

The background of the slide features a light blue gradient. A large, stylized mosquito is centered in the upper half, with its wings spread. To the left, there is a palm tree. In the lower right, there are stylized mountain peaks.

# Wide Area Larvicide Sprays in Coachella Valley

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WALS Summit  
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# Coachella Valley



Agriculture



Wetlands



Resort

**Encompasses  
2,400 square miles**



Suburban

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# WALS – Wide Area Larvicide Sprays

- Applying larvicide to multiple yards from
  - Truck-mounted sprayers
  - Aerial sprayers
- Available larvicides
  - VectoBac WDG (Bti)
  - Altosid Liquid Larvicide (methoprene)

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# Items We Considered

- Time
- Guaranteed treatment
- Cost
- Pesticide questions
- Health concerns
- Noise
- Complaints to other agencies

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# Aerial applications

- County Agricultural Commissioner
  - Product to be used
  - Area
  - Plans to be inspected
- Federal Aviation Administration
  - Congested Area Flight Plan
    - Operating Certificate and Pilot Information
    - Public Notification Information
    - Maps

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# Operating Certificate and Pilot Information

- Pesticides to be used (and why)
- Dates and hours of application – this can be more general

## Application Details:

1. Name and type of materials to be dispensed:  
Vectobac 12AS, Vectobac WDG, Altosid Liquid, Duet, Scourge 18+54
2. Type of pest control work to be accomplished:  
Mosquito Control
3. Proposed Start Date:  
1/1/2018
4. Proposed End Date:  
12/31/2018
5. Hours of Operation:  
All applications will be done in accordance to the biology of the species of mosquitoes to be controlled for the application to be most effective. If daytime applications are deemed necessary, significant additional public and official notifications will be implemented prior to the applications.

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# Notification

## 48 hour Agency Pre-flight Notification

- Application area City or County Police and Fire Departments
- Agricultural Commissioner
- When in designated air space, the appropriate Air Traffic Manager





# Notification

## Public Notification

Information provided below concerns the notification venues, timelines, and advance notice that will be used by the official or governing body authorizing operations to inform the affected public of planned aerial mosquito control missions. Exact names of venues, frequency of notification, and how much prior notice the affected public is given below:

- ❑ **Local TV Stations:** KMIR, KESQ, NESQ, FOX, KUNA, Univision (KVER, KEVC)
- ❑ **Cable TV Station:** Time Warner Cable
- ❑ **Local Radio Stations:** KUUU, KPSI, KCLB, KRHQ, KPLM, KDGL, KDES, KMRJ, KEZN, KJJZ, KPSI, KNWZ, KWXY, KUNA, KLOB
- ❑ **Local Newspapers:** The Desert Sun, Press Enterprise, DesertLocalNews.com, El Informador, La Prensa Hispana
- ❑ **Flyers:** Post disease notification and aerial adult and larval mosquito control product information signs and sandwich boards at the beginning of spray routes and major intersections.
- ❑ **Email:** We send notification via an electronic mailing list to the following: City managers and PR departments; County health and environmental officials; local school boards; local water districts; Burretec Waste; Valley Sanitation; the Living Desert; local chambers of commerce; Palm Springs Cemetery; CV Recreation and Park; CV Resource Conservation; State assemblymen; Torrez Martinez Tribe; Eisenhower Medical Center, JFK, and Desert Regional Medical Center hospitals; and an additional 120 people who have signed up for alerts.
- ❑ **Website:** Post aerial application on our website on our Control Activities webpage <http://www.cvmvcd.org/controlactivities.htm> and in some instances on our homepage.
- ❑ **Telephone:** Board of Trustees, County Supervisor, and affected City Managers.

Describe how much advance notice is given to the affected public before an operation: **24-48 hours prior to event** when possible.

Describe the timeline and/or frequency public notice is posted: **Prior to each mission.**

*I agree that our agency uses the above listed venues to inform the affected public of planned aerial mosquito control missions.*

Agency Name: Coachella Valley Mosquito and Vector Control District

### CVMVCD TO CARRY OUT LARVAL MOSQUITO CONTROL BY HELICOPTER



PRSRT STD  
ECRWSS  
U.S. POSTAGE  
PAID  
EDOM RETAIL

Dear Resident,

The Coachella Valley Mosquito and Vector Control District will use a helicopter to apply mosquito larval treatments over your area, where *Aedes aegypti*, an invasive mosquito species, has been detected. Residents may choose to stay indoors during and for 30 minutes after application as a best practice to reduce exposure.

This mosquito species is not native to the U.S. and is capable of transmitting viruses including chikungunya, dengue, and Zika. While these viruses are not currently transmitted locally, we want to rid the Valley of the species to reduce the risk of transmission in the future. Once established, this mosquito species is difficult to get rid of.

Larval control targets mosquitoes in the water using a naturally occurring bacterium to kill mosquito larvae before they emerge into biting adults. The product, VectoBac® WDG, is environmentally friendly and has no effect on people or pets at the amounts used for mosquito control. It is registered with the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation. For more information on larval control and future application dates, please visit <http://www.cvmvcd.org/controlactivities.htm>. Call the District at (760) 342-8287 to report standing water and learn how to rid your yard of standing water.

Coachella Valley Mosquito and Vector Control District | 43-420 Trader Place | Indio, CA 92201

Local  
Postal Customer

DATE: July 21 or 22  
TIME: 4-7AM  
ROUTE MAP:



### CVMVCD LLEVARA A CABO CONTROL DE LARVAS DE MOSQUITO POR HELICOPTERO



Estimado Residente,

El Coachella Valley Mosquito and Vector Control District utilizará un helicóptero para aplicar tratamientos de larvas de mosquito sobre su área donde se han detectado *Aedes aegypti*, una especie de mosquito invasiva. Los residentes pueden optar por permanecer en el interior durante y 30 minutos después de la aplicación como una buena práctica para reducir la exposición.

Esta especie de mosquito no es nativo de los Estados Unidos y tiene la capacidad de transmitir los virus incluyendo chikungunya, dengue, y Zika. Mientras que estos virus no se transmiten actualmente a nivel local, queremos eliminar la especie en el Valle para reducir el riesgo de transmisión en el futuro. Una vez establecida, esta especie de mosquito es difícil de eliminar.

Control de larvas afecta mosquitos en el agua utilizando una bacteria de origen natural para matar las larvas de mosquitos antes de que emerjan en adultos que pican. El producto, VectoBac® WDG, no es nocivo para el medio ambiente, no tiene ningún efecto sobre las personas o los animales domésticos en las cantidades utilizadas para el control de mosquitos.

FECHA: 22 o 21 de Julio  
HORA: 4-7AM  
MAPA DE RUTA:



Está registrado en la Agencia de Protección Ambiental Departamento Regulación de Pesticidas de California. Para obtener más información sobre el control de larvas y las futuras fechas de aplicación, por favor visite <http://www.cvmvcd.org/controlactivities.htm>. Llame al Distrito al (760) 342-8287 para reportar agua estancada y para aprender como librar su jardín de agua estancada.

Coachella Valley Mosquito and Vector Control District | 43-420 Trader Place | Indio, CA 92201





# Working with the Media



- Scouted a staging area
- Had staff on hand to answer questions
- 3 news teams with stories filed for 5 outlets – English and Spanish!





# The Response?



**Correcaminitos** shared City of Coachella's post.

June 28 at 4:44pm · 🌐

For those in the area of Coachella. How does this affect those with asthma or those with compromised immune systems or the elderly or pets?

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ig the  
icres  
eet.



**City of Coachella** For more information, please contact Coachella Valley Mosquito & Vector Control District directly at (760) 342-8287.

Like · Reply · June 28 at 4:58pm



**Coachella Valley Mosquito & Vector Control District** Apologies for the late response. The product, VectoBac® WDG, is environmentally friendly, approved for application on organic crops, and registered with the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation. The active ingredient in this product is *Bacillus thuringiensis israelensis* (Bti), a microbe found naturally in soil. Risk to the general public from the use of Bti is minimal. It has no effect on people, pets, plants, or wildlife at the amounts used for mosquito control. People with pre-existing allergies may want to avoid exposure during and immediately after the application as a best practice. Please visit the District website to check out our FAQ and let us know if you have more questions. <http://www.cvmvcd.org/press/aeriallarvalcontrolFS.pdf>



**Jessi Goodman** I just talked to my friend who works for vector control in Florida, they've been doing the aerial applications for awhile there and haven't had any adverse events reported.

Like · Reply · 👍 1 · June 28 at 5:28pm



**Correcaminitos** Thanks for that piece of information. I just feel we need to be critical of whatever is going to be released into the air. Asthma is so bad here already so air quality concerns me.

Like · Reply · 👍 1 · June 28 at 5:48pm





# Measuring Efficacy

- Bioassay cups
  - Results within a week
  - Determine where along a route there are issues
  - Need living mosquitoes
  - Time-consuming
- Adult mosquitoes in traps
  - Results match the goal
  - Delayed results (larvicide, not an adulticide)
  - Placement of traps within the area (edge effects)



# Bioassay Cups at Houses

open



25% covered



100% covered



50% covered



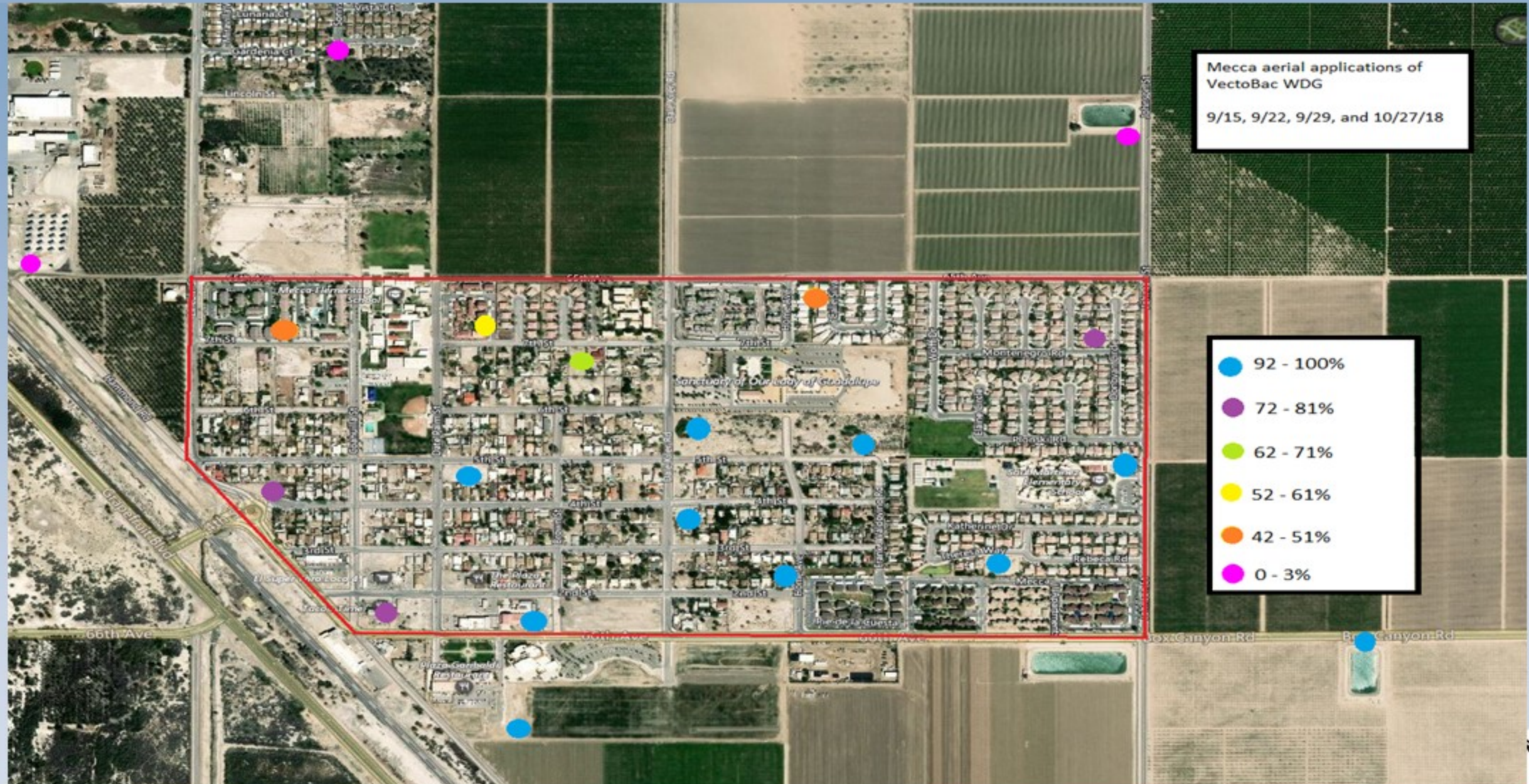
- Cups placed day prior
- Cups retrieved 1+ hours after application
- Rinsed and frozen
- ~100 mL DI water + 15 larvae; fed

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# Mecca 2019 – average of 4 applications

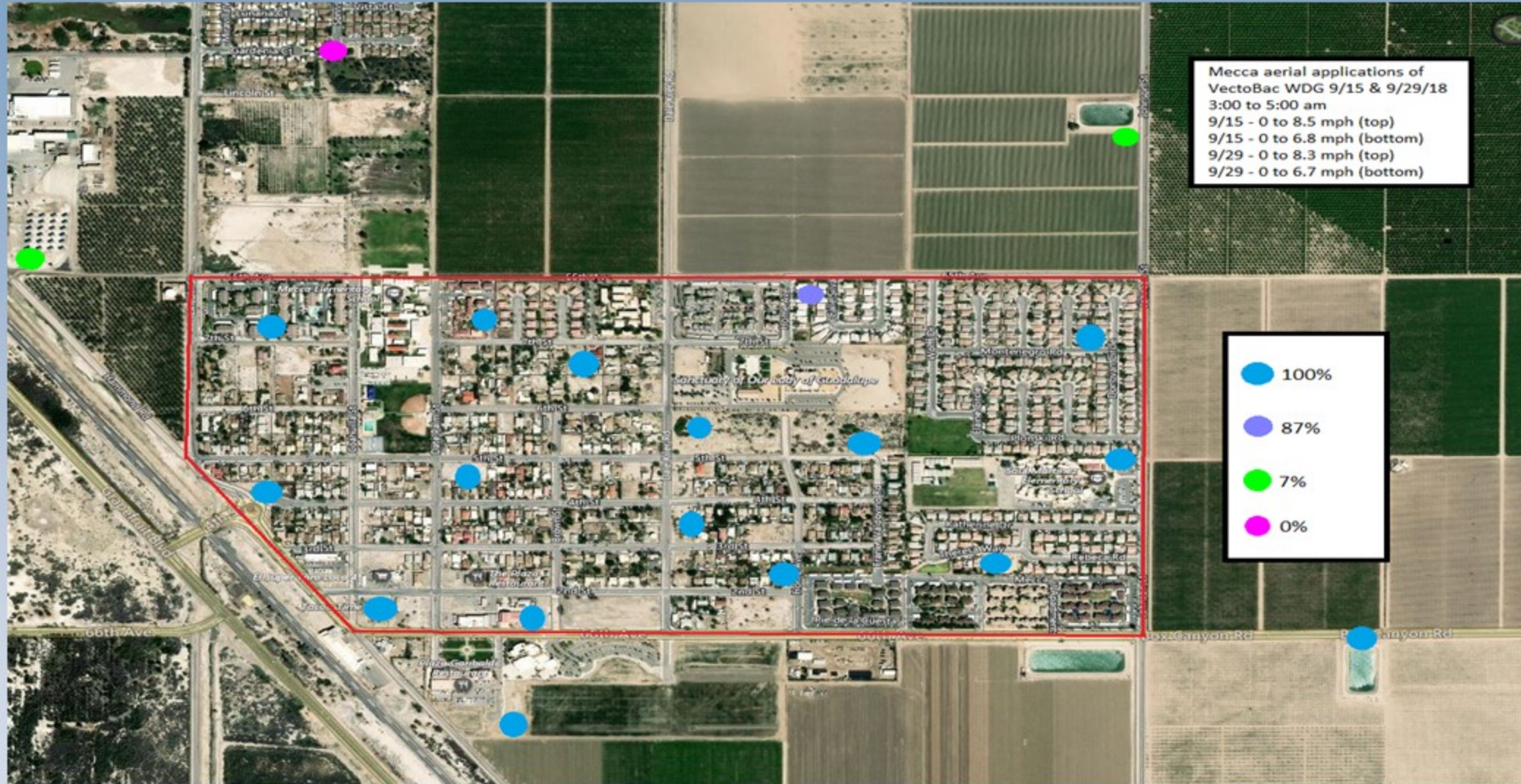


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# Applications with wind <5mph



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# Applications with wind >5mph



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# District results

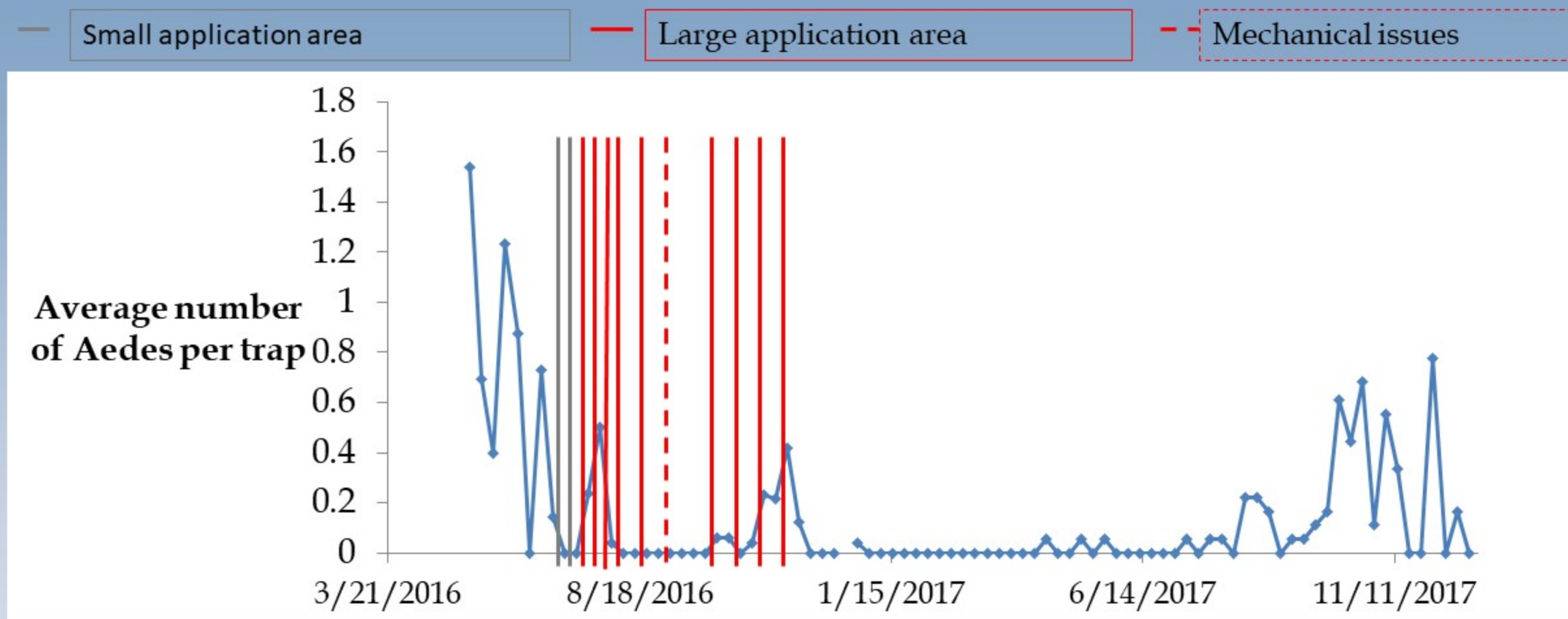
- Coachella – 10 applications in 2016 (+ 2 preliminary applications) (July – November)
  - No *Aedes* from December – April
  - Very low numbers in 2017; Resurgence in 2018
- Indio – 5 applications in Feb. – Mar. 2017
  - Less than 1 mosquito per trap until August 2017
- Palm Springs – 5 applications in Aug. – Sept. 2017
  - Less of an impact – timing between applications
- Mecca – 5 applications in Sept. – Oct. 2018
- Palm Springs – 3.5 applications in July – Aug. 2019

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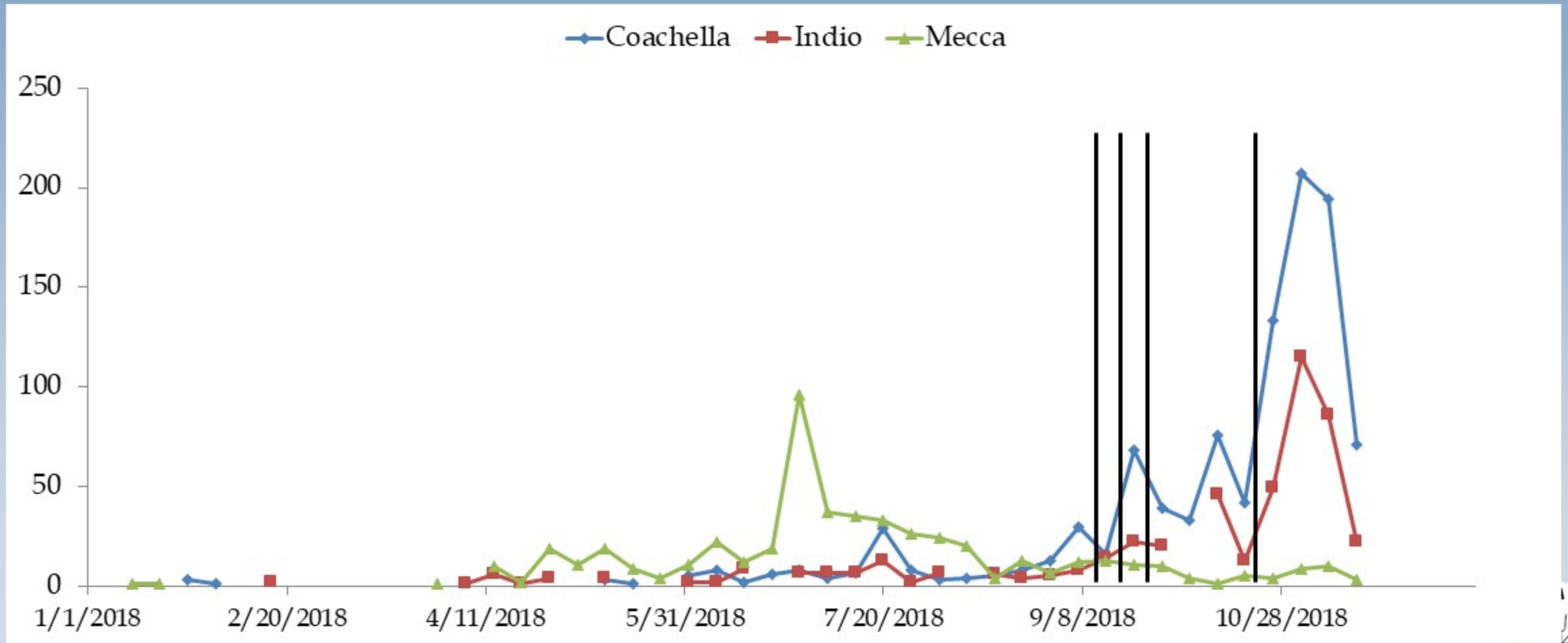
## Coachella – Bti (VectoBac WDG)



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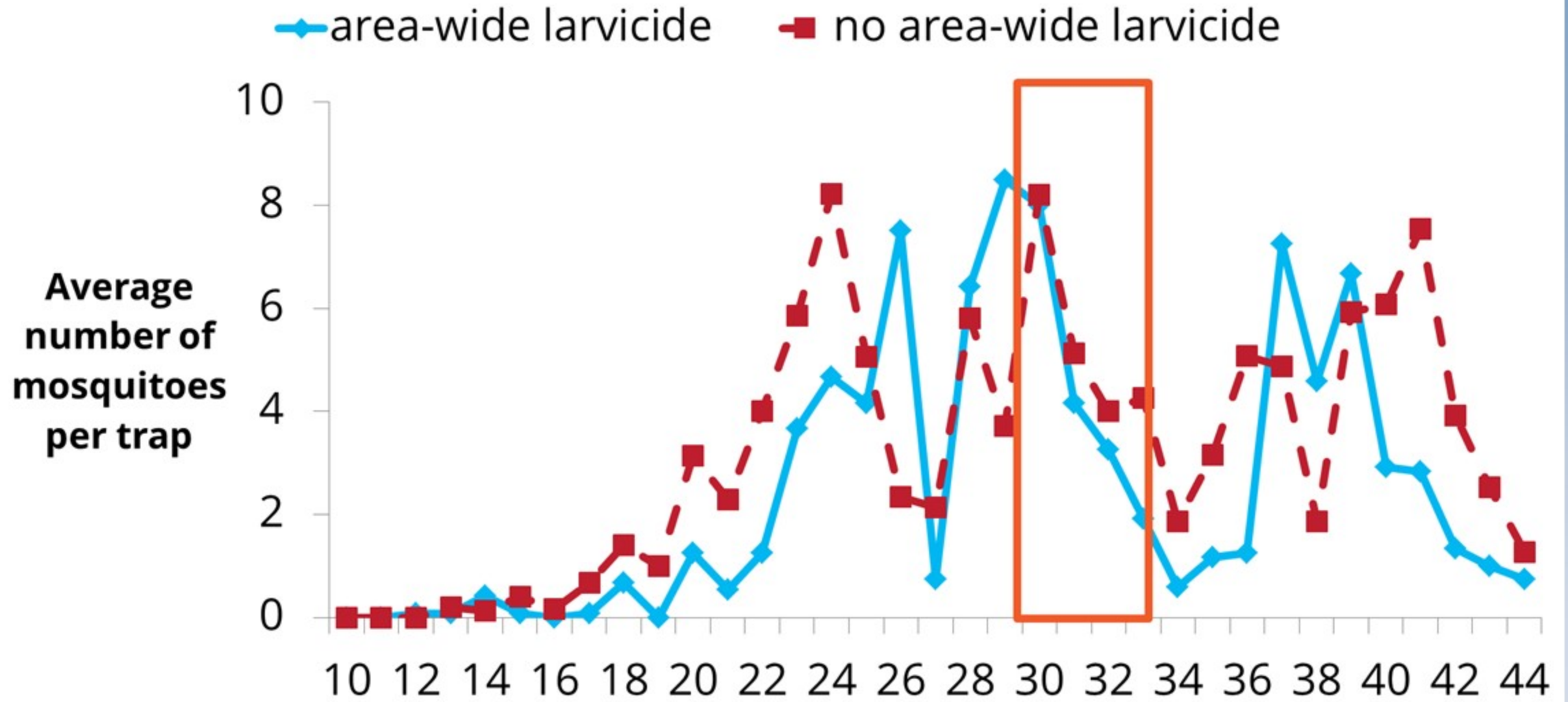
# *Aedes* mosquitoes in Mecca



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# Palm Springs – *Ae. aegypti*





# Ground applications

- Smaller areas
- Noise concerns

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Adapco Guardian 190 G4 sprayer



Super Duty A1 Mist Sprayer





# Determining swath width



- Sampling station every 30 feet (0-600) with the wind
- Card and cup

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# Swath Width with VectoBac WDG

June

Equipment	Angle	Temp.	Wind	Complete coverage	Partial coverage
<b>Guardian</b>	0 (vertical)	86.3°F	10.1 mph	240 ft.	540 ft.
	45	85.8°F	9 mph	240 ft.	600 ft.
<b>Buffalo (San Diego)</b>	0 (vertical)	85°F	5.8 mph	240 ft.	570 ft.
	45	84.7°F	5.4 mph	210 ft.	570 ft.
<b>Buffalo (Riverside)</b>	0 (vertical)	84.4°F	5.9 mph	390 ft.	600 ft.
	45	84.9°F	5.3 mph	150 ft.	540 ft.
<b>TIFA</b>	0 (vertical)	84.4°F	6.1 mph	90 ft.	210 ft.
	45	83.2°F	2.8 mph	90 ft.	270 ft.
<b>DynaFog LV-8 (Northwest)</b>	0 (vertical)	82.6°F	4.9 mph	30 ft.	570 ft.
	45	82.7°F	4.8 mph	330 ft.	> 600 ft.
<b>Micronair</b>	0 (vertical)	83°F	6.7 mph	300 ft.	390 ft.
	45	81.2°F	2.7 mph	570 ft.	> 600 ft.

September

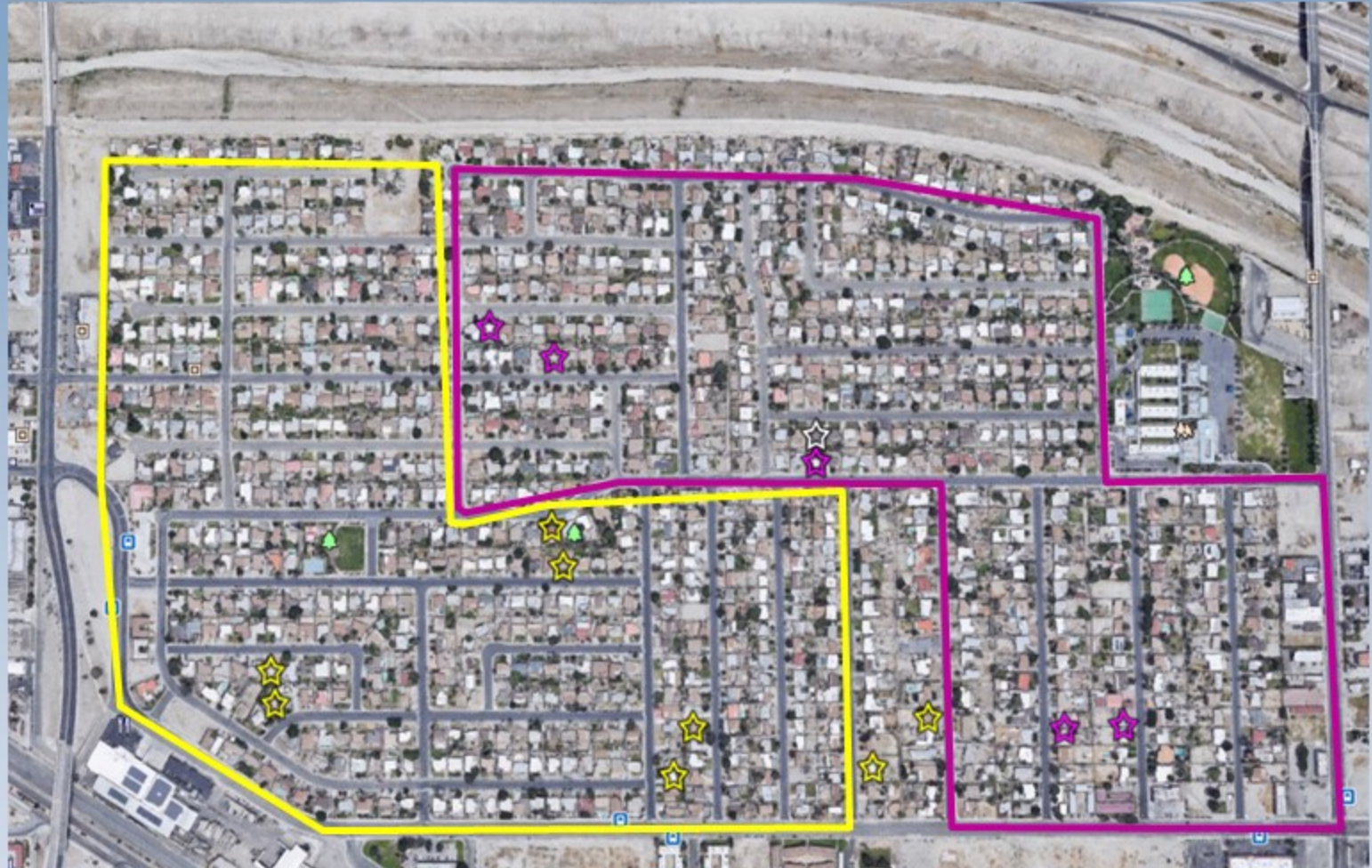
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# Indio

- Cups
  - Front open
  - Front cover
  - Back open
  - Back cover
- 2 pieces of equipment
  - A1 Super Duty
  - Guardian
- All cups had 100% larval mortality



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# Would residents notice droplets?

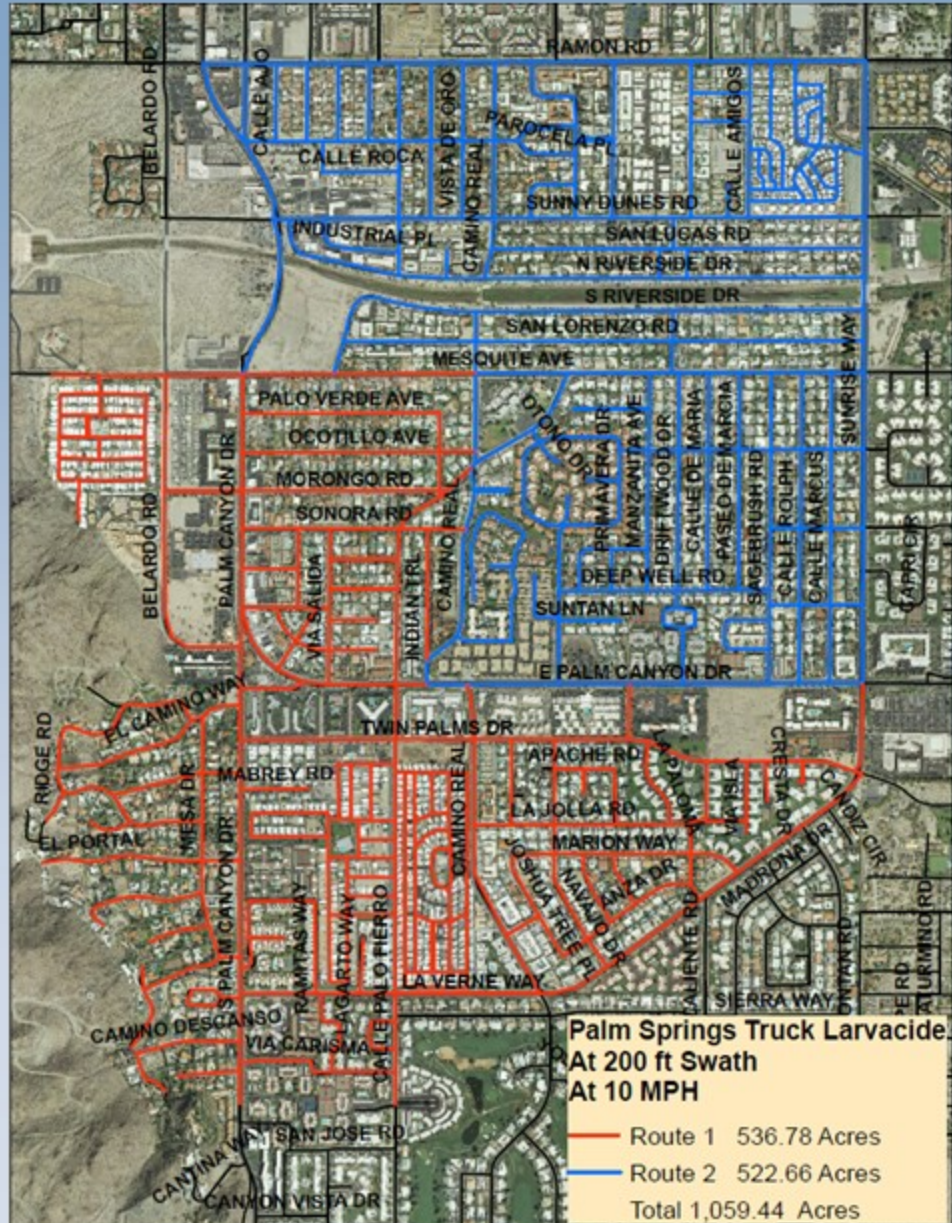


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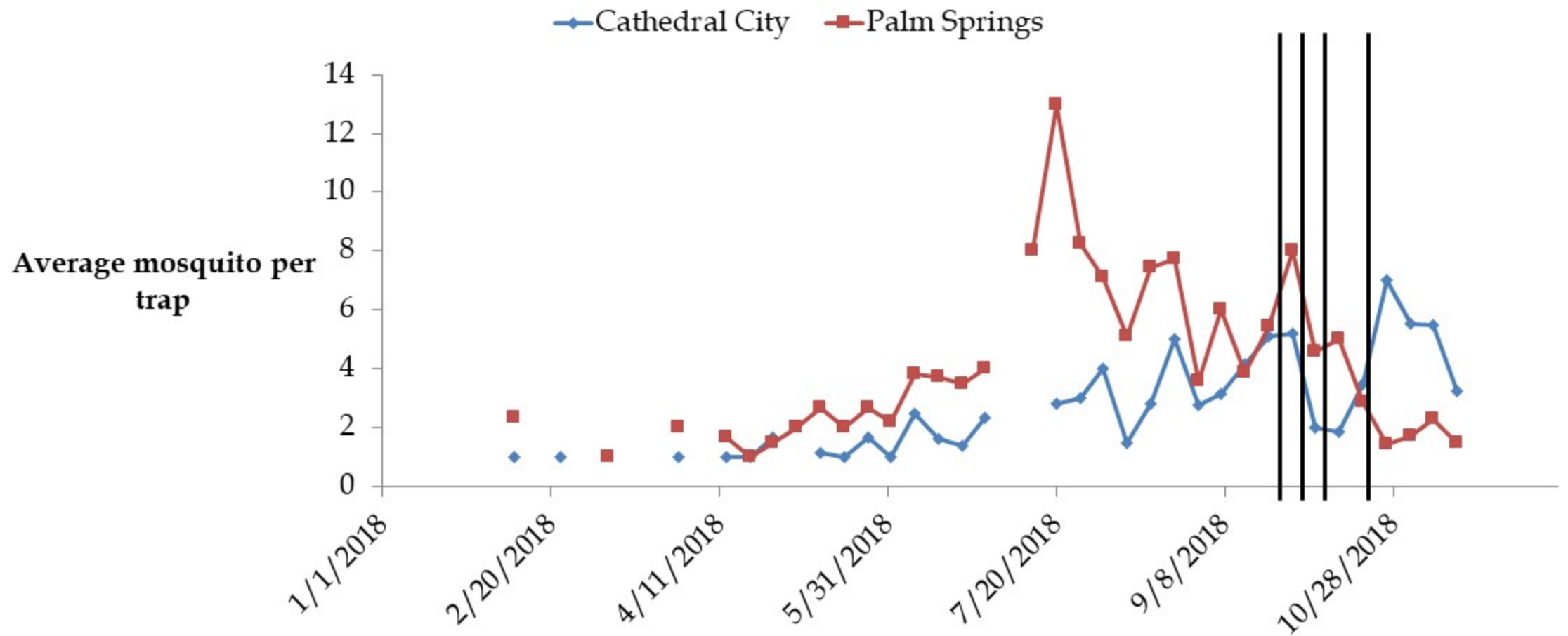


# Truck Larvicide – Palm Springs - Bti



- 2 routes
  - A1 Super Duty®
  - Dynafog LV-8
- Cups placed in
  - Front open
  - Front cover
  - Back open
  - Back cover

# *Aedes aegypti*

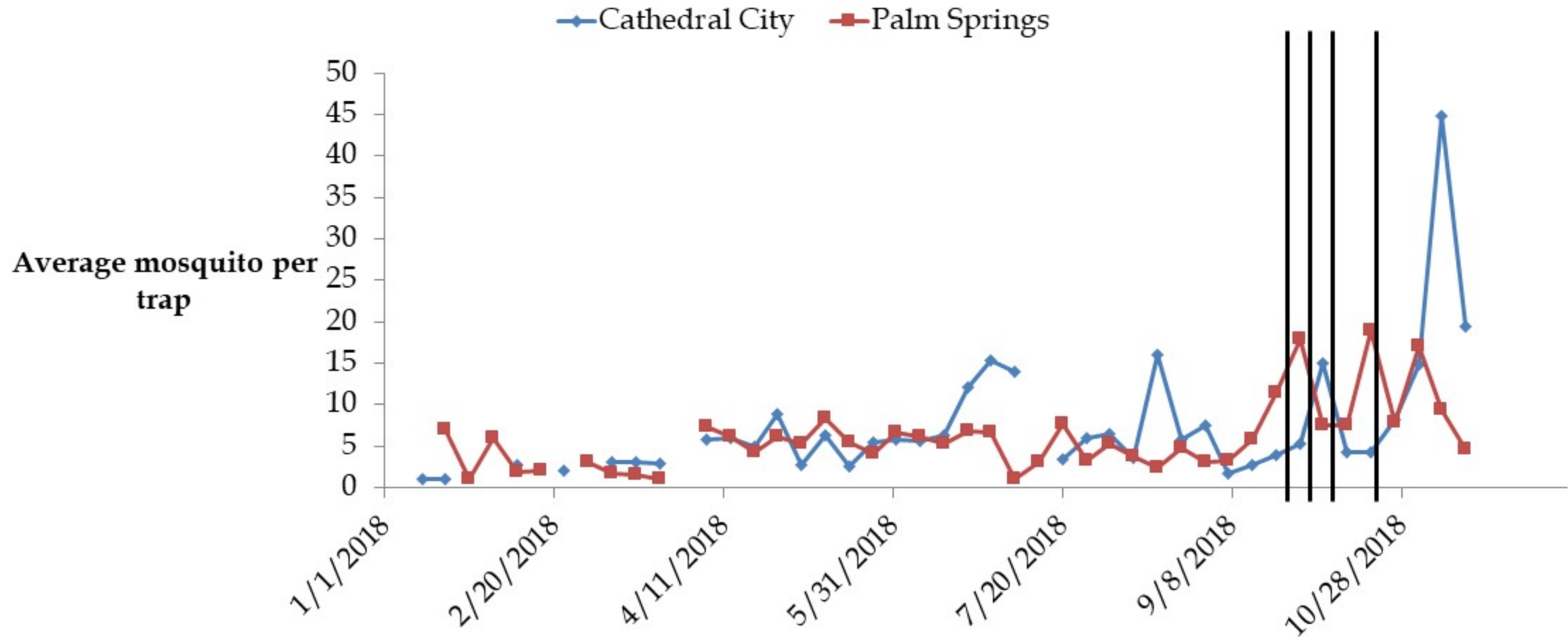


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# *Culex quinquefasciatus*

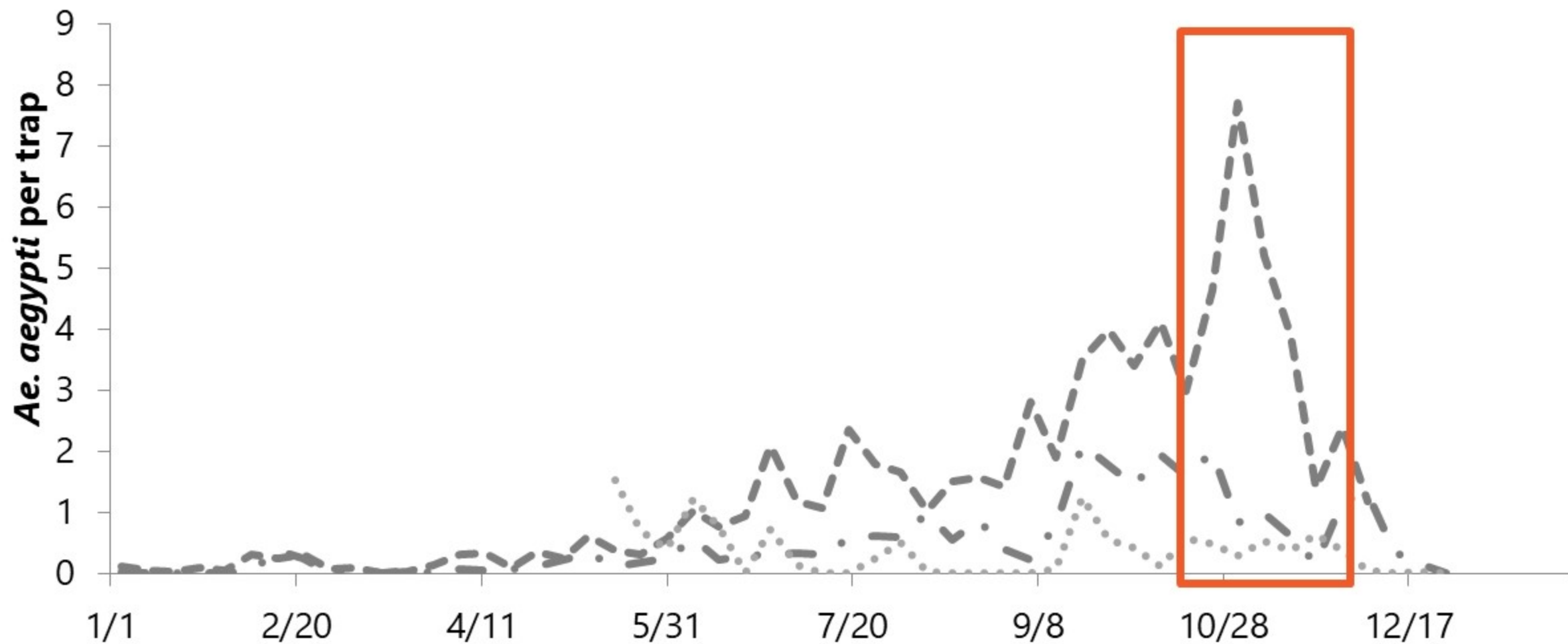


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## Number of *Aedes aegypti* per trap

-- 2018    — 2017    ... 2016



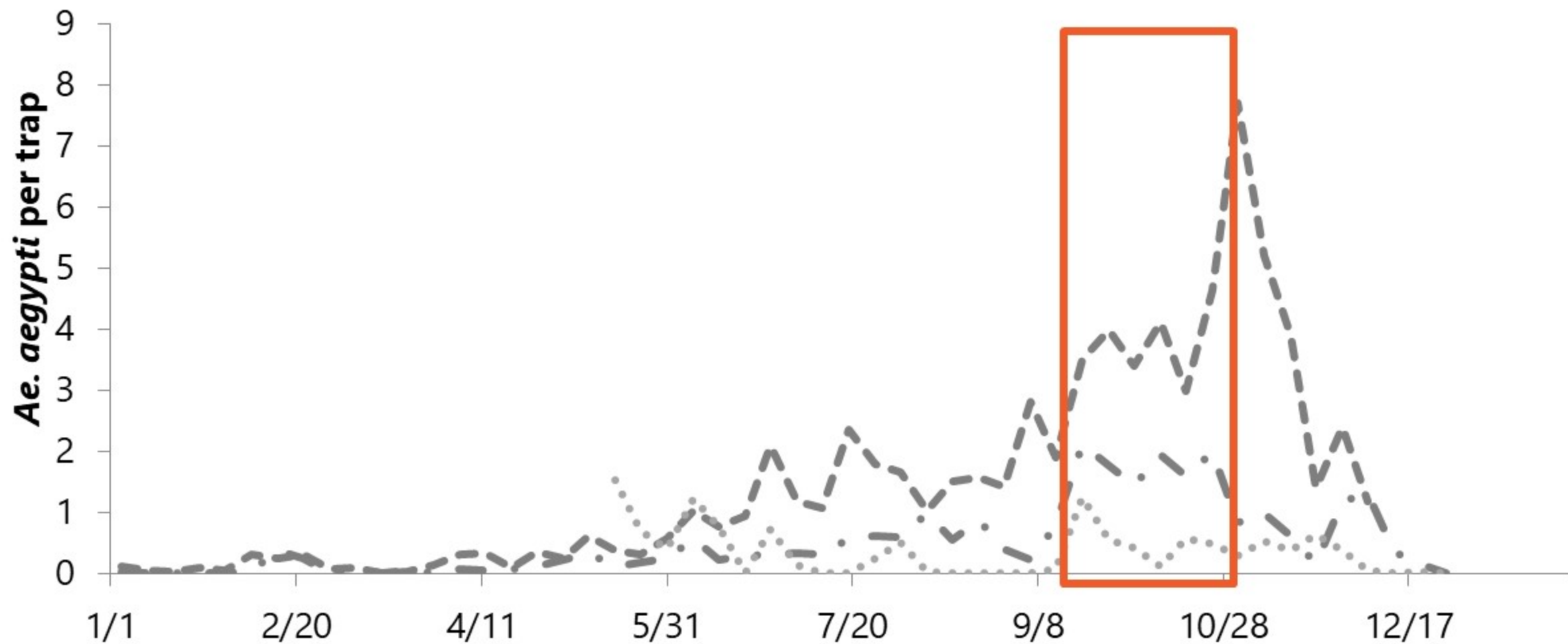
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## Number of *Aedes aegypti* per trap

-- 2018    — 2017    ... 2016



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# The Problem

## *Aedes aegypti*

- BG trap counts above average
- Service requests increased





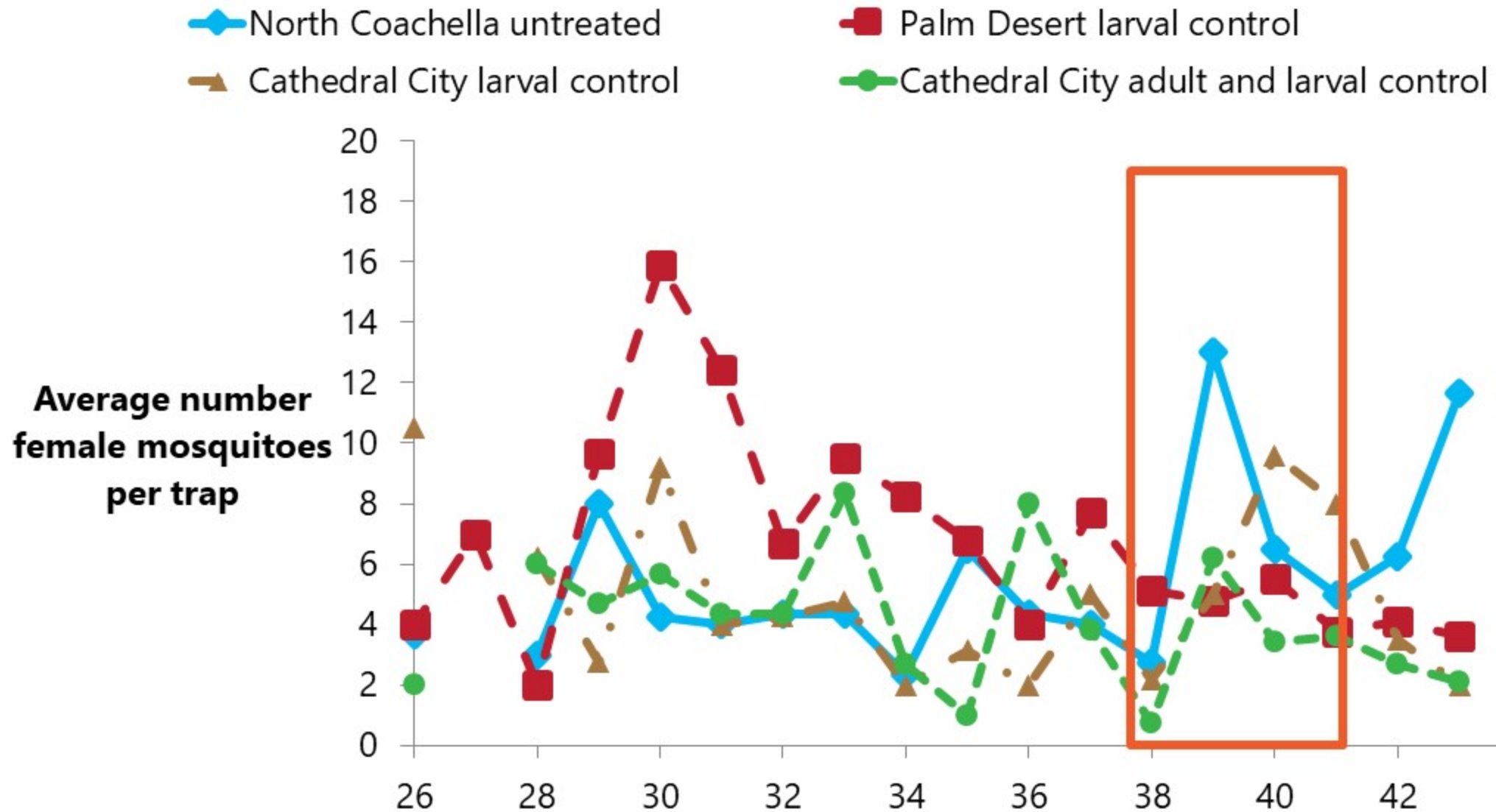
# The Plan

Weekly applications  
Altosid Liquid Larvicide  
@ 4 oz./acre

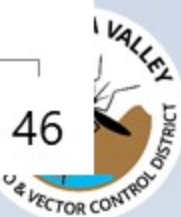
DeltaGard  
@ 0.59 oz./acre



# *Aedes aegypti*

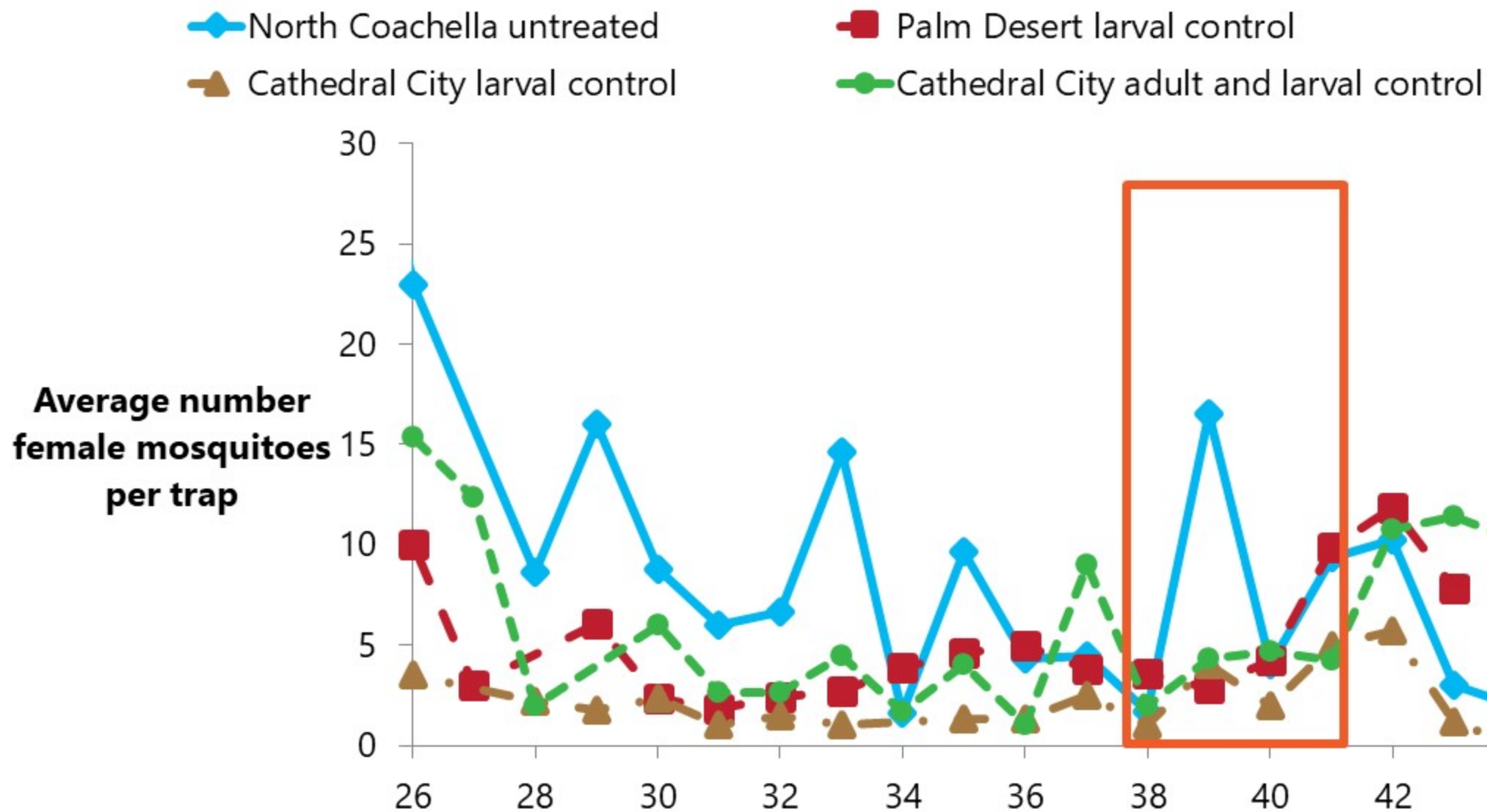


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# *Culex quinquefasciatus*



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# Results

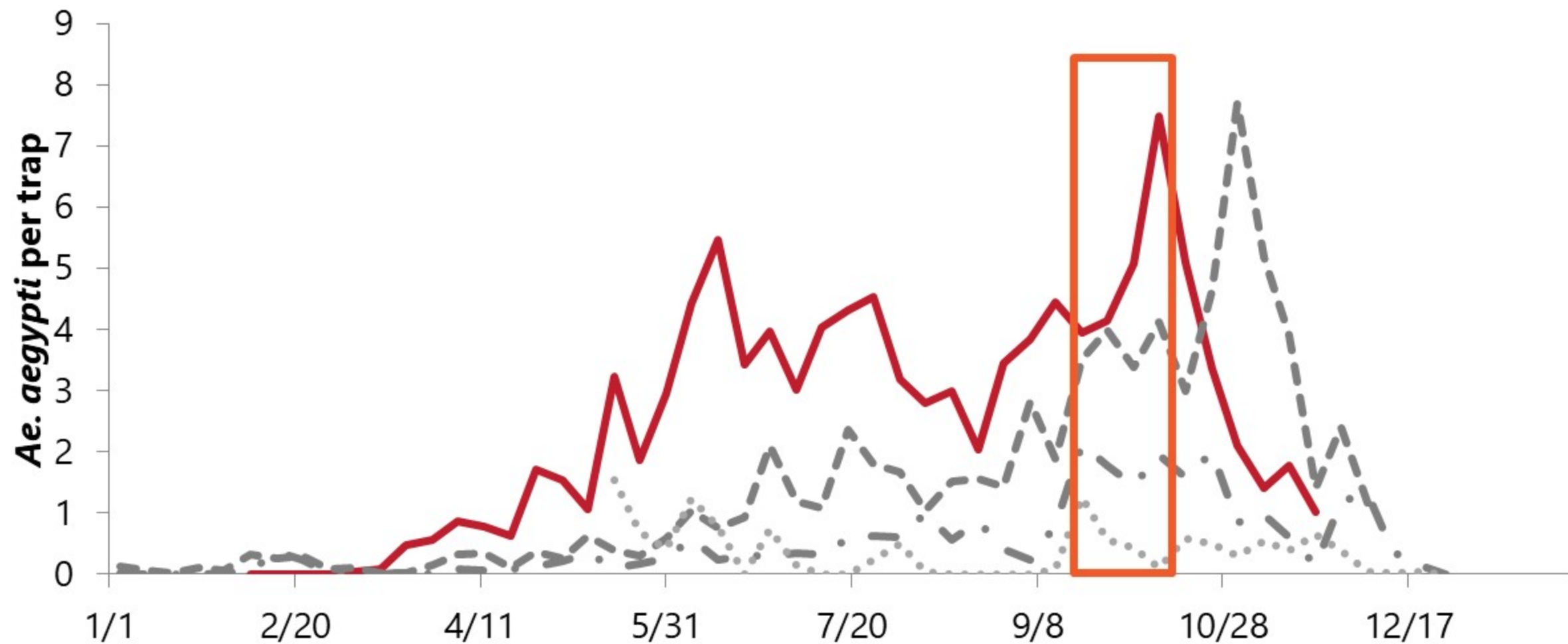
- Adult control not very effective
  - Lower numbers than in untreated, but that trend preceded the treatments
- All larval control did have fewer *Aedes* adults after the treatments
  - Downward trend had started; applications helped the decline
- No clear impact on *Culex* mosquitoes
  - Very low collections in all traps in September and October





## Number of *Aedes aegypti* per trap

— 2019    - - 2018    - - 2017    ... 2016

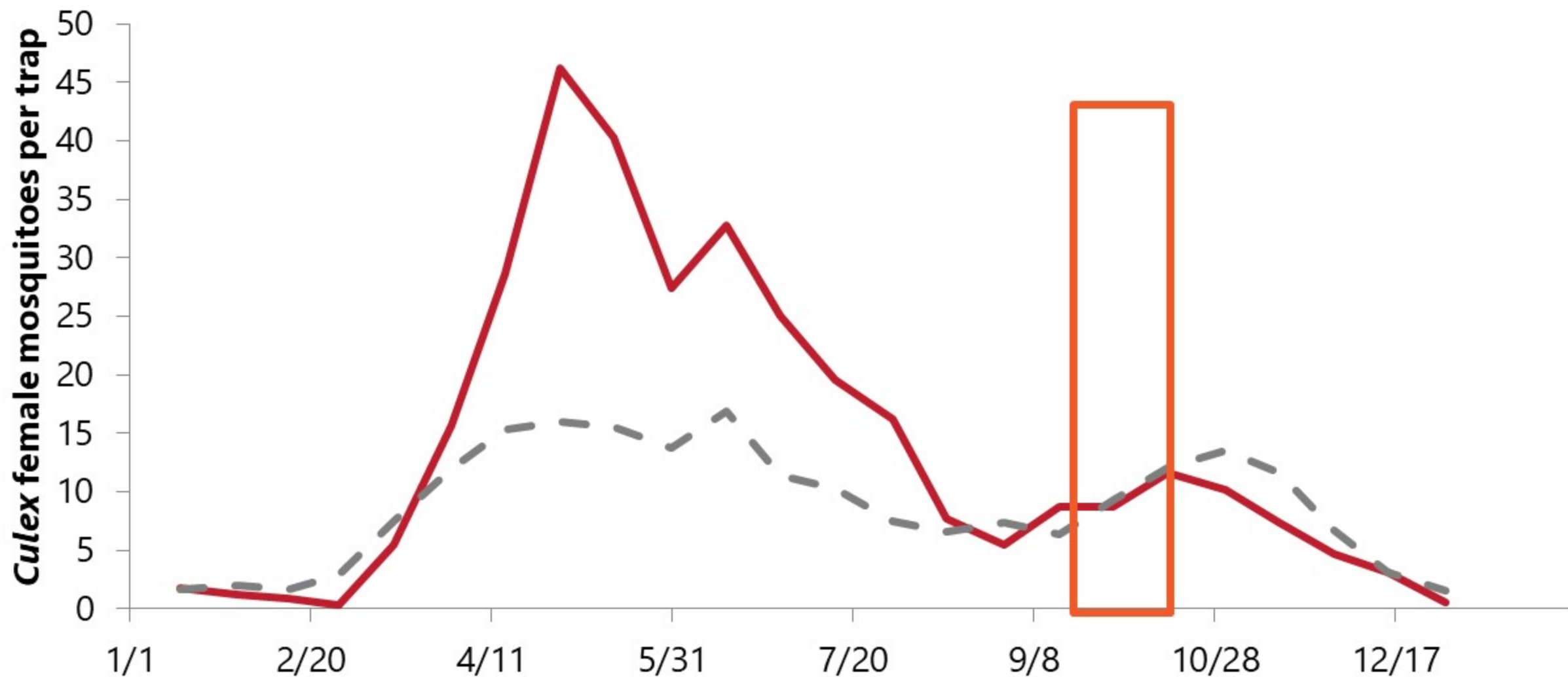


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## Urban Mosquito Traps

— 2019 — 5-year average

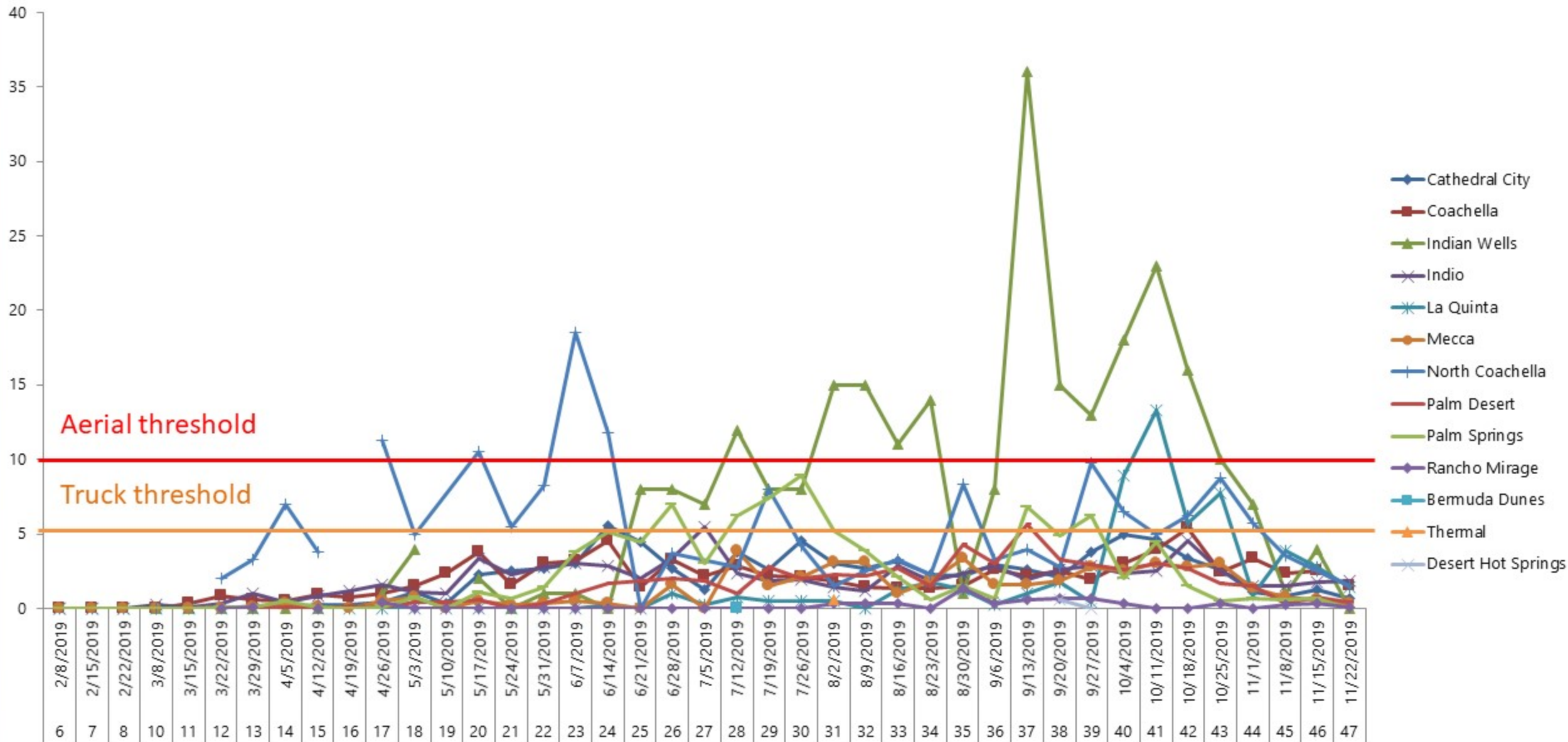


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**Average *Ae. aegypti* females per trap by city/area**



# Summary

- Area wide larviciding is a useful tool for getting into hard to reach locations
- Impacts on *Culex* mosquitoes were difficult to discern
  - Role of routine treatments
  - Ability for products to drift in storm water structures
- Lots of outreach and teamwork led to successful applications





# Items to consider

- When does it make sense to make area wide applications?
- Who will do this? What will they not be able to do instead?
- How will you define success?
- Who will have questions? How do they best receive information?



# Thank You!



## Other Government Agencies

- Greater Los Angeles VCD
- Riverside Co. DEH
- San Diego Co. DEH
- San Gabriel Valley MVCD
- Northwest MVCD

## Partners

- Salton Sea Air Service
- Hummingbird, Inc.
- Valent BioSciences
- Adapco
- Central Life Sciences

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