup>th</sup> FKMCD-Oxitec Public Educational Webinar:  
The 2022 FKMCD – Oxitec Mosquito Project: 2022 Update**

# Introductions – Panelists With You Today



**Andrea Leal**  
Executive Director  
FKMCD



**Rajeev Vaidyanathan**  
Director of U.S. Programs  
Oxitec



**Kevin Gorman**  
Chief Development Officer  
Oxitec

# FKMCD-Oxitec Public Educational Webinar Series

## Introduction to our Webinar Series

**FKMCD and Oxitec are hosting a series of public educational webinars to share information with residents of the Florida Keys and provide forums to answer questions.**

- Webinars are open to everyone.
- Webinars are recorded and made available for everyone after the event.
- All questions relating to the webinar topic(s) will be answered (some in batches if questions are similar).
- If time runs out, we will accept questions in writing via [florida@oxitec.com](mailto:florida@oxitec.com).

# FKMCD & Oxitec Public Educational Webinars

Welcome to Webinar #22!

## Today's Agenda:

- Background
- 2022 Project Design
- Project Status
- Independent Evaluation
- Community Engagement
- Your Questions Answered

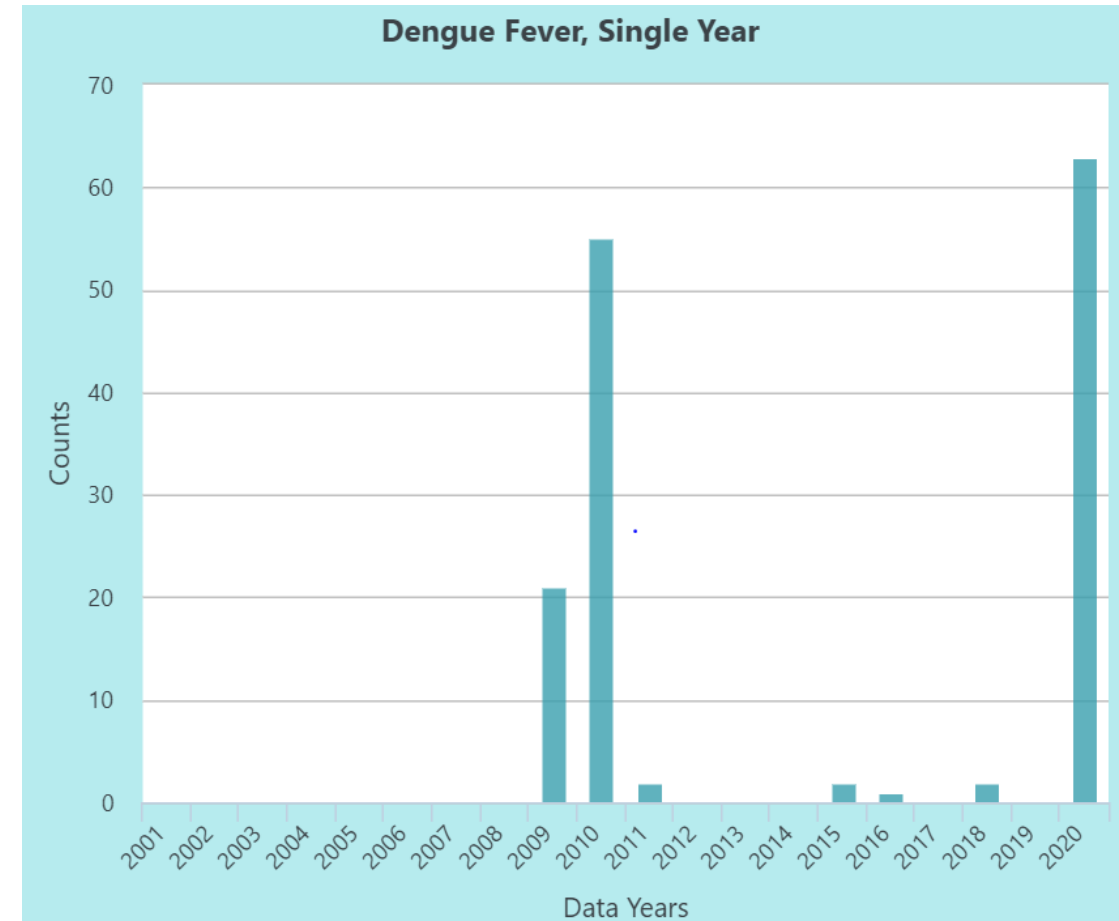


Documentation, resources, references, and other information are available at [keysmosquitoproject.com](https://keysmosquitoproject.com)

# *Aedes aegypti* in the Florida Keys

## Virus transmission and insecticide resistance are a real challenge

- **Dengue is an ongoing challenge** with 72 locally-acquired cases in Monroe County in 2020. From July to August of this year, there have been **7 new** locally-acquired dengue cases in Miami/Dade.
- Potential risk of **Zika, chikungunya, and yellow fever.**
- **Pyrethroid resistance** in *Ae. aegypti* in Florida is ubiquitous.
- **Inherent challenges to *Ae. aegypti* control.** Cryptic harborages, oviposition & larval sites, diurnal behavior.
- **Need more tools** in our toolbox.
- **Environmental impact** a key consideration in the Keys.



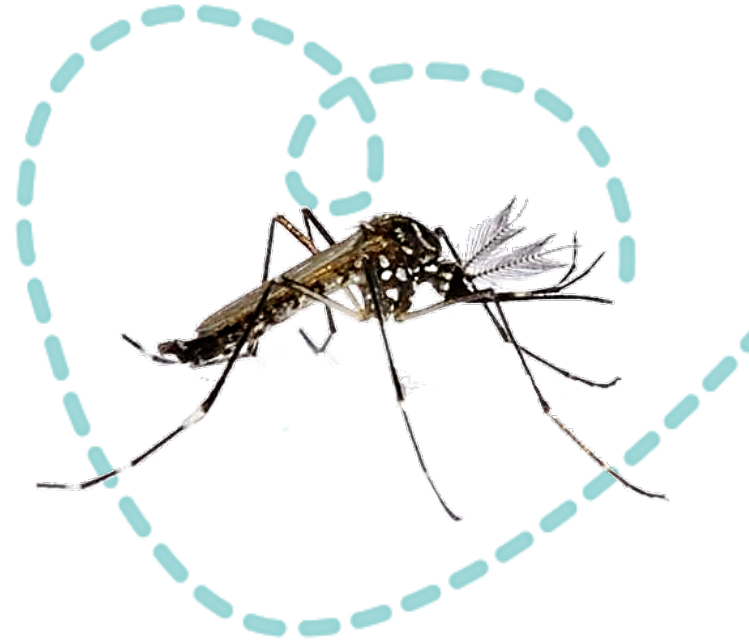
Locally acquired cases of dengue in Monroe County since 2001. Courtesy of FLHealthCharts.gov.

# Overview of Oxitec's *Aedes aegypti* Mosquito

✓ TARGETED SUPPRESSION

✓ SAFE, NON-TOXIC, NON-ALLERGENIC

✓ PROVEN EFFECTIVENESS



MALE-ONLY RELEASES  
(male mosquitoes do not bite)

TRACEABLE IN THE FIELD

SELF-LIMITING IN THE ENVIRONMENT



This combination of unique characteristics of Oxitec's mosquito technology distinguish it from other mosquito control methods

# Success: Florida Keys 2021 Hit the Mark!

## Key Performance Outcomes

- ✓ Oxitec's self-limiting gene maintains effectiveness in the field
- ✓ Dose rates are suitable for use
- ✓ Oxitec males performed excellently
- ✓ Box dosing established effective overflooding against invasive species
- ✓ Oxitec males mated successfully
- ✓ Oxitec progeny found in natural breeding sites (this is good!)
- ✓ No females released





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# Florida Field Project Designs and Objectives



**Florida pilots are designed with the aim of providing specific regulatory data**  
Small | high statistical power | protocol approved by regulators | biology/efficacy measured

# Regulatory Approval Process

Formal regulatory approvals from federal and state agencies preceded the project

- **EPA approved an extension of the Experimental Use Permit (EUP)** granted in 2020 permitting our 2022 project in the Florida Keys.
- Alongside its in-depth scientific evaluation process was a 30-day period for public comments. The **EPA reviewed and responded to each public comment before issuing its approval.**
- All of EPA's risk assessments, together with the approved field protocol, are available on [regulations.gov](https://www.regulations.gov).
- **FDACS approved an extension of our state permit** granted in 2020.



# 2022 Project Aims

## Supplement 2021 data through replicating studies

- Collect relevant data to support the pathway to US commercial registration - accelerating the availability of Oxitec males for mosquito control more broadly.
- Supplement data on mosquito dispersal, longevity and mating performance, including over small areas/single homeowners.
- Demonstrate the effectiveness of Oxitec males in reducing pest abundance.

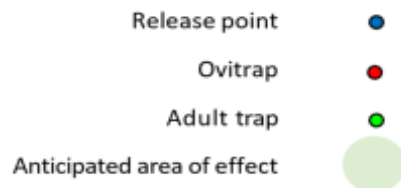
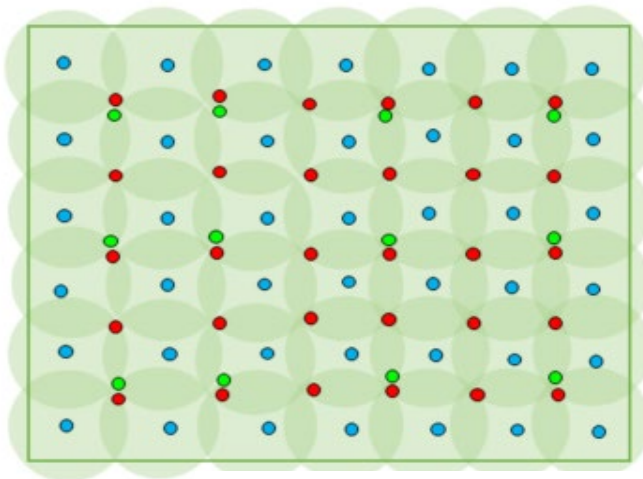


# Three Field Pilot Designs for Florida 2022

## Project B: Small Neighborhood Study

Examining area-wide applications:

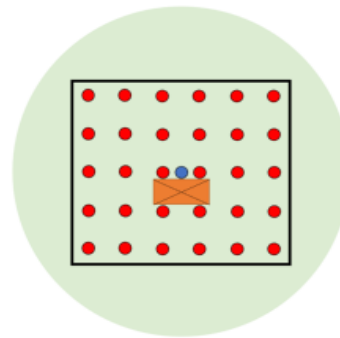
- Efficacy of the self-limiting gene.
- Adult sex ratios.
- Proportion of population treated.
- Duration and scale of residual activity.
- Presence in cryptic breeding sites.



## Project D: Household Study

Examining effects at household scale:

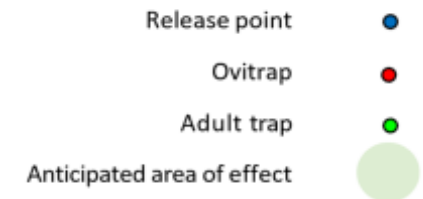
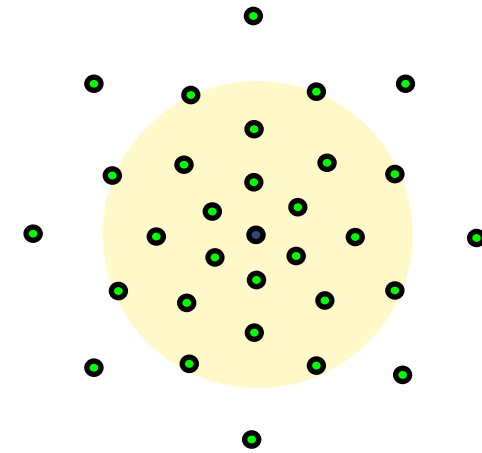
- Efficacy of the self-limiting gene.
- Adult overflooding ratio.
- Proportion of population treated.
- Duration and scale of residual activity.
- Presence in natural breeding sites.



## Project E: Mark Release Recapture

Evaluating biological parameters:

- Dispersal distance of released adult male Oxitec mosquitoes.
- Longevity of released adult male Oxitec mosquitoes.



Schematic representations only

# How We Conduct Mosquito Surveillance

## 1 Egg Collection



### Small plastic cups

Monitors the numbers of eggs laid by *Ae. aegypti* females

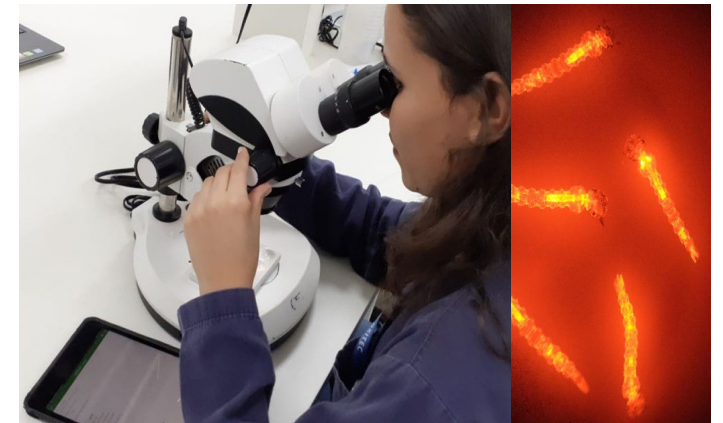
## 2 Adult Mosquito Collection



### Captures adults

Monitors ratios and numbers of *Ae. aegypti* male and female adults

## 3 Lab-based Monitoring/QC



### Stereo microscopes

Used to track performance and confirm quality

# Project Status

## Highlights

### Project B (area-wide) began second week of May

- ✓ Males are **dispersing and mating effectively**
- ✓ **No females produced** - all female offspring died as expected
- ✓ **Reductions in abundance** are being observed
- ✓ OX5034 offspring found in natural breeding sites indicating **good coverage**

### Project D (household scale) began in July

- ✓ **Releases are underway** around individual homes
- ✓ **Males are dispersing** and we will soon begin to measure the effects

### Project E will begin in early September

- ✓ Preparations are underway and **on track**  
**...more to follow** in the coming weeks on where and when.



# Independent Oversight of FKMCD and Oxitec's Project

## PROTOCOL DESIGN AND EVALUATION



Protocol design is driven by US regulatory agencies, who will also evaluate program results.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON D.C., 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

**MEMORANDUM**

**SUBJECT:** Review of Section G for an Experimental Use Permit 93167-EUP-E to Test



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON D.C., 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

**MEMORANDUM**

**SUBJECT:** Review of the Updated Section G Dated April 30, 2020 for an Experimental Use Permit 93167-EUP-E to Test OX5034 *Aedes aegypti* Mosquitoes Decision #549240

## INDEPENDENT ADVISORY GROUP TECHNICAL AND OPERATIONAL OVERSIGHT



**Dr Jorge Rey**  
University of Florida  
– IFAS Florida  
Medical Entomology  
Laboratory  
Member, Project  
Independent  
Advisory Group



**Bob Eadie**  
Monroe County  
Department of Health  
Member, Project  
Independent  
Advisory Group



**Dr Douglas Mader**  
Veterinary Specialist  
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Independent  
Advisory Group



**George Fernandez**  
Key West Butterfly &  
Nature Conservatory  
Member, Project  
Independent  
Advisory Group

# 2022 Community Engagement Continues

Media engagement, radio ads and interviews, social media, webinars, door-to-door, community events and festivals, website, Listserv, billboard, factsheets and much more!



Webinars



Job Fairs



Door-to-door flyers and hangers



# 2022 Community Engagement Continues

Media engagement, radio ads and interviews, social media, webinars, door-to-door, community events and festivals, website, Listserv, billboard, factsheets and much more!



# 2022 Summary

## Highlights

- Projects B and D are well underway, and **Project E will start soon.**
- We were oversubscribed for box and trap hosts for Project B and D. **Thank you to all our community volunteers!**
- Our male mosquitoes are finding females, mating well, and **no female offspring are surviving.**
- Operations have since gone well, with **no hurricanes to date!**
- Once the data for all three projects have been analyzed, **reports will be provided to regulatory agencies for review.**



 **oxitec**

## Innovative mosquito control to protect our residents

Learn more:  
[keysmosquitoproject.com](https://keysmosquitoproject.com)



# Question and Answers

Any and all questions on this evening's topics are welcome!

*(If we run out of time tonight, email [florida@oxitec.com](mailto:florida@oxitec.com) and we will attempt to answer your question if it isn't included in the growing FAQ or post-event summary we publish online at [oxitec.com/florida](http://oxitec.com/florida) and [keysmosquitoproject.com](http://keysmosquitoproject.com))*

**THANK YOU!**

A summary of this event, as well as more Q&As, resources, facts, and background materials will be made available at [oxitec.com/florida](http://oxitec.com/florida) and [keysmosquitoproject.com](http://keysmosquitoproject.com)