

# 2023 ANNUAL REPORT

## SACRAMENTO-YOLO MOSQUITO & VECTOR CONTROL



Sacramento-Yolo  
MOSQUITO & VECTOR  
CONTROL DISTRICT



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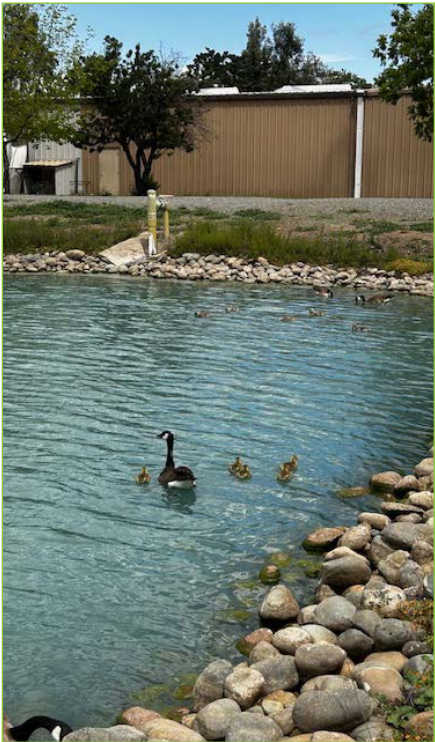
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# Dear Residents, Colleagues & Friends

It is our pleasure to present the 2023 Annual Report for the Sacramento-Yolo Mosquito and Vector Control District. By utilizing a comprehensive Integrated Pest Management approach we were able to respond to West Nile virus (WNV), the ongoing spread of invasive mosquitoes and other public health threats and provide exceptional services to the residents of Sacramento and Yolo counties. This report describes the work performed by the District.

In 2023 there was a record amount of rain that led to many mosquito breeding sources. In addition, there was a significant increase in the number of rice acres planted within our District area. These factors, in combination with hot temperatures during the summer led to a long and intense West Nile virus season that resulted in a sharp increase in human cases. In Sacramento County there were 53 human cases confirmed while Yolo County had 39. This is a huge upsurge compared to 2022 when there were 5 and 3 cases respectively. Statewide, there were 428 human cases including 19 fatalities. West Nile virus activity was also detected in 636 mosquito samples 258 birds. At the peak of West Nile virus in August, an elevated amount of WNV activity resulted in urban aerial spraying to decrease mosquito populations posing a public health threat in the cities of Davis and Woodland.

In addition to the surge of West Nile virus activity of ongoing concern are the invasive mosquito species *Aedes aegypti* and *Aedes albopictus* which continued to spread into many new areas in both Sacramento and Yolo counties. Invasive mosquitoes are aggressive day biting mosquitoes that breed in very small backyard sources and have the potential to transmit diseases such as Zika, dengue and chikungunya. They were discovered for the first time within District boundaries 2019 and have since been spreading rapidly. In 2023 some of the biggest infestation areas were Rosemont, south Natomas, Eldercreek and Arden Arcade in Sacramento County. Meanwhile, Winters and West Sacramento have the largest infestations of these mosquitoes in Yolo County. As a result of new and ongoing detections, extensive surveillance was conducted by the laboratory in different areas; our Aedes crew initiated door-to-door inspections where District technicians educated residents about this ongoing issue. In the meantime, field technicians within our control operations division conducted extensive and ongoing

ground spraying targeting both adult and immature mosquitoes in all affected neighborhoods successfully reducing mosquito populations. Throughout the state, invasive mosquitoes also kept spreading and for the first time ever, there were 2 locally acquired cases of dengue in Long Beach and Pasadena.

Despite the spread of invasive mosquitoes, West Nile virus continues to be the top priority. Our laboratory and surveillance program worked diligently collecting dead birds and monitoring all mosquito activity by trapping, sorting and testing mosquito samples throughout the season. When WNV reached levels that posed a threat for increased virus transmission to the public, control operations responded by conducting ground spraying to quickly and effectively reduce mosquito populations. Field staff also spent time looking for and treating mosquito breeding sources, inspecting thousands of catch basins and responding to service requests from residents.

Ongoing public information and outreach campaigns disseminated mosquito prevention messages via an extensive advertising and social media campaign as well as participation in community outreach events. Mosquitofish were utilized in urban, rural and agricultural areas as a natural method for controlling mosquitoes and our ecological management department completed a variety of best management projects and worked closely with landowners and residents to reduce mosquito populations and breeding areas. In addition, our Geographic Information Systems department provided mapping services, data and analytics while Information Technology maintained all workstations, equipment and databases to ensure the smooth running of all District operations. Lastly, the Administration department provided a variety of professional services to the public and supported District staff and the shop performed ongoing routine maintenance and repairs on all vehicles and equipment.

As we move forward, we are committed to continue offering the best mosquito control program to the residents we serve.

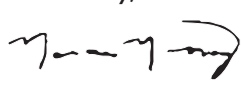
If you have any questions please visit our website at [www.FIGHTtheBITE.net](http://www.FIGHTtheBITE.net) or call us at 1-800-429-1022.

Sincerely,



Gary Goodman  
District Manager

Sincerely,



Marcia Mooney  
2023 President, Board of Trustees

# Our History



In 1915, the California Legislature adopted the “Mosquito Abatement Act” (now incorporated into the California Health and Safety Code, Division 3) which formed the basis for the creation, function and governing powers of Mosquito Abatement Districts.

On June 18, 1946, the Sacramento County-Yolo County Mosquito Abatement District was formed by joint resolution of the Board of Supervisors for Sacramento and Yolo counties. The driving force behind the formation of the District was the public’s need for protection against mosquito-borne diseases and relief from serious pest nuisance.

In July of 1990, the District Board voted by resolution to change the name of the District to the Sacramento-Yolo Mosquito and Vector Control District to better reflect the expanded services and responsibilities the District assumed regarding ticks, yellow jackets and other vectors.

The District is governed by a Board of Trustees, each appointed by one of the incorporated cities or one of the counties within the District’s boundaries. Board meetings are held at 10:00 am on the third Tuesday of each month in Elk Grove.



## 2023 BOARD OF TRUSTEES OFFICERS

**President:** Marcia Mooney, City of Galt

**Vice-President:** Sean Denny, City of Woodland

**Secretary:** Charles Duty, Sacramento County



## BOARD OF TRUSTEES

Chris Barker, City of Davis

Janell Darroch, City of West Sacramento

Bruce Eldridge and William Reisen Yolo County

Lyndon Hawkins, City of Elk Grove

Raymond LaTorre, City of Sacramento

Robert J. McGarvey, City of Rancho Cordova

Staci Gardiner, City of Isleton

Craig Burnett, City of Folsom

Jayna Karpinski-Costa, City of Citrus Heights

Gar House, City of Winters



## DISTRICT STAFF

### ADMINISTRATIVE OFFICE, PUBLIC INFORMATION, CONTROL OPERATIONS, FISHERIES AND LABORATORY

#### SACRAMENTO COUNTY

**8631 Bond Road**  
**Elk Grove, CA 95624**  
**Phone: 1-800-429-1022**  
**Fax: 916-685-5464**

### CONTROL OPERATIONS

#### YOLO COUNTY

**1234 Fortna Avenue**  
**Woodland, CA 95776**  
**Phone: 1-800-429-1022**  
**Fax: 530-668-3403**

### PERSONNEL

**Manager:** Gary Goodman  
**Assistant Managers:** Tony Hedley  
and Steve Ramos  
**Administrative Managers:**  
Rebecca Lane and Lisa Pelletier  
**Program Coordinator:** Marty Scholl  
**Senior Administrative Assistants:**  
Kellee Brinkman and Tatiana Ochoa  
**Administrative Assistants:**  
Dania Smith and Catalina Garcia

### LABORATORY

**Laboratory Director:** Sarah Wheeler  
**Biologist:** Mario Novelo Canto  
**Vector Ecologist:** Debbie Dritz  
**Microbiologist:** Kara Kelley  
**Laboratory Technicians:** Whitney  
Clack, Joy Drake, Karin Jenkins, Stanley  
Roberts, Katrina Stokes, Marilou Thomas,  
Haley Unmacht, James Brodigan, Anna  
Cutshall, and Elizabeth Slagboom

### FISHERIES

**Fisheries Supervisor:** Ken Harris  
**Field Technicians:** Callahan Wieland,  
Kiara Day, and Rocky Molina

### PUBLIC INFORMATION & EDUCATION

**Public Information Officer:**  
Luz Maria Robles

### ECOLOGICAL MANAGEMENT

**Ecological Management Supervisor:**  
Kevin Combo  
**Ecological Management Technicians:**  
Guy Kachadorian and Timothy Guimont

### MAPPING & INFORMATION TECHNOLOGY

**Mapping/Systems Coordinator:**  
Ruben Rosas  
**Information Technology**  
**Administrator:** Dan Fisher

### SHOP

**Supervisors:** Tom Price and  
Robert Fowler  
**Mechanics:** Ben Weisenberg and  
Don Henson

### MOSQUITO CONTROL OPERATIONS

#### NORTH SACRAMENTO COUNTY

**Supervisor:** Richard Speakman  
**Field Technicians:** Nick Ascarrunz,  
Ron Burkhouse, Alex Cherney, Richard  
Fowler, Timothy Yuen, Grant White,  
and Jacob Pascual

#### SOUTH SACRAMENTO COUNTY

**Supervisor:** Demetri Dokos  
**Field Technicians:** Jeff Anderson, Kevin  
Valone, Katie Kirkham, Jonas Leuluaialii,  
Brian McGee, Nate Pascual, Aaron  
Gruen, Tyler Alloway, and Rollin Phelps

### AEDES CREW

**Supervisor:** David Smith  
**Field Technicians:** Dave Zepf, Katherine  
Kellogg, Jonathon Milanese, Cason  
Reyes, and Anthony Barrera

#### NORTH YOLO COUNTY

**Supervisor:** Brett Day  
**Field Technicians:** Garrett Bell, Jason  
Lloyd, Zeb Middleton, Mark Pipkin, and  
Jake Vigna

#### SOUTH YOLO COUNTY

**Supervisor:** Will Hayes  
**Field Technicians:** Dan Bickel,  
Frank Mendez, Soda Sanouvong,  
Kylie Letamendi, George Santiago,  
and Phillip Merritt

### CATCH BASIN CREW

**Supervisor:** Ryan Wagner  
**Field Technicians:** Shan Badhan,  
Yeng Chang, Jay Geigle, Eric Guimont,  
Garrett Koch, and Khalil Mayes



# Integrated Pest Management



Mosquito and vector control are based on scientifically planned management tactics and control strategies that reduce the abundance of target pests in a timely manner. This method is commonly referred to as “Integrated Pest Management” (IPM). This comprehensive program incorporates five basic methods: public information and education, mosquito and vector surveillance, biological control, physical control, and microbial and chemical control.

## PUBLIC INFORMATION & EDUCATION

The District’s outreach program educates and informs the public about mosquito and West Nile virus prevention methods through an extensive advertising and media campaign. District messages are also disseminated to the public by participating in a variety of community events, health fairs, presentations to schools and community organizations as well as partnerships with local groups.

## MOSQUITO & VECTOR SURVEILLANCE

The District closely monitors mosquito activity, climate change and arbovirus activity by testing mosquitoes, sentinel chickens, wild birds and ticks for the presence of pathogens, parasites or arboviruses. This research and surveillance information helps guide efficient control of vectors and vector-borne diseases in Sacramento and Yolo Counties.

## BIOLOGICAL CONTROL

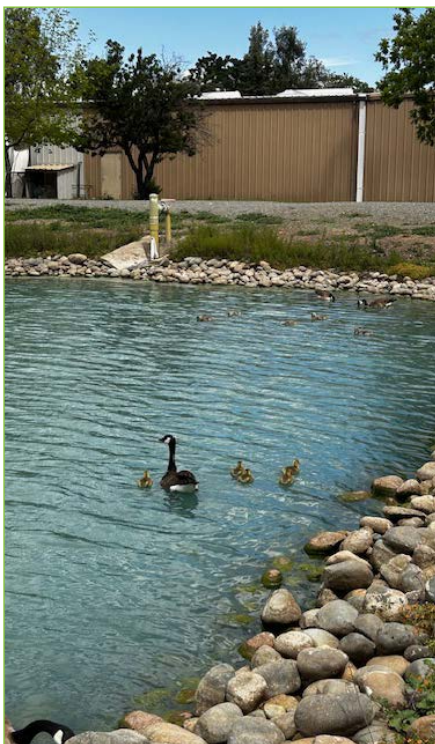
Biological control is the use of specially chosen living organisms to control a particular pest. This chosen organism might be a predator, parasite, or pathogen which will attack the harmful insect resulting in a desired reduction of pest population levels. The most common biological tool against immature mosquitoes in California are mosquito-eating fish such as the mosquitofish, *Gambusia affinis* and the Guppy, *Poecilia reticulata*. When introduced to a mosquito breeding source, these fish quickly adapt, multiply and become numerically capable of sustaining an effective control level.

## ECOLOGICAL MANAGEMENT

Ecological Management consists of altering the pest’s environment such as: promoting effective drainage, controlling emergent vegetation and encouraging appropriate timing of irrigation otherwise known as mosquito reduction best management practices in urban, agricultural and conservation areas. By managing aquatic sources, opportunity for mosquitoes to develop is eliminated.

## MICROBIAL & CHEMICAL CONTROL

Microbial and chemical control are the prudent use of specific microbials and chemical compounds (insect growth regulators and insecticides) that reduce mosquito populations. These materials are applied when other methods are unable to maintain mosquito numbers below a level that is considered tolerable or when emergency control measures are needed to rapidly disrupt or terminate the transmission of disease to humans and animals. These products and application methods used are registered for public health use by the California Department of Pesticide Regulation, as well as California Environmental Protection Agency, and are designed to minimize non-target effects. Larvicides target immature mosquitoes; adulticides are chemicals that reduce adult mosquito populations.



# Public Information & Education

The District's award winning public information and education department strives to raise awareness of mosquitoes and of vector-borne diseases such as West Nile virus, Zika, dengue and chikungunya. This is done through extensive media coverage obtained on television, radio, print and various news websites using an aggressive advertising campaign which includes radio and television advertisements in English and Spanish, extensive social media, outdoor creative ads and online digital ads. The District's media strategy also includes participation in various radio and television public affairs shows and television programs used to disseminate District messages. Two additional elements important to the department are community outreach and the school program. The District hosts information booths at several community events throughout Sacramento and Yolo counties where educational materials are disseminated and the public receives information about available District services. Another element of outreach is the school program which includes classroom presentations, school assemblies and the annual Fight the Bite Contest for all students and schools within Sacramento and Yolo counties.


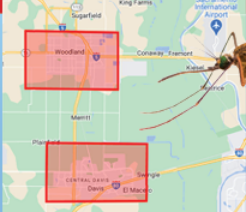
In 2023 there was a record amount of rain that led to many mosquito breeding sources. In addition, there was an increase in acres of rice that were planted within our District area. These factors, in combination with hot temperatures during the summer led to a long and intense West Nile virus season that resulted in a sharp increase in confirmed human cases of the disease. In Sacramento County there were 53 human cases confirmed while Yolo County had 39. This is a huge upsurge compared to 2022 when there were only 5 and 3 cases respectively. Statewide, there were 428 human cases including 19 fatalities.

In addition to the surge of West Nile virus activity in 2023, of ongoing concern are the invasive mosquito species *Aedes aegypti* and *Aedes albopictus* which continued to spread into many new areas in both Sacramento and Yolo counties. Some of the biggest infestation areas were Rosemont, south Natomas, Elder Creek and Arden Arcade in Sacramento County. Meanwhile, Winters and West Sacramento have the largest infestations of these mosquitoes in Yolo County. As a result of new and ongoing detections, extensive door-to-door inspections were initiated where District technicians educated residents about this ongoing issue.

We also utilized social media to further disseminate information regarding invasive mosquitoes. To target residents in specific communities where invasive mosquitoes were extensively found, we participated in different city sponsored events such as Movies in the Park, Concerts in the Park and farmers markets. We passed out repellent wipes and materials, talked to residents and answered questions regarding invasive mosquito species and our District activities to control them. Lastly, we collaborated with city hall and local elected officials to disseminate information via the city website, newsletters, and social media.



**AERIAL SPRAYING** to control mosquitoes and West Nile virus planned for Davis and Woodland  
Sunday and Monday August 6th and 7th  
8:30pm to 11:00pm



Residents can sign up for urban aerial spraying text message updates by texting "sprayupdate" to 69922

Sacramento-Yolo MOSQUITO & VECTOR CONTROL DISTRICT

[www.FIGHTtheBITE.net](http://www.FIGHTtheBITE.net)  
1.800.429.1022





## FURTHER OUTREACH ACTIVITIES

### COMMUNITY EVENTS

The District participated in a variety of community events throughout the year. An educational and engaging booth was set up that included live mosquito and mosquitofish displays, a bug box, a repellent display, free individual repellent packets, information on invasive mosquitoes and a variety of message reinforcement items. Staff engaged the public and was available to answer questions on District activities and to promote our various services. In 2023 we participated in a total of 38 community events throughout the year.

### PRESENTATIONS TO SCHOOLS, COMMUNITY GROUPS AND LOCAL ELECTED OFFICIALS

As part of our community education and outreach we provide presentations to a variety of service groups, neighborhood associations, schools and to local elected officials. In 2023, a total of 29 presentations were given.

### FIGHT THE BITE CONTEST

In 2023 we were able to once again hold our annual Fight the Bite Contest! Contest fliers were disseminated and students in grades K-12 were asked to create artwork encouraging the audience to practice one or all of the District D's of Mosquito Prevention. In total we received 794 entries. Winners were selected and announced during Mosquito Awareness Week in April.

### SCHOOL ASSEMBLIES

In an effort to expand and grow our school program, we formed a partnership with Red Shoe Productions to organize, plan and conduct Fight the Bite "What Bugs You?" school assemblies that serve to educate and inform the kids on our Be a Mosquito Buster program. Each 45-minute assembly, which is geared for grades 2nd-5th, includes a variety of games and educational activities to reinforce the importance of mosquito control and District D's of mosquito prevention. In 2023 a total of 15 assemblies took place in local schools reaching hundreds of children.

### REPELLENT DISTRIBUTION

An important component of the education and outreach program is to promote the use of mosquito repellent as a way to have the public protect themselves from mosquito bites. The District offers free mosquito repellent wipes for agencies and community organizations to use during outdoor evening activities. In 2023, field technicians delivered boxes of repellent to agencies that serve homeless populations, parks and recreation departments, senior centers and businesses. To request mosquito repellent you may send an email to [info@fightthebite.net](mailto:info@fightthebite.net).





# Mosquito & Vector Surveillance

The District laboratory conducts the following activities to protect public health in Sacramento and Yolo Counties:

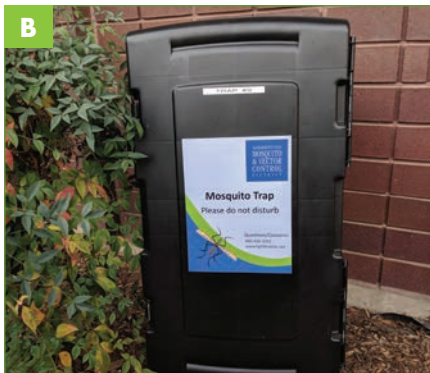
- Mosquito abundance surveillance
- Mosquito-borne disease surveillance for:
  - » West Nile virus (WNV)
  - » Saint Louis Encephalitis (SLEV)
  - » Western Equine Encephalitis (WEEV)
- Tick and Lyme disease surveillance
- Yellowjacket abundance surveillance
- Identification of arthropods of public health significance
- Pesticide resistance testing and management
- Product efficacy testing
- Mosquito control applied research

In addition to the mosquito species found in Sacramento and Yolo Counties, District technicians are also trained to recognize any exotic or introduced species, if present, in any of the thousands of samples they collect each year.

## SURVEILLANCE OF MOSQUITOES

Mosquito surveillance is an essential component of the District's Integrated Vector Management (IVM) program and is designed to provide real-time data on mosquito abundance and mosquito-borne disease activity. The primary mosquito-borne disease in California is West Nile virus. To control the spread of this virus the District maintains a systematic approach for locating areas with high mosquito abundance and mosquito-borne disease activity. In addition, the District has implemented a robust surveillance program to monitor the invasive species *Aedes aegypti* and *Aedes albopictus* that were introduced into the area in 2019 and 2022, respectively.





The District uses a range of trap types that target different species and mosquito life stages:

- A) Encephalitis Vector Surveillance (EVS) Trap** Uses dry ice (carbon dioxide) as an attractant and targets host-seeking mosquitoes; set for one night and used to collect mosquitoes that are tested for encephalitis viruses.
- B) Locker Trap** This trap was designed by the District; it runs continuously and uses compressed liquid carbon dioxide to attract host-seeking mosquitoes; used for abundance surveillance.
- C) Gravid Trap** Can be configured to run continuously or for a single night; uses water infused with fermented hay and hog chow to attract gravid females seeking a place to lay eggs; used for both abundance and mosquito-borne virus surveillance.
- D) Biogents Sentinel Trap (BG-S)** Can be configured to run continuously or for a single night; uses trap design, carbon dioxide, and BG lure (proprietary odor blend) to attract mosquitoes, especially effective for collecting *Aedes aegypti* and *Aedes albopictus*.
- E) Biogents Counter Trap (BG-C)** This is an attachment that rests on top of a BG-S that counts “mosquito-sized” objects that enter the trap; used primarily in rice field habitats; set with compressed liquid carbon dioxide that attracts host-seeking mosquitoes.

In 2023, mosquito abundance surveillance was conducted at 24 sites across Sacramento and Yolo Counties. At each trap location a gravid trap and locker trap configured for constant operation were deployed in tandem. In total, 88,760 female mosquitoes comprising 12 species were collected in Yolo County and 122,539 female mosquitoes from 17 species were collected in Sacramento County.

The tables below show the total number of each mosquito species captured at 24 abundance monitoring sites in Sacramento and Yolo Counties during 2023.

## ADULT MOSQUITO ABUNDANCE TRENDS

### 2023 YOLO COUNTY MOSQUITO ABUNDANCE SURVEILLANCE

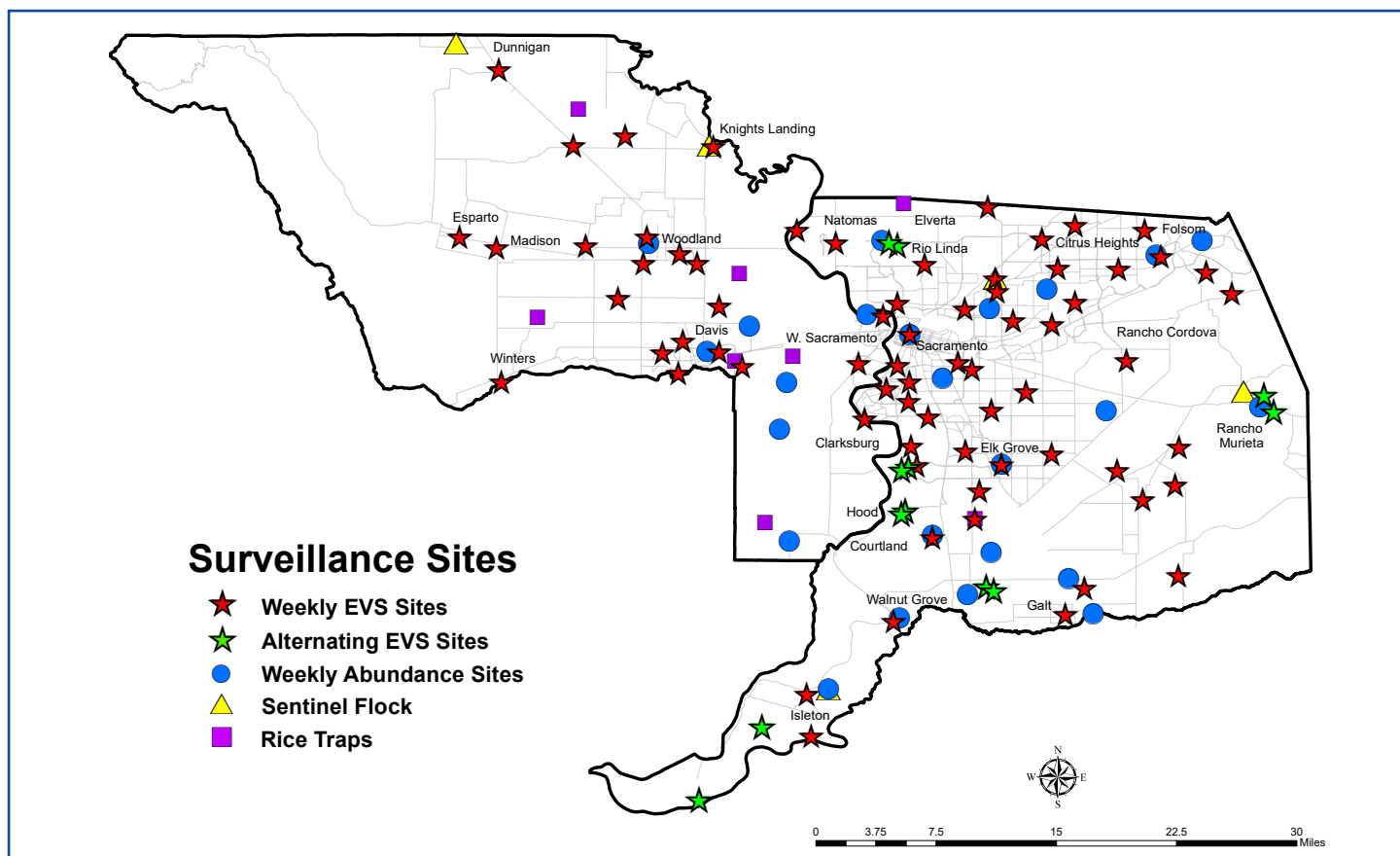
Species	Clarksburg-63113	Clarksburg-63106	Davis - 54334	Davis - 6642	Davis-54347	Woodland - 54320
<i>Aedes melanimon</i>	2,785	573	84	4	1427	
<i>Aedes nigromaculis</i>	24		4		3	
<i>Aedes vexans</i>	1	0			183	
<i>Anopheles franciscanus</i>			13		1	
<i>Anopheles freeborni</i>	148	223	3,367	178	1,104	630
<i>Culex erythrorhax</i>	38				2	
<i>Culex pipiens</i>	252	438	2,245	1,031	294	3,475
<i>Culex stigmatosoma</i>	47		5	1	2	1
<i>Culex tarsalis</i>	1,945	17,052	26,043	2054	17,766	1,541
<i>Culiseta incidens</i>	16	19	5	3	6	25
<i>Culiseta inornata</i>	637	124	166	29	451	23



## 2023 SACRAMENTO COUNTY MOSQUITO ABUNDANCE SURVEILLANCE

Species	Sacramento - 63055	Sacramento - 63252	Sacramento - 54440	Sacramento - 63331	Sacramento - 63367	Sacramento - 63139	Carmichael - 54386	Folsom-63197	Orangevale - 63196	Sloughhouse - 54421	Elk Grove-63525	Elk Grove - 63517	Elk Grove - 18894	Galt-54471	Galt-54472	Galt-54468	Isleton - 18975	Walnut Grove - 63577
<i>Aedes aegypti</i>		1		1														
<i>Aedes melanimon</i>	10	1	150	52	2	48	1				5	18		37	108	483	2,914	253
<i>Aedes nigromaculis</i>			7							2	1			1	1	15	1	
<i>Aedes sierrensis</i>	1	2	-	25	5		1	12	-	28	5	2			110		1	2
<i>Aedes vexans</i>			10							3	6	69		4	85	232	774	13
<i>Aedes washinoi</i>				2				1		1					11			214
<i>Anopheles franciscanus</i>	1		7				1			1	1						1	
<i>Anopheles freeborni</i>	160	120	61	65	1	10,534	74	2	4	42	85	185	74	31	28	2,882	120	136
<i>Anopheles punctipennis</i>																1		
<i>Culex erythrothorax</i>	1		3									8	5		11	42	38	5
<i>Culex pipiens</i>	1,295	854	223	1,493	6,857	163	926	3,929	3,777	55	7,607	7,044	1,554	7,541	2,707	2,856	963	61
<i>Culex stigmatosoma</i>	6	3	3	5	3	3	6	42	1	11	24	11	2	5	77	3	3	7
<i>Culex tarsalis</i>	653	94	830	318	268	5,817	327	683	222	159	1,462	2,127	1,644	4,830	1,266	22,719	6,950	217
<i>Culiseta incidens</i>	114	7	5	202	177	7	41	150	72	4	4	41	29	52	157	7	99	7
<i>Culiseta inornata</i>	21	2	86	23	7	81	8	9	16	-	25	218	12	8	6	17	408	83

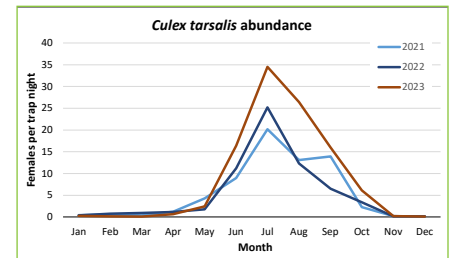
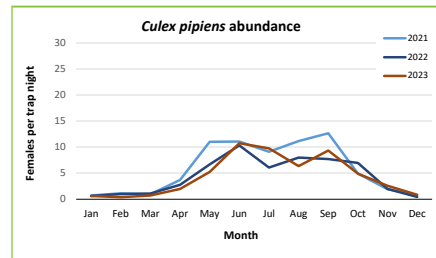
## 2023 LAB SURVEILLANCE MAP





All mosquito species are monitored throughout the year, but the District is particularly interested in *Culex pipiens* and *Culex tarsalis*, our primary vectors of West Nile virus. The abundance of these species is closely monitored and is used to direct control efforts. *Culex tarsalis* abundance peaks July-August, these mosquitoes primarily utilize rice fields and wetland habitats for immature development. The active season for *Culex pipiens* is longer, with the highest abundance trends observed June-September. *Culex pipiens* use both urban sources such as catch basins and standing water around homes and rural sources including dairy lagoons and roadside ditches.

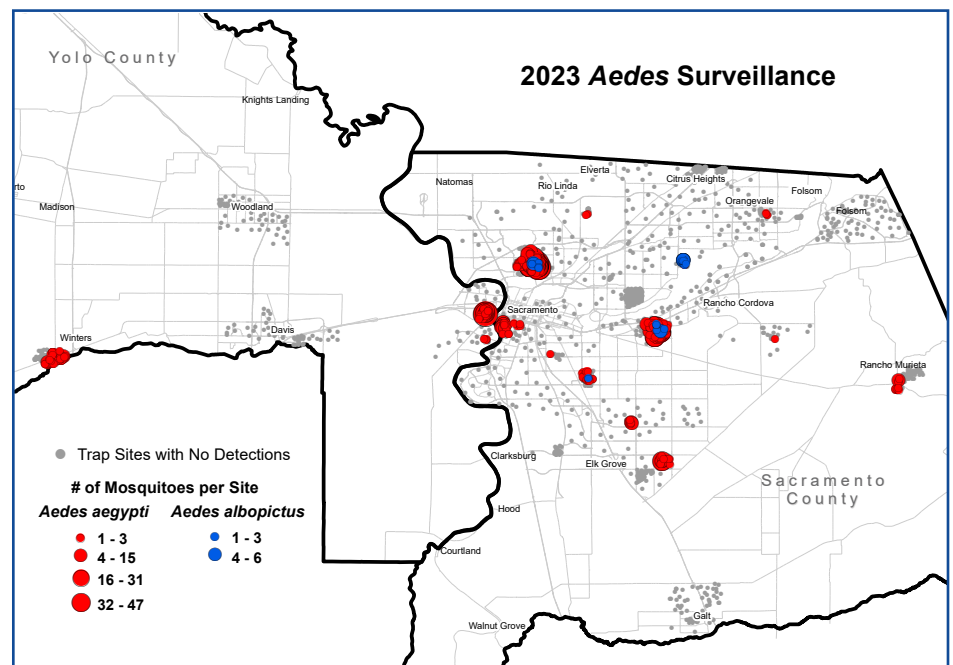
The charts below show the mean number of female mosquitoes per trap night captured in both locker and gravid traps set at 24 sites abundance surveillance sites across Sacramento and Yolo Counties. The previous two years of abundance trends for *Culex tarsalis* and *Culex pipiens* is shown.



The invasive mosquito *Aedes aegypti* has become established in multiple locations across Sacramento and Yolo Counties. In addition, during October 2023 *Aedes albopictus* was also detected in Sacramento County. The District uses two approaches to monitor invasive *Aedes* populations. First, all known populations are routinely monitored using BG-S traps and surveillance data is used to plan control interventions. Second, BG-S traps are set throughout Sacramento and Yolo Counties to detect new infestations. *Aedes aegypti* and *Aedes albopictus* utilize small containers that hold water around the home for larval development. These sources can harbor eggs that persist during dry spells and hatch when reflooded. Both species are aggressive biters that host-seek during both the day and night.



## 2023 INVASIVE AEDES SURVEILLANCE MAP





# ENCEPHALITIS VIRUS SURVEILLANCE

## SENTINEL CHICKENS

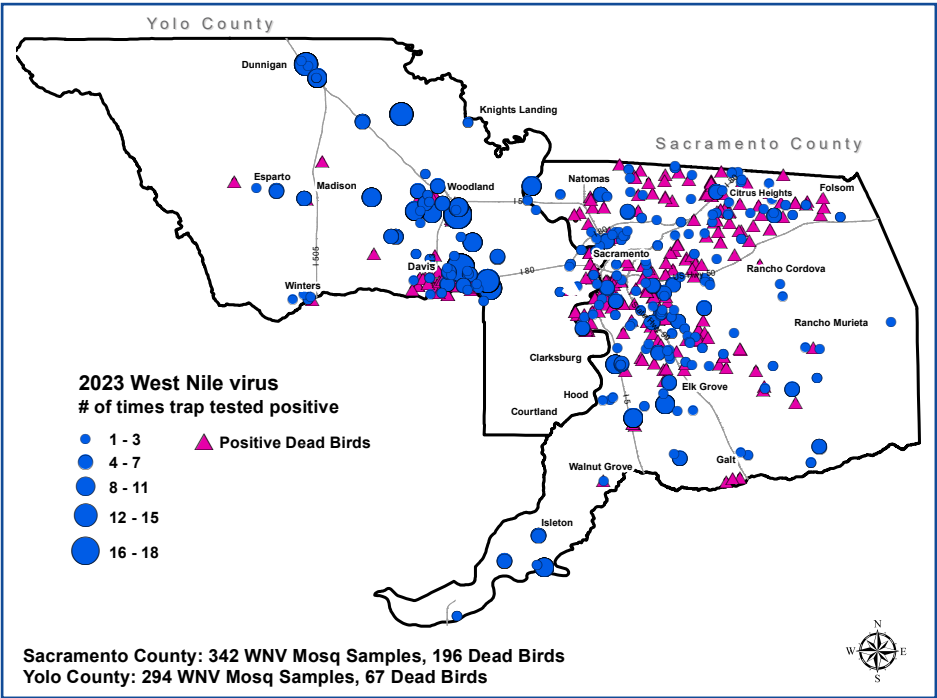
Chickens are readily fed upon by host-seeking *Culex tarsalis* and *Culex pipiens*. When chickens are bitten by a WNV-infected mosquito, they become asymptotically infected and develop antibodies against WNV. Chickens are dead-end hosts for WNV; meaning they do not pass the virus to other mosquitoes. Sentinel chickens are especially useful because they are housed in a fixed location, thus the presence of antibodies indicates local virus transmission. Sentinel chicken flock locations for 2023 are shown on the 2023 Laboratory Surveillance Map. During 2023, the District maintained a total of 25 chickens distributed across five flocks in Sacramento and Yolo Counties from April through October. Sentinel chickens were tested for antibodies against Saint Louis encephalitis virus (SLEV), western equine encephalitis virus (WEEV), and WNV. WNV antibodies were detected in chickens from four out of five flocks.

### 2023 SENTINEL CHICKEN TESTS

SACRAMENTO COUNTY			
Flock Location	Flock size	WNV antibody positive	Date of first seroconversion
Iselton	5	5	8/3/23
Sacramento	5	0	
Rancho Murieta	5	2	9/28/23

YOLO COUNTY			
Flock Location	Flock size	WNV antibody positive	Date of first seroconversion
Knights Landing	5	4	8/14/23
Dunnigan	5	4	7/31/23

### 2023 WEST NILE VIRUS SURVEILLANCE MAP





## MOSQUITOES

From May through October EVS and gravid traps are set overnight throughout Sacramento and Yolo counties. Starting EVS trapping locations are shown on the 2023 Laboratory Surveillance Map. Trap locations shifted in response to WNV detections. Mosquito collections were returned to the lab, identified to species and sex, counted, and *Culex pipiens* and *Culex tarsalis* pooled in collections of up to 50 females by location and trap type. Pools were tested in-house for the SLEV, WEEV, and WNV using reverse transcriptase quantitative polymerase chain reaction (RT-qPCR).

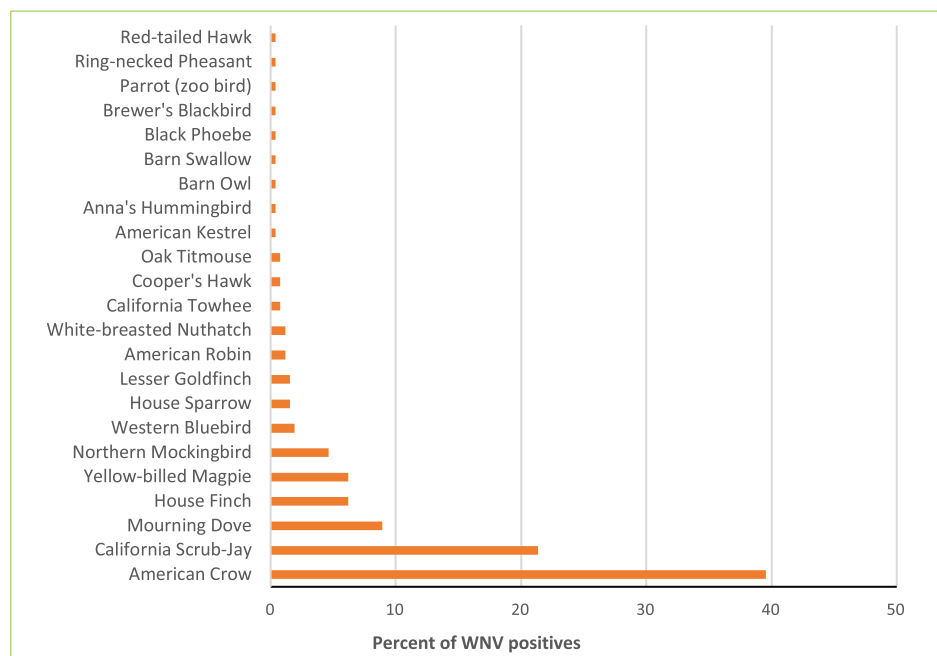
During 2023, 191,285 female and 4,928 male mosquitoes from 19 species were captured in EVS and gravid traps deployed for encephalitis virus surveillance. Of these, 80,927 female *Culex tarsalis* (3,842 pools; Sacramento County = 2,234; Yolo County = 1,608) and 43,324 female *Culex pipiens* (4,136 pools; Sacramento County = 2,907; Yolo County = 1,229) were tested. Overall, 400 pools of *Culex tarsalis* (Sacramento County = 171; Yolo County = 229) and 236 pools (Sacramento County = 171; Yolo County = 65) of *Culex pipiens* tested positive for WNV (see 2023 West Nile Virus Surveillance Map). The first WNV-positive pool was detected in Sacramento County on June 2, 2023 and the last was detected in Yolo County on October 16, 2023. Additionally, SLEV was detected in two pools of *Culex tarsalis* collected in Yolo County; WEEV was not detected.

## DEAD BIRDS

Bird mortality is an indicator of West Nile virus activity. Dead birds are reported by the public to the WNV Call Center (1-877-WNV BIRD, or online at [westnile.ca.gov](http://westnile.ca.gov)). Birds reported in Sacramento and Yolo Counties are collected by the District and tested for WNV, SLEV, and WEEV. Dead birds are often the first indicator of WNV activity in an area and are an important component of our surveillance program, helping us to track and target WNV activity.

In 2023, 1,281 dead birds were reported to the WNV Call Center from Sacramento and Yolo Counties. Of these, 584 birds (Sacramento County = 456; Yolo County = 128) were collected and tested for WNV, SLEV, and WEEV. Overall, 258 (Sacramento County = 195; Yolo County = 63) dead birds tested positive for WNV (see 2023 West Nile Virus Surveillance Map). The bird species found positive for WNV are shown in the accompanying figure (Dead birds positive for WNV in 2023).

## 2023 DEAD BIRDS POSITIVE FOR WNV





## YELLOWJACKETS

The District's yellowjacket monitoring and control program was established to address nuisance and safety issues associated with high yellowjacket populations. The program consists of trapping drones and queens and removal of yellowjacket nests. In the spring, the District uses apple juice-baited traps to capture queens before nests can be established. Later in the season, traps are baited with heptyl butyrate to attract drones. When yellowjacket nests pose safety concerns they are removed.

## ARTHROPOD IDENTIFICATION SERVICE

Besides identifying mosquitoes and ticks collected through our surveillance program, the District receives and identifies many other arthropods brought in by the public. Some of the previously identified species include: ants, termites, springtails, mites, solitary and carpenter bees, long-horned beetles, honey bees, yellowjackets and wasps, spiders, stored product pest beetles, moths, bedbugs, and midges.

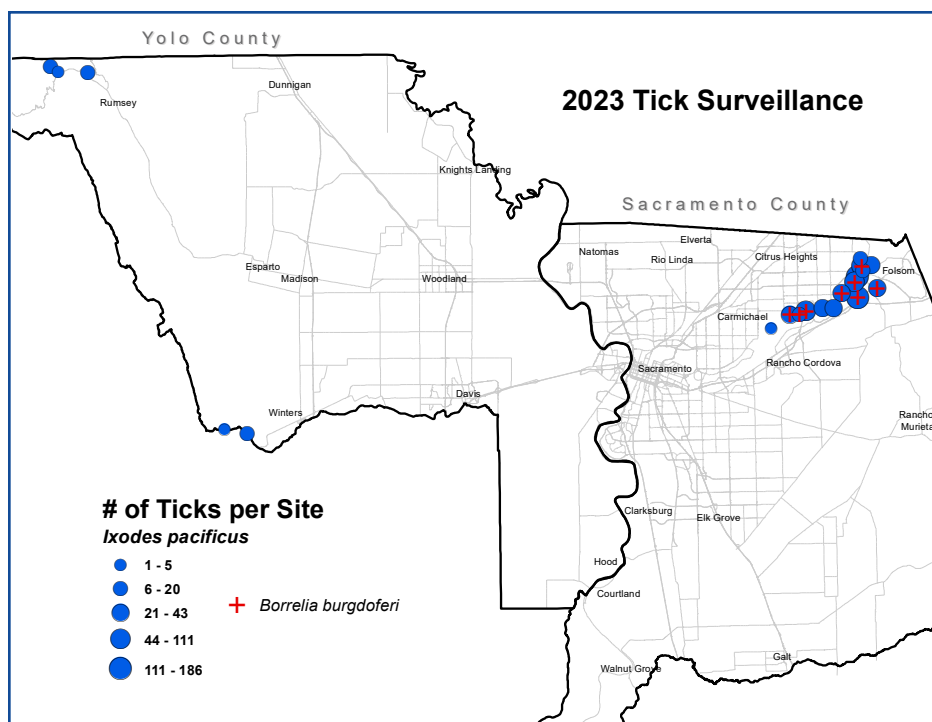
## PESTICIDE RESISTANCE MANAGEMENT

Pesticides play an important role in mosquito and vector control Integrated Vector Management (IVM) programs. Growing insecticide resistance to the available active ingredients used for mosquito control impacts the efficacy of our control operations. Therefore, the District performs both adult and larval resistance testing on mosquitoes collected throughout Sacramento and Yolo Counties. To aid in this work the District maintains reference mosquito colonies of both *Culex pipiens* and *Culex tarsalis* and utilizes resistance testing protocols from the Centers for Disease Control and Prevention (CDC) and recommendations from the Mosquito and Vector Control Association of California.

## TICK AND LYME DISEASE SURVEILLANCE

Lyme disease is caused by the bacterium *Borrelia burgdorferi*. In Sacramento and Yolo Counties it is primarily vectored by the tick *Ixodes pacificus*, also known as the western blacklegged tick. The District collects tick specimens from twenty fixed locations comprised of high-use trails with suitable tick habitat from November through May. Ticks are collected using a technique called tick-flagging, where a 1m x 1m section of white flannel is dragged along the side of a trail for short distances then inspected for attached ticks. Collected ticks are identified to species and sex, counted, and pooled in collections of up to five *Ixodes pacificus* by site. Ticks are tested at the District using quantitative polymerase chain reaction (qPCR) for *Borrelia burgdorferi*. When *Borrelia burgdorferi* is detected, signs are posted to create public awareness of the steps to take to prevent tick bites and Lyme disease. Of the 20 sites flagged for ticks in 2023, *Borrelia burgdorferi*-positive ticks were found at eight sites, see the tick surveillance map for specific locations.

## 2023 TICK SURVEILLANCE MAP



## RESEARCH AND SPECIAL PROJECTS

The District routinely evaluates new and current strategies for controlling mosquitoes, and collaborates with researchers from academia and industry. Evaluations take place both in the field and laboratory. One technique for evaluating product efficacy is through a field efficacy trial where bioassay cages of adult mosquitoes and droplet impingers are deployed to assess spray events. These data aid in the development of new products and guide implementation of vector control strategies.





# Biological Control

Biological control elements are natural predators, parasites or pathogens that can be used to achieve desired reductions in pest population levels. The Fisheries Department is responsible for breeding mosquitofish and other fish species that prey on mosquito larvae. Mosquito-eating fish are readily available for the District's field technicians and to the general public through the service request program.

The District maintains 22 ponds which produce 2,500 to 5,000 pounds of fish annually. Today, the District is one of the largest mosquitofish producing facilities in the nation.

## **MOSQUITOFISH, *Gambusia affinis***

The most successful biological tool against immature mosquitoes in California is the mosquitofish, *Gambusia affinis*. When introduced to a mosquito breeding source, the mosquitofish quickly adapts, multiplies and becomes numerically capable of sustaining an effective control level.

The mosquitofish, a live-bearing American fish, is utilized as a predator of mosquito larvae in many diverse aquatic habitats throughout the world. A comparatively small species, the full-grown females are usually less than 2½ inches in total length, while males are typically under 1½ inches. The muted silver and light olive green body color is common to both sexes. In addition, they are able to lighten or darken their body color pigmentation to more closely match their immediate environment.

## **GUPPIES, *Poecilia reticulata***

The guppy, *Poecilia reticulata*, has been used for biological mosquito control since World War I. It has been introduced almost all over the world from the areas of tropical South America to which it is indigenous. In many areas, the guppy has provided good control of mosquitoes in highly polluted sources, such as sewage pools, dairy lagoons, chicken ranch ditches and slightly acidic sources. Unlike the mosquitofish, the guppy's ability to reproduce or control mosquitoes is not reduced by low levels of dissolved oxygen and thrive in areas where mosquitofish cannot successfully develop.





## BIOLOGICAL CONTROL DISTRIBUTION

SYMVCD's state-certified mosquito and vector control technicians provided mosquitofish and guppies to residents of Sacramento and Yolo Counties free of charge.

### BIOLOGICAL CONTROL DATA FOR 2023

#### RICE FIELDS STOCKED WITH MOSQUITOFISH

Number of Fields .....	140
Pounds of Fish * .....	2,283
Acres Stocked .....	11,026

#### WILDLIFE REFUGES AND DUCK CLUBS STOCKED WITH MOSQUITOFISH

Number of Fields .....	40
Pounds of Fish .....	846
Acres Stocked .....	2,595

#### SOURCES STOCKED WITH GUPPIES

Number of Sources .....	7
Pounds of Guppies .....	0.555
Acres Stocked .....	0.037

#### MOSQUITOFISH SUPPLIED TO TECHNICIANS

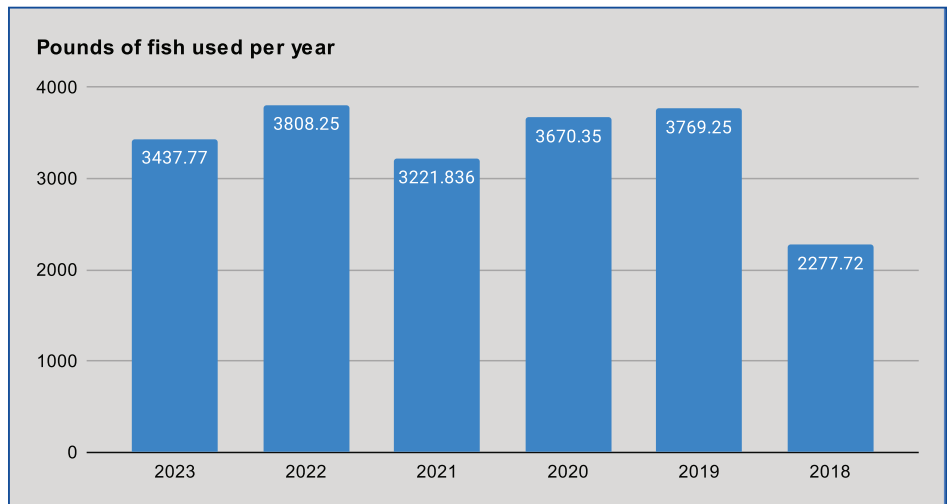
Woodland Facility .....	105
Elk Grove Facility .....	316

#### SUMMARY OF ALL MOSQUITOFISH PLANTS IN 2023

Number of Sources .....	2,888
Pounds of Fish .....	3,438
Acres Stocked .....	15,741

\* 1 pound of fish equals approximately 450 fish.

### A COMPARISON OF MOSQUITOFISH USED 2018-2023





# Ecological Management

The Ecological Management Department manages the physical, environmental, and cultural control aspects of the District's Integrated Pest Management Program by actively exploring opportunities to reduce or eliminate mosquito development sites. This is accomplished through the implementation of ecologically based, site specific Mosquito Reducing Best Management Practices (BMPs) that reduce or eliminate the need for chemical control measures as well as initiates the abatement process in instances of continued Health and Safety Code section §2060 violations. Additionally, the Ecological Management Department provides support to all District departments on an as needed basis, including assisting with mosquito control applications and surveillance.

## MOSQUITO REDUCTION BEST MANAGEMENT PRACTICES (BMP) MANUAL

In 2023, The Ecological Management Department pursued landowner implementation of Mosquito Reducing Best Management Practices (BMPs) as outlined in the District's Mosquito Reduction Best Management Practices Manual. This manual provides specific information regarding District BMP policies, mosquito biology, and various BMPs that may be useful in reducing mosquito populations. Land-use specific sections of the Manual provide guidance for landowners and land-managers who deal with programs such as: managed wetlands, stormwater and wastewater systems, irrigated agriculture, rice production, dairies, swimming pools, cemeteries, and tire storage facilities. The BMP manual is available for download at: [www.fightthebite.net/programs/ecological-management/](http://www.fightthebite.net/programs/ecological-management/).

The BMP manual serves as the basis for all general Ecological Management Department programs including Stormwater, Managed Wetlands, Agriculture, Urban/Industrial programs, including, development, environmental and regulatory project reviews, and property access enforcement. The Ecological Management Department provided detailed guidance to property owners on how best to implement the BMPs, and in some cases assisted with physical improvements and environmental manipulation.

## ECOLOGICAL MANAGEMENT PROJECTS IN 2023

In 2023, the Ecological Management Department addressed seventy-two BMP projects submitted by Control Operations field staff. These projects ranged from access to significant mosquito breeding sites and vegetation control to elimination or reduction of mosquito breeding habitats. Each project that is submitted is evaluated and a BMP plan is devised in accordance with the District's BMP manual and using sound Integrated Pest Management (IPM) policies and procedures. Once the project is finalized, the Department in coordination with the Landowner/Managers work cooperatively to implement BMP's that will reduce/eliminate standing water, mosquito breeding, improve mosquito control product efficacy, and ensured safe access for mosquito control activities. After completion of the projects, Ecological Management staff monitors the project sites to ensure the long-term goals of the project are met and any preventive maintenance to the project sites are being addressed.

## PLANNING REVIEW PROGRAM

In 2023, The Ecological Management team reviewed fifty proposed development projects from cities, counties, Federal and State agencies, requesting the District to offer comments or suggestions relating to mosquito production and long-term preventative maintenance of the proposed projects. Ecological Management staff evaluated each proposed plan or project and responded where the proposed project may have an impact to mosquito production and/or control activities. Many of the comments to the proposed projects are focused upon stormwater/sewer plans and projects that incorporate Low Impact Development practices that are implemented in landscape features to mitigate stormwater runoff. Project proponents are encouraged to respond with actions plans, long-term maintenance plans, and review potential remediations with Departmental staff that will address any adverse effects to mosquito control activities.





## STORMWATER/DRAINAGE PROGRAM

The Department's Stormwater Program continues to monitor various types of storm water conveyance and treatment facilities including but not limited to stormwater drains, retention/detention ponds and settling and infiltration ponds. The Department continued to address drainage blockages, access issues associated with dense riparian or vegetated stream banks, and upland mosquito breeding within drainage corridors. The Ecological Management staff collaborates with multiple Federal, State, and local Agencies to remove blockages and perform preventive maintenance to prevent effluent from backing up into areas and creating significant mosquito breeding habitats. Staff and affected agencies focused their effort on projects where the potential for intensification of vector borne diseases and high mosquito abundance were prominent near populous areas in Sacramento and Yolo Counties.



## MANAGED WETLAND PROGRAM

The process of flooding dry wetlands for conservation and habitat in the summertime to improve food plots and reduce unwanted invasive vegetation in wetland cells creates habitats that are favorable for mosquito breeding. The flooding in conjunction with high temperatures and emergent vegetation can promote rapid mosquito production and create the perfect storm for amplification of some vector-borne diseases such as West Nile Virus (WNV). To promote implementation of wetland Best Management Practices, staff participated in multiple federal and state stakeholder meetings to discuss new federal and statewide wetland policies and to develop wetland management plans for individual wetland complexes.



The District's wetland program continues to evolve and coordination with private wetland managers is imperative to the success of the program. The Department conducted on-site meetings with private wetland managers and recommended BMP's for wetlands and discussed the timing and longevity of irrigations and flood ups that balance the management objectives of the wetland manager and the goals of the District to control mosquito populations. In 2023, seven private wetland properties were flooded prior to October 1st and were invoiced for mosquito control costs under the District's wetland cost share program.

## AGRICULTURE PROGRAM

The Ecological Management Department conducted 12 vegetation removal/management projects in response to technician requests. Departmental staff utilized vegetation removal equipment to provide technician access to significant mosquito breeding sites. These projects enhanced technician safety and increased the efficacy of materials applied to control mosquito populations.



Additionally, the Department responded to 7 irrigated pasture related mosquito reducing Best Management Plan (BMP's) projects. These projects ranged from excavating new drainage ditches to installing and/or repairing culverts to drain irrigation effluent off the pastures reducing the standing water that is conducive for mosquito breeding. Staff excavated roughly 10,000 linear feet of drainage ditches and reduced approximately 60 acres of mosquito breeding habitat. As part of the projects, moving forward, staff encouraged landowners and irrigators to implement Best Management Practices as outlined in the District's BMP manual to reduce mosquito breeding habitats on their agricultural properties.

## CEMETERIES

The Ecological Management Department monitors mosquito production in 32 cemeteries in Sacramento and Yolo Counties. In 2023, staff inspected and treated approximately 15,500 cemetery vases. The Department utilized a combination of water absorbing crystals and chemical treatments to mitigate mosquito breeding in cemetery flower vases. The Department increased trapping and surveillance in cemeteries due to the introduction of *Aedes aegypti* (yellow fever mosquito) in 2019 and the detection of *Aedes albopictus* (Asian Tiger mosquito) in Sacramento County in the fall of 2022.





# Microbial & Chemical Control

Microbial and chemical control are the use of specific microbials and chemical compounds (insect growth regulators and insecticides) that eliminate immature and adult mosquitoes. They are applied when biological and physical control methods are unable to maintain mosquito numbers below a level that is considered tolerable or when emergency control measures are needed to rapidly disrupt or terminate the transmission of disease to humans. Larvicides target immature mosquitoes. Adulticides are insecticides that reduce adult mosquito populations. All products applied by the District are registered with the California Environmental Protection Agency.

## MOSQUITO AND MOSQUITO-BORNE DISEASE MANAGEMENT PLAN

### Level I – Normal Season

The District performs routine mosquito, mosquito-borne disease and public health pesticide efficacy surveillance activities. The District also attends community events, provides presentations and distributes outreach material to various community organizations.

### Level II – Positive Dead Birds and/or Mosquito Pools

Response is initiated when the District's Laboratory detects a mosquito-borne virus [i.e., West Nile virus (WNV), Western Equine Encephalomyelitis (WEE), St. Louis Encephalitis (SLE)] in mosquito pools or dead birds within the District's boundaries.

### Level III – Positive Sentinel Chickens/Animals

A response is initiated when the District's Laboratory detects a seroconversion to a mosquito-borne virus (i.e., WNV, WEE, or SLE) in a sentinel chicken(s) or when the District is notified of a mosquito-borne infected horse or other animal within the District's boundaries.

### Level IV – Positive Human Case

A response is initiated when the Sacramento/Yolo County Public Health Laboratory officials notifies the District that a human has locally acquired a mosquito-borne virus (i.e., WNV, WEE, SLE) disease within the District's boundaries.

### Level V – Multiple Human Cases, Epidemic Conditions

A response is initiated when County Public Health Laboratory or CDPH officials notifies the District that multiple mosquito-borne virus (i.e., WNV, WEE, or SLE) infections have occurred in humans within a specific area or there is evidence that epidemic conditions exist. The epidemic area is defined as the geographic region in which human cases are clustered (incorporated city, community, neighborhood, or zip code).

## MOSQUITO AND VECTOR CONTROL OPERATIONS

The Sacramento-Yolo Mosquito and Vector Control District provides year-round mosquito and vector control services to the residents of Sacramento and Yolo Counties. The two counties combined comprise 2,013 square miles of urban, commercial and agricultural land. The District is divided into 27 geographical zones, with state-certified technicians responsible for all aspects of mosquito and vector control in each zone, from larval surveillance to treatment.

The primary goal of field technicians is to manage mosquito populations so they do not pose a significant health risk to the public. To achieve this, field staff conducts year round inspections of various types of mosquito breeding sources. If mosquitoes are found, technicians will apply a larvicide or mosquitofish to take care of the problem. When WNV activity or high abundance numbers are detected in any given area, technicians conduct ground treatments with truck mounted foggers and back packs in order to quickly reduce





adult mosquito populations. 2023 was a very intense year with widespread WNV activity in both counties. At the peak of the season an elevated amount of WNV activity resulted in urban aerial spraying to decrease mosquito populations posing a public health threat in the cities of Davis and Woodland. Urban aerial spraying was conducted on August 6th and 7th. Routine and ongoing aerial spraying over known agricultural sources that produce mosquitoes was also performed in order to reduce nuisance mosquitoes

In addition technicians respond to year-round home service requests which include general inspections, treating neglected swimming pools, delivering and stocking mosquitofish where they are needed, and looking for and treating yellowjackets.

Control operations staff work closely with all other District departments. Field technicians assist with education and outreach efforts by participating in community events and giving classroom presentations. They support the Laboratory surveillance program by picking up dead birds and collecting larvae. They lend a hand to the Ecological Management program by completing brush cutting projects and ditch cleaning whenever necessary. Staff also update zone work books, calibrate field vehicles and winterize all necessary equipment.

### **CATCH BASIN PROGRAM**

The Catch Basin Program was formed in 2005 to address the need for mosquito control in a common and abundant source: urban and suburban storm drains. Catch basins are underground vault structures that collect water from storm events and urban runoff while preventing the entry of debris into open water and sewer systems. The Catch Basin Program's technicians monitor and apply larvicides to hundreds of thousands of catch basins each year, many of which are only a few feet away from a residence or place of business and are capable of producing thousands of adult mosquitoes in a given day.

In 2023, this department continued its routine treatments and inspections of drains across both counties while technicians were able to better prioritize treatments based on a growing historical database of catch basin water abundance. Efficient catch basin treatments and substantial larval sampling responses were made to West Nile Virus incidents and new detections of invasive Aedes mosquitoes.

The program conducted numerous larvicide efficacy examinations throughout the season, which continue to provide more accurate product residual data in the District's local context.



### **SWIMMING POOL PROGRAM**

In 2023, the swimming pool program continued to be a large focus of the District's urban larval control efforts. Stagnant water in swimming pools is a major concern as one pool alone can produce thousands of mosquitoes and put an entire neighborhood at risk for West Nile virus. Every season the District conducts aerial surveys to identify neglected swimming pools in residential areas. Once neglected pools are identified, the District will conduct operations to ensure breeding is eliminated. The District currently has 1487 swimming pools that require annual inspections.



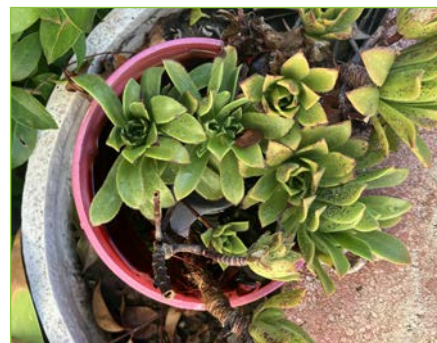
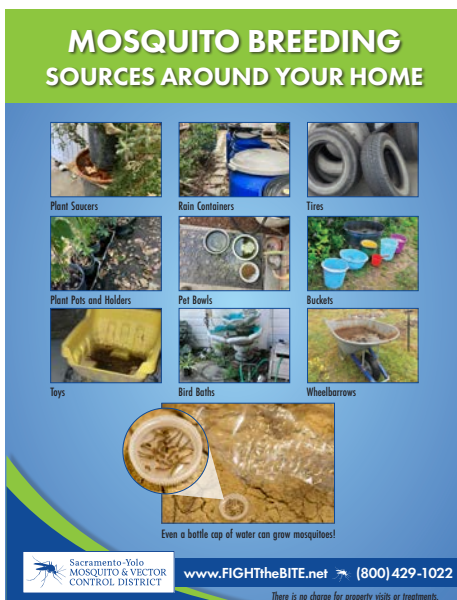


## INVASIVE MOSQUITOES

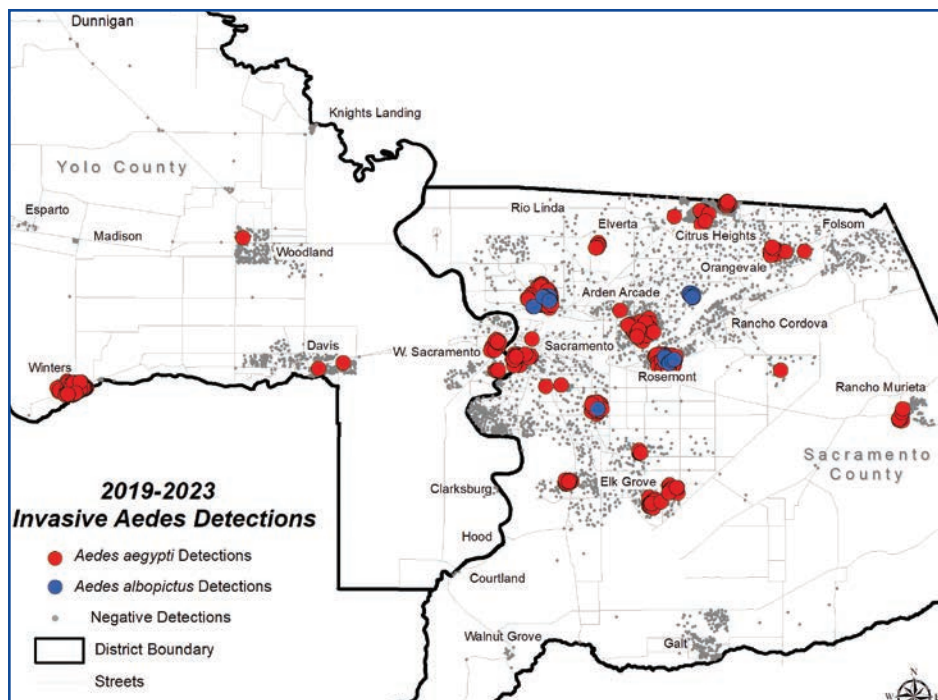
In its second operational season, the Urban Operations Invasive *Aedes* team demonstrated unwavering dedication to intensive surveillance and control efforts of invasive mosquitoes. The primary focus remained on managing invasive mosquito species across the District, covering over 465,000 residential properties in Sacramento and Yolo counties.

The first detection of *Aedes aegypti* in late April, initially in Rosemont, marked the beginning of a season that saw new detections in areas like Vintage Park, Anatolia, Rancho Murieta, and Upper Land Park in Sacramento County. Meanwhile, West Sacramento in Yolo County also saw a growing infestation of invasive mosquitoes. Ongoing surveillance, door-to-door inspections, and localized adulticide treatments were carried out in known infestation areas such as South Natomas, Winters, Rosemont, South Sacramento, and Carmichael. Informational handouts were distributed in high infestation areas to encourage residents to reduce and eliminate mosquito breeding sources on their property. However, the consistent detection of these invasive species prompted multiple early morning Wide Area Larviciding and Ultra Low Volume treatments covering over 9,300 acres in total.

The 2023 season also witnessed two new areas of *Aedes albopictus*, with Rosemont and South Sacramento experiencing their first detection of the Asian Tiger Mosquito. As November brought cooler temperatures, trap abundance tapered, culminating in the last detection of the season in Rosemont. Trapping operations concluded at the beginning of December, highlighting the end of a busy season marked by vigilant surveillance and effective control measures.



## 2023 INVASIVE AEDES DETECTIONS



## 2023 MATERIALS USAGE

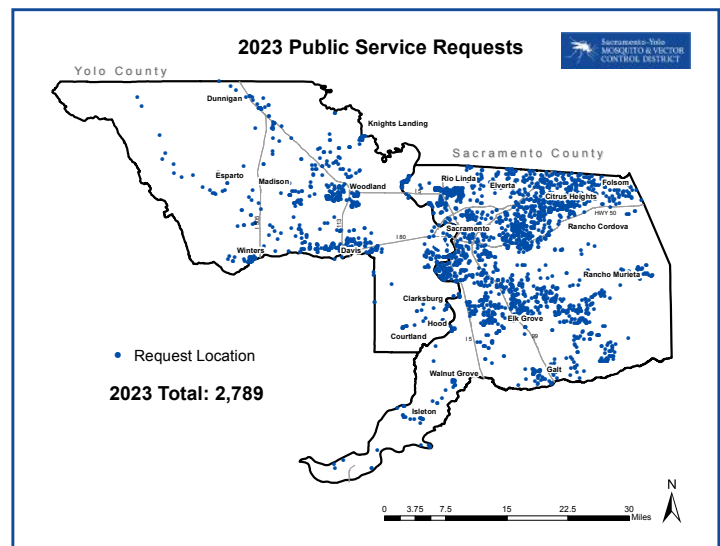
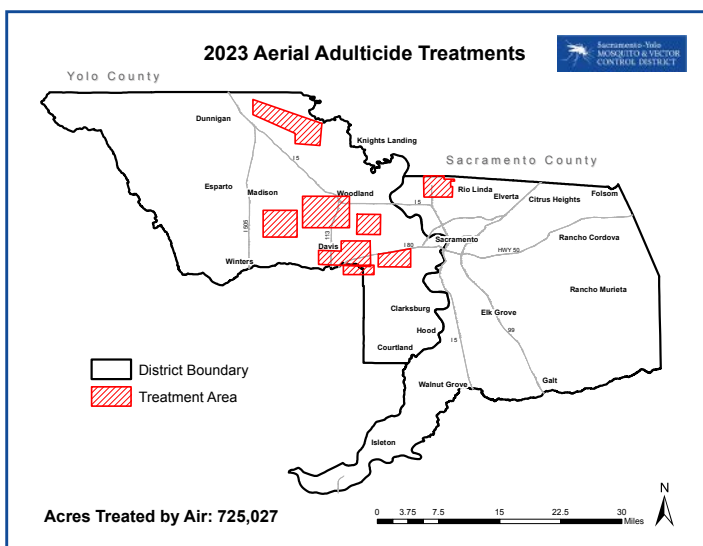
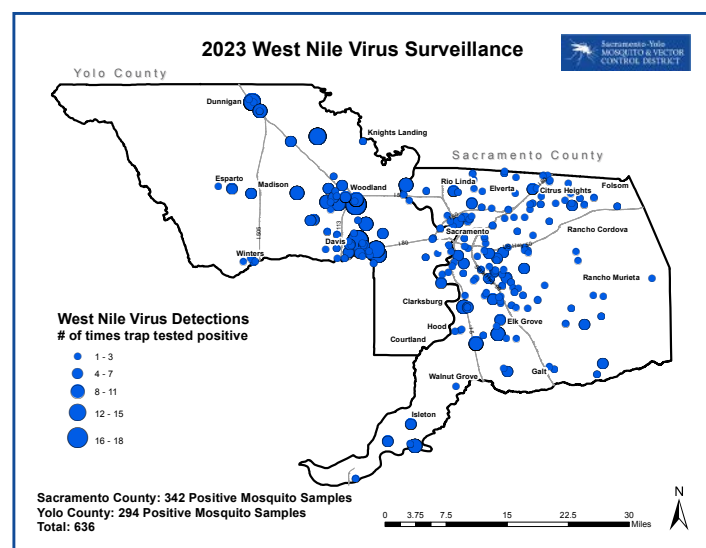
LARVICIDE MATERIALS	ACRES TREATED	AMOUNT OF MATERIAL	NUMBER OF APPLICATIONS
AGNIQUE MMF	3.402	3.399 gal	20
Agnique MMF G Pak35	0.259	2.401 lb	22
Altosid Briquete	0.094	0.653 lb	17
Altosid Liquid and Liquid Concentrate	664.662	5.192 gal	227
Altosid Pellets	2.073	10.461 lb	13
Altosid P35	1,711.21	8,913.85 lb	633
Altosid XR Briquets	0.044	1.529 lb	13
Altosid XR-G	3,748.63	21,275.10 lb	58
Altosid XRG ULTRA	208.94	1,044.70 lb	2
Mosq oil BVA2/Cocobear/Kontrol	123.9	610.14 gal	488
Natular DT	0.193	1.155 lb	212
Natular G30	4,275.06	21,825.69 lb	729
Natular G30 WSP	1.069	19.919 lb	144
Natular XRT	0.921	35.714 lb	179
Natular 2EC	1,457.87	17.106 gal	471
Sumilarv 0.5G	0.545	60.4 lb	200
Vectobac 12AS	43,835.70	3,854.57 gal	1,645
VectoBac GR	26,270.79	134,470.95 lb	351
VectoBac GS	90,554.44	473,060.63 lb	1,285
Vectobac WDG	17,460.20	3,923.74 lb	131
VectoMax FG	110.94	1,085.41 lb	155
Vectomax WSP	6.717	131.278 lb	1,070
VectoPrime FG	604.66	3,083.30 lb	10
LARVICIDE MATERIALS CATCH BASIN	BASINS TREATED	AMOUNT OF MATERIAL	NUMBER OF APPLICATIONS
Altosid Pellets WSP	1,082	17 lb	1,082
Altosid XR-B	39,343	3165 lb	39,343
Natular G30 DWSP/WSP	18,920	416 lb	18,920
Natular XRT	21,649	1909 lb	21,649
Sumilarv 0.5g	50,837	1130 lb	50,837
Vectomax FG DWSP	12,908	283.69 lb	12,908
Vectomax WSP	867	19 lb	867
ADULTICIDE MATERIALS	ACRES TREATED	AMOUNT OF MATERIAL	NUMBER OF APPLICATIONS
Organophosphates (Ground & Air)	369,098	1,795 gal	71
Pyrethrins / Pyrethroids (Ground & Air)	362,093	2,427.00 gal	913
Deltamethrin	174,501	918 gal	2,093
YELLOWJACKET CONTROL MATERIAL	AREA TREATED	AMOUNT OF MATERIAL	NUMBER OF APPLICATIONS
Drione	<1	24 lb	233
PT 565+ XLO	<1	2.1 gal	33



# Geographic Information Systems & Information Technology

In 2023 the GIS Department recorded mosquito control treatments to 1,112,476 acres, which included 19,474 known mosquito breeding sources, 127,822 catch basins, 2,789 requests for service from the public, and 44,312 acres of rice. Besides the EPA registered products, mosquito eating fish were used in 15,741 acres of mosquito breeding habitat. The GIS Department provides spatial analytics, data visualization and implements multiple software platforms to evaluate and improve District operations.

The IT Department is responsible for aligning existing and future District goals with cost-effective scalable technology solutions. The Department maintains servers, wired and wireless networks and equipment, workstations, mobile devices, laptops and projectors for District meetings and public presentations. It also oversees web-based database programming, software and peripherals, as well as a virtual private data network and VoIP phone system connecting offices in Elk Grove and Woodland. Each field technician is equipped with truck-mounted laptops with mobile data and custom GIS software.



# Administration



The District's Administrative Department serves both the residents of Sacramento and Yolo Counties as well as District employees. Functions performed by the Department include customer service and general reception, Human Resources (benefits, recruiting/onboarding, compliance, training, safety, etc.) and Finance (accounting, payroll, coordinating the annual audit and annual budget, accounts payable/receivable, etc.), in addition to critical administrative responsibilities, such as maintaining public records, liability policies and reporting to the Board of Trustees. The Administrative Department strives for excellence in supporting District operations, District management and the public.

## CONTINUING EDUCATION

The District employs vector control technicians certified by the California Department of Public Health. Certification is renewed every two years after established continuing education requirements are met. The Administrative Department tracks employees' continuing education units and helps organize the District's regional continuing education programs and workshops.

# Shop



The District employs two Automotive Service Excellence–certified mechanics working out of the Elk Grove and Woodland locations. The shop maintains 106 vehicles, 3 forklifts, 3 Argo all terrain vehicles, 18 quad-runners, 4 John Deer Gator utility vehicles, 11 utility trailers, 2 low bed trailers, 2 Wheeled Tractors, 1 backhoe tractor, 1 compact tracked loader, 17 London ULV Foggers, 7 Curtis Dyna foggers, 6 Longray electric backpack sprayers, 2 turbine sprayers, 1 Cobra turbine sprayer and 2 Acrease 57" mowers.

The shop is also responsible for repairing and installing various types of equipment, including chainsaws, pole saws, weed eaters, hand cans, edge-trimmer, backpacks, spray guns, lab traps, pumps, and other items in need of repair. In addition, shop staff are skilled in the many aspects of metal fabrication and welding and have helped with projects such as 3D printing accessories for the lab and designing a calibration station for ULV spray systems.





# Financial Statements

## Sacramento–Yolo Mosquito & Vector Control District Statement of Net Position June 30, 2023

### Statement of Revenues & Expenditures for the Fiscal Year Ended June 30, 2023 *UNAUDITED*

The District's financial audit for the Fiscal Year ending June 30, 2023 is currently in progress. Audited financial information relating to Assets, Liabilities, and Net Position is expected to be available by September 1, 2024.

	<b>GENERAL FUND</b>	
<b>REVENUES</b>		
Property taxes	\$	18,189,121
Interest		113,695
Other tax revenue		1,399,589
Other revenues		23,244
<b>Total Revenues</b>	<b>\$</b>	<b>19,725,648</b>
<b>EXPENDITURES</b>		
Aircraft Services	\$	707,274
Auditing / Fiscal		11,000
Biorationals		960,549
Communications		27,523
Control Operations		55,573
District Office Expenses		22,708
Ecological Management		7,061
Fisheries		29,382
Gas & Petroleum		192,762
Geographic Information Systems		4,061
Information Technology		77,771
Insecticides		670,775
Lab Services		182,170
Liability Insurance		247,704
Materials & Supplies		17,013
Member Training		93,341
Microbial		1,044,368
Professional Services		416,744
Public Information		556,128
Rents & Leases		9,125
Safety Program		2,550
Salaries & Benefits		10,719,331
Shop Department		198,102
Structure & Grounds		82,982
Utilities		120,944
<b>Total Expenditures</b>	<b>\$</b>	<b>16,456,941</b>



**Sacramento-Yolo  
MOSQUITO & VECTOR  
CONTROL DISTRICT**

**Sacramento County**  
8631 Bond Road  
Elk Grove, CA 95624  
Phone: 1-800-429-1022  
Fax: 916-685-5464  
Web site: [www.FIGHTtheBITE.net](http://www.FIGHTtheBITE.net)  
Hours: 7:00 am to 3:30 pm

**Yolo County**  
1234 Fortna Avenue  
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