



1st Delta MVCD-Oxitec Public Educational Webinar, April 26th 2022
An Introduction to Oxitec in California: A Project Based on Strong Partnerships with Local Governments, Communities, and Experts



Introductions – Panelists With You Today



Mustapha Debboun
General Manager/Medical
& Veterinary Entomologist,
Delta Mosquito & Vector
Control District



Rajeev Vaidyanathan
Director of U.S. Programs
Oxitec



Kevin Gorman
Chief Development Officer
Oxitec



Delta MVCD-Oxitec Public Educational Webinar Series

Introduction to our Webinar Series

Delta MVCD and Oxitec are hosting a series of public educational webinars to share information with residents of Tulare County 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 info@oxitec.com.
- Questions and answers will be published in writing after the event with external or related online resources/references.

Delta MVCD & Oxitec Public Educational Webinars

Welcome to Webinar #1!

Today's Agenda:

- Why Now? Why California?
- Oxitec and Self-limiting Mosquito Technology
- Project Plans
- Your Questions, Answered

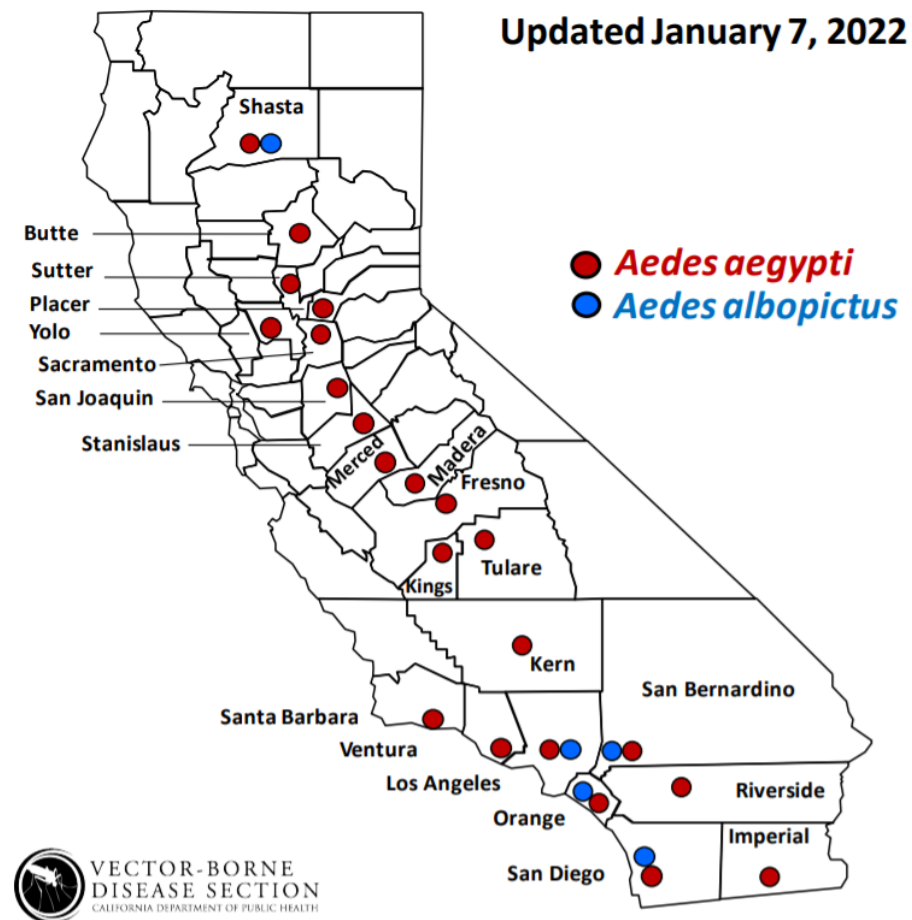


Documentation, resources, references, and other information are available at oxitec.com/california

Why Now, Why California?

Invasive *Aedes aegypti*, pyrethroid resistance, and challenges unique to *Aedes aegypti*

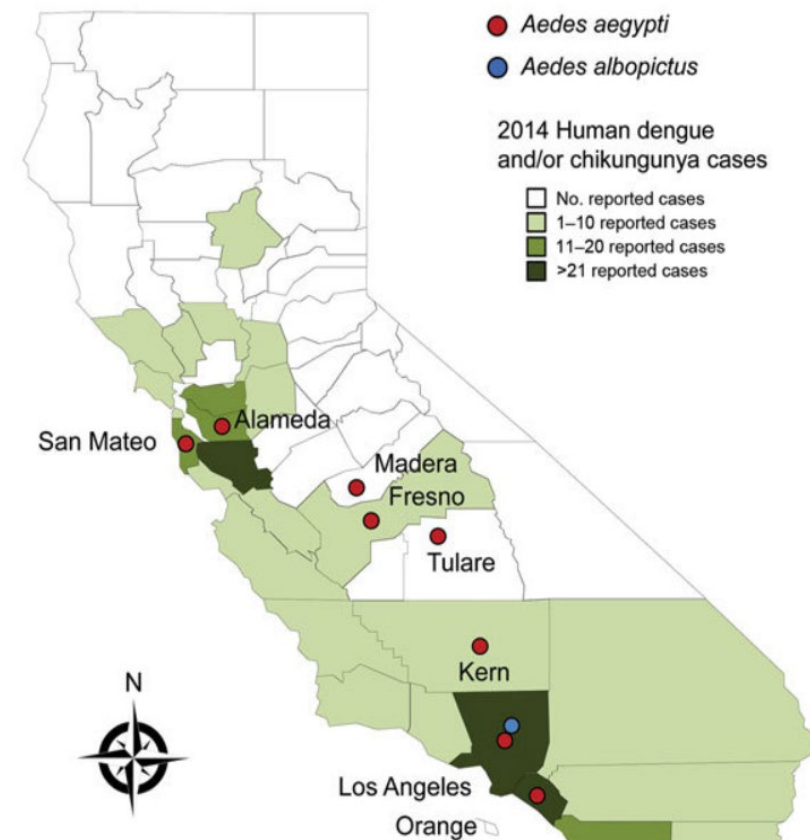
- **Potential risk of local dengue, Zika, chikungunya, and yellow fever transmission.**
- **2013:** *Ae. aegypti* detected in **Fresno, Madera, and San Mateo Counties.**
- **2014:** *Ae. aegypti* persisted in those 3 counties and were **also detected in Kern, Tulare, Los Angeles, and San Diego Counties.**
- **2015:** Detected in **Imperial and Orange Counties.**
- **Inherent challenges to *Ae. aegypti* control.** Cryptic harborages, oviposition & larval sites, daytime behavior.
- **Insecticide resistance:** Need more tools in our toolbox.



Disease Transmission in California?

No locally acquired cases of Dengue or Zika have been detected, but the risk of transmission increases with the spread of *Ae. aegypti*.

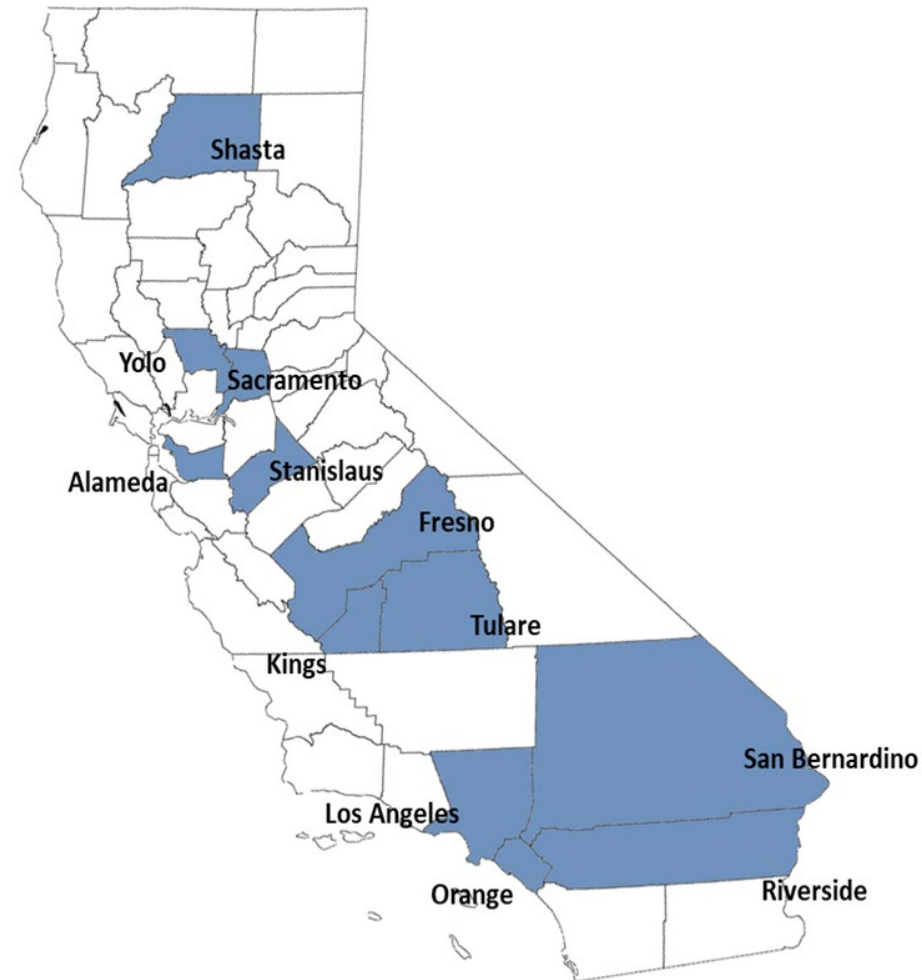
- Viral diseases transmitted by *Aedes aegypti* present a threat to public health in California.
- With travel-acquired cases in California, it's important that local MCDs have the tools to control this invasive species before it starts transmitting these diseases within the state.
- *Aedes aegypti* is the #1 reason the public calls Delta MVCD to complain.



Ten Districts in California Wanted To Work With Us

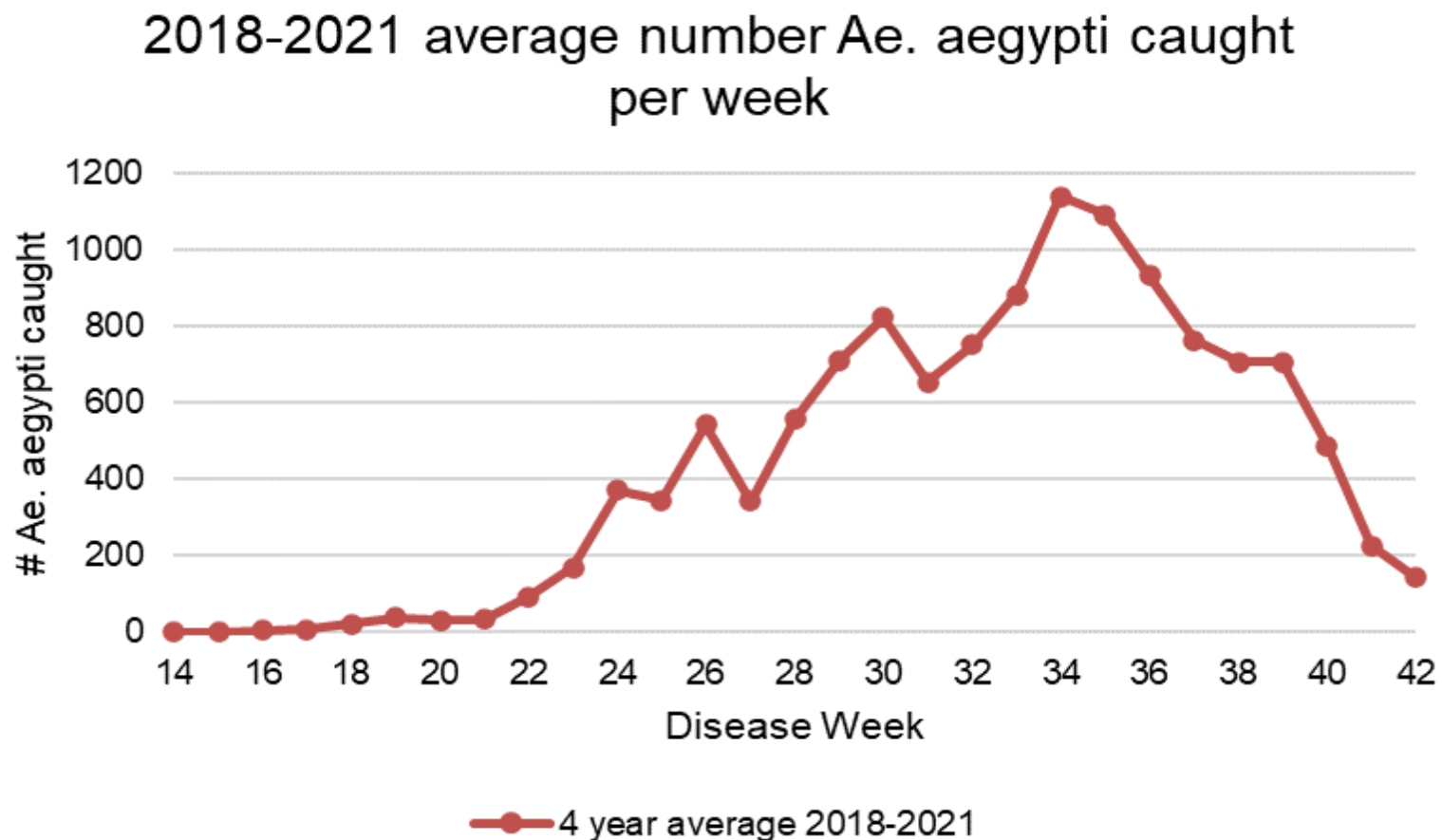
These mosquito control districts spanned the state!

- Each expressed an interest to participate on our pilot projects.
- We included their names in our EUP amendment to the EPA.
- Some counties/districts have had abundant populations of *Aedes aegypti* since 2013-2014.
- Others detected this invasive pest as recently as 2020.



Aedes aegypti in Delta MVCD

Invasive *Aedes aegypti* is becoming increasingly common in Tulare County.

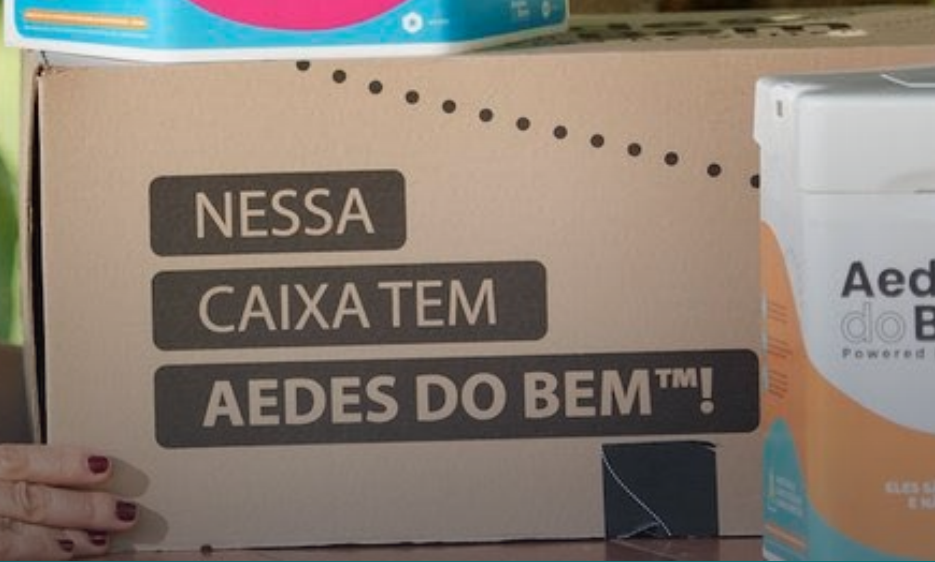


Public Approval & Ballot Initiative

Delta MVCD has strong public support for measures to fight *Aedes aegypti*.

- 2021: Property tax assessment: 16,000 surveys.
- "Would you support a ballot measure increasing the district's biennial assessment by \$12.50 to fight the invasive *Aedes aegypti* mosquito?"
- 57% voted "Yes."
- The citizens of Delta MVCD are interested in innovative mosquito control technologies.





Oxitec and Self-limiting Mosquito Technology



We're forging a new category of safe, sustainable, chemical-free, highly effective biological pest control solutions.

ESSE AEDES NAO TRANSMITE DENGUE



SAIBA MAIS: AEDESDOBEM.COM.BR

região
ocê quer
o Bem™?

nos comentários...

#UnboxCare
#UnboxdoBem

Aedes do Bem



Hoje é dia de reunir quem a gente ama e celebrar com carinho e proteção.
É o que o Aedes do Bem™ mais deseja a você!
Feliz Natal!

e agora
entender
m?



Arrasta pro lado e veja como.


O verão começou!
Curta sem preocupação.



Aedes do Bem™
Uma nova vida fora da caixa.

Na luta contra o *Aedes aegypti*, você sabe a diferença entre

PREVENÇÃO & SOLUÇÃO?



#UnboxCare
#UnboxdoBem

Já estamos no Polo Shopping Indaiatuba!

Venha conhecer o Aedes do Bem™!



Arrasta pro lado pra ver mais fotos.

#UnboxCare
#UnboxdoBem



World-Leading Innovation to Empower Communities

250+

Oxitec personnel globally

15+

Nationalities represented

30+

PhDs in Oxitec's R&D team

10+

Languages spoken

3 World-Class R&D Facilities

(two UK, one Brazil; one more in development in Brazil)



Broad and Cross-cutting Expertise

- Genetics & Biotechnology
- Scalable Production
- Intellectual Property
- Regulatory Affairs
- Pest Biology
- Product Development
- Project Management
- Digital Systems
- Field Validation
- Modelling
- Quality Assurance
- Communications & Engagement

Oxitec's Friendly™ Science – Safe, Biological, Effective



Friendly™ pests carry two introduced genes that deliver unparalleled pest management performance

♥ Self-limiting gene

♥ Marker gene

Friendly™ males are released to mate with pest females

Safe and non-toxic

Harmless predators and other species

Traceable in the field

Marker detectable with special filters

Male-only releases

Males do not harm people or crops

Self-limiting in environment

Gene cannot persist beyond a few generations

Targeted suppression

Without harming biodiversity

Dilutes insecticide resistance

Natural, safe genes help to protect other tools

Scientifically Proven

- 100+ peer-reviewed publications
- Globally respected leader in arthropod biotechnology

Unmatched Effectiveness

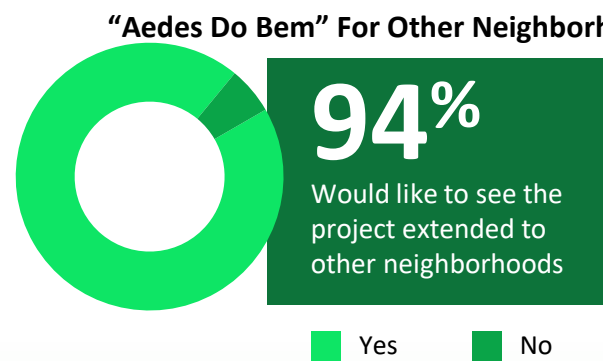
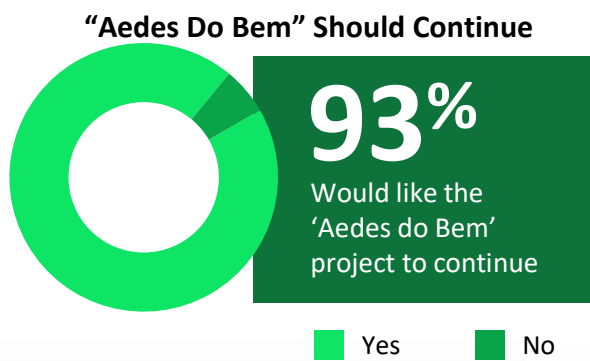
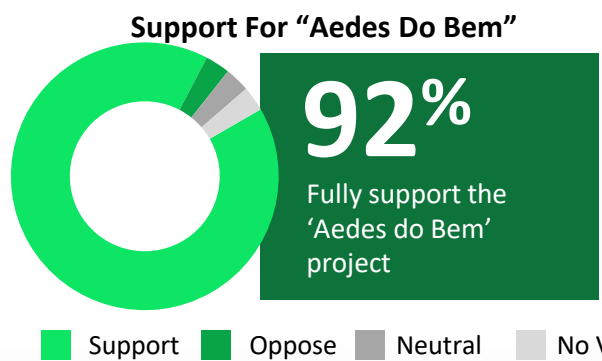
- Best-in-class vector suppression in city-wide and farm-scale deployments
- Repeated success in field pilot demonstrations in multiple countries

Multiple Biosafety Approvals

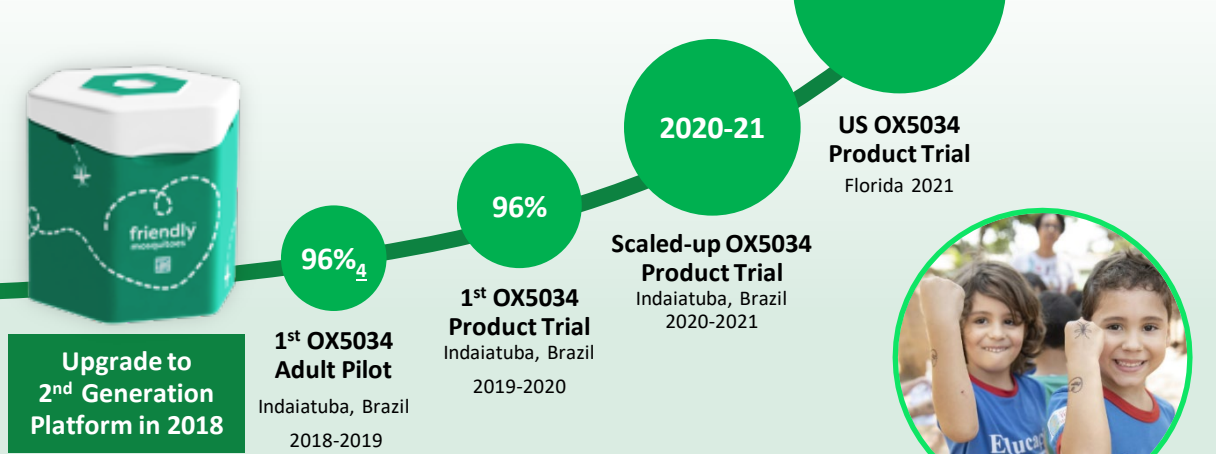
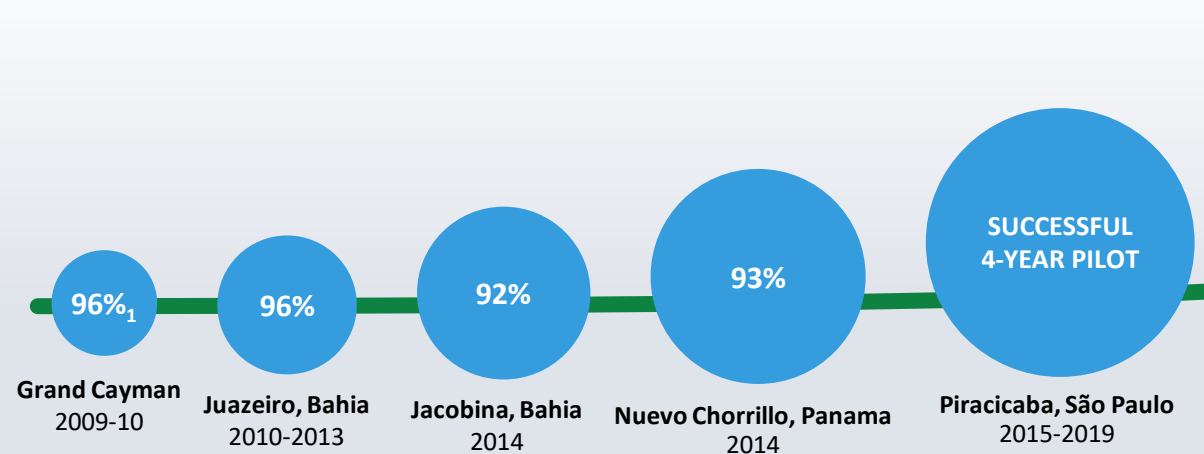
- Deployments and pilot demonstrations conducted under approvals in the Americas, Africa, Europe, Asia and Australia
- Two products de-regulated in Brazil

>1 Billion Friendly™ Non-Biting Male Mosquitoes Released

OXITEC'S PROVEN VECTOR CONTROL RESULTS ARE COMBINED WITH EXCEPTIONALLY HIGH PUBLIC SUPPORT IN A RANGE OF MARKETS.



Public survey of 1,000 people carried out in September 2019 in the city of Indaiatuba



DECADE OF DEVELOPMENT AND PROOF-POINTS

PREPARING FOR COMMERCIAL LAUNCH

Oxitec's Products Are Designed for Use by a Diverse Range of Stakeholders and Communities





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Últimos dias para conhecer o **Aedes do Bem™** no Polo Shopping Indaiatuba!



Aedes do Bem™
Uma nova vida fora da caixa.

#UnboxCare
#UnboxdoBem

Dengue, zika e chikungunya:



o que espera o brasileiro neste verão?

Fonte: Band

Aedes do Bem™, o jeito mais seguro, simples e eficaz de combater o Aedes aegypti



“
Biotecnologia, uma nova aliada contra as doenças endêmicas”
veja

#UnboxdoBem

Voe para o nosso esquento BLACK FRIDAY!

Preço especial e frete grátis! Assine agora!

E a cada compra realizada, uma Caixa do Bem™ será doada para o Projeto Aquarela.



#UnboxCare
#UnboxdoBem

Aquarela



Gripe, Covid-19 ou Dengue?

Arraste para o lado e saiba a diferença!



Aedes do Bem
PROTEÇÃO BY DESIGN

Está em Indaiatuba? Então venha conhecer o Aedes do Bem™!



Aedes do Bem™
Uma nova vida fora da caixa.

#UnboxCare
#UnboxdoBem

Casos de chikungunya voltam a crescer no Brasil. Saiba como se prevenir!




Aedes do Bem™
Uma nova vida fora da caixa.

Fonte: G1



#UnboxdoBem
#UnboxCare



80% DOS FOCOS do mosquito Aedes aegypti estão dentro de casa.



Fonte: Relatório CDEV 2020

A PAZ INVADIU O MEU CORAÇÃO DE REPENTE ME ENCHEU de paz



Um verão cheio de paz para você!

Amanhã começa um novo ciclo com novos desafios e oportunidades para você viver a sua vida **fora da caixa!**

Feliz 2022!



Aedes do Bem
PROTEÇÃO BY DESIGN



A proteção está no ar!



Acese o nosso site e garanta a proteção da sua família.

#UnboxCare
#UnboxdoBem

Com **Aedes do Bem™** você curte o verão sem preocupação.



FALTA 1 DIA

#UnboxCare
#UnboxdoBem



FALTAM 2 DIAS

Para você se proteger do mosquito da dengue de um jeito muito simples.

#UnboxCare
#UnboxdoBem

10 Years of Popular Support Every Place We've Worked



WE DELIVER IMPACT WORKING IN CLOSE PARTNERSHIP WITH COMMUNITIES

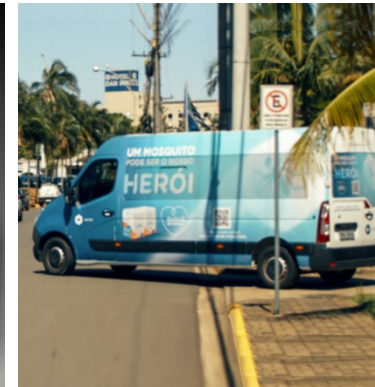
Example: a public survey of 2,000 people carried out in March 2021 in the city of Indaiatuba highlights that:

97%

Would like the Friendly™ project to continue

97%

Would like to see the project expanded



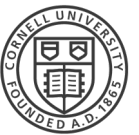
World-Class Partners, Collaborators and Regulatory Record



Select Partners and Underwriters



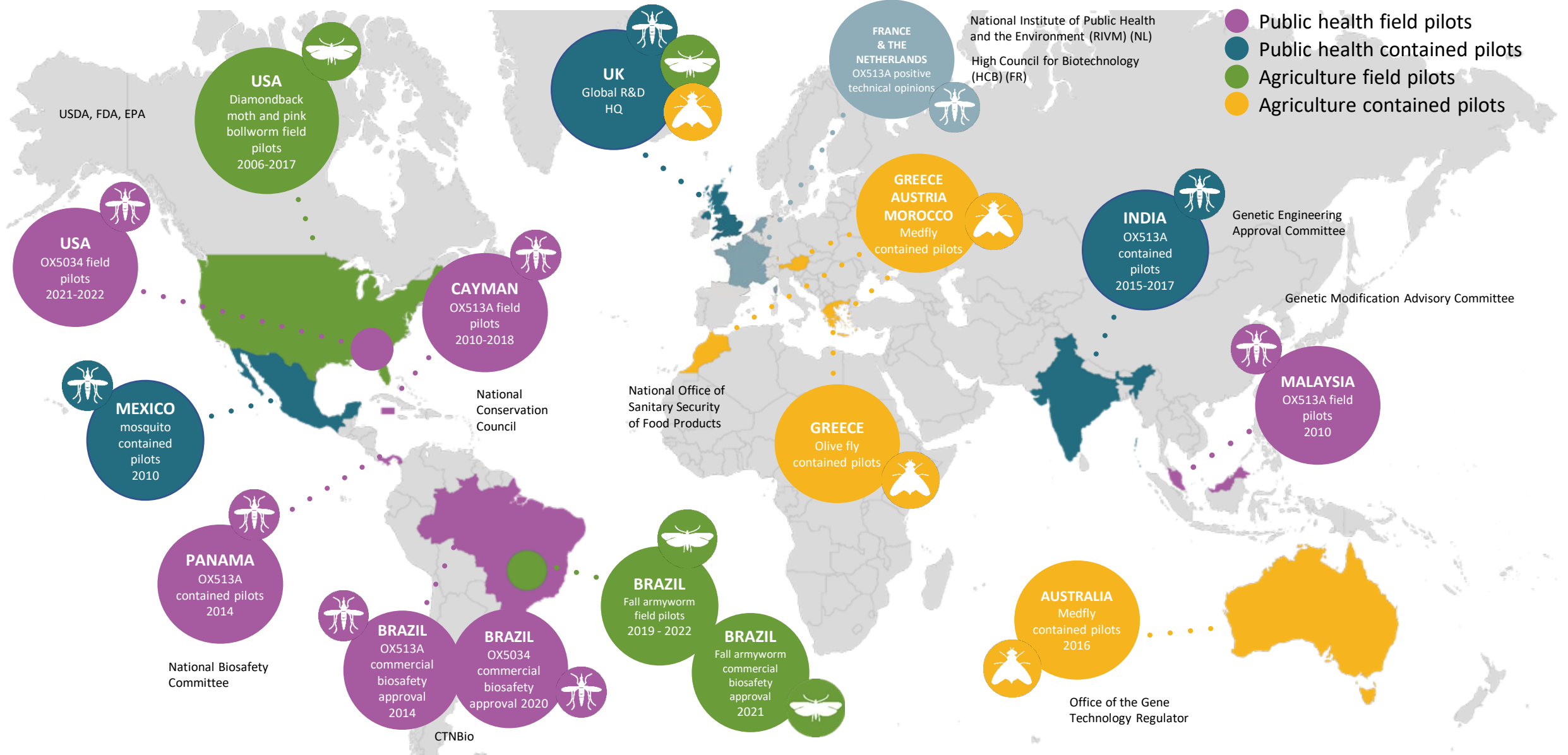
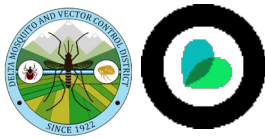
Select Current and Historical Collaborators



Positive Regulatory Approvals and Opinions



10+ Years of Successful Regulatory Decisions



Overview of EPA's Scientific Assessment and Approval

Key Elements:

- 14-month in-depth process
- Exhaustive scientific review
- Risk assessment
- Multi-agency support
- Public comment & responses



By the Numbers:

- 70+ documents submitted
- 25 commissioned studies
- 4,500+ pages, including 2,500+ pages of scientific peer-reviewed literature

Data Requirements Fulfilled by Oxitec (partial list)

Environmental Assessments:

- Fish
- Birds
- Mammals
- Plants
- Aquatic Invertebrates
- Insects
- Endangered Species

Health Assessments:

- Trait Penetrance
- Oral Toxicity
- Inhalation Toxicity
- Ocular Toxicity
- Dermal Toxicity
- Allergenicity
- Vector Competence

Mosquito Characterization and Performance:

- Insecticide Susceptibility
- Trait Penetrance
- Tetracycline Response
- Stability of Genetic Traits
- Trait Persistence
- Field Data (Brazil)
- Protein Stability
- Arbovirus Screening
- Introgression Analysis
- Complete SOPs
- Analytical Methodologies

EPA Conclusion: Oxitec Mosquitoes are Safe for Humans, Wildlife, and the Environment

Independently validated: no effects on endangered species or critical habitat, whether direct or indirect.

SAFE FOR

- Fish
- Birds
- Mammals
- Plants
- Invertebrates
- Other aquatic animals



'OX5034 male mosquitoes do not bite people or wildlife'



Success: Florida Keys 2021 Hits 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 accessed cryptic breeding sites (this is good)
- ✓ No females released



nature

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NEWS | 18 April 2022

Biotech firm announces results from first US trial of genetically modified mosquitoes

[From 2021, Planning for 2022](#)



Delta MVCD-Oxitec Mosquito Project Plans

Our Joint Team

Oxitec and Delta MVCD:

- A complementary mix of experience, technical expertise, and local knowledge.
- Working hand-in-hand to carry out this project together with local communities.
- Transparency, inclusiveness, and equity are fundamental to success.



Si los reguladores estatales lo aprueban, a partir de la primavera de 2022, Delta MVCD y Oxitec evaluarán la eficacia de los mosquitos macho Oxitec para controlar el mosquito *Aedes aegypti* invasivo y propagador de enfermedades en Visalia, California.

- El mosquito *Aedes aegypti* es el vector conocido por transmitir enfermedades como fiebre amarilla, dengue, chikungunya, y Zika. Este mosquito se está volviendo más resistente a los pesticidas tradicionales
- Como todos los mosquitos machos, los mosquitos machos de Oxitec no pican. Solo los mosquitos que son hembras pican y propagan enfermedades.
- Los mosquitos machos Oxitec son seguros y autolimitadores.

Visite oxitec.com/california y DeltaMVCD.org para recursos adicionales.

Public Engagement

Over the coming weeks and months we will be listening to the community:





Field Project Designs and Data Collection

1

Regulatory Pilots

Small | high statistical power | protocol approved by regulators | biology/efficacy measured

2

Demonstration Pilots

Larger pilot to demonstrate area-wide suppression | designed w/ regulator | compared with control

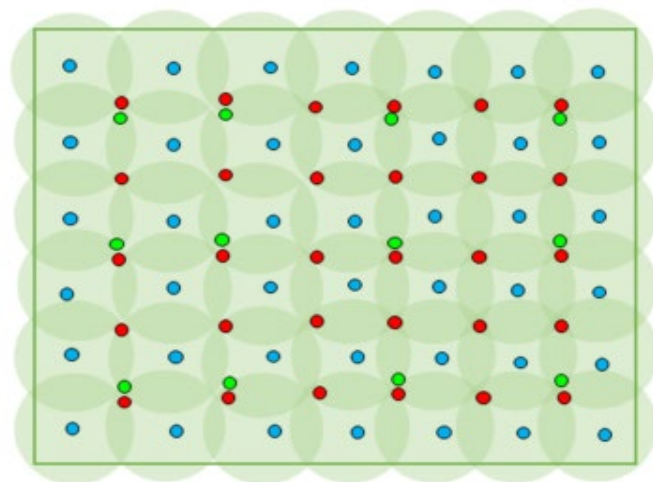
3

Operational Deployment

Deployed as vector control tool to suppress vector population over an area

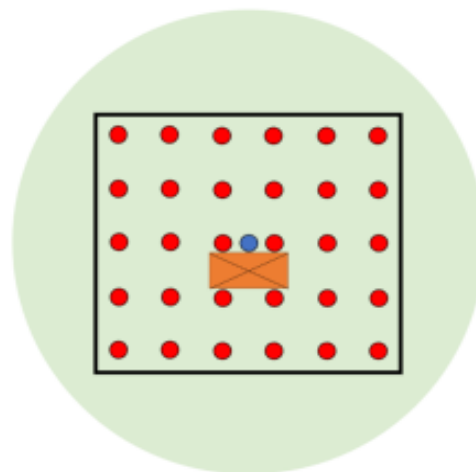
Regulatory Pilots Planned



Project B: Small Neighborhood Study



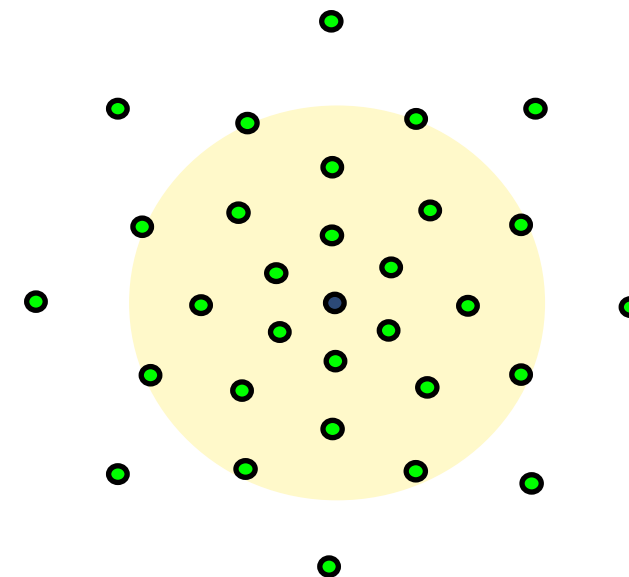
- Release point ●
- Ovitrap ●
- Adult trap ●
- Anticipated area of effect ●

Project D: Household Study



- Release point ●
- Ovitrap ●
- Single home 
- Property border 
- Anticipated area of effect ●

Project E: Mark Release Recapture



- Release point ●
- Ovitrap ●
- Adult trap ●
- Anticipated area of effect ●

Next Steps

This project is currently under review at California's Department of Pesticide Regulation (DPR).

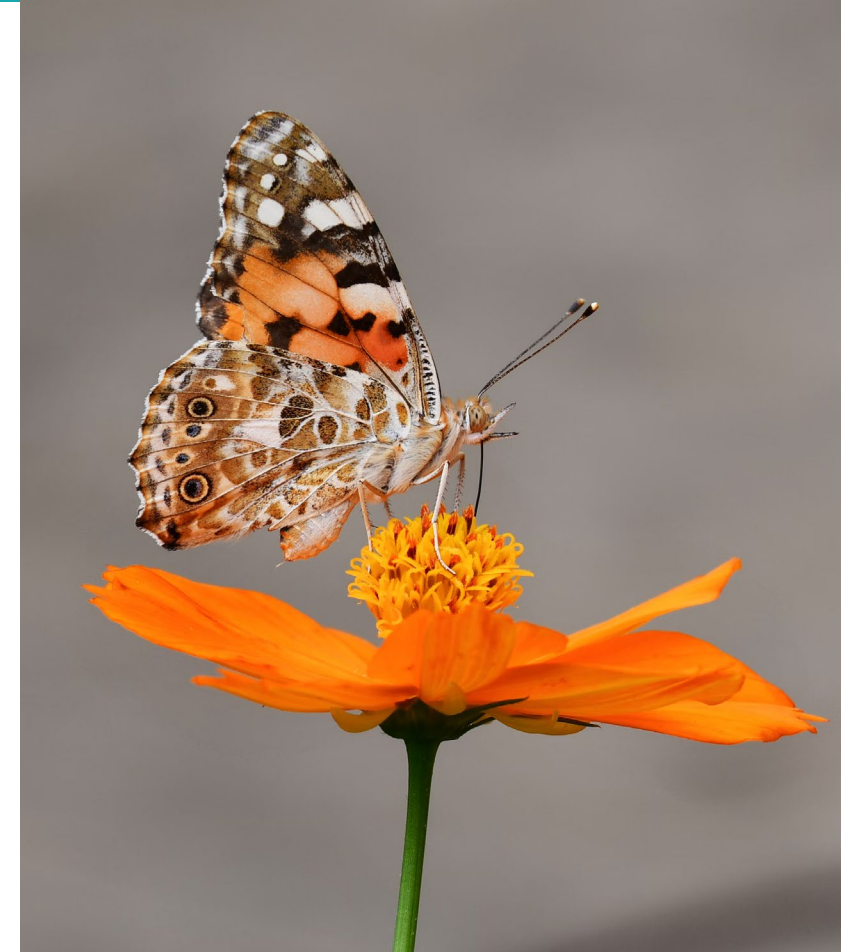
- Oxitec and Delta MVCD will share **information about the planned project**
- **Community engagement** will take place over the coming weeks and months
- **Pre-release monitoring of *Aedes aegypti*** may be initiated at potential project sites
- California's regulators will continue their review of the **Research Authorization application**



Question and Answers

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

(If we run out of time tonight, email info@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/california and deltamvcd.org)





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/california