



**Delta MVCD – Oxitec Public Educational Webinar #6
California, Mosquitoes, and Climate Change: Why Oxitec Was Invited to
California and the Urgent Need for Innovative Pest Control Technologies**

Tuesday, September 20th, 2022

Photo by [Simon Hurry](#)

Introductions – Panelists With You Today



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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.



Delta MVCD-Oxitec Public Educational Webinar Series

Today's Agenda

Today's Agenda:

- Global climate change & health risks.
- Evidence for a hotter, wetter future.
- Climate change and invasive species.
- Impacts for mosquitoes in California.
- Your questions, answered.

Documentation, resources, references, and other information are available at californiamosquitoproject.com.

Global Climate Change and Health Risks



- World Health Organization predicts 250,000 more deaths globally per year due to malnutrition, vector-borne disease and heat stress
- There are impacts in other ways too including food and water availability

Photo by [Raphael Wild](#)

NASA Predicts More Intense Climatic Events



- Global climate models predict hurricanes will cause more intense rainfall
- Have an increased coastal flood risk
- Hurricanes that form are more likely to be damaging



Photo by [Jonas](#)



Evidence for a Hotter, Wetter Future

- The U.S., Europe and China have recently experienced some of the hottest temperatures on record
- In some U.S. cities, this year the heat has reached dangerous levels affecting millions of Americans
- In many regions wildfires are more prevalent and destructive than they used to be

Photo by [Ryan Stone](#)

Invasive Species and a Hotter, Wetter Future

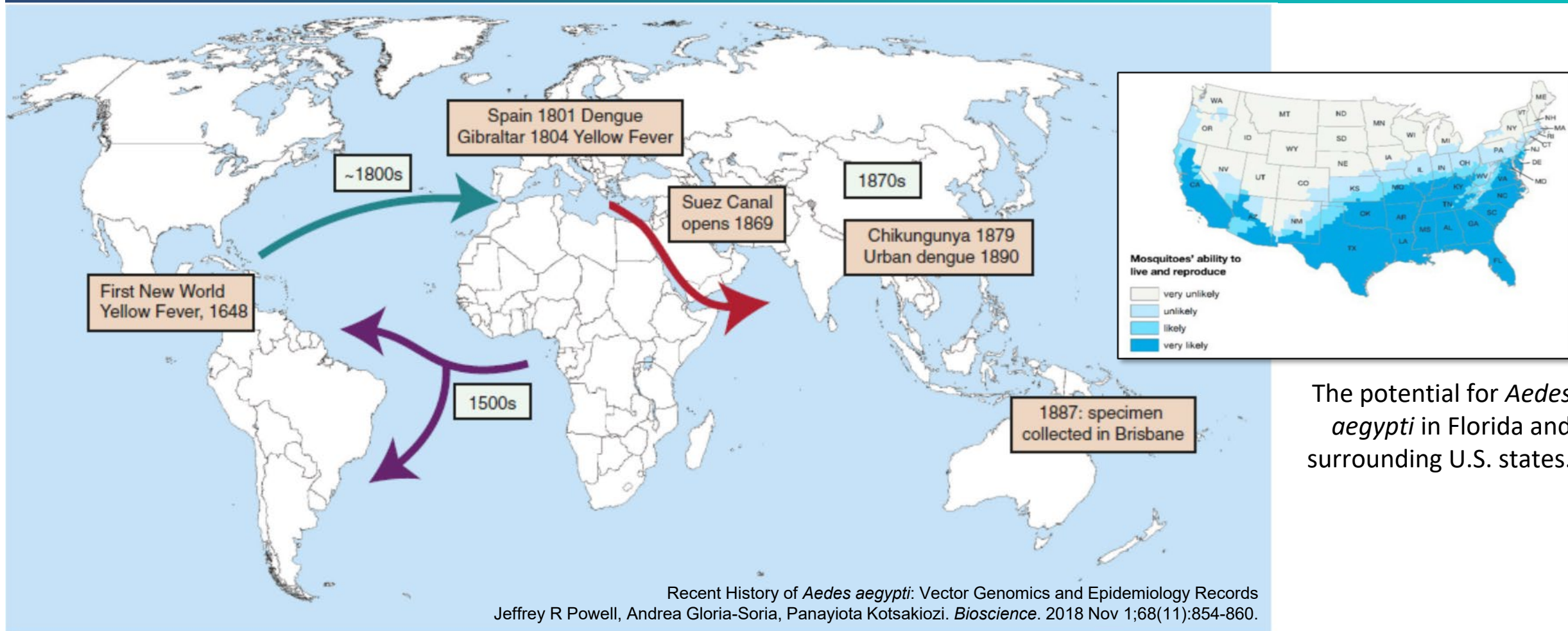
- Many invasive tropical or sub-tropical species may benefit from warmer environments
- Their range is likely to expand northwards as the climate permits year-round establishment



Photo by [Brittney Weng](#)

Aedes aegypti in the United States

Aedes aegypti introduced to the Americas about 500 years ago. In the U.S. it has been spreading north and westward.

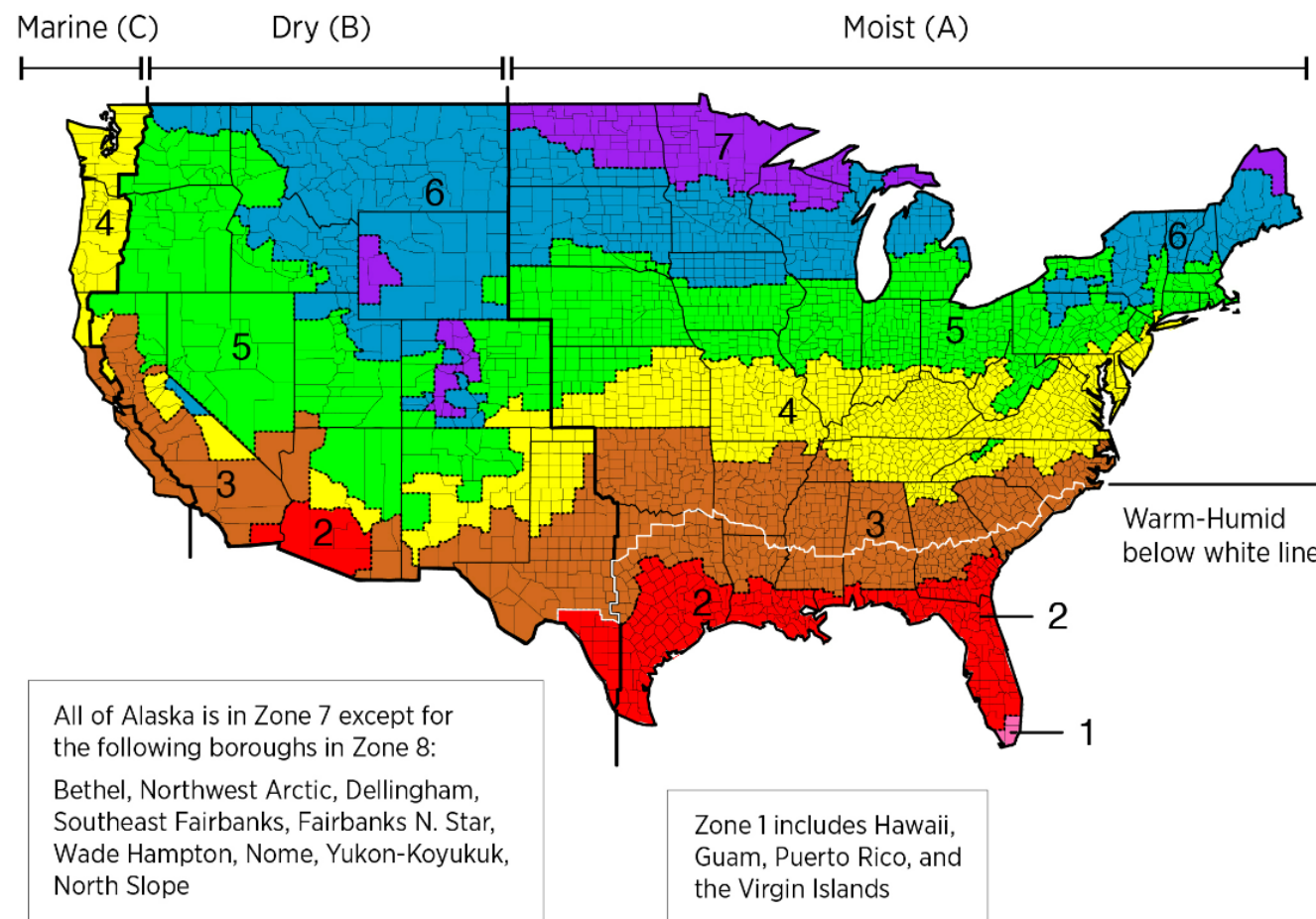


The potential for *Aedes aegypti* in Florida and surrounding U.S. states.

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.

Aedes aegypti in the United States

- Climate zones 1-3 are the primary areas of *Aedes aegypti* establishment
- *Aedes aegypti* can now be found some parts of climate zone 4
- Since 2013, it has established and expanded into 23 counties in California



A Warmer Climate Means More Infectious Bites

- Higher temperatures lead to more generations per season
- Higher temperatures means faster virus development and more infectious females
- Warmer regions will promote the spread of mosquitoes
- Higher rainfall means more places to lay eggs

Climate Change May Affect Mosquito Hosts Too!

- Many birds and mammals are important reservoirs for mosquito-borne viruses
- Many birds serve as reservoirs for mosquito-borne viruses – such as crows, jays, robins, sparrows, finches
- The same is true for deer, squirrels, chipmunks and rabbits
- We don't know what effect climate change could have on individual and population health of these animals



Urbanization Compounds the Threat of *Aedes aegypti*

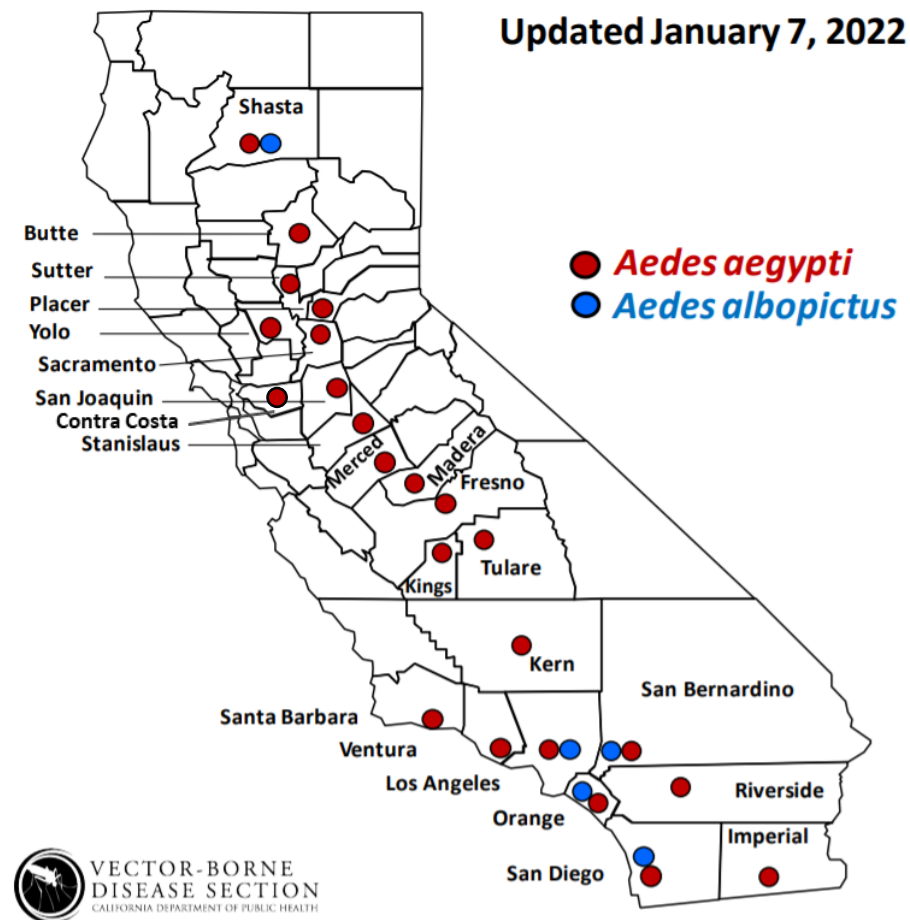
- *Aedes aegypti* prefers humans as hosts and is almost exclusively found in and around our homes
- Increasing urbanization and human population densities promote establishment and expansion of this potentially dangerous mosquito



Why Now, Why California?

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 *Aedes aegypti* control.** Cryptic harborages, oviposition & larval sites, daytime behavior.
- **Insecticide resistance:** Need more tools in our toolbox.



Eleven Districts in California Want To Work With Oxitec

Interested mosquito control districts spanned the state!

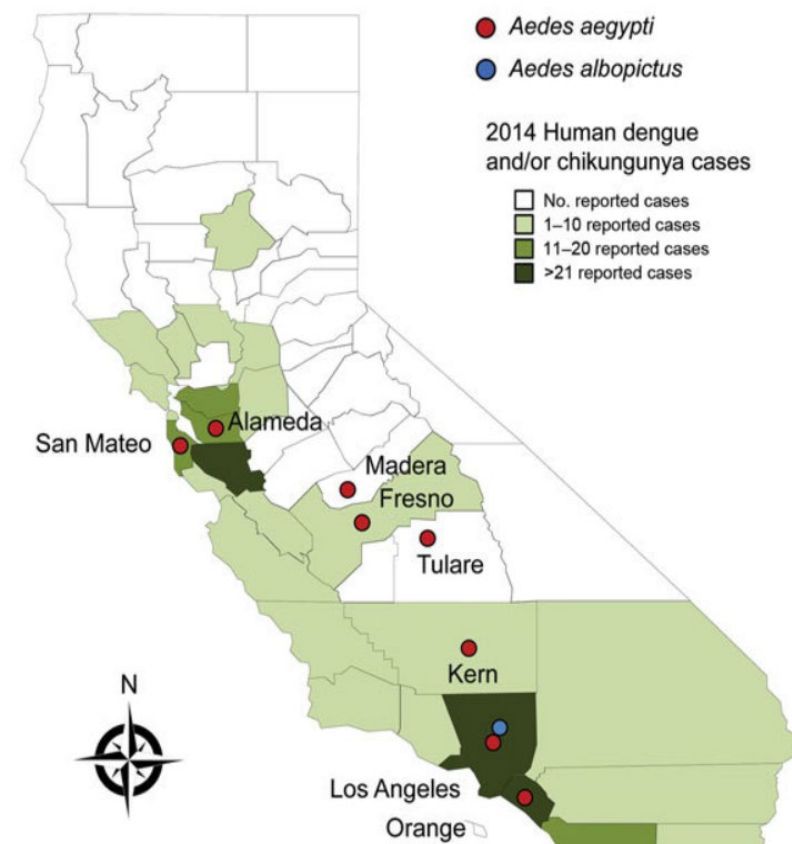
- Each expressed an interest to participate in our pilot projects as **new tools are badly needed**.
- Some counties/districts have had abundant populations of *Aedes aegypti* since **2013-2014**.
- Others detected this invasive pest as recently as 2020.
- **Federal approval received** for pilot projects in CA, now under review with California Department of Pesticide Regulation.
- Subject to state approval, pilot projects to be conducted in **partnership with Delta Mosquito and Vector Control District**.



No Disease Transmission by Aedes in California

Thankfully, no locally acquired cases of dengue or Zika have been detected

- 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.

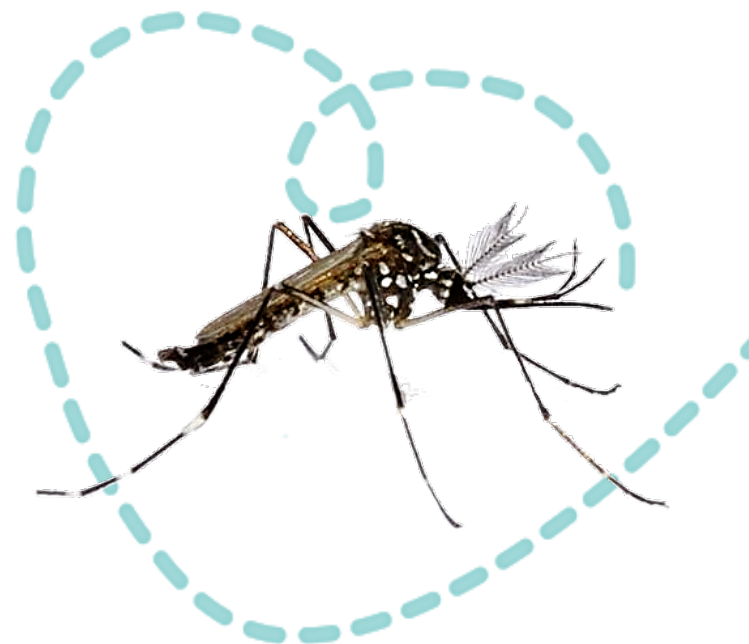


Overview of Oxitec's *Aedes aegypti* Mosquito

✓ 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



Unique combination of characteristics ensures leading safety and performance profile

Questions 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 we publish online at californiamosquitoproject.com, oxitec.com/california and deltamvcd.org)



Thank You



For more information, please visit californiamosquitoproject.com.

Photo by [Sterling Davis](#)