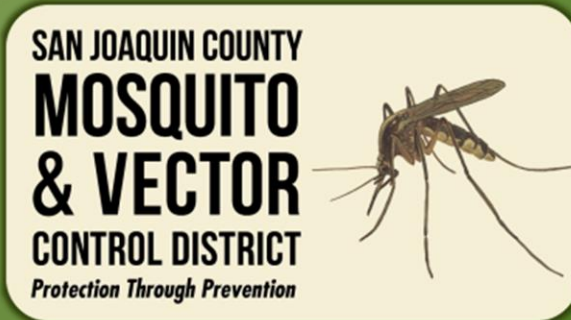


Current Status of the Invasive Mosquito Species, *Aedes aegypti* in San Joaquin County



Shaoming Huang, Ph.D.
Entomologist



What is *Aedes aegypti* – Biting Behavior



Aedes aegypti is a nuisance

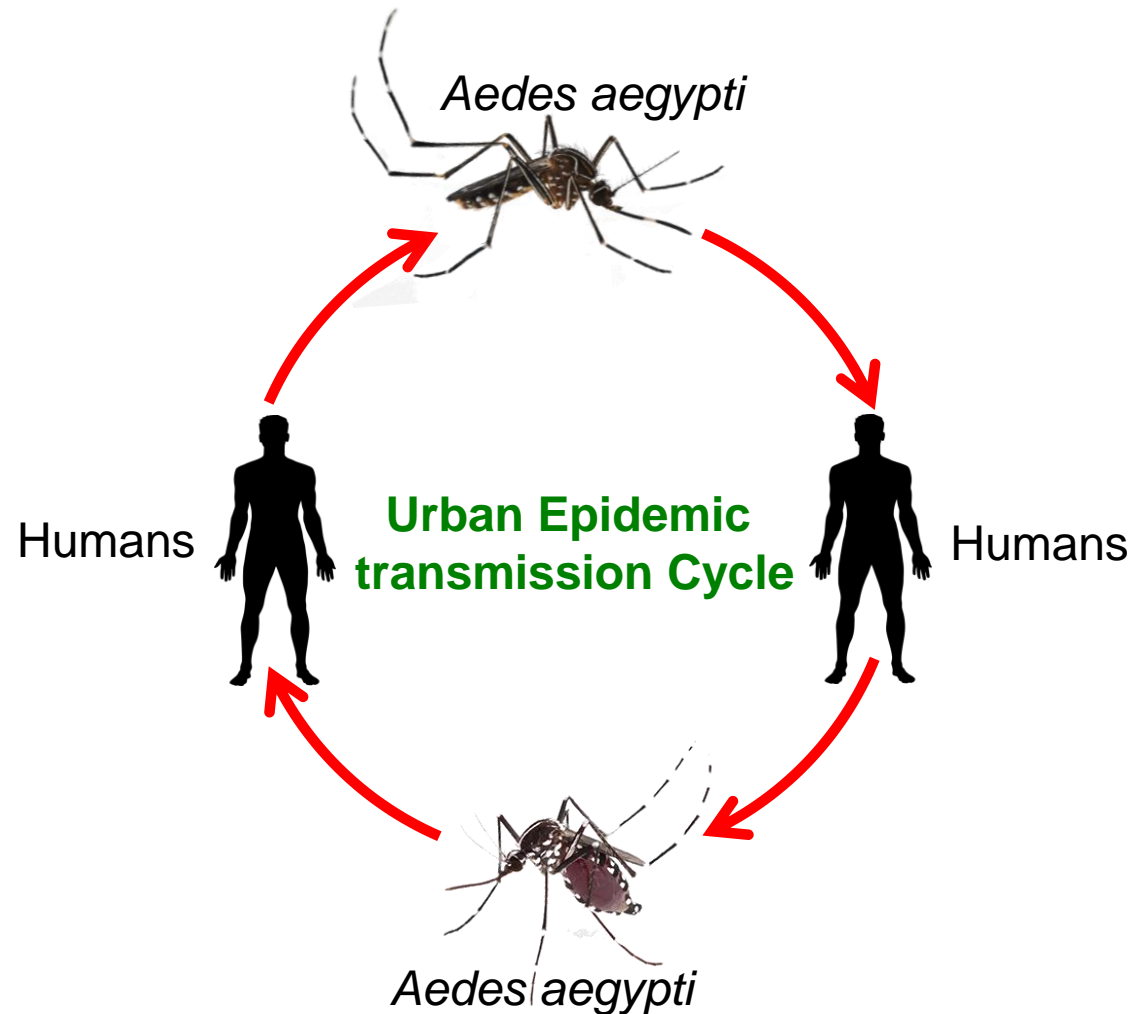
- Daytime vicious and sneaky biter: approaches from behind and bites on the ankles and elbows; follows people until getting a blood meal
- Highly prefers humans, lesser degree domestic mammals; biting pressure is high!



Images: Alex Wild Photography

What is *Aedes aegypti* – Disease Transmission

Aedes aegypti is the primary mosquito species transmitting diseases including Dengue, Zika, Yellow Fever, and Chikungunya

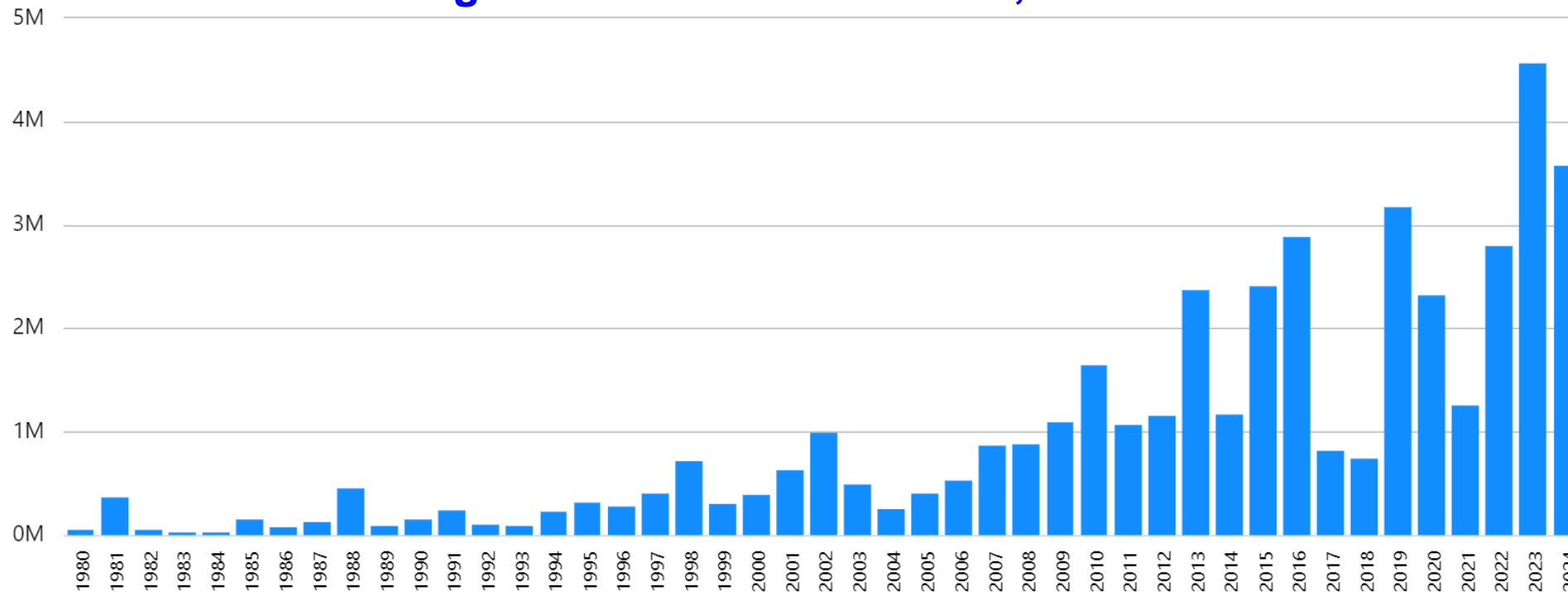


Local transmission is possible in areas where both the diseases and *Aedes aegypti* are present.

What is *Aedes aegypti* – Disease Transmission

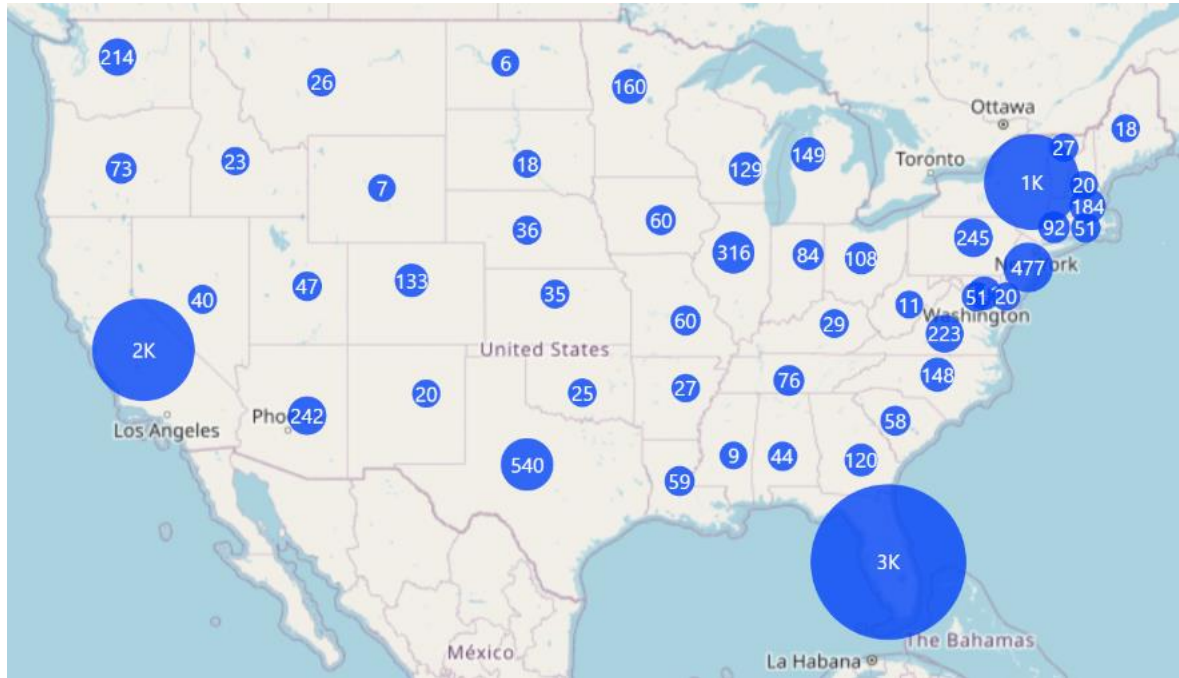
- Dengue outbreaks occur in many countries in tropical and sub-tropical climates
- **WHO Worldwide Estimates:**
 - 40 ~100 million cases per year (3 cases per second!)
 - 25,000 deaths per year
 - Death rate 1-5%

Dengue Cases in the Americas, 1980-2024



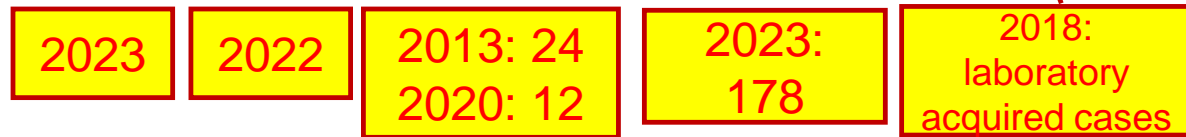
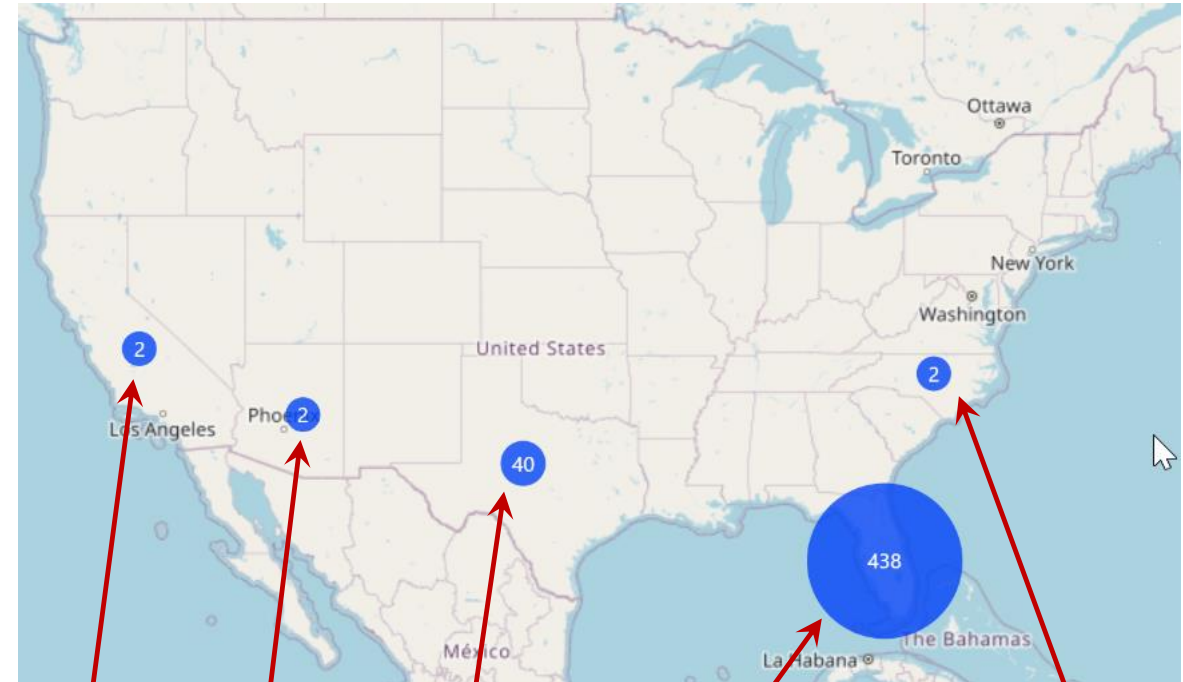
What is *Aedes aegypti* – Disease Transmission

Travel related Dengue cases in the US, 2010 - 2023



San Joaquin County: 18 cases

Locally acquired Dengue cases in the US, 2010 - 2023



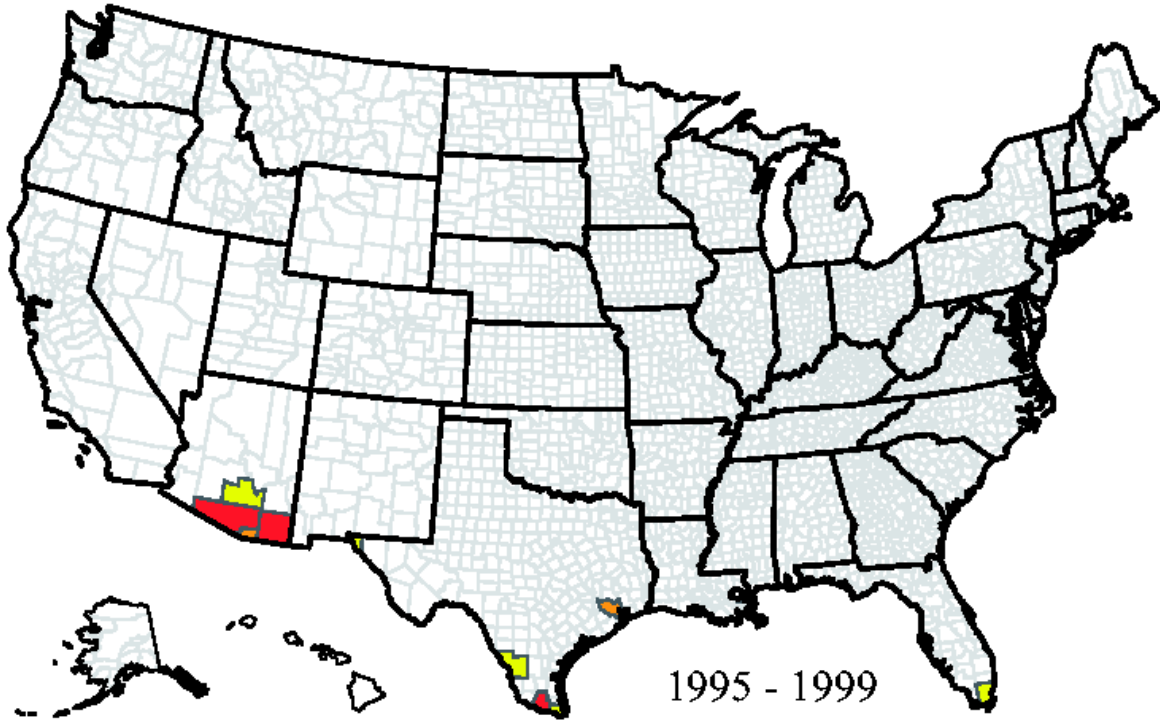
Aedes aegypti – Global Invasion



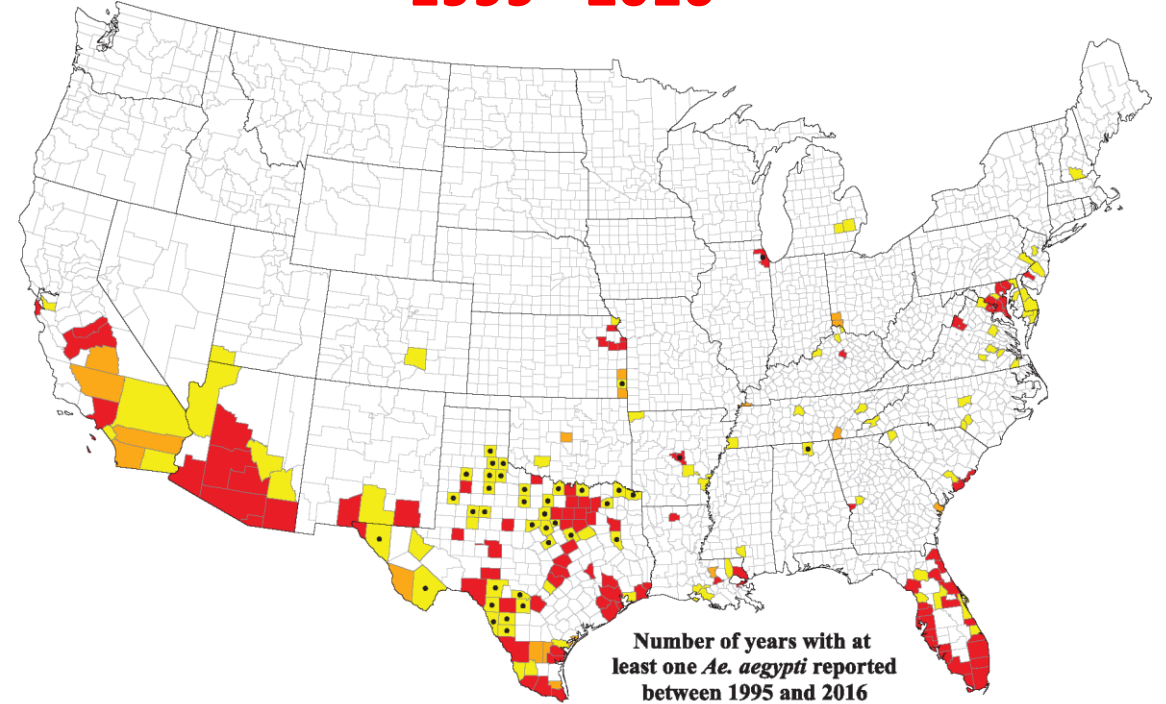
Tabachnick, W. J. **1991**. Am. Entomol. 37: 14–24.

Aedes aegypti – Spread in the US

1995 - 1999



1999 - 2016

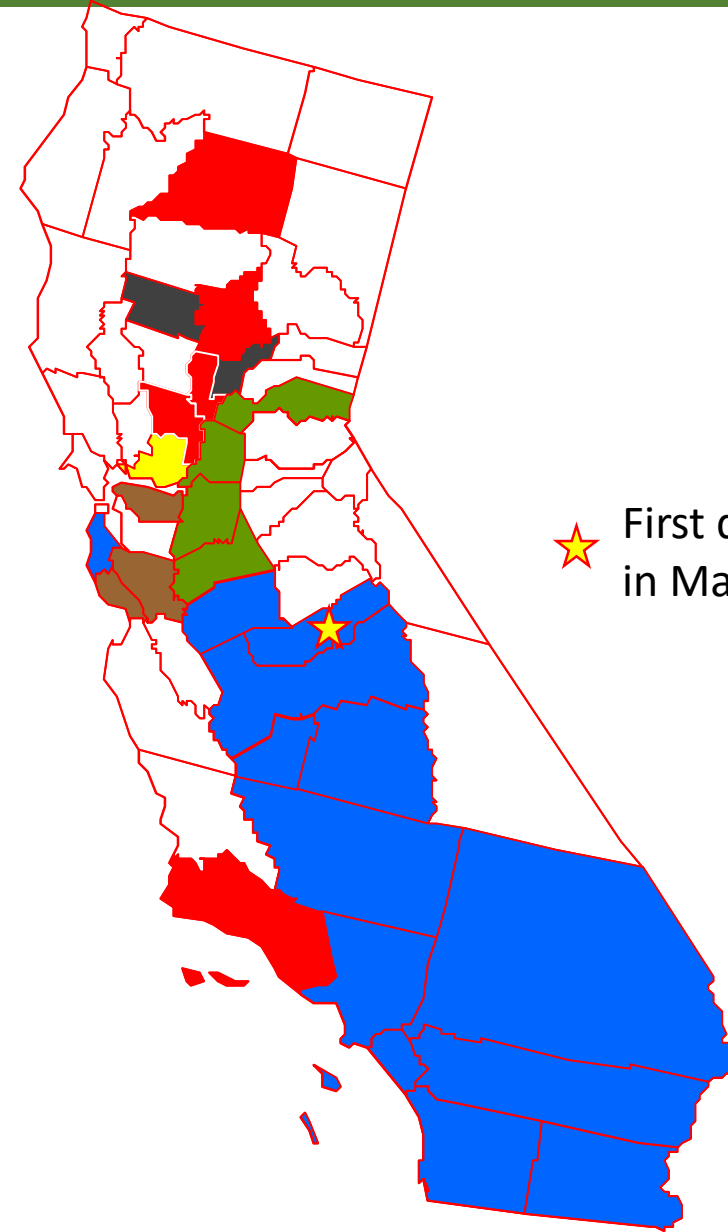


Hahn, M. B., et. al. 2016. J. Med. Entomol. 53(5): 1169-75.

The Spread of *Aedes aegypti* in California

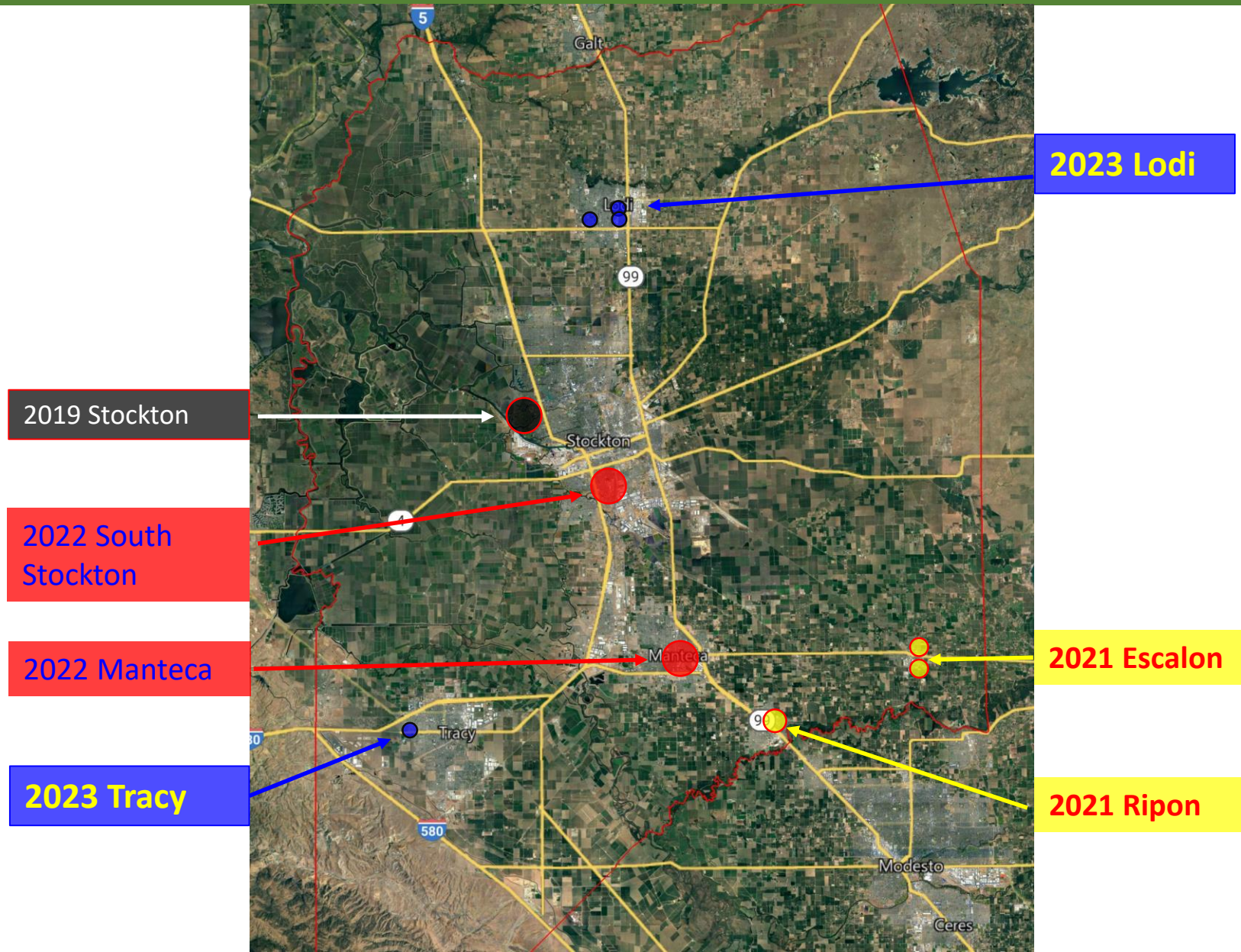


2013 - 2018	From Merced County to the entire southern California region
2019	Stanislaus County San Joaquin County Sacramento County Placer County
2020	Shasta County Butte County Sutter County Santa Barbara County Yolo County Ventura County
2021	Solano County
2022	Contra Costa County Santa Clara County Santa Cruz County
2023	Glenn County Yuba County



★ First detection of *Aedes aegypti* in Madera County

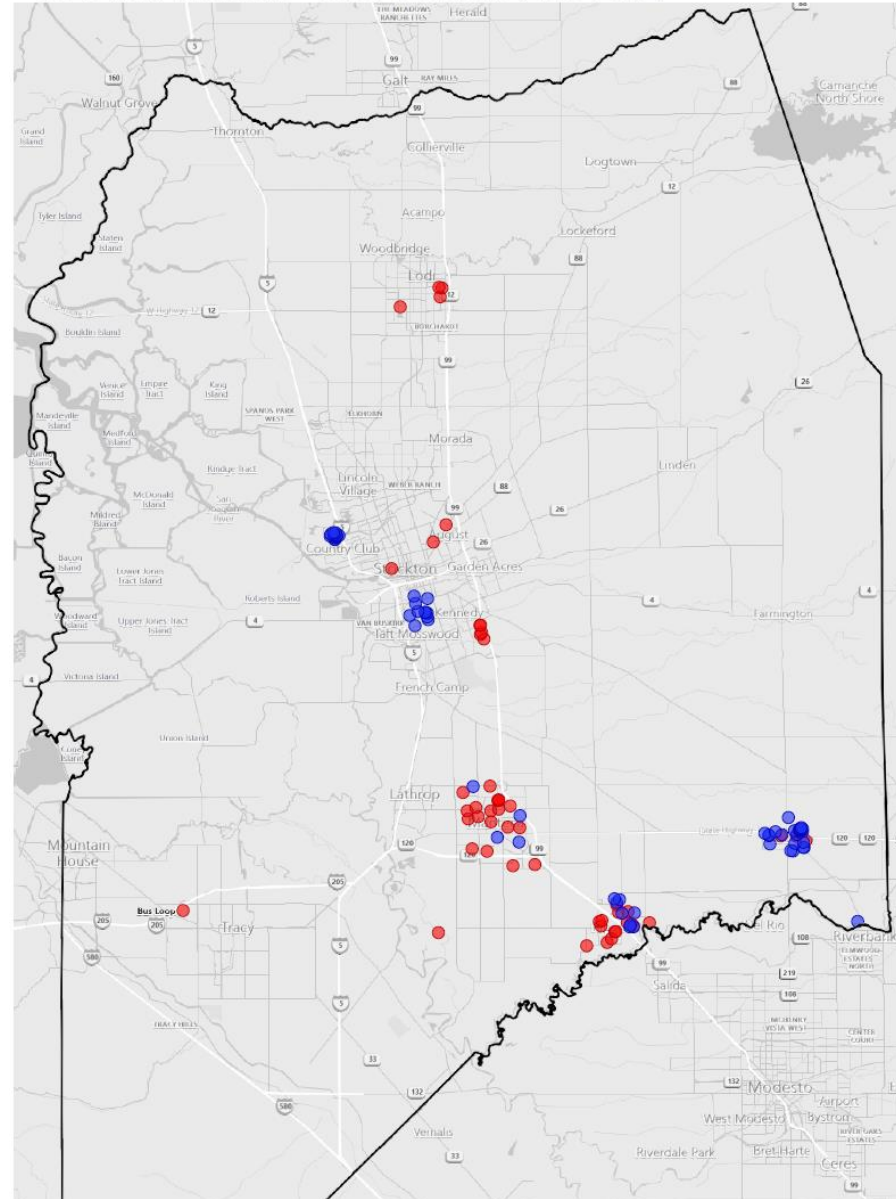
Timeline of *Aedes aegypti* Discoveries in San Joaquin County



Locations with *Aedes aegypti* in San Joaquin County



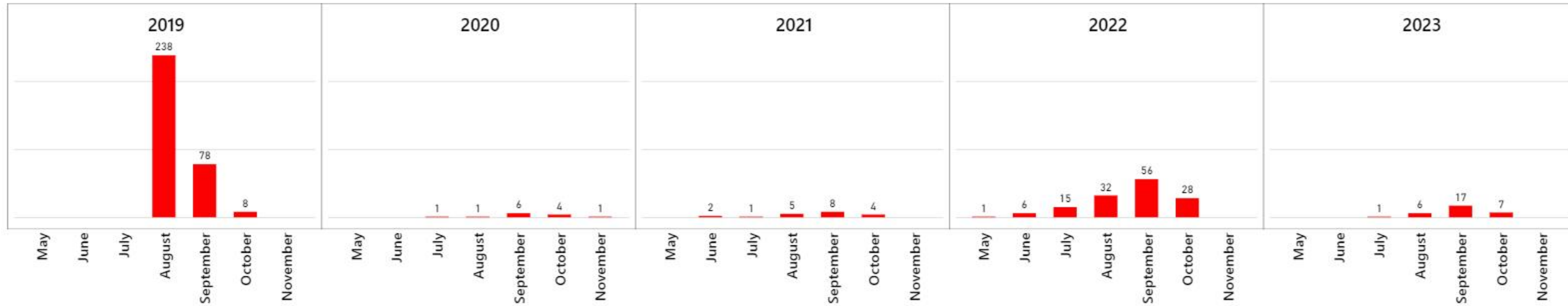
● 2023 New Locations ● Prior Locations (2019-2022)



Aedes aegypti @ Brookside Area, Stockton, 2019-2023

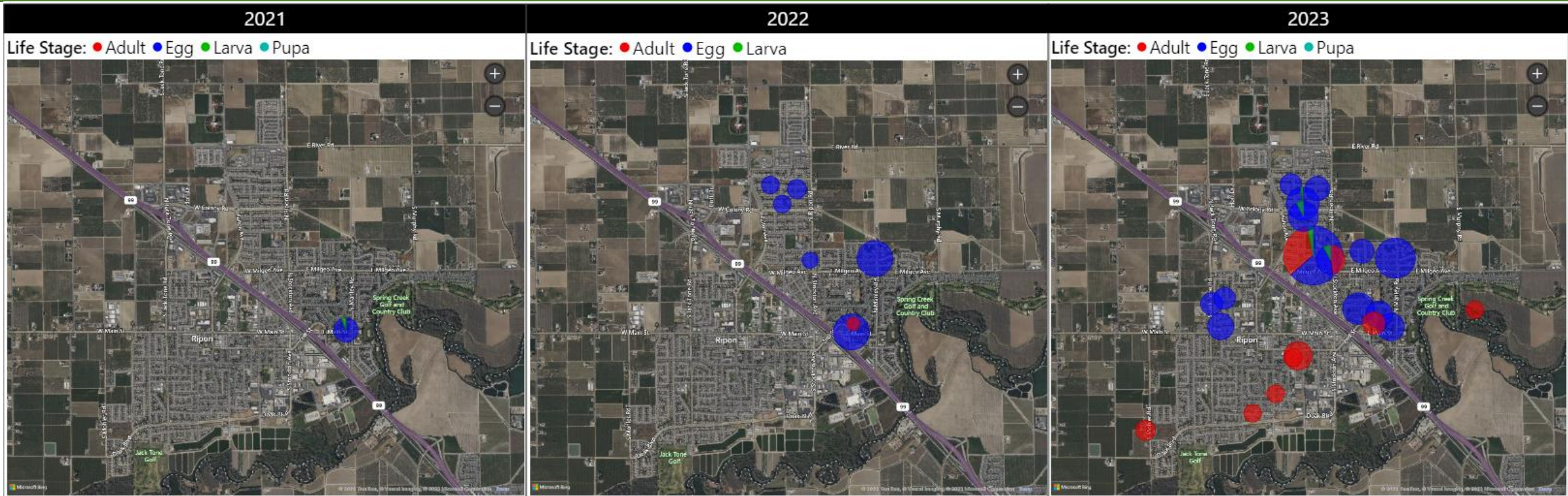


Total Aedes Adults Collected 2019-2023



Early detection and intervention is the key to suppress the population to the lowest level possible!

Aedes aegypti @ Ripon, 2021-2023

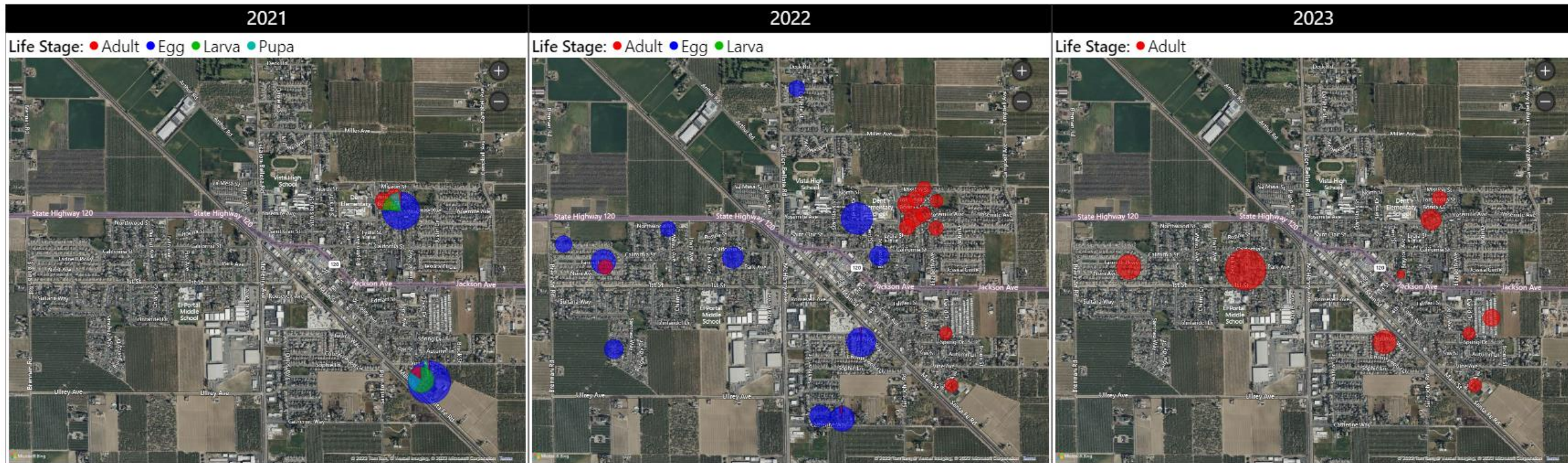


Total Aedes Adults and Eggs Collected

● Adult ● Egg



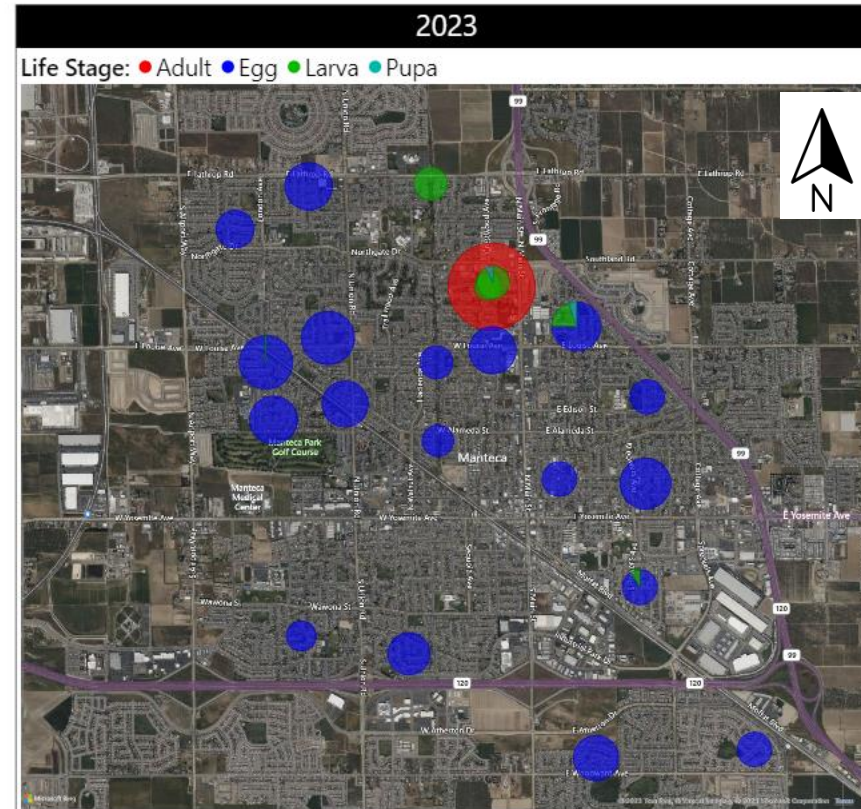
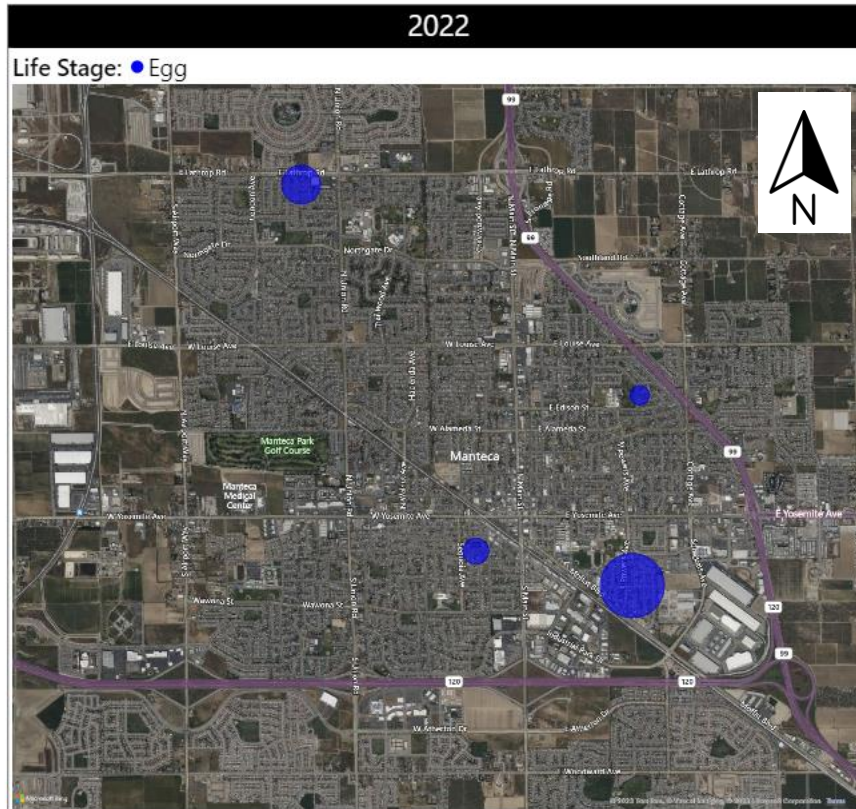
Aedes aegypti @ Escalon, 2021-2023



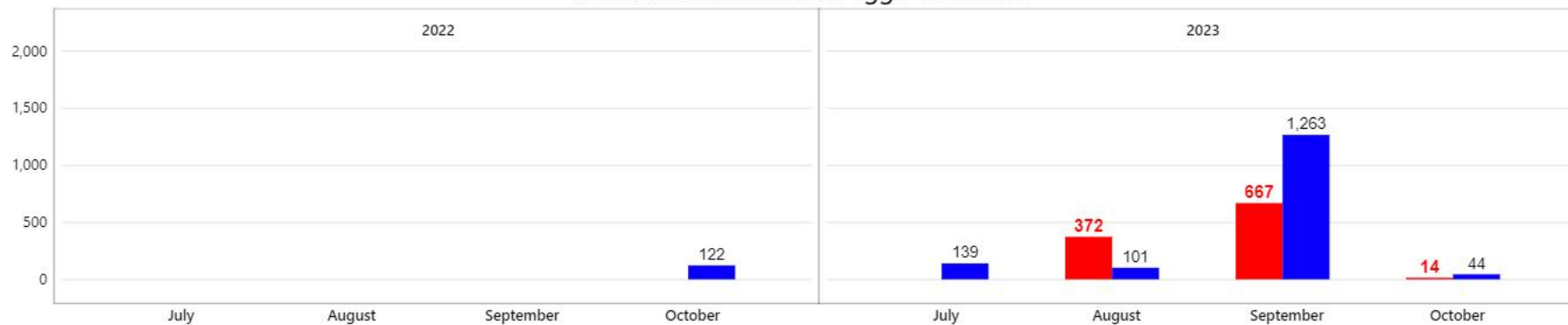
Total Aedes Adults Collected



Aedes aegypti @ Manteca, 2022-2023



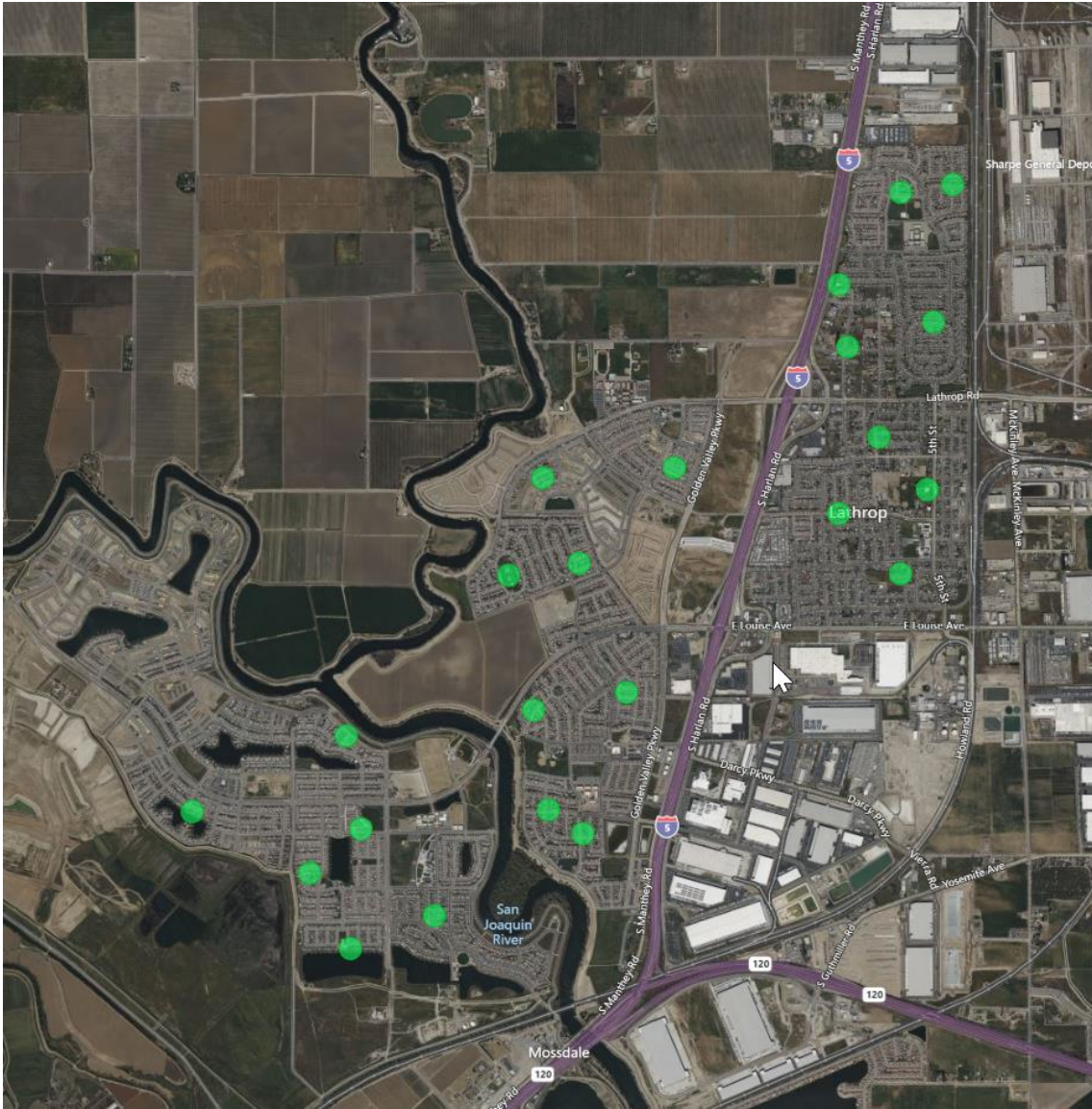
Total Aedes Adults and Eggs Collected



2024 *Aedes aegypti* Surveillance for Lathrop



2024 Locations for *Aedes aegypti* traps



- Trapping will start as early as the first week of May
- Every location will be inspected once a week
- Results will be included in our weekly invasive *Aedes* report

2024 *Aedes aegypti* Surveillance for Lathrop



BG-Sentinel traps for adult collection



Oviposition traps for egg collection



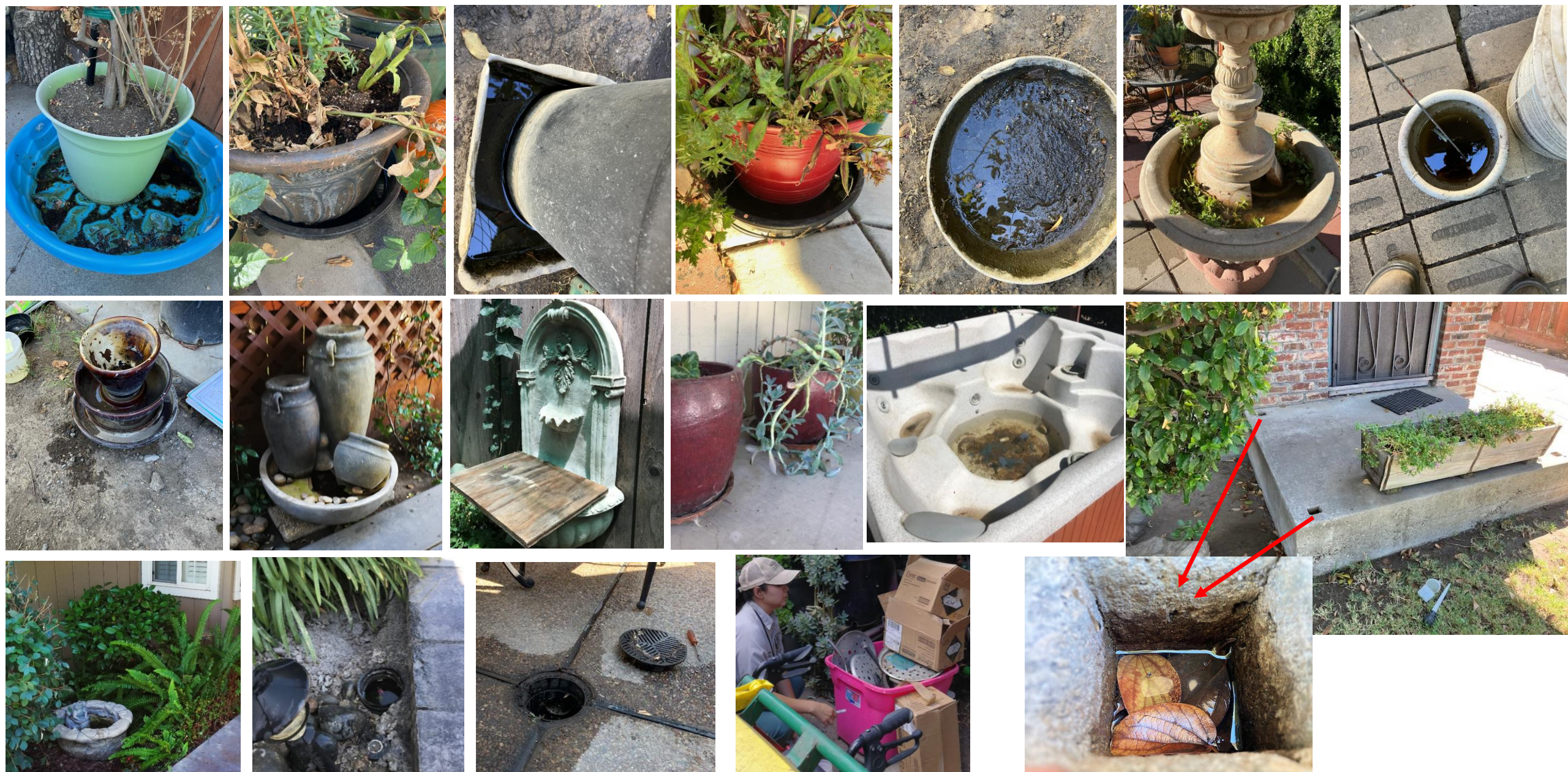
Community Engagement for Mosquito Control



How you can help to reduce *Aedes aegypti* AND other mosquito species:

- Allow us to inspect your property for mosquito breeding
- Allow us to set traps in your front yard to monitor mosquito populations
- Report day biting mosquitoes
- Dump out standing water; Remove or tip over anything that may hold water

Aedes aegypti – Container Breeder

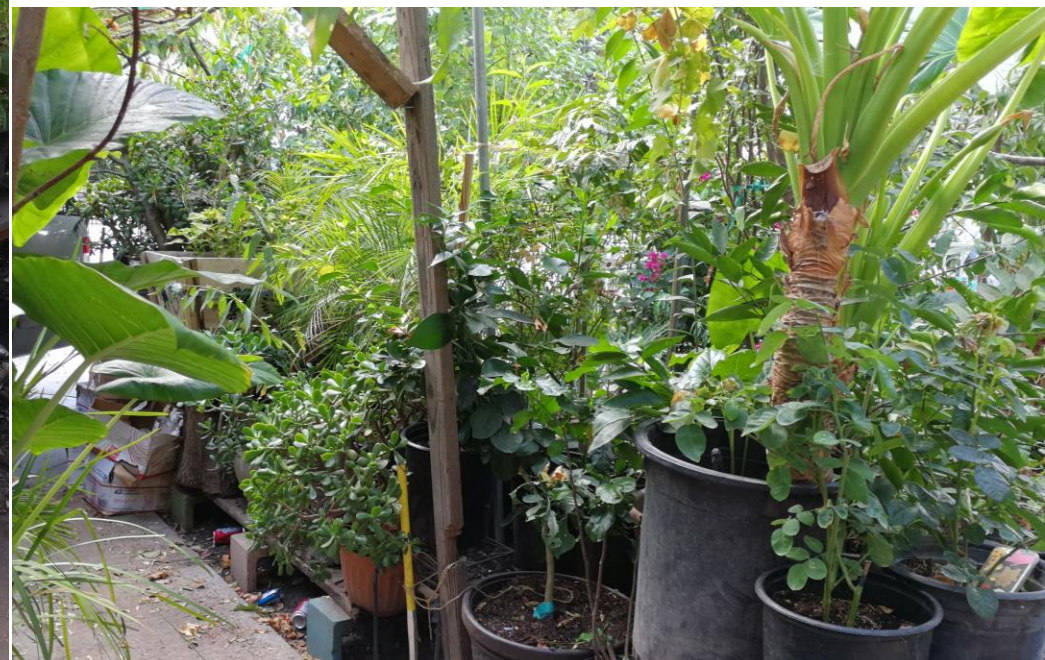
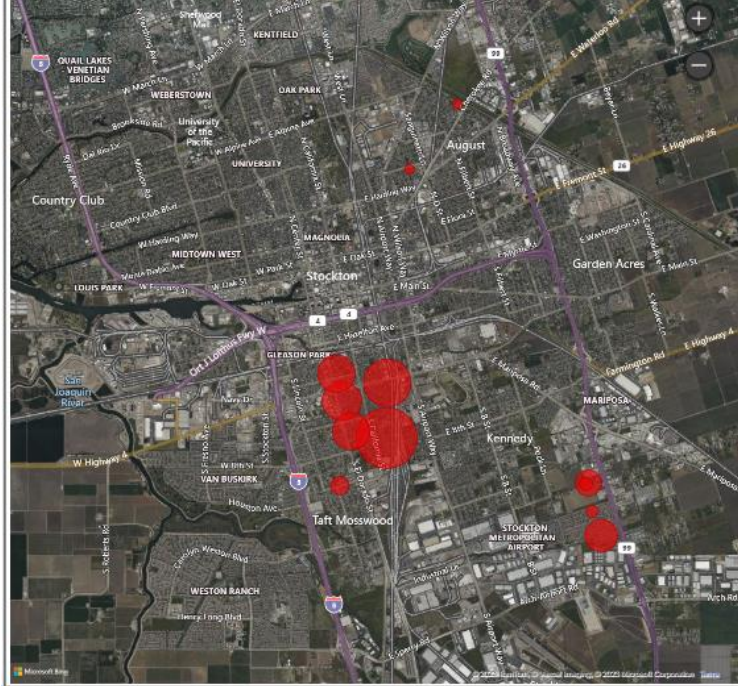


Aedes aegypti @ South Stockton



2023

Life Stage: ● Adult



Community Engagement for Mosquito Control



What you can help to reduce *Aedes aegypti* AND other mosquito species:

- Allow us to inspect your property for mosquito breeding
- Allow us to set traps in your front yard to monitor mosquito populations
- Report day biting mosquitoes
- Dump out standing water; Remove or tip over anything that may hold water
- Screen drains to prevent mosquitoes from laying eggs in the drains
- Tell your neighbors, families and friends to do the same

Questions?

Are you being bitten by mosquitoes during the day or experiencing an unusual number of mosquitoes?

Report mosquitoes to San Joaquin County Mosquito & Vector Control District by calling 209.982.4675 or 1.800.300.4675 or report online at www.sjmosquito.org.



What can I do to avoid mosquito bites?

- Apply a repellent that contains DEET, picaridin, IR3535®, or oil of lemon eucalyptus. Protection time varies on the type and percentage of active ingredient in these products. Make sure you follow label directions!
- Wear protective clothing, such as long-sleeved shirts and pants.
- Check and repair all window and door screens to keep mosquitoes out of your house.
- Minimize outdoor activities if mosquitoes are active.
- Call the District to report daytime biting mosquitoes or significant numbers of mosquitoes.

San Joaquin County Mosquito & Vector Control District

Protection Through Prevention since 1945

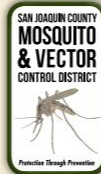
San Joaquin County Mosquito and Vector Control District is an independent special district governed by a board of trustees.

The District covers over 1,400 square miles including seven cities and all unincorporated areas. District operations are based on a concept that utilizes several different approaches to vector control. The District uses state-of-the-art, environmentally sound techniques as a sustainable approach to managing public health pests and vectors, by combining biological, chemical, legal, natural and physical control tactics in a way that minimizes economic, health and environmental risks.

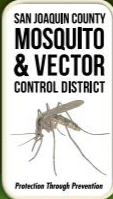
San Joaquin County Mosquito and Vector Control District continues to protect public health through preventive techniques, as well as providing surveillance for potentially new invasive mosquitoes and exotic diseases they may carry.

SERVICES PROVIDED for San Joaquin County Residents (cities and rural areas)

Mosquitoes Inspection & Control	Mosquitofish For Residential & Agricultural Sites
Ticks Inspection, Identification & Education	Public Education Literature, Presentations, Website, News & Spray Alerts



209.982.4675
1.800.300.4675
7759 S. Airport Way
Stockton, CA 95206
District Hours
Monday-Friday
7a.m. to 3:30p.m.
www.sjmosquito.org
@SJmosquitoandvector



INVASIVE AEDES MOSQUITOES

Aedes aegypti



Aedes albopictus



www.sjmosquito.org



Aedes aegypti
Yellow Fever mosquito

This is a small, dark, daytime biting mosquito with stripes forming a harp shape on the mid-body (thorax) and white banded legs. *Aedes aegypti* usually will approach low and behind a person, often biting people's ankles and elbow areas. *Aedes aegypti* were found in San Joaquin County during the summer of 2019.



Aedes albopictus
Asian Tiger mosquito

This mosquito is a small, black, daytime biter with a bright white stripe on the front of the mid-body (thorax) and bright white banded legs. This mosquito is an aggressive, rapid daytime biter.



WHY THE CONCERN?

Aedes aegypti, the Yellow Fever mosquito and its relative *Aedes albopictus*, the Asian Tiger mosquito are invasive mosquitoes in California. They can be a major annoyance and a public health threat. These mosquitoes are potentially capable of transmitting several diseases including Zika, dengue, chikungunya, yellow fever and others.

FACTS-Invasive *Aedes* Mosquitoes:

- Prefers to dwell in urban areas, indoors and outdoors.
- They especially like to bite ankles, wrists and elbows.
- They lay eggs in small sources of water around homes.
- They are very difficult to control.
- They complete their metamorphosis in 7-10 days. The adults live for about 3 weeks.
- Individual eggs are glued to the sides of containers. The eggs are resistant to drying out and can survive without water for many months in the egg form, until water covers them.



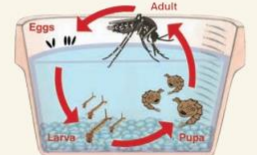
Mosquito development sources that need your attention:

- Remove saucers under plants
- Cover bins, buckets, and tubs with fitted lids
- Remove miscellaneous containers from yard
- Remove old tires from yard
- Fill rims of pots with sand
- Re-direct sprinklers so containers are not filled
- Keep recyclables in covered container(s) that drain
- Properly modify (screen) or remove rain-barrels
- Empty birdbaths/fountains (every 3 days)
- Empty/refill pet drinking water (every 3 days)
- Clean out/drain rain gutters and drains in yard
- Remove plants that hold water in yard
- Keep potential sources dry when not in use



How to inspect your property for mosquito breeding sources:

1. Walk your entire property looking for any container(s) both natural and man-made that can hold a teaspoon of water or more.
2. Separate containers into three categories:
 - A. Those that can be thrown away
 - B. Those that can be scrubbed down and stored in a dry place
 - C. Permanent fixtures that will remain in the yard and require regular inspection



Invasive *Aedes* Mosquito Life Cycle



<https://www.sjmosquito.org/>