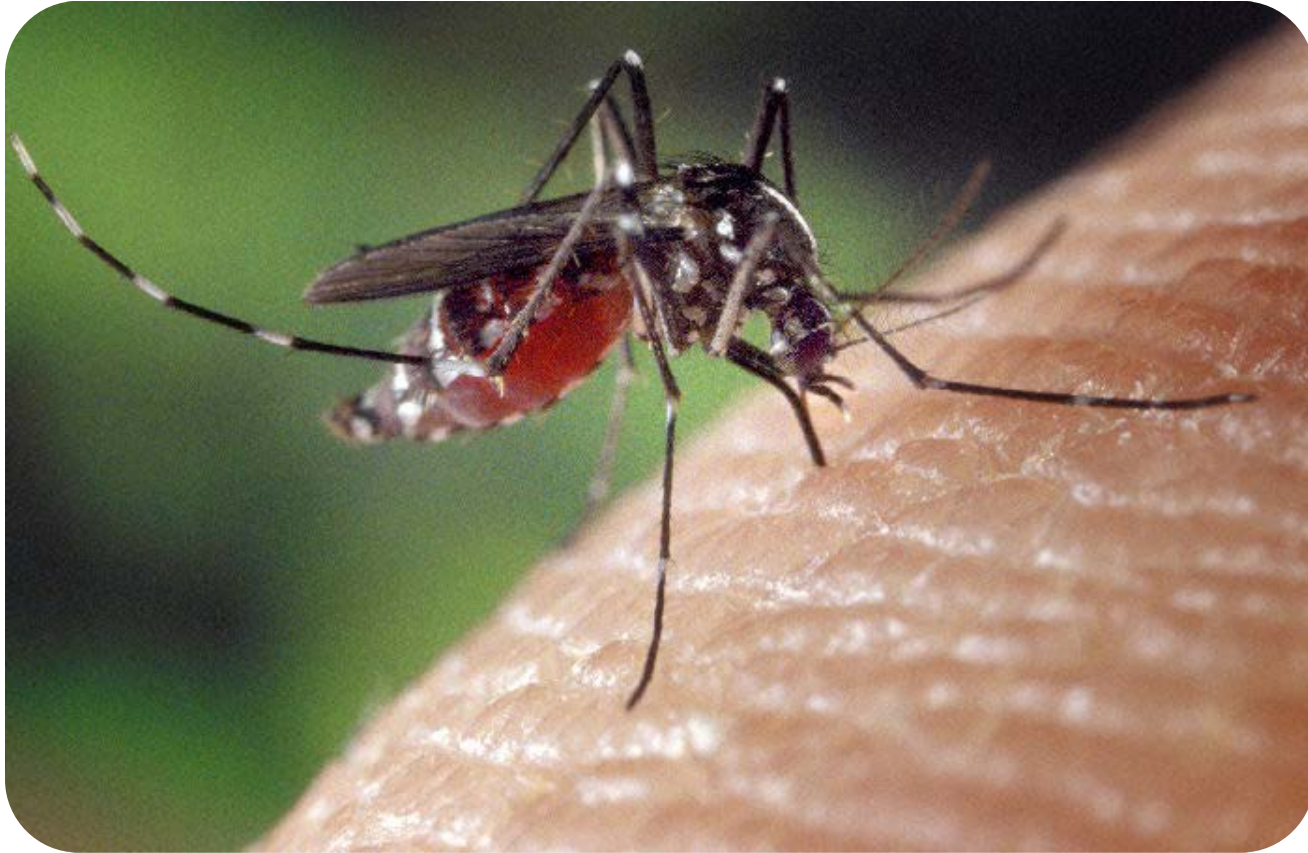


Asian Tiger Mosquito Health Forum



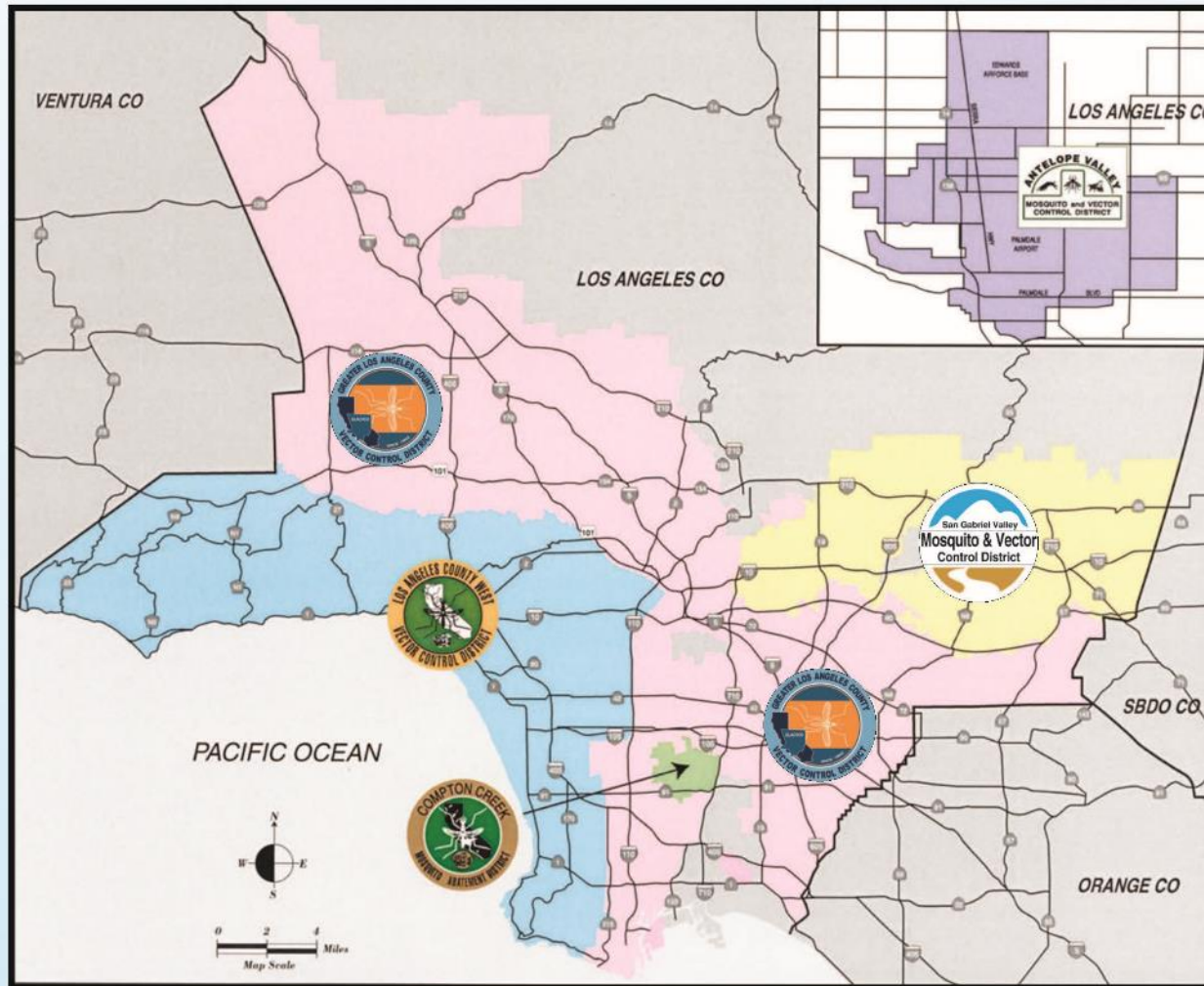
What is Vector Control?

A VECTOR is an insect, rodent or other animal capable of transmitting the causative agents of human disease, or causing human discomfort or injury.

- GLACVCD is an independent special district formed in 1952
- Provide services to:
 - 35 cities and unincorporated areas in Los Angeles County
 - 1338 sq. mi.
 - 6.8 million residents
- Employ 67 full-time employees
- Funded by annual benefit assessment: FY 14/15 - \$7.74/parcel



Vector Control Agencies Protect the Health of Millions



**Greater Los Angeles County
Vector Control District**
(562) 944-9656
www.glacvcd.org

**Los Angeles County West
Vector Control District**
(310) 915-7370
www.lawestvector.org

**Compton Creek Mosquito
Abatement District**
(310) 933-5321
www.comptoncreekmad.org

**Antelope Valley Mosquito
& Vector Control District**
(661) 942-2917
www.avmosquito.org

**San Gabriel Valley Mosquito
& Vector Control District**
(626) 814-9466
www.sgvmosquito.org



Greater Los Angeles County Vector Control District | 562-944-9656 | glacvcd.org

Our Services:

Integrated Vector Management

- **Disease Surveillance**

- Mosquito populations
- Disease transmission

- **Mosquito Management**

- Inspections & service requests
- Source reduction / elimination
- Treatments

- **Outreach & Education**

- Community events
- Elementary education
- Media alerts



INVASIVE *Aedes* SPECIES



- Asian tiger mosquito (*Aedes albopictus*)
- Yellow fever mosquito (*Aedes aegypti*)
- Australian backyard mosquito (*Aedes notoscriptus*)



Three Invasive *Aedes* Mosquitoes at a Glance



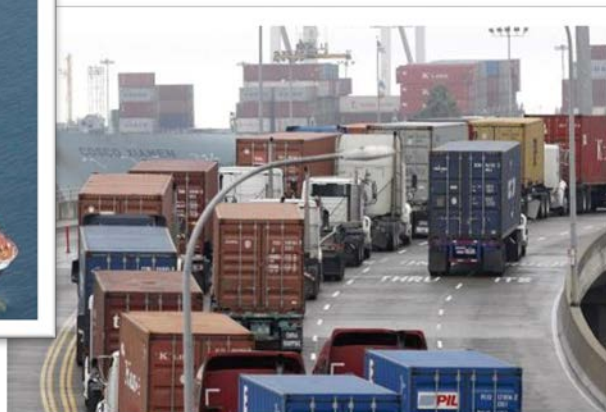
Asian tiger mosquito



Australian backyard mosquito



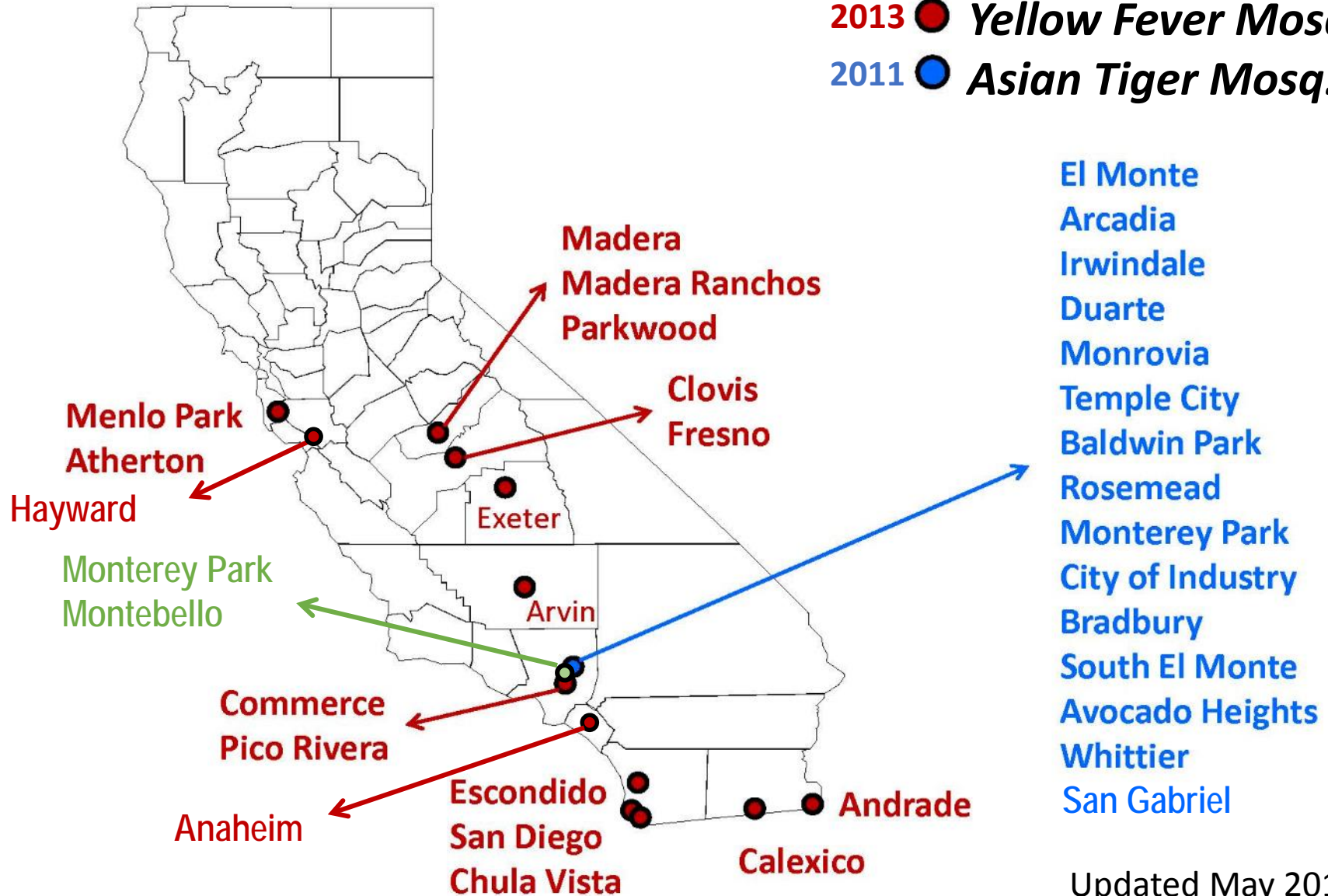
Yellow fever mosquito



Aedes aegypti and *Aedes albopictus* Mosquitoes

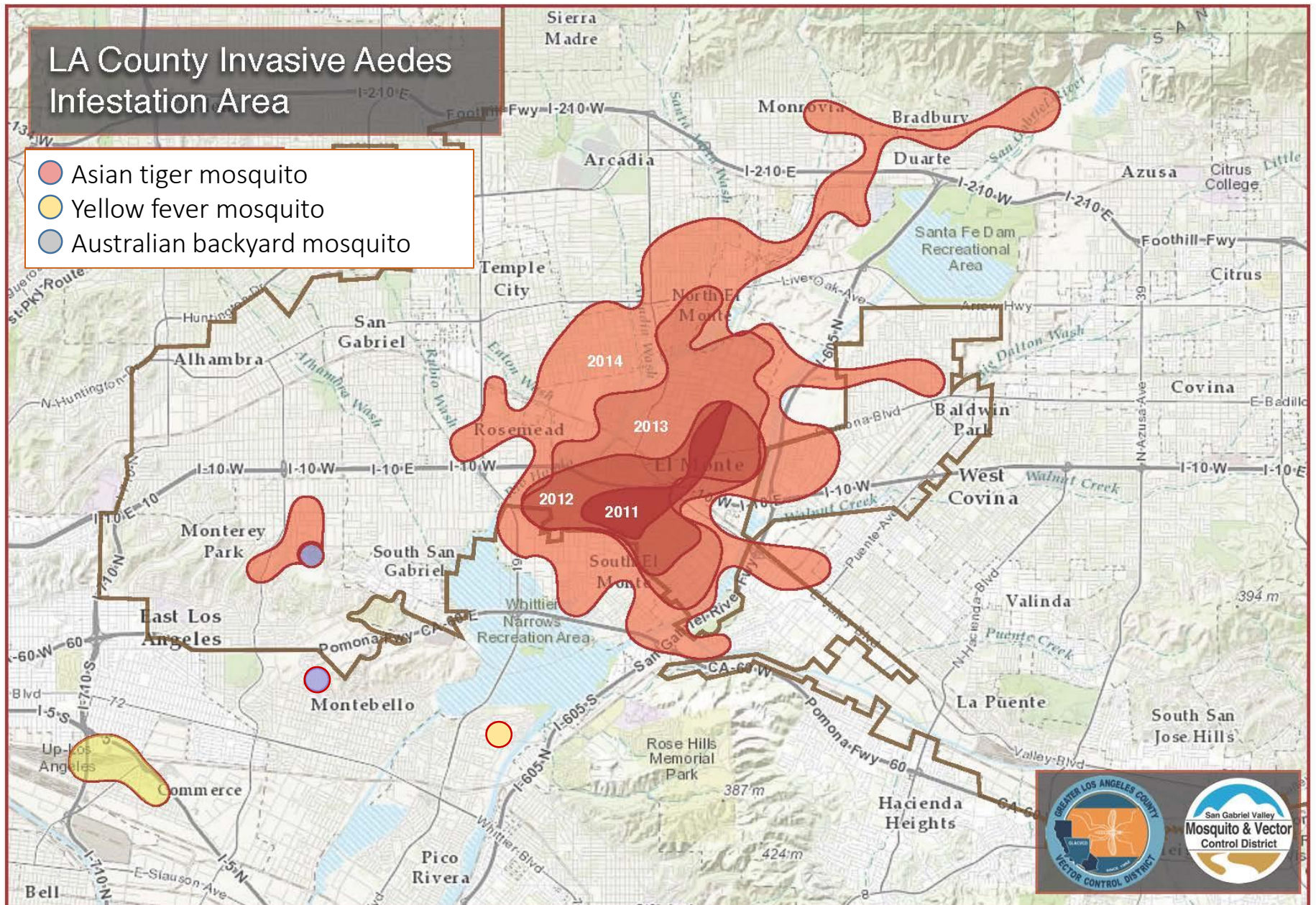
Detection Sites in California, 2011-2015

2014 ● *Australian Backyard*
2013 ● *Yellow Fever Mosq.*
2011 ● *Asian Tiger Mosq.*



LA County Invasive Aedes Infestation Area

- Asian tiger mosquito
- Yellow fever mosquito
- Australian backyard mosquito



A New Public Health Concern

■ Asian Tiger Mosquito

- Identified September 2011 in El Monte, South El Monte
- Aggressive **day-biting** mosquito
- **Small (1/4 inch)** with distinct **black/white banding**
- Capable of transmitting
 - Dengue
 - Chikungunya
 - Yellow fever
 - Canine heartworm





Mosquito-Borne Diseases in Los Angeles County

Rachel Civen, MD
Van P. Ngo, MPH

Los Angeles County Department of Public Health
June 15, 2015





Presentation Overview

- Role of Los Angeles County Department of Public Health
- *Aedes* Mosquito Vectors
- Diseases Transmitted by *Aedes* Mosquitoes: **Dengue, Chikungunya, and Yellow Fever**
 - ✓ What is it?
 - ✓ What are the symptoms?
 - ✓ Who is at risk of getting sick?
 - ✓ How is it treated?
 - ✓ How is it prevented?





Role of LAC DPH

- **85 diseases and conditions reportable by state law**
 - **LAC DPH conducts public health surveillance**
- 
- A large, stylized orange arrow pointing from the left box to the right box, indicating a flow or relationship between the two sets of information.

- Information can be used for planning, implementing, and evaluating control and prevention activities
- Other diseases we monitor
 - West Nile virus infection
 - Murine typhus
 - Lyme Disease
 - Malaria

Aedes Mosquito Vectors



**Yellow fever
mosquito
(*A. aegypti*)**

- Originally from Africa
- Has been detected in multiple CA counties since 2013



**Tiger mosquito
(*A. albopictus*)**

- Native to Southeast Asia
- Responsible for recent outbreaks of dengue in Florida, Hawaii, and Texas

- Both are main transmitters (vectors) of dengue, chikungunya, and yellow fever
- Ongoing infestations of both mosquitoes in LAC



WHAT IS DENGUE FEVER?

- A disease caused by four related viruses (DENV 1-4)
- Transmitted between people by the bite of infected *Aedes* mosquito
 - No person-to-person transmission
- Most common vectorborne disease worldwide – estimated 50 to 100 million cases each year



WHAT ARE THE SYMPTOMS OF DENGUE FEVER?

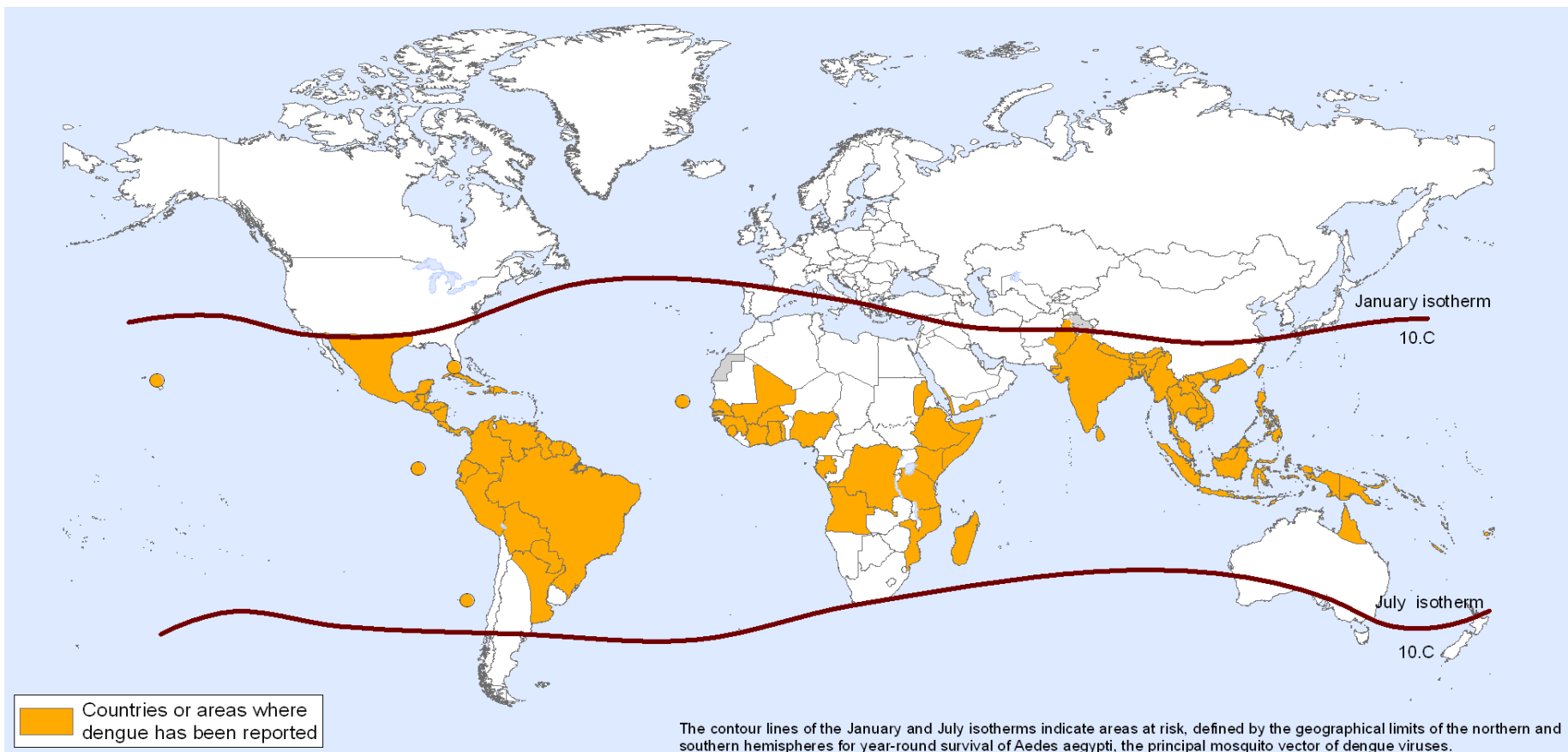
- The main symptoms are high fever, severe headache, severe eye pain, joint pain, muscle and bone pain, rash, and mild bleeding.
- Symptoms typically last 3 to 10 days
- Fatality rate is 1% with early recognition and proper treatment.

WHO IS AT RISK OF GETTING SICK FROM DENGUE?

- Residents of or visitors to tropical and subtropical environments, especially urban and suburban areas
- Increased severe and fatal disease in children under 15 years



COUNTRIES AT RISK FOR DENGUE, 2011



**40% of the world's population live in areas where there
is risk of Dengue**



DENGUE IN THE UNITED STATES (U.S.)

- *Aedes* mosquitoes are commonly found in southern and central parts of U.S.
- Mainly a travel-associated disease in the U.S. and LAC
- Locally-acquired outbreaks as recently as 2009 in Florida



WHAT IS CHIKUNGUNYA (\chik-en-gun-ye)?

- A virus that is spread by the bite of infected *Aedes* mosquito
 - No person-to-person transmission
- From the Kimakonde language, meaning “to become contorted” and describes the stooped appearance of sufferers with joint pain.
- Outbreaks have occurred in Africa, Asia, Europe, and the Indian and Pacific Oceans.
- In late 2013, Chikungunya virus was found for the first time in the Americas on islands in the Caribbean.



WHAT ARE THE SYMPTOMS OF CHIKUNGUNYA?

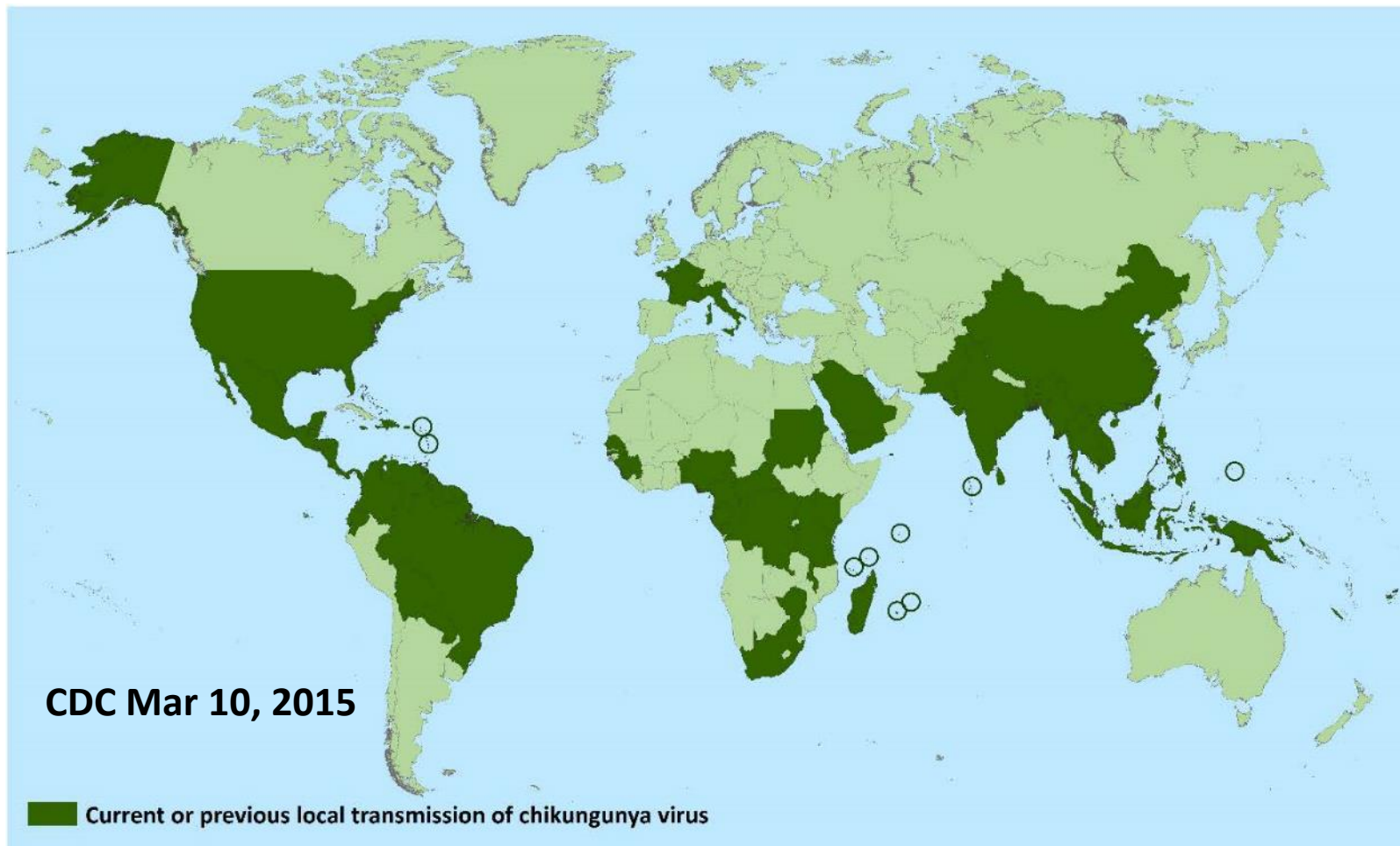
- The most common symptoms are fever and severe joint pain, often in the hands and feet.
- Most patients will feel better within a week.
 - Some people develop longer-term joint pain that can last weeks to months, even years!
- Death is rare (<1%) but can occur, mostly in older adults

PEOPLE AT RISK FOR CHIKUNGUNYA

- Residents of or visitors to tropical and subtropical environments, especially urban and suburban areas
- People at risk for severe disease
 - Infants exposed around the time of birth
 - Older adults (aged > 65 years)
 - Persons with other serious underlying medical conditions (hypertension, diabetes, or cardiovascular disease).



Current Chikungunya Distribution



Now locally transmitted in 44 countries in the Americas, with 1.2 million suspected cases.



Laboratory-Confirmed Chikungunya, United States, 2014

Top 10 States	Travel-Associated Cases (N=2,481) No. (%)	Locally-Transmitted Cases (N=11) No. (%)
New York	740 (30)	0 (0)
Florida	447 (18)	11 (100%)
New Jersey	171 (7)	0 (0)
Massachusetts	158 (6)	0 (0)
Pennsylvania	96 (4)	0 (0)
Texas	81 (3)	0 (0)
California	77 (3)	0 (0)
Maryland	62 (3)	0 (0)
Virginia	55 (2)	0 (0)
Rhode Island	49 (2)	0 (0)

Prior to 2006, Chikungunya rarely identified in U.S. travelers.



Chikungunya in Los Angeles County (LAC), 2014

50 cases in 2014, including 1 fatality

- All travel-associated
 - Mostly Caribbean and Central America
 - None with travel history to Mexico
- Average duration of symptoms (preliminary data) = 31.5 days
 - Up to 127 days
 - Estimated at time of presentation, symptoms may persist longer

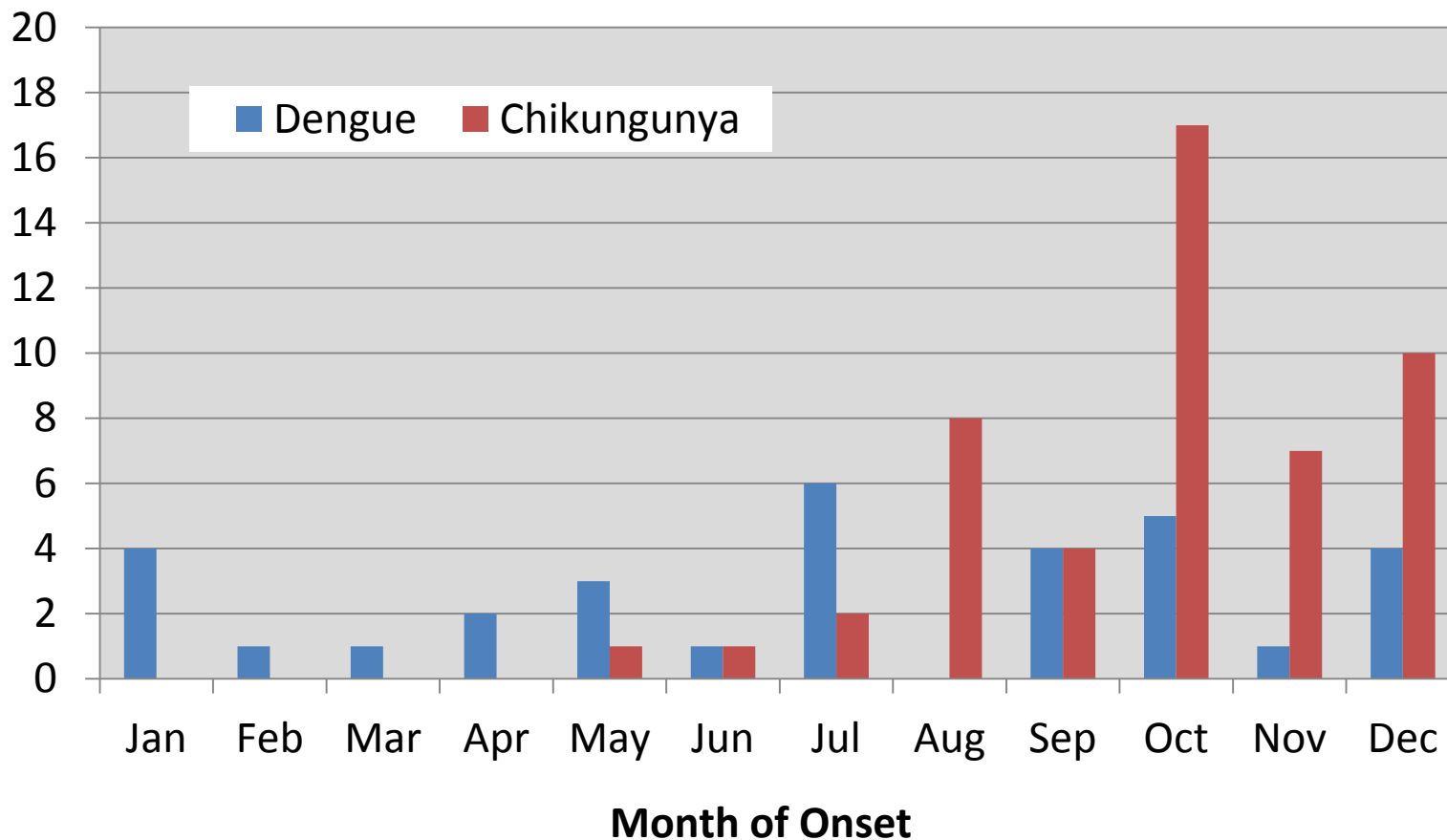
Chikungunya in Mexico

- Travel advisories have been issued by the CDC and California Department of Public Health to take precautions for travel to Mexico





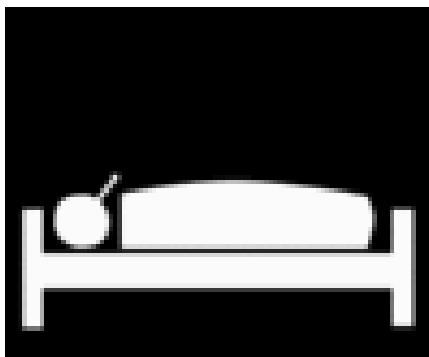
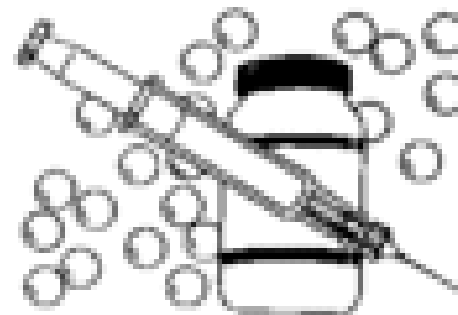
Dengue (N=32) & Chikungunya (N=50) by Onset, LAC 2014



WHAT IS THE TREATMENT?

For Dengue, Chikungunya, or Yellow Fever virus infection or disease, there is no treatment!

- Supportive care only
- Treatment is directed primarily at relieving the symptoms





HOW CAN *Aedes*-TRANSMITTED DISEASES BE PREVENTED?

There is no vaccine to prevent Dengue or Chikungunya!

- **There IS a vaccine to prevent Yellow Fever!**



Aedes-Transmitted Disease Trends and Challenges

- Increasing numbers of Dengue, Chikungunya, and Yellow Fever
- Other mosquito-borne viruses are emerging: recent cases of Zika Virus (related to Dengue) confirmed in Chile and Brazil
- ★ Continued infestation of *A. albopictus* and introduction of *A. aegypti* increase the risk of transmission within LAC
- ★ Need to increase community participation in prevention and control programs.

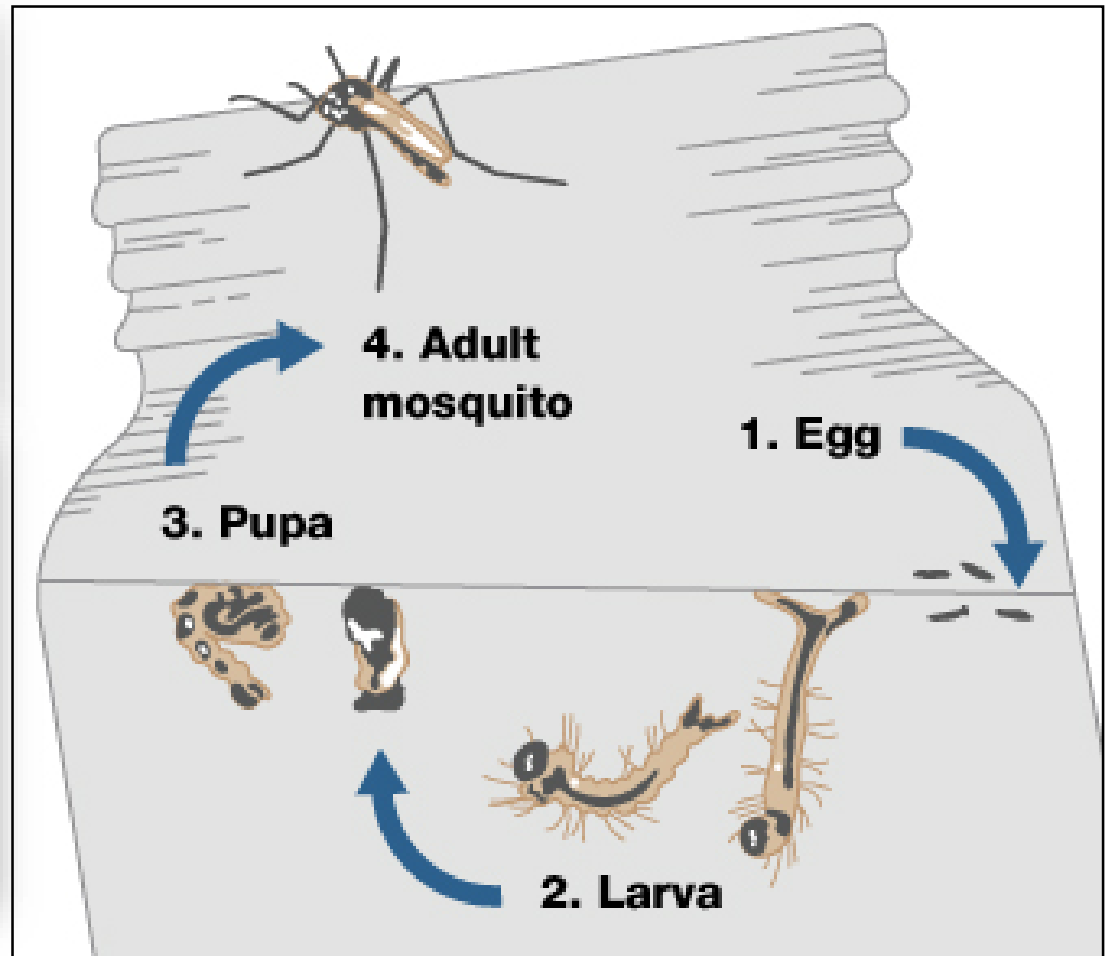


Acknowledgements

- San Gabriel Valley and Greater LA Mosquito and Vector Control Districts
- California Department of Public Health
- Centers for Disease Control and Prevention
- European Centre for Disease Prevention and Control
- Pan American Health Organization
- World Health Organization

— Thank you -

Mosquito Lifecycle



Tiger Mosquito Eggs

- Very tiny!
- Laid along the edges of containers that hold water
- Dry eggs remain viable for years

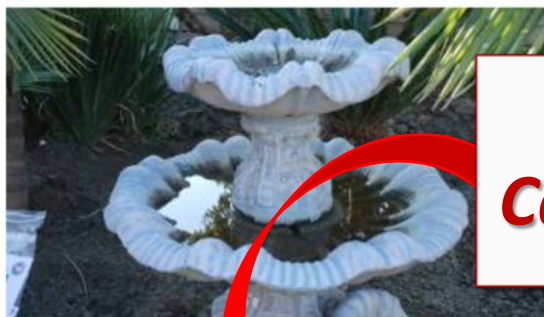
The *biggest* challenge for tiger mosquito eradication



Aedes mosquitoes: 'Container-breeding' Mosquitoes



**Mosquito eggs
*Can live for years!***



Tiger Mosquito *Infestation Overview*

September 2011 – 2 cities (El Monte, South El Monte)

June 2015 - 15 LA County cities/communities

In GLACVCD:

- 3,650+ properties inspected
- 456 total properties infested with Asian tiger mosquitoes
- 238 properties currently infested with Asian tiger mosquitoes
- South El Monte, neighboring unincorporated LA County



As of 12/1/15

Invasive *Aedes* Eradication or Control?

2011-2012 – Eradication!

- Door-to-Door Inspections
- Source reduction / Sanitation
- Treatments
- Education

2013-2014 – Infestation management

- Ongoing neighborhood control & education
- Began discussing sterile male mosquito release

2015 – Shift to long-term control strategy

- Resident responsibility
- Sterile male tiger mosquito release – limited area



Sterile Male Tiger Mosquito Pilot Project

It WORKS

- ✓ Males seek out and find female tiger mosquitoes
- ✓ Males mate with wild females in the neighborhood
- ✓ Eggs laid are sterile/non-viable and will not hatch

It's SAFE

- ✓ Male mosquitoes DO NOT BITE or transfer disease
- ✓ Safe for people and pets
- ✓ Safe for the environment
- ✓ Reduces pesticide use
- ✓ Highly targeted mosquito control

Breaking the Mosquito Life Cycle Naturally



Program Details

Pilot Project Area

- 5.7 acre area – West of Santa Anita Ave between Weaver and Enloe
- Ongoing infestation
- Excellent community partnership



Program Details

Pilot project:

June 23 to October 31

- Ratio of 7:1 = Sterile males to wild males
- Release 5,000 sterile male mosquitoes twice weekly (1,000 per site) in pilot area
- Males only live 1-2 weeks
- Ongoing trapping (eggs and adults)
- Monitor hatch rates of eggs collected



Program Details

What can you expect?

- You will see us often in your neighborhood
- You may **see** more mosquitoes flying in or near the pilot area
- We may ask to inspect your yard
- You will have fewer mosquitoes over time



Program Details

What you will NOT see:

- You will *not* get more mosquito bites because of this program
- We will *never* ask to come *into* your home
- You will *not* be charged



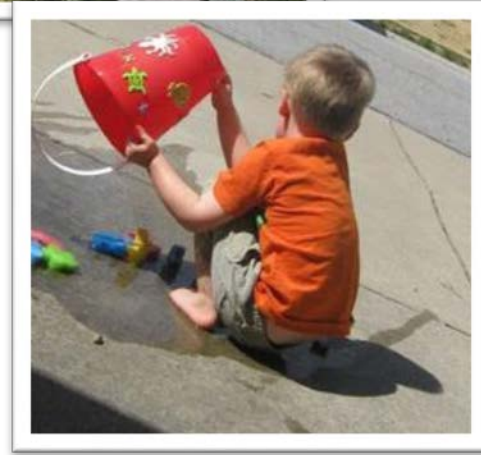
Mosquitoes will lay eggs in **ANY** container that holds water



What You Can Do

We need YOUR help:

- Allow us access to inspect and manage breeding sources
- **Tip and Toss!** Keep your property mosquito-free
- Check your yard carefully every week.
- Look for things that hold water:



Buckets
Old tires
Tire swings
Plant saucers
Decorative pots
Plant leaves

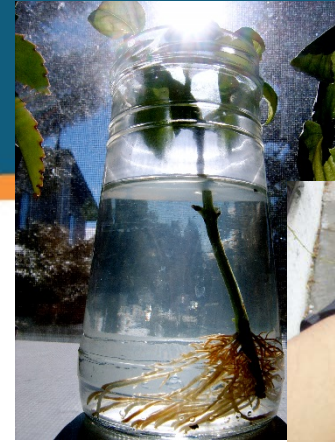
Under bushes
Trash
Recycle bins
Trash cans
Leaky faucets
Vases

Tarps
Yard drains
Bird baths
Decorative fountains
Ponds / water gardens
Outdoor fish / turtle tanks

What You Can Do

We need **YOUR** help:

- **Keep mosquitoes OUTSIDE**
 - Keep door and window screens in good repair
- **Check indoor vases and plant saucers for mosquitoes**
 - Use floral gel
 - Wash vases with soap and water every week
- **Avoid mosquito bites** – especially if you have just returned from areas where viruses are transmitting
 - Use CDC recommended repellent



Contact us!

Greater Los Angeles County Vector Control District

12545 Florence Avenue
Santa Fe Springs

REPORT MOSQUITO PROBLEMS:

(562) 944-9656 or www.glacvcd.org



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