

**FKMCD-Oxitec Public Educational Webinar #23:  
2023 Progress Report  
Thursday, July 27<sup>th</sup> 2023**

# Introductions – Panelists With You Today



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# FKMCD-Oxitec Public Educational Webinar Series

## Welcome 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 #23!

## Today's Agenda:

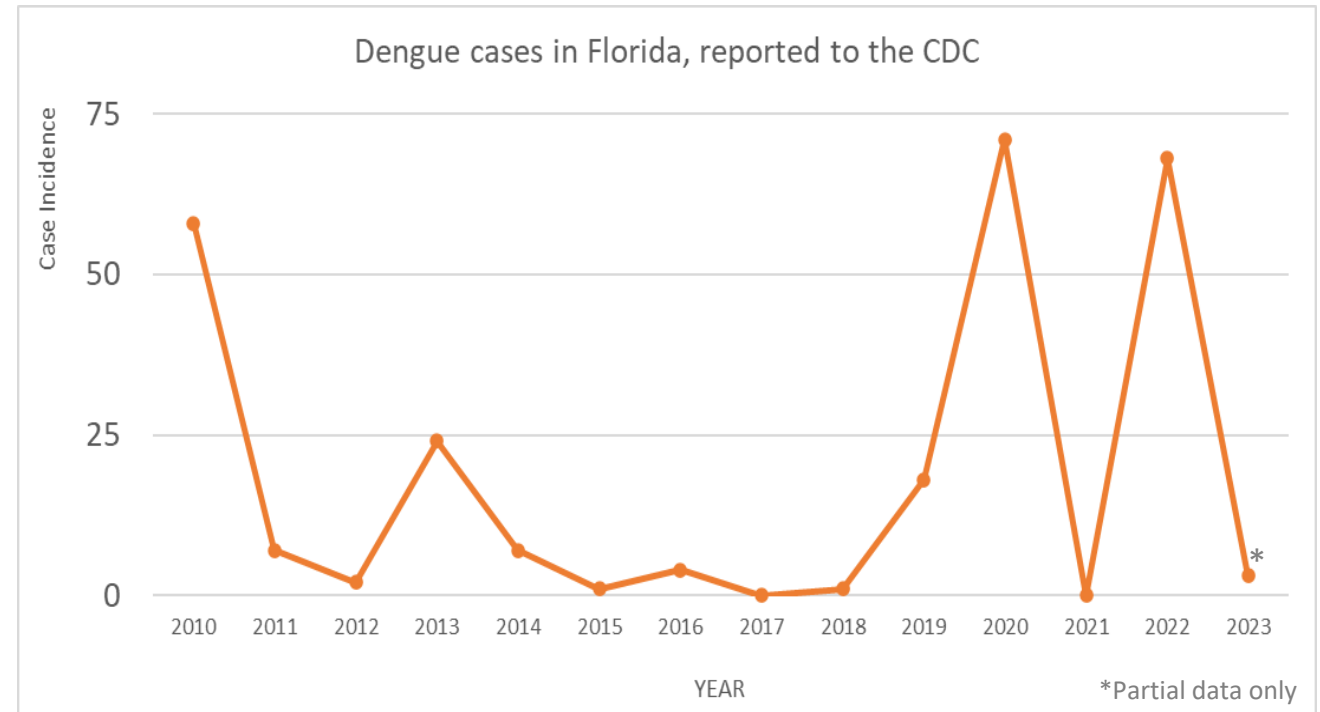
- Background
- 2023 Project Design
- Project Status
- Your Questions Answered



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

# Why Now, Why the Florida Keys?

- **Dengue** an ongoing challenge, last year saw **68 locally-acquired cases in Florida**.
- Threat of other diseases such as **chikungunya, Zika, yellow fever, and heartworm** persists.
- **No cure or vaccine** exists for many of the diseases transmitted by *Aedes aegypti*.
- **Insecticide resistance** is a growing concern.
- **Environmental impact** and human health are major considerations.
- Using **species-specific tools** minimizes impacts on other organisms.

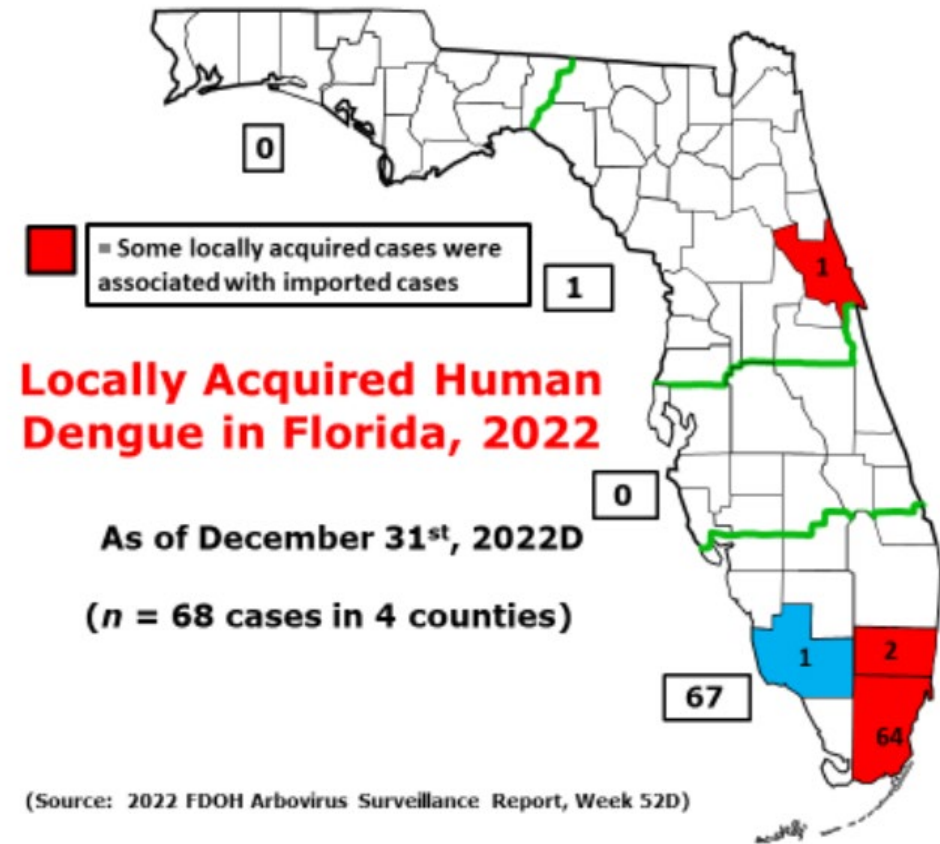


# Why Now, Why the Florida Keys?

**Dengue continues to threaten our communities. The majority of 2022 dengue cases occurred in South Florida:**

- 68 cases of locally acquired dengue were reported in Collier, Broward (2), Miami-Dade (64), and Volusia counties.
- In 2022, >750 travel-associated dengue cases were reported, which includes more than 500 reported from Miami-Dade County.

**As of July, 118 travel-associated dengue cases and three locally-acquired dengue cases have been reported\* in Florida this year.**



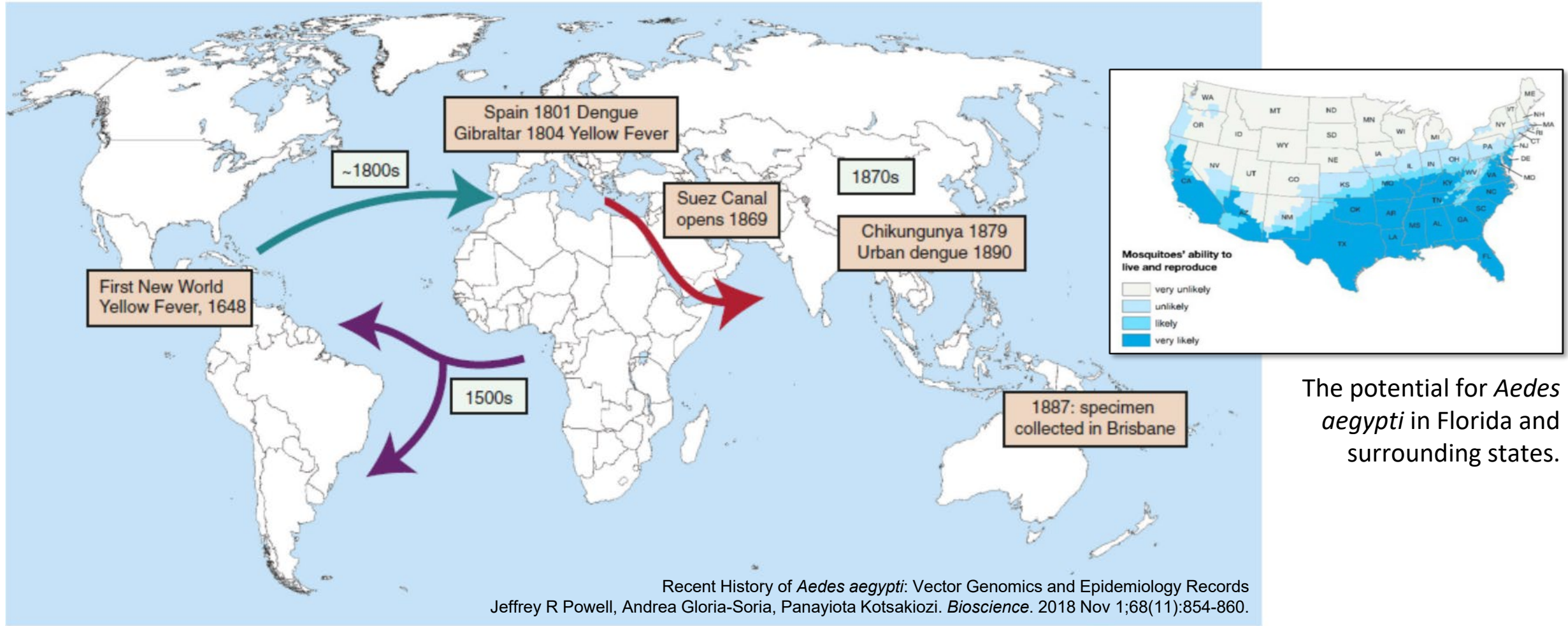
\*Source: [floridahealth.gov/diseases-and-conditions/mosquito-borne-diseases/documents/2023-week28-arbovirus-surveillance-report.pdf](https://floridahealth.gov/diseases-and-conditions/mosquito-borne-diseases/documents/2023-week28-arbovirus-surveillance-report.pdf)



# The *Aedes aegypti* Mosquito: An Invasive Species in Florida

*Aedes aegypti* is not native to the Americas.

It was likely transported from Africa in the 1500s, bringing viral diseases with it.



The potential for *Aedes aegypti* in Florida and surrounding states.

Recent History of *Aedes aegypti*: Vector Genomics and Epidemiology Records  
 Jeffrey R Powell, Andrea Gloria-Soria, Panayiota Kotsakiozi. *Bioscience*. 2018 Nov 1;68(11):854-860.

# Malaria Returns to the U.S.



The screenshot shows the NBC News website header with navigation links: NEWS, POLITICS, U.S. NEWS, WORLD, BUSINESS, HEALTH, CULTURE & TRENDS, VIDEO, NBC NEWS TIPLINE, and WATCH NOW. The main headline reads: "New malaria case in Florida brings national total to 8, the first U.S. acquired cases in 20 years". A sub-headline reads: "All seven of Florida's cases have been found in Sarasota County. A CDC official said the agency does not expect a nationwide outbreak."

- *Anopheles* mosquitoes transmit malaria, *Aedes aegypti* does not.
- Every year, ~2,000 cases of malaria are diagnosed in the U.S., but these are associated with travel abroad.
- Locally-transmitted malaria is rare in the U.S., but there have been 7 cases this year in Florida and one in Texas - the first locally-acquired cases in 20 years!



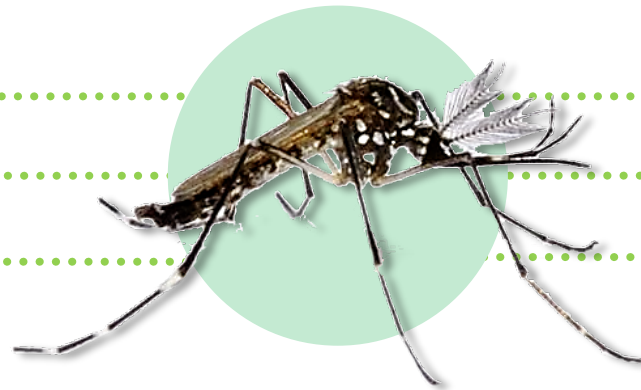
# Oxitec's *Aedes aegypti* Male Mosquitoes

Oxitec male mosquitoes mate with invasive female mosquitoes, and only the male offspring of these encounters survive.

✓ TARGETED SUPPRESSION

✓ SAFE, NON-TOXIC, NON-ALLERGENIC

✓ PROVEN EFFECTIVE



MALE-ONLY RELEASES  
(male mosquitoes do not bite!)

TRACEABLE IN THE FIELD

SELF-LIMITING IN THE ENVIRONMENT





# 2023 Project





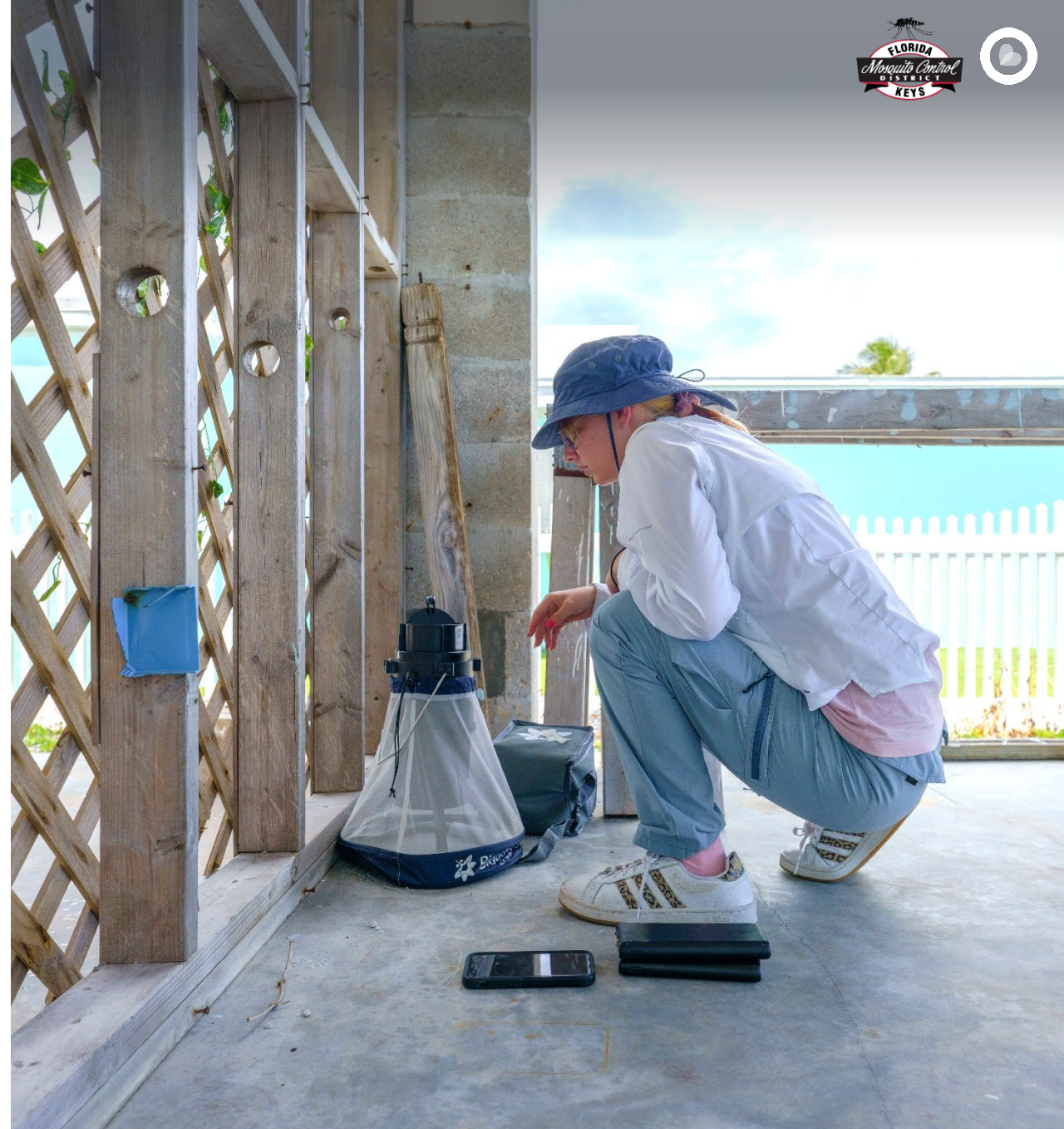
# 2023 Pilot Project Design

## Project Design Elements

1. Single-point release, trapping males and offspring.
2. Multi-point release, trapping males and offspring.
3. Replicated and compared to untreated areas.
4. Locations determined post-community engagement.
5. Trapping adults and larvae.
6. Distance constraints relating to sewage treatment plants and citrus orchards.

## Evaluation Elements

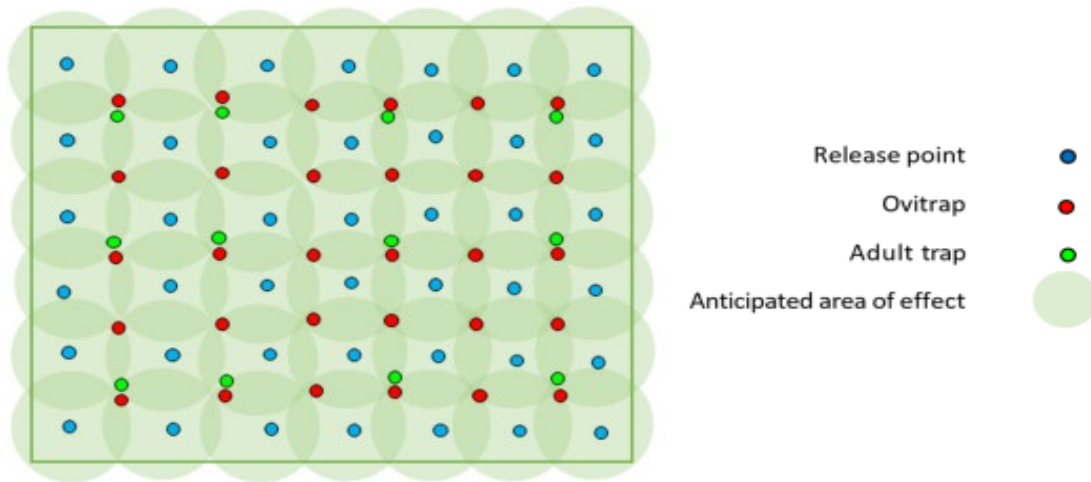
1. Numbers of male mosquitoes released.
2. Percentage kill of female larvae sampled.
3. Proportion of the invasive population treated.
4. Evaluation of natural breeding sites.
5. Duration of effect (residual activity).



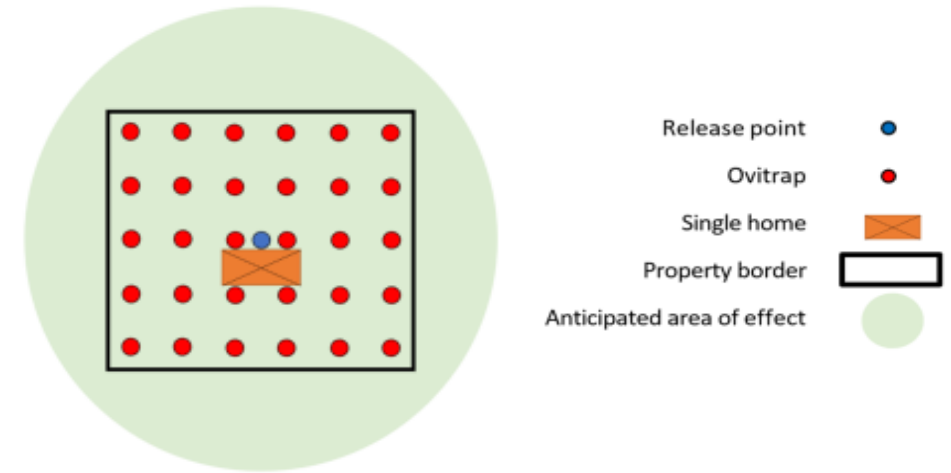


# Two Designs for Florida 2023

## Project 'B' – Neighborhood Scale



## Project 'D' – Household Scale



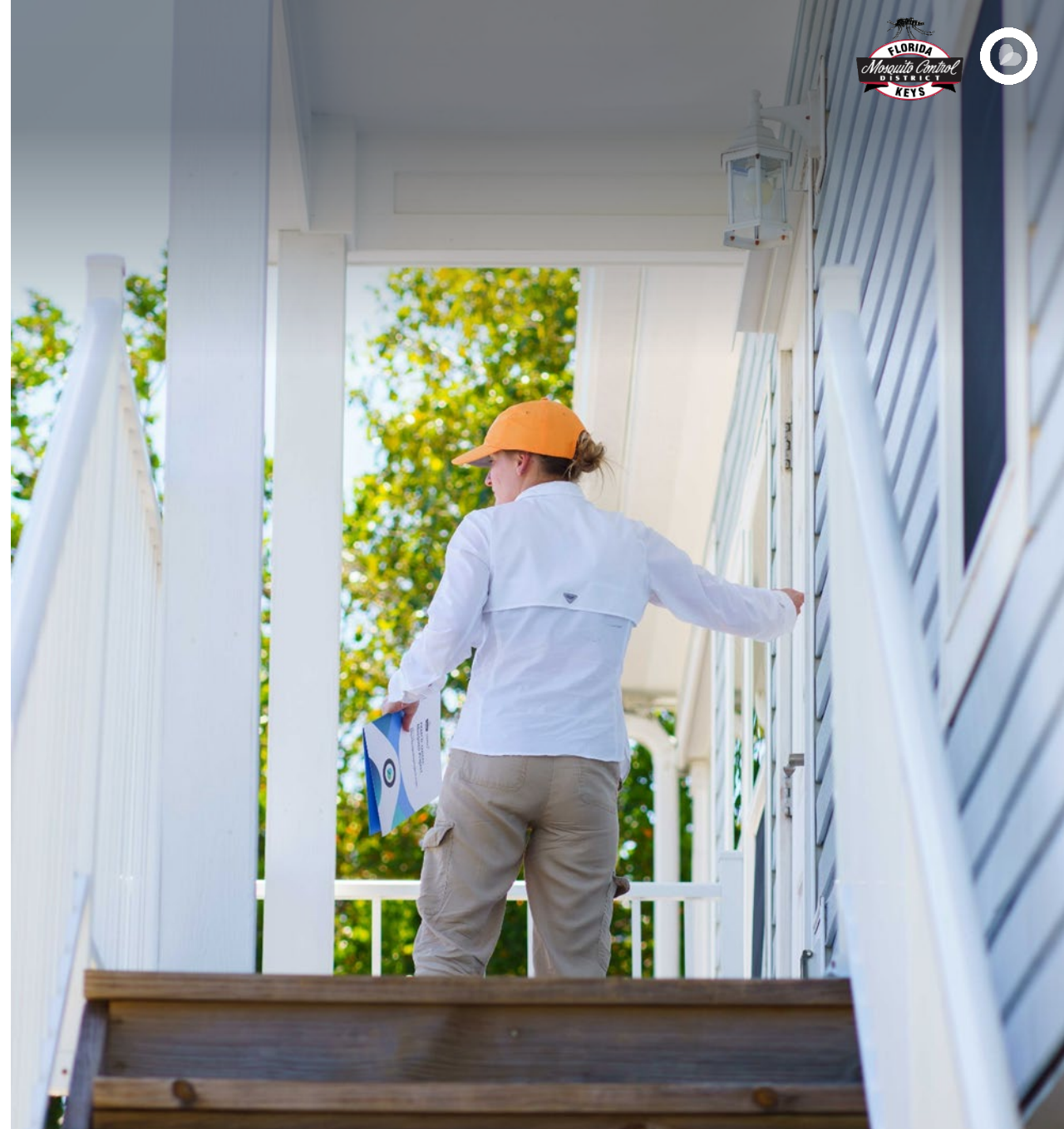
Both Projects B and D evaluate important biological and performance related parameters:

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

# 2023 Releases

## Aims of the Program

- Demonstrate **strong performance of Oxitec males.**
- Supplement existing data on mosquito **dispersal, longevity** and **mating performance** including for small areas/single properties.
- Collect **data relevant to support a product registration**, which would facilitate Oxitec males for mosquito control more broadly in the USA.



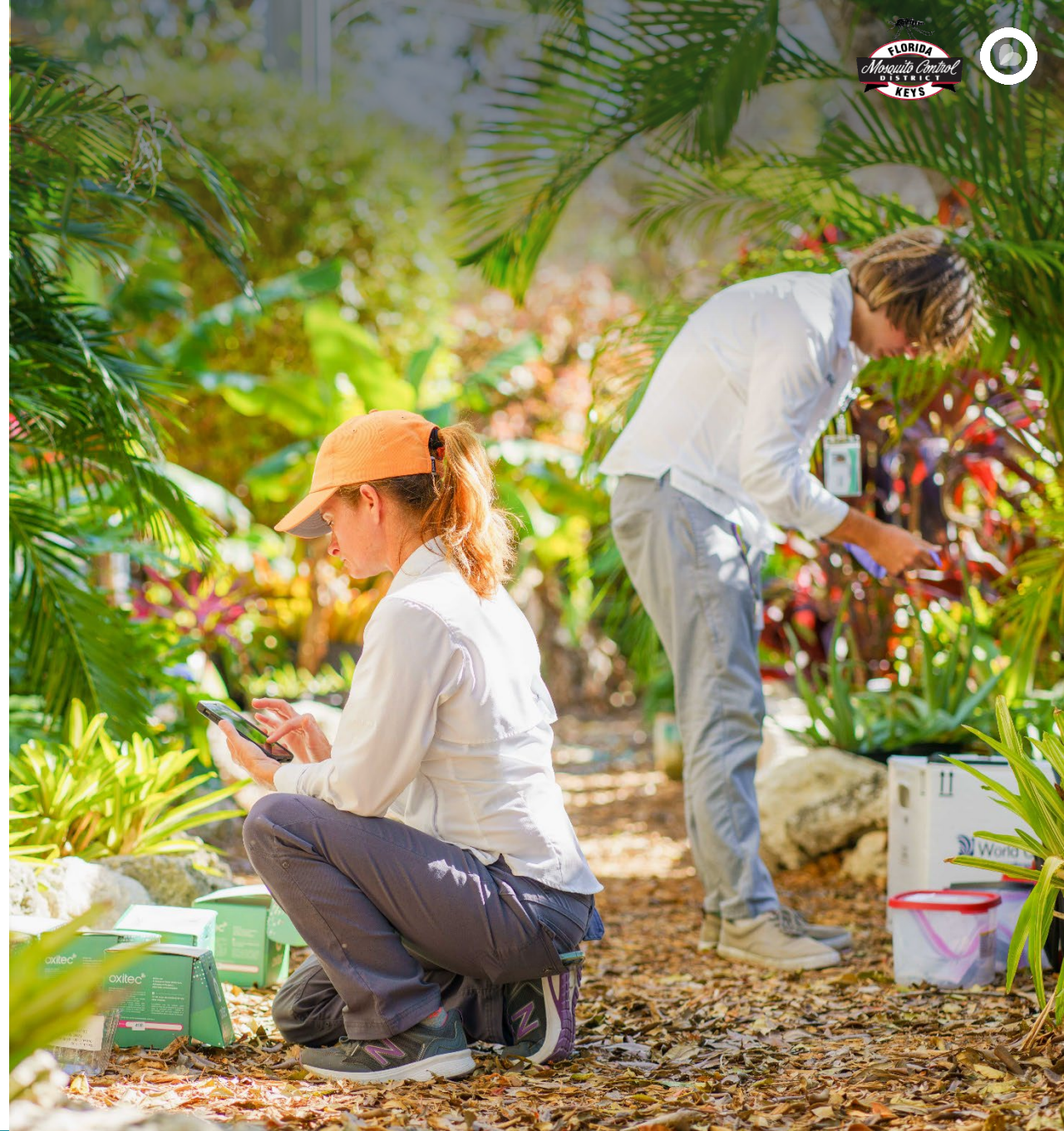




# Release Locations and Timing

## Release Locations and Timing

- Project B (neighborhood-wide) releases started in April 2023 on Vaca Key.
- We have Project B treatment sites and control (untreated) sites on Vaca Key.
- Project D (house-specific) treatment started in May 2023 on Vaca Key.
- We have Project D control (untreated) sites on Vaca Key and Key Colony Beach.





# Our New PRO boxes



Some of our project volunteers on Vaca Key are hosting new PRO box designs.



## Our New MINI boxes

Some volunteers are hosting Oxitec's new MINI just-add-water box, it is being piloted in the U.S. for the first time. The MINI is a smaller, single-use, recyclable product that is designed for individual households and small businesses.





# 2023 Project Status

Thanks to our wonderful volunteer hosts the project is proceeding to schedule, and so far, ...no storms!

## Project B – Neighborhoods

- ✓ Treatments from April – October.
- ✓ Oxitec males shown to fly typical distances.
- ✓ Oxitec males live long enough to effectively find and mate with pest *Aedes aegypti* females.
- ✓ 100% of female offspring died – zero female adults!
- ✓ We're detecting reductions in local pest *Aedes aegypti* populations.
- ✓ Fluorescent larvae in natural breeding sites means treatment in hard-to-reach places.

## Project D – Single homes

- ✓ Treatments from May – October.
- ✓ MINI boxes are producing males efficiently.
- ✓ Males are dispersing and mating with pest *Aedes aegypti* females.
- ✓ All fluorescent females die before pupation.



# 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. Please visit [keysmosquitoproject.com](http://keysmosquitoproject.com) for the post-event recording of this and all other webinars.*

# 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](https://oxitec.com/florida) and [keysmosquitoproject.com](https://keysmosquitoproject.com).