



FKMCD-Oxitec Public Educational Webinar #3

Developing Partnerships With Communities

4 August 2020



OXITEC

Introductions – Panelists With You Today



OXITEC



Andrea Leal
Executive Director
FKMCD



Chad Huff
Public Education &
Information Officer
FKMCD



Kevin Gorman
Head of Field Operations
Oxitec



Meredith Fensom
Head of Public Affairs
Oxitec

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.

- All webinars are open to everyone
- All webinars are recorded and made available for everyone after the event
- All questions will be answered (some in batches if questions are similar)
- If time runs out, we will accept questions in writing via florida@oxitec.com
- Questions and answers will be published in writing after the event with external or related online resources/references

Upcoming Events:

Webinar 4: Oxitec's Vector Control Performance

Tuesday, August 11th, 5:00 – 6:00 p.m. ET

Webinar 5: Assessment, Oversight, and Validation

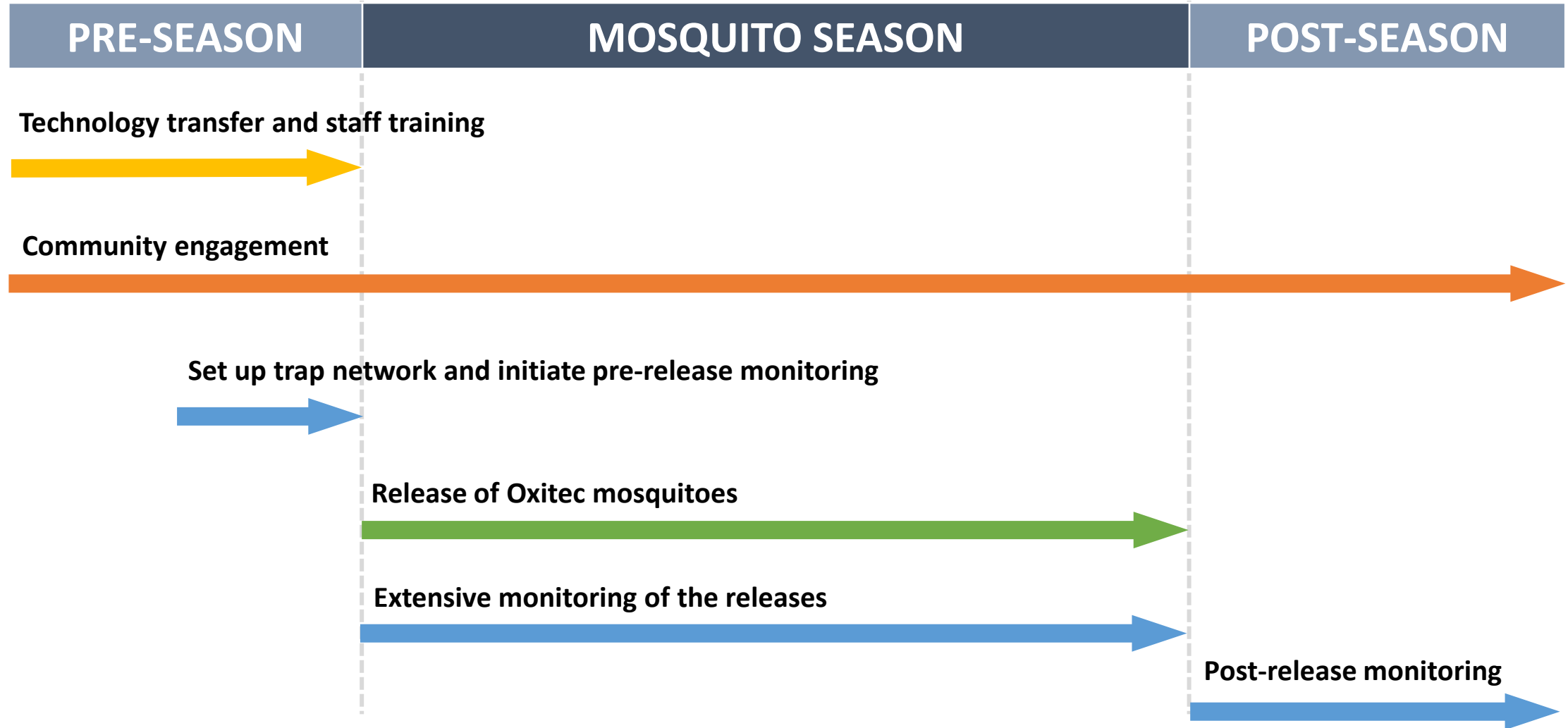
Monday, August 17th, 5:00 – 6:00 p.m. ET



Welcome to Webinar #3 in this 5-part series!

Today's Agenda:

- Building partnerships with communities
 - Strong project partnership
 - Defining stakeholders
 - Listening and learning
 - Sharing and informing
 - Empowering and partnering
 - Continued feedback and dialogue
 - Evaluating and improving
- Building blocks for success
- FKMCD-Oxitec intentions for proposed Florida Keys project
- FAQs
- Your Questions





Building Partnerships with Communities



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Our Goal:

Develop a genuine, trust-based partnership with the Keys community



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Working together, FKMCD and Oxitec will continue engaging, listening and sharing with communities in the Florida Keys.



Community Approach:

- Full coordination between FKMCD and Oxitec
- Transparency and robust information sharing
- Listening and learning from communities and stakeholders
- Inclusive engagement programs specific to community members and groups
- Broad view of stakeholders – citizens, communities, businesses, experts
- Multiple avenues for anyone to contact and engage



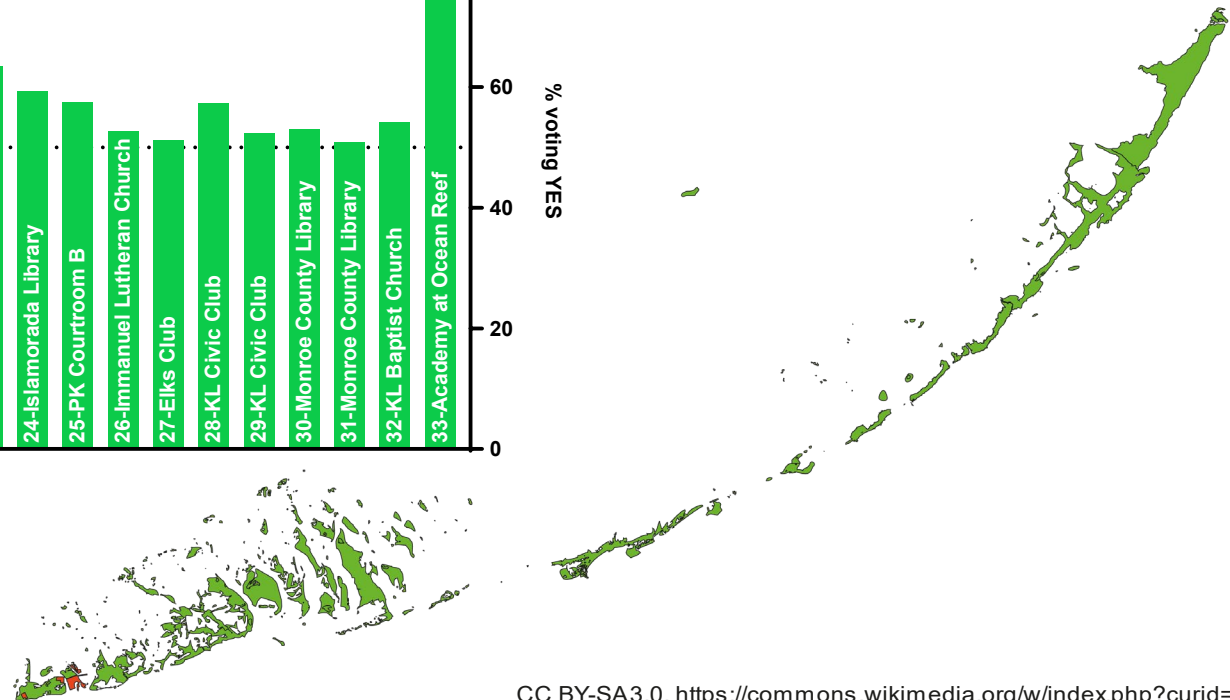
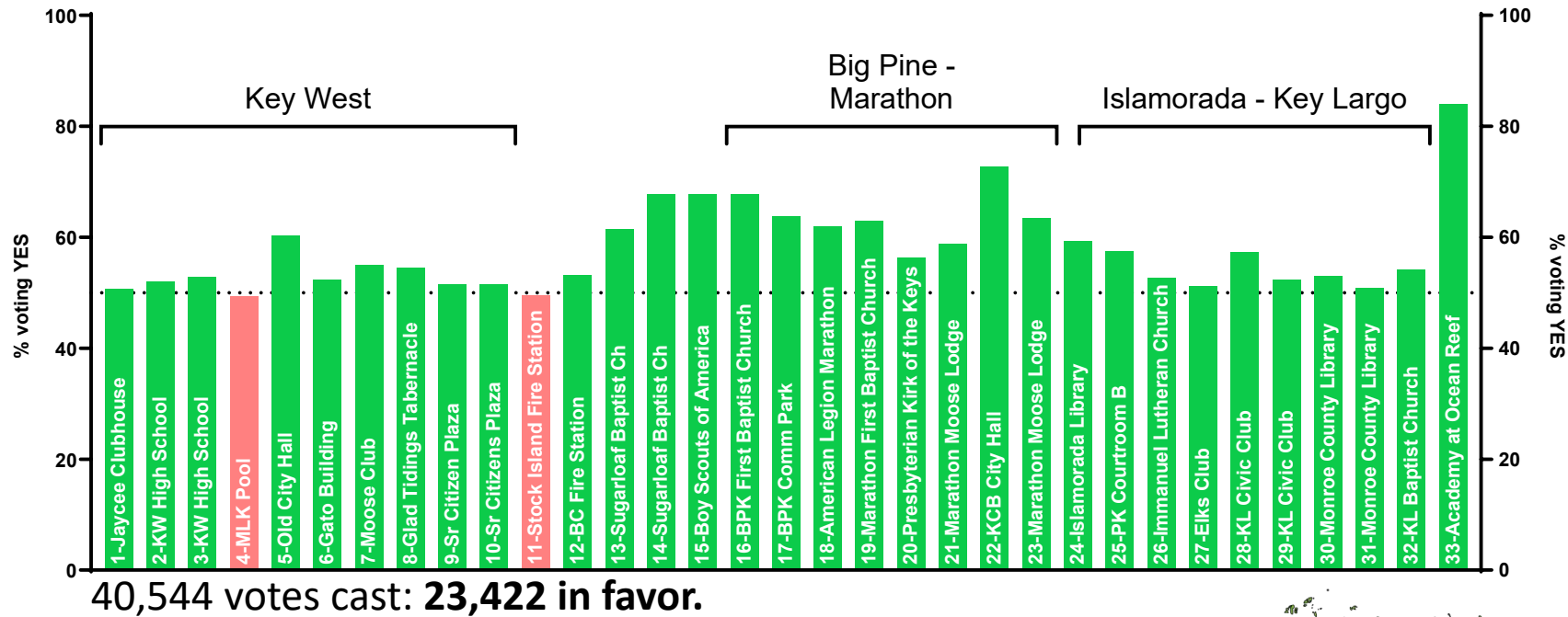


Context: Broad Base of Support in Keys



"Are you in favor of the Florida Keys Mosquito Control District conducting an effectiveness trial in Monroe County, Florida, using genetically modified mosquitoes to suppress an invasive mosquito that carries mosquito-borne diseases?"

Oxitec GM Mosquito Referendum Results Nov 2016





Context: Decade of Pioneering Experience, Lessons & Proof-Points

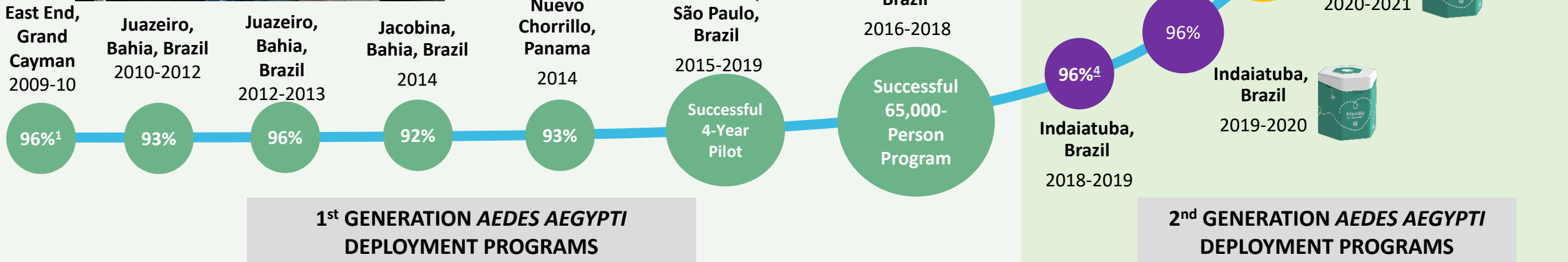


- Published **peak suppression performance of wild-type *Aedes aegypti* ranging from 92% to 96%** as compared to control sites (see below)
- **1Bn+ Oxitec mosquitoes produced for release**
- Deployments ranged from small-scale to **coverage of 65K people**
- **Successful suppression of target *Aedes aegypti* populations in range of deployments**
- Demonstrated **safe with no lasting impact on the environment, humans or animals**
- **Multiple pilot approvals from biosafety regulators**



SELECTED DEPLOYMENT PROGRAMS, 2010 – 2021

Aedes aegypti peak suppression measured in each program compared to control sites



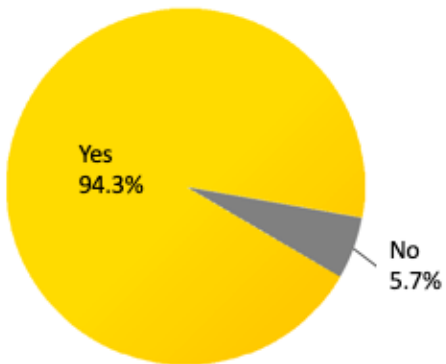
1st GENERATION *Aedes aegypti* DEPLOYMENT PROGRAMS

2nd GENERATION *Aedes aegypti* DEPLOYMENT PROGRAMS

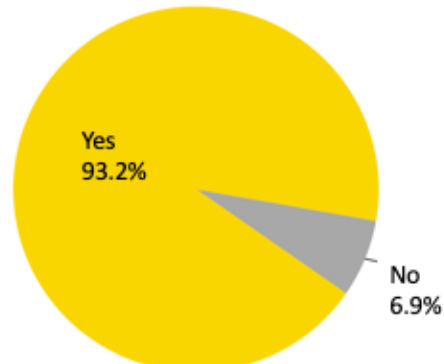


Brazil Survey on Oxitec Mosquitoes (2019)

94%
would like the
Friendly project to
continue



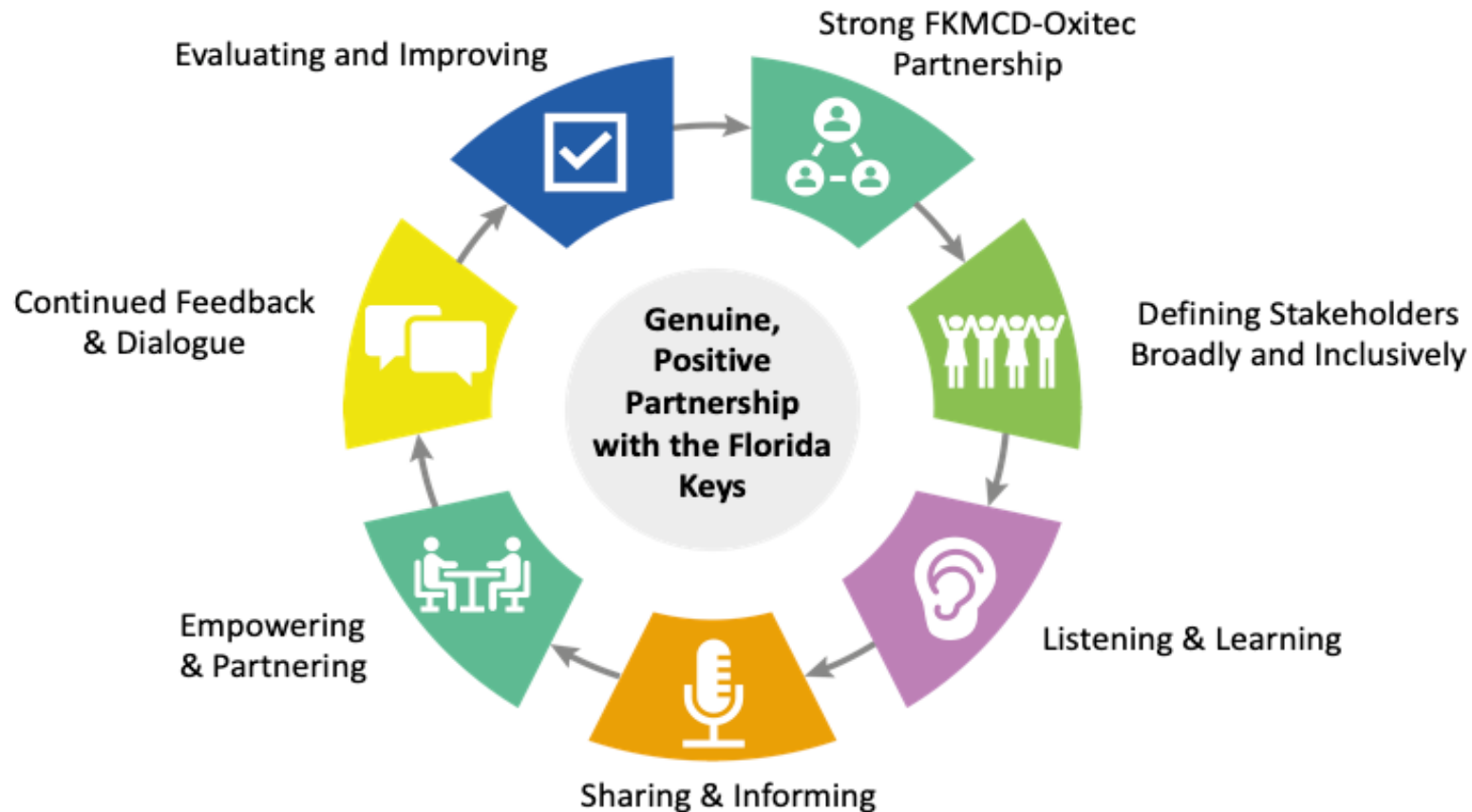
93%
would like to see the
project expanded



A public survey of 1,000 people carried out in September 2019 in the city of Indaiatuba.



Our Process



Our Building Blocks

Scientific Excellence

Transparency

Independent Validation



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Define Stakeholders Broadly & Inclusively

Residents | Communities | Businesses | Non-profits | Educators | Local Governments | Media

Inclusive of age, gender, ethnicity, economic background



Listening & Learning
Public Meetings | House-to-house | Questionnaires | Q&As | Social Media



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Sharing and Informing

Door-to-Door | Full Transparency | Virtual & In-person Engagement | Open House Days | Meet the Mosquitoes | Science Demonstrations | Seminars | Publications | Webinars



Let's Keep India Ahead

Gangabhai Bhikaji Investment and Trading Limited (GBIT) and Oxitec are working in partnership to bring Friendly™ *Aedes aegypti* to India, to help fight the mosquito that transmits dengue, chikungunya and Zika.

WHY IS THIS PROJECT IMPORTANT?
India invests significant resources in fighting the *Aedes aegypti* mosquito that transmits dengue, chikungunya and Zika. However, current tools are insufficient to control this mosquito and stop diseases from spreading. Many in our country suffer from dengue and chikungunya every year. The Friendly™ *Aedes aegypti* is an additional tool that can help control the spread of disease-carrying mosquitoes.

MALE MOSQUITOES DO NOT BITE OR TRANSMIT DISEASE

HOW DOES FRIENDLY™ AEDES AEGYPTI WORK?
Genetically engineered self-limiting male *Aedes aegypti* mosquitoes, which cannot bite or transmit disease, are released to mate with local female *Aedes aegypti*. Their offspring, before being able to reproduce, will have a reduced population. With repeated releases, the mosquito population is reduced. This is an environmentally friendly and safe solution.

FRIENDLY™ AEDES AEGYPTI MATE WITH WILD FEMALES

ECO-FRIENDLY
We have been conducting contained studies evaluating the Friendly™ *Aedes aegypti* at our research centre in Dordrecht since 2011. These were approved by the Ministry of Science and Technology of the Government of India.

WHAT IS THE NEXT STEP?
We are evaluating Friendly™ *Aedes aegypti* in outdoor cages. Open field trials will only occur following regulatory permission by the Government of India. Before field trials begin, we will inform the local communities through engagement activities.

WHERE HAVE FRIENDLY™ AEDES AEGYPTI BEEN USED?
The Friendly™ *Aedes aegypti* mosquitoes have already been used successfully in field trials in Brazil, Panama and the Cayman Islands. In each of these projects, releases of Friendly™ *Aedes aegypti* reduced the wild populations by more than 90 percent.

WHERE ARE WE CURRENTLY TESTING?
CAYMAN ISLANDS: 96%
PANAMA: 93%
BRAZIL: 92%
BRAZIL: 99%

Learn more about eco-friendly mosquito control in India
GBIT: info@gbit.co.in | +91 93 202 2627 | www.gangabhai.com, Dordrecht, The Netherlands, PO Box 10, 4800 AA, 011 71 201
Oxitec: info@oxitec.com | +44 (0) 1442 324163 | www.oxitec.com | Oxitec, 1400 West Park, Arroyo, CA 94024, USA
© 2014 Oxitec Mosquitoes & Technology Limited 02/14



Introduction to The Oxitec Florida Keys Project

Oxitec's passionate and committed team is dedicated to developing and releasing self-limiting male *Aedes aegypti*, which is transmitting such as dengue, Zika and yellow fever.

Oxitec's male mosquitoes are:

- Safe and environmentally friendly
- Effective and proven
- Non-biting

What is the Oxitec Florida Keys project?
The Florida Keys have seen outbreaks of dengue and Zika in recent years. The Florida Keys Mosquito Control District and Environmental Protection Agency, working in collaboration to combat the invasive *Aedes aegypti* mosquito which can transmit three diseases.

The proposed project, currently under review by the Environmental Protection Agency, will be a demonstration of Oxitec's non-biting mosquitoes in the Florida Keys environment and their impact on wild populations of the invasive *Aedes aegypti*.

How it works

- Like other male mosquitoes, Oxitec's mosquitoes cannot bite or transmit disease.
- When they mate with female *Aedes aegypti*, the offspring survive. So with repeated releases in an area, the population of the *Aedes aegypti* mosquito is reduced.
- And because it only targets the *Aedes aegypti* mosquito, it leaves other insects like butterflies and bees unharmed.

More than one billion Oxitec mosquitoes have been produced for release worldwide, with no observed negative impacts.

Oxitec mosquitoes have been determined by multiple regulatory agencies, including in the US and Brazil, to be safe, and to pose no threat to humans or the environment.

Please contact us if you have any questions or feedback; we would love to hear from you.
Email us at florida@oxitec.com

www.oxitec.com





Empowering & Partnering
Community Integration | Consultations on Operations | Timing Considerations



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Continued Feedback & Dialogue

"Always Available" | Routine Dialogue | Public Meetings | House-to-house Engagements | Radio | Social Media | Surveys | etc.



Evaluating & Improving
Feedback Sessions | Meetings | Independent Analysis



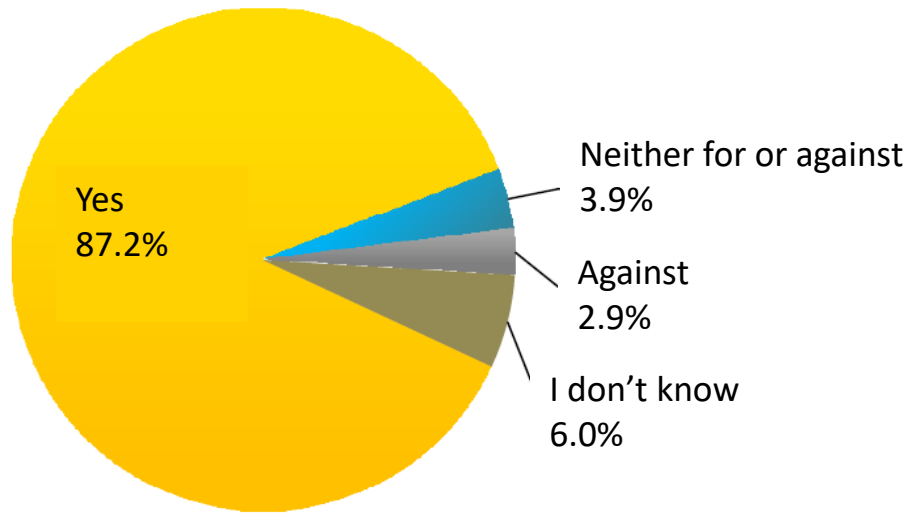
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Oxitec's OX5034 Mosquito Receives High Levels of Support

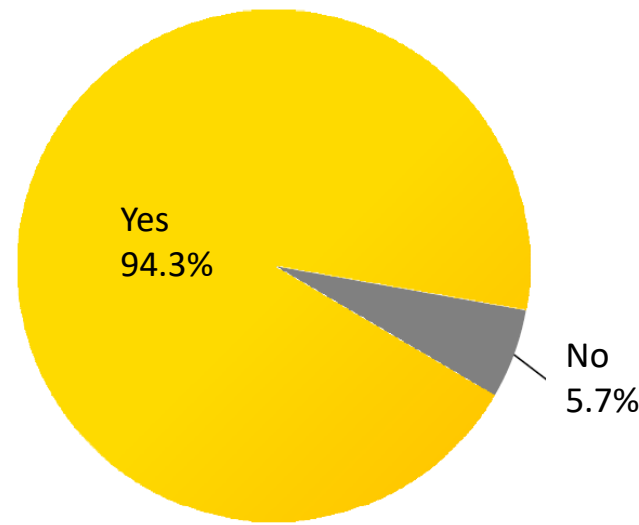


A public survey carried out in September 2019 in the Brazilian city of Indaiatuba, where Oxitec's 2nd generation 'Aedes do Bem' had been released for 1 year, showed exceptionally high levels of support for the technology.



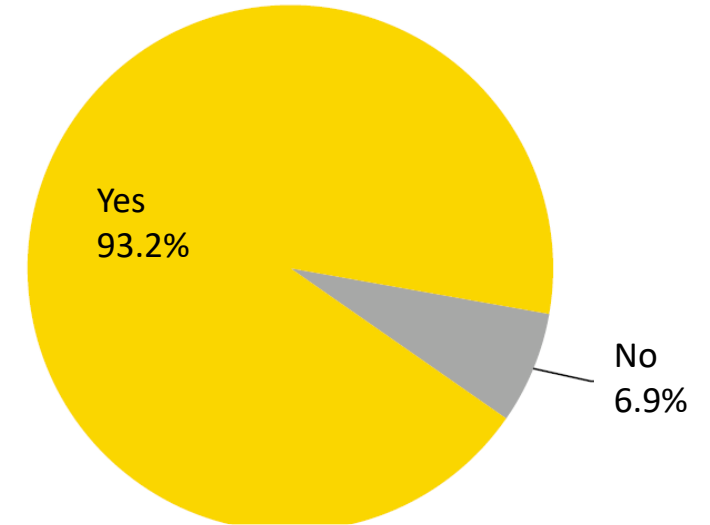
87%

fully support the *Aedes do Bem!*[™] project



94%

would like the *Aedes do Bem!*[™] project to continue



93%

would like to see the project extended to other neighbourhoods

METHOD: Interviews
 WHO: >16 years old citizens of Indaiatuba, SP
 HOW MANY: 1000 interviews
 DISTRICTS: 17
 WHEN: September 2019



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Building Blocks for Supporting Strong Partnerships with Communities
Scientific Excellence | Transparency | Independent Validation



Building Blocks: Scientific Excellence
Extensive academic review | 100+ scientific publications



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Research Article
Received: 11 August 2015
Revised: 9 September 2015
Accepted article published: 14 September 2015
Published online in Wiley Online Library: 14 October 2015
(wileyonlinelibrary.com) DOI: 10.1002/ps.4151

Short-term suppression of *Aedes aegypti* using genetic control does not facilitate *Aedes albopictus*

Kevin Gorman,^{a*} Josué Young,^b Lleysa Pineda,^b Ricardo Márquez,^b Nestor Coca,^b Damaris Romal,^b Rolando Torrez,^b Yamilizal Soto,^b Renaud Lacroix,^a

NEGLECTED TROPICAL DISEASES
RESEARCH ARTICLE
Suppression of a Field Population of *Aedes aegypti* in Brazil by Sustained Release of



Analyzing the control of mosquito-borne diseases by a dominant lethal genetic system

Pest control and resistance management through release of insects carrying a male-selecting transgene

Tim Harvey-Samuel, Neil I. Morrison, Adam S. Walker, Thea Marubbi, Ju Yao, Hilda L. Collins, Kevin Gorman, T. G. Emyr Davies, Nina Alphey, Simon Warner, Anthony M. Shelton and Luke Alphey

NEGLECTED TROPICAL DISEASES
RESEARCH ARTICLE

Assessment of the Impact of Potential Tetracycline Exposure on the Phenotype of *Aedes aegypti* OX513A: Implications for Field Use

Zoe Curtis^{1,2*}, Kelly Matzen¹, Marco Neira Oviedo^{1,3}, Derric Nimmo¹, Pamela Gray¹

SCIENTIFIC REPORTS

OPEN Exposure to genetically engineered olive fly (*Bactrocera oleae*) has no negative impact on three non-target organisms

Received: 16 May 2017
Accepted: 30 August 2017
Published online: 13 September 2017
Thea Marubbi¹, Clare Cassidy^{1,3}, Esther Miller², Martha Koukidou¹, Enca Martin-Rendon¹, Simon Warner¹, Augusto Loni² & Camilla Beech^{1,4}

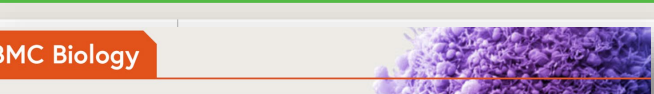
First Field Release of a Genetically Engineered, Self-Limiting Agricultural Pest Insect: Evaluating Its Potential for Future Crop Protection

NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

PROCEEDINGS OF THE ROYAL SOCIETY B

BIOLOGICAL SCIENCES



Home About Articles Submission Guidelines

Research article | Open Access | Published: 16 July 2015

Pest control and resistance management through release of insects carrying a male-selecting transgene

nature biotechnology

Correspondence | Published: 10 September 2012

Successful suppression of a field mosquito population by sustained release of engineered male mosquitoes

Angela F Harris, Andrew R McKemey, Derric Nimmo, Zoe Curtis, Isaac Black, Siân A Morgan, Marco Neira Oviedo, Renaud Lacroix, Neil Naish, Neil I Morrison, Amandine Collado, Jessica Stevenson, Sarah Scaife, Tarig Dafa'alla, Guoliang Fu, Caroline Phillips, Andrea Miles, Norzahira Raduan, Nick Kelly, Camilla Beech, Christl A Donnelly, William D Petrie & Luke Alphey

100+ scientific publications peer-reviewed by independent experts:

- ✓ Effective performance
- ✓ No impact on non-target organisms
- ✓ Full safety
- ✓ No long-term persistence
- ✓ No evidence for species niche replacement
- ✓ Potential to dilute insecticide resistance



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Building Blocks: Transparency

Unprecedented information sharing | Accessible Publications | Available to community 24/7



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Building Blocks: External Validation

Regulatory oversight | Independent Advisory Board | Independent scientific validation



Independent Advisory Board Members



Bob Eadie

Administrator and Health Officer
Monroe County Department of Health
Member, Project Independent Advisory Board



Dr Douglas Mader

Veterinary Specialist
Marathon Veterinary Hospital
Fellow, Royal Society of Medicine
Member, Project Independent Advisory Board



Dr Jorge Rey

Director and Professor
University of Florida – IFAS
Florida Medical Entomology Laboratory
Member, Project Independent Advisory Board





External Validation and Independent Oversight of this Project



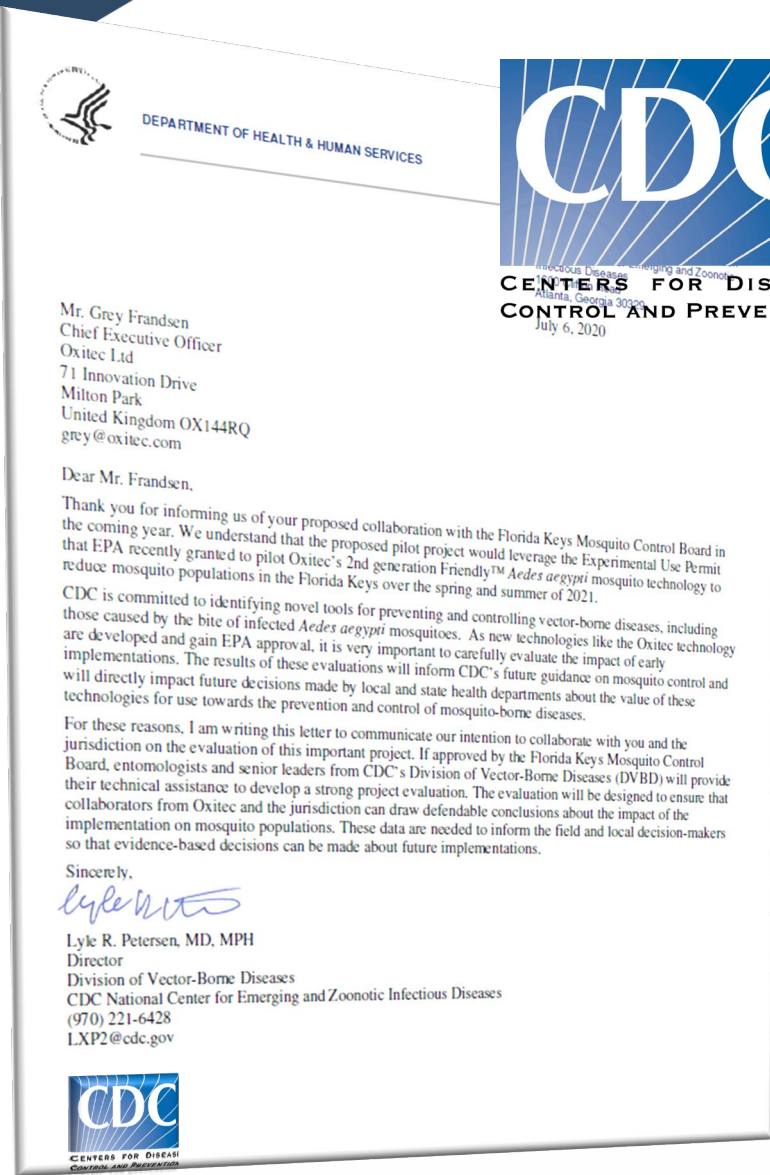
EUP also approved by:

- ✓ Bureau of Inspection and Incident Response (BIIR)
- ✓ Bureau of Agricultural Environmental Laboratories (BAEL)
- ✓ Bureau of Chemical Residue Laboratories (BCRL)
- ✓ Bureau of Scientific Evaluation and Technical Assistance, Scientific Evaluation Section (SES)



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We Continue to Invite Comprehensive Independent Reviews



CDC confirms participation:

“...I am writing this letter to communicate our intention to collaborate with you and the jurisdiction on the evaluation of this important project.

...entomologists and senior leaders from CDC’s Division of Vector-Borne Diseases (DVBD) will provide their technical assistance to develop a strong project evaluation.”

Lyle Petersen, MD, MPH
Director of Division of Vector-Borne Diseases
Centers for Disease Control and Prevention



Florida Keys Community Engagement Timeline



Defining Stakeholders



Listening to communities (house-to-house, local meetings, virtual as needed)



Sharing and Information (radio, social, events)



Project updates (start, middle, end)



Reporting



Empowering and Partnering (operations, support and advice)



Continued Feedback and Dialogue (communities and stakeholders)



Evaluating and Improving (surveys)





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 and we will attempt to answer your question if it isn't included in the growing FAQ or post-event summary we publish online)



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Conclusion



THANK YOU!

A summary of this event, as well as more Q&As, resources, facts, and background materials are available at oxitec.com/florida.