

Modern Mosquito Control Challenges and Opportunities

An Independent Special District
Protecting Public Health since 1930



City of Newark: 1/10/19



Hello Newark.

- Our District
- Mosquitoes
- Health Threats
- Control
- Innovations
- Partners



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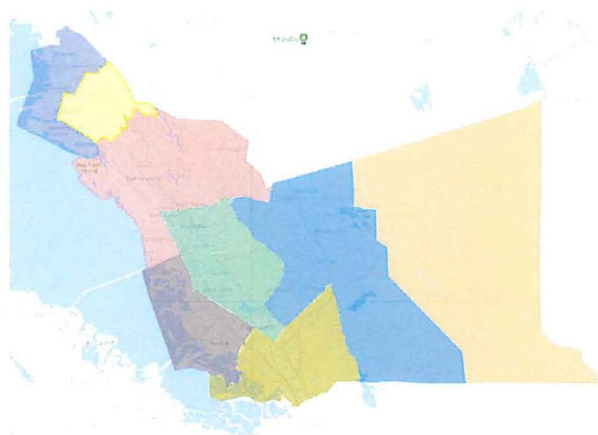


Fixed Charges and/or Special Assessments		
Description	Phone	Amount
CITY SEWER SERVICE	800-676-7516	313.80
MOSQUITO ABATEMENT	800-273-5167	1.74
CSA PARAMEDIC	800-441-8280	32.86
CSA VECTOR CONTROL	800-273-5167	5.92
HEALTHCARE DIST	800-273-5167	298.00
CSA LEAD ABATEMENT	510-567-8280	10.00
* SCHOOL MEASURE B1	844-332-0549	683.20
PERALTA CCD MEAS B	800-792-8021	48.00
SFBRA MEASURE AA	888-508-8157	12.00
HAZ WASTE PROGRAM	800-273-5167	7.40
CSA VECTOR CNTRL B	800-273-5167	4.08
MOSQUITO ASSESS 2	800-273-5167	2.50
AC TRANSIT MEAS VV	800-273-5167	96.00
EBMUD WETWEATHER	866-403-2683	103.74
* EAST BAY TRAIL LLD	888-512-0316	5.44
* EBRP PARK SAFETY/M	888-512-0316	12.00
URBAN RUNOFF	510-670-6615	56.14

Financials

(.0009% of property tax assessed value)

Our Staff: 17 FT & 5 Seasonal Staff



Mosquito Control

9 FT Staff in 8 Zones
2 Seasonal Staff

Monitoring

3 FT Staff
2 Seasonal Staff

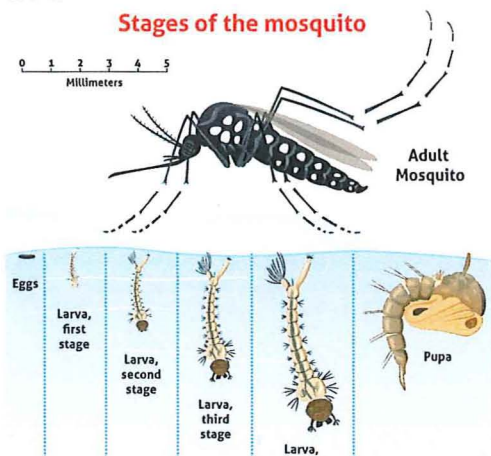
Administrative

5 FT Staff
1 Seasonal Staff



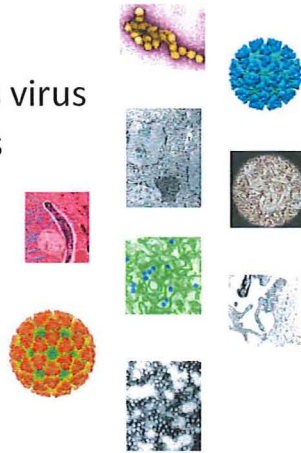
Aquatic Lifecycle

- Urban mosquitoes spend 1 - 2 weeks as larvae or pupae
- Breathe air at the surface of water



Mosquito Pathogens

- West Nile virus
- Western equine encephalitis virus
- Saint Louis encephalitis virus
- Dog heartworm
- Malaria
- Zika virus
- Dengue virus
- Chikungunya virus
- Yellow fever virus



Mosquitoes in Alameda County that transmit West Nile virus



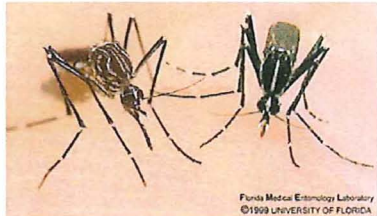
Culex pipiens:
common house mosquito



Culex tarsalis:
western encephalitis mosquito



Mosquitoes that spread Zika, Dengue, Chikungunya, Yellow Fever viruses

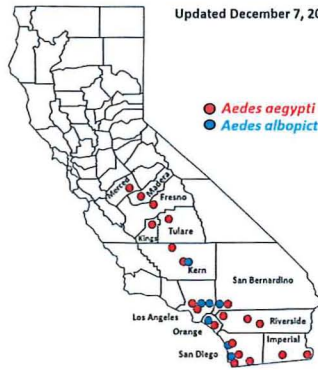


Florida Medical Entomology Laboratory
©1999 UNIVERSITY OF FLORIDA

Aedes aegypti
lyre-shaped pattern on thorax

Aedes albopictus
bright lateral line on thorax

Aedes aegypti and *Aedes albopictus* Mosquitoes In California
Detection Sites by County/City
Updated December 7, 2018



● *Aedes aegypti*
● *Aedes albopictus*

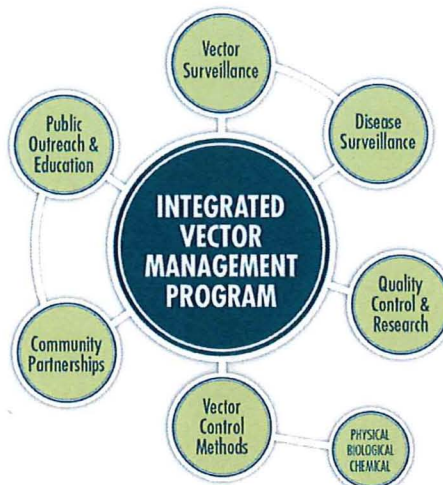
Counties with *Aedes aegypti* only:
Fresno, Imperial, Kings, Madera, Riverside, Merced, Tulare

Both *Aedes aegypti* and *Aedes albopictus*:
Kern, Los Angeles, Orange, San Bernardino, San Diego

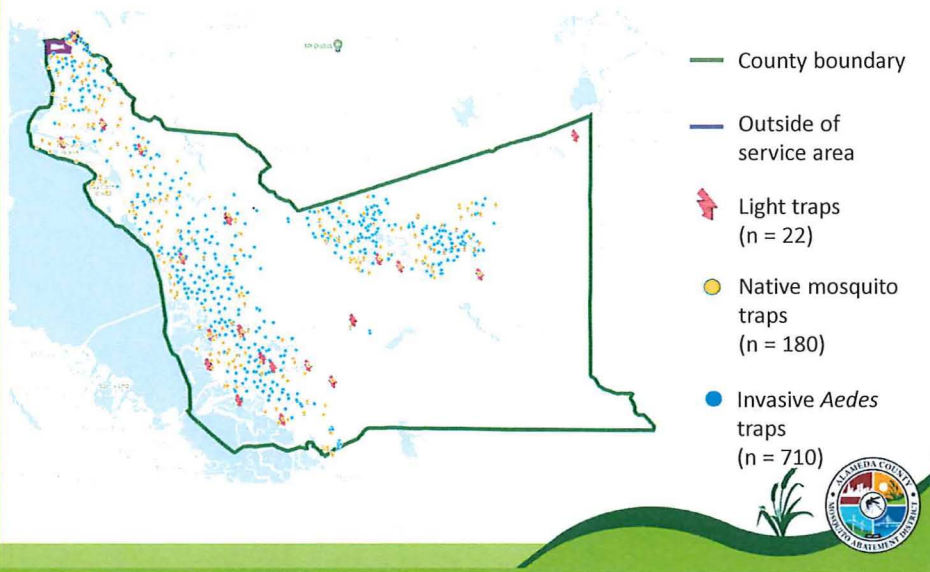
See pages 2 and 3 for *Aedes* detections by city or census-designated place in each county.



Controlling Mosquitoes

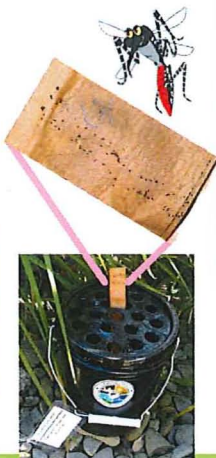


Our Service Area and Monitoring Sites



Monitoring Approach

Looking for larvae & eggs



Adult monitoring with traps



Testing for disease and insecticide resistance

we test more than 90 % of disease-spreading mosquitoes caught in our traps



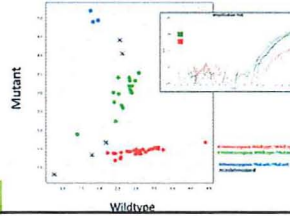
virus test results in 3 hours



sensitivity to insecticides



insecticide detoxification

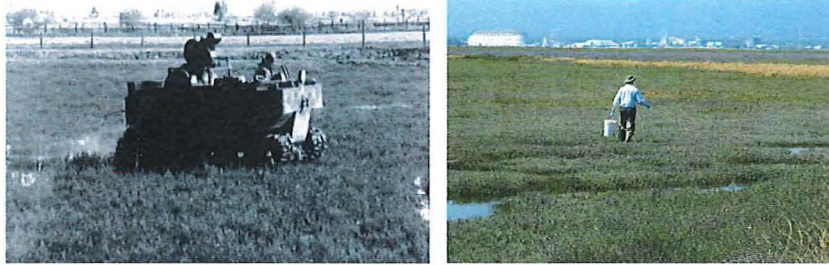


genetic resistance

Controlling mosquitoes in storm drain systems



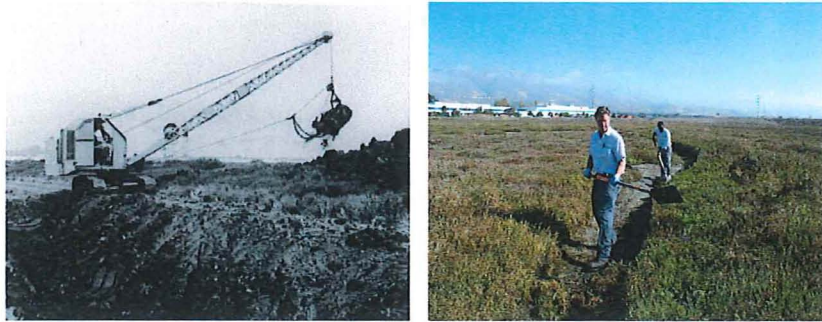
Controlling mosquitoes in marshes



Controlling mosquitoes with fish



Controlling mosquitoes through source reduction



Channels for community outreach

Legislative



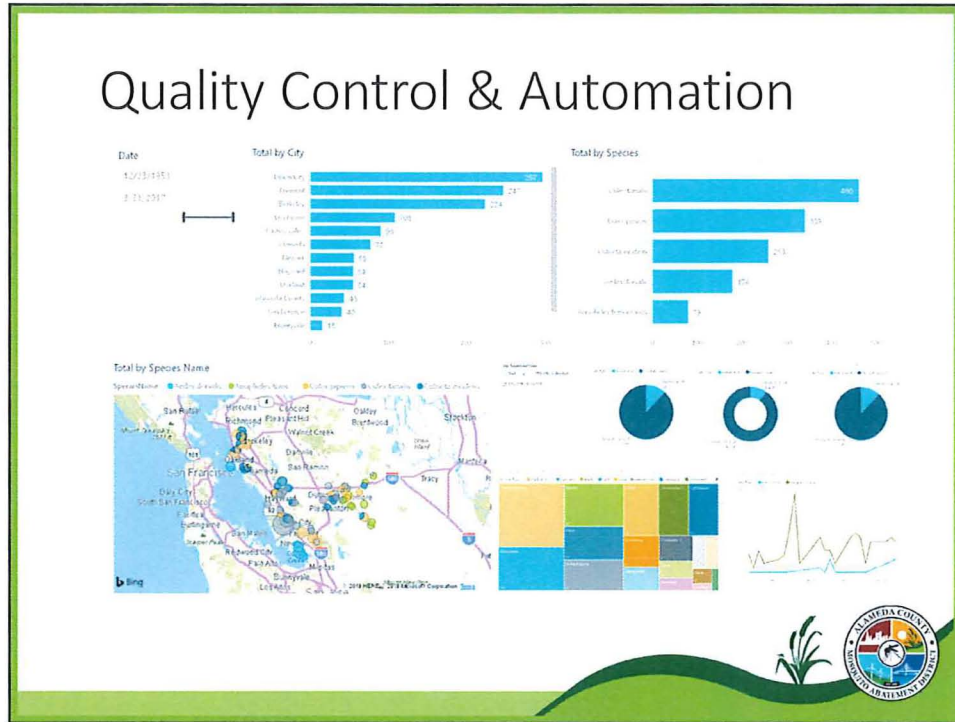
Interagency



Public






Quality Control & Automation




1. Financial Planning

-  \$2.50 benefit assessment *can* be raised to \$7.00 for enhanced services
-  Pension stabilization-115 trust with PARS
-  Reserve funds with CAMP

2. Innovative Control Methods

-  Irradiate reproductive cells
-  Wolbachia-infect
-  Modify genome using Gene Drives (CRISPR)



3. Interagency collaboration: trash capture devices/ BMPs



4. Healthy Wetlands



California Department of
Fish and Wildlife

**South Bay Salt Pond
Restoration Project**



5. Emerging technologies: drone imagery of marshes where mosquitoes can breed





Partnerships

- San Francisco Bay Restoration Authority
- CDPH California Department of Public Health
- ALAMEDA COUNTY PUBLIC HEALTH DEPARTMENT
- East Bay Regional Park District
- CALIFORNIA STATE UNIVERSITY EAST BAY
- CHAN ZUCKERBERG BIOHUB
- Berkeley UNIVERSITY OF CALIFORNIA
- SAN FRANCISCO BAY JOINT VENTURE
- U.S. FISH & WILDLIFE SERVICE
- CITY AND COUNTY OF SAN FRANCISCO
- MADRA COUNTY MOSQUITO VECTOR CONTROL DISTRICT
- MVCAC Mosquito and Vector Control Association of California
- CSDA California Special Districts Association
- SAN MATEO COUNTY MOSQUITO & VECTOR CONTROL DISTRICT

Mosquito Sources in the City of Newark

- Unmaintained swimming pools, catch basins, flood control channels
- Don Edwards San Francisco Bay National Wildlife Refuge



Thank you-

- Ryan Clausnitzer, MPA
- General Manager
- 23187 Connecticut Street
- Hayward, CA 94545
- www.mosquitoes.org
- ryan@mosquitoes.org
- 510-925-1756