2022 ANNUAL REPORT

SACRAMENTO-YOLO MOSQUITO & VECTOR CONTROL

Sacramento-Yolo
MOSQUITO & VECTOR
CONTROL DISTRICT

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SQUITO
USTER SQUAD

Dear Residents, Colleagues & Friends

We are pleased to present the 2022 Annual Report for the Sacramento-Yolo Mosquito and Vector Control District. Despite the impacts of the drought and ongoing Covid-19 pandemic, the District provided exceptional services to the residents of Sacramento and Yolo counties and our talented staff was able to adapt to ongoing challenges. 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. This report describes the work performed by the District.

This year was extremely busy for invasive mosquitoes as laboratory and control efforts detected *Aedes aegypti* very early in the season. After the initial detection in April, the District increased surveillance efforts within the cities where these invasive mosquito populations are well established including: Elk Grove, Winters, and Sacramento (Arden/Arcade, Rosemont, and Elder Creek communities). The newest detection area for this year was in south Natomas within the city of Sacramento. When detected, field technicians quickly mobilize to begin door to door inspections and conduct treatments as needed. Public outreach was also conducted in these areas to keep the public informed. Other new detection sites within Sacramento County in 2022 included Carmichael, Rio Linda and Orangevale.

In addition to *Aedes aegypti*, a second invasive mosquito species was found in Sacramento County in the month of October. *Aedes albopictus*, commonly known as the Asian Tiger mosquito was detected as a result of a call from a resident in Carmichael who had reported being bitten during the day. Field technicians conducted a backyard inspection and found a single mosquito larva in a watering can. In response to this initial finding, staff conducted more door to door inspections in other homes throughout the neighborhood and uncovered additional *Aedes albopictus* adult mosquitoes and larvae in surrounding areas. This second species of invasive mosquitoes was also found in south Natomas. The District responded to invasive detections by conducting ongoing ground spraying targeting both adult and immature mosquitoes in affected neighborhoods.

Despite invasive mosquitoes, West Nile virus continues to be a top priority. Overall 2022 was a very mild year for WNV activity especially as compared to other seasons. While populations of mosquitoes were steady and surveillance efforts were extensive, WNV activity was significantly low in both birds and mosquito populations. 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. For 2022 there were 107 mosquito samples, 64 dead birds and 10 sentinel chickens that tested positive for WNV in both counties. 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, our dedication and commitment are firm 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 or call us at 1-800-429-1022.

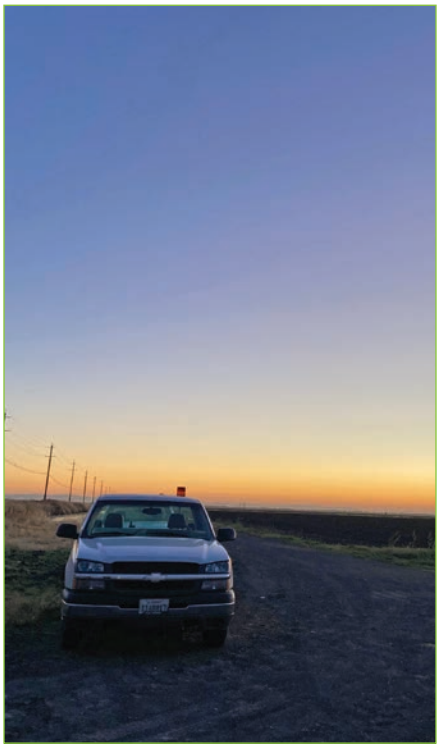
Sincerely,

Gary Goodman
District Manager

Sincerely,

Marcia Mooney
2022 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.

2022 BOARD OF TRUSTEES OFFICERS

President: Marcia Mooney, City of Galt

Vice-President: Garfield House, City of Winters

Secretary: Sean Denny, City of Woodland

BOARD OF TRUSTEES

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Jayna Karpinski-Costa, City of Citrus Heights

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 Manager: Samer Elkashef
Administrative Managers: Shelley Eckler and Rebecca Lane
Program Coordinator: Steve Ramos
Senior Administrative Assistant: Kellee Brinkman
Administrative Assistant: Dania Smith

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

FISHERIES

Fisheries Supervisor: Tony Hedley
Field Technicians: Kiara Day, Grant White

PUBLIC INFORMATION & EDUCATION

Public Information Officer: Luz Maria Robles

ECOLOGICAL MANAGEMENT

Ecological Management Supervisor: Marty Scholl
Ecological Management Technicians: Robert Fowler, Guy Kachadorian

MAPPING & INFORMATION TECHNOLOGY

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

SHOP

Supervisor: Tom Price
Mechanics: Ben Weisenberg, Don Henson

MOSQUITO CONTROL OPERATIONS

NORTH SACRAMENTO COUNTY

Supervisor: Kevin Combo
Field Technicians: Nick Ascarrunz, Ron Burkhouse, Alex Cherney, Richard Fowler,Timothy Guimont, Ken Harris, David Smith, Timothy Yuen

SOUTH SACRAMENTO COUNTY

Supervisor: Demetri Dokos
Field Technicians: Jeff Anderson, Katie Kirkham, Jonas Leuluaialii, Brian McGee, Jacob Pascual, Nate Pascual, Richard Speakman, Kevin Valone

AEDES CREW

Supervisor: John Snell and David Smith
Field Technicians: Jonathon Milanese, Dave Zepf, and Katherine Kellogg

NORTH YOLO COUNTY

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

SOUTH YOLO COUNTY

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

CATCH BASIN CREW

Supervisor: Ryan Wagner
Field Technicians: Shan Badhan, James Brodigan, Yeng Chang, Jay Geigle, Eric Guimont, Garrett Koch

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.

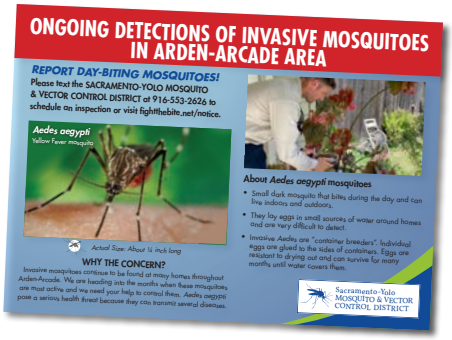
MICROBIAL & CHEMICAL CONTROL

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 WNV, 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 and an annual spring Fight the Bite Contest for all students and schools within Sacramento and Yolo counties.

In 2022, despite some Covid restrictions it was great to resume our traditional public outreach activities that included ongoing presentations to schools and civic engagement groups as well as attend a variety of community events. In addition, we were able to return to do in person presentations to most local elected officials. We were successfully able to disseminate mosquito prevention information via social media, through our extensive advertising campaign and by giving out public relations bags during service request appointments and door-to-door inspections conducted by field staff. In addition, technicians were instrumental in helping to deliver repellent to community groups, senior centers and park districts.



In 2022, the invasive mosquito species, *Aedes aegypti* continued to spread into many new areas in both Sacramento and Yolo counties. In addition, *Aedes albopictus* was also discovered for the first time in two different locations within Sacramento County. Upon any new detection of invasive mosquitoes, a press release was issued to inform the public and a door to door response was initiated where District technicians educated residents on how to prevent these mosquitoes on their property. Residents received brochures, repellent and a door hanger with information and prevention tips. Since the infestations of invasive *Aedes* were intense in some areas we launched social media campaigns to further disseminate information regarding invasive mosquitoes. To target residents even further, we mailed out postcards to all residents in affected communities. In addition, we collaborated with city hall and local elected officials to disseminate information via the city website, newsletters, and social media. Repellent was delivered to the chamber of commerce and delivered to businesses.

FURTHER OUTREACH ACTIVITIES

PRESENTATIONS TO LOCAL ELECTED OFFICIALS

In 2022 we returned to some in person presentations to elected officials while others were still conducted virtually. In total 12 presentations were made and written reports were also submitted to some cities that made this request.

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 2022 we participated in a total of 26 community events reaching nearly 15,000 people.

FIGHT THE BITE CONTEST

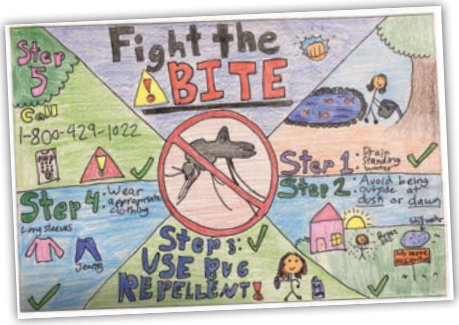
In 2022 we were able to once again hold our annual Fight the Bite Contest! Contest fliers were disseminated and students in grades K-12 were asked to create artwork encouraging the audience to practice one or all of the District D's of Mosquito Prevention. In total we received 704 entries. Winners were selected and announced during Mosquito Awareness Week in April.

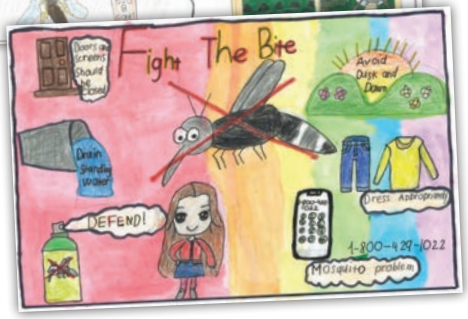
SCHOOL ASSEMBLIES

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 2022, five assemblies took place in local schools reaching almost 900 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 2022, 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.





Mosquito & Vector Surveillance

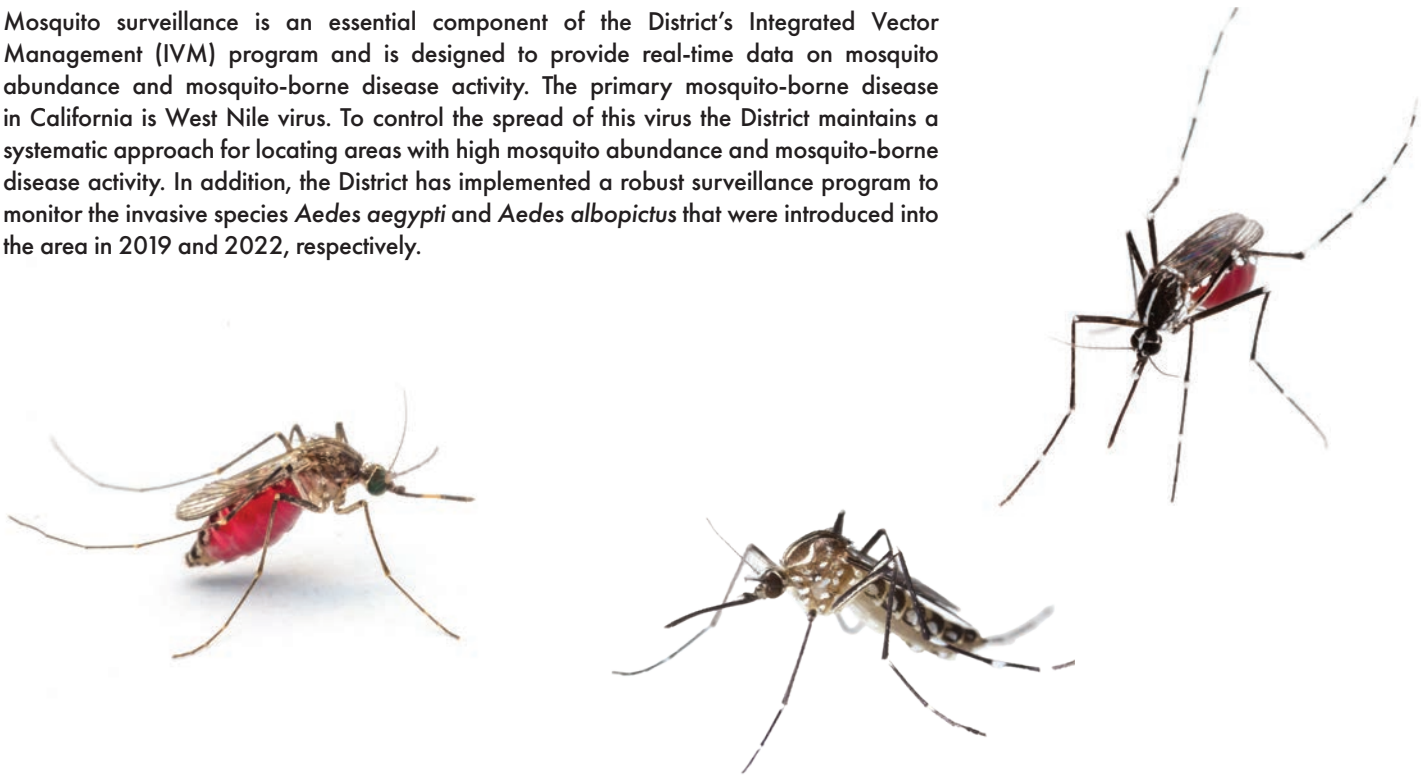
The District laboratory conducts the following activities to protect public health in Sacramento and Yolo Counties:

- 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 an oviposition location; used for abundance surveillance and to collect mosquitoes tested for encephalitis viruses.

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 2022, 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, 64,831 female mosquitoes comprising from 13 species were collected in Yolo County and 70,383 female mosquitoes from 16 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 2022.

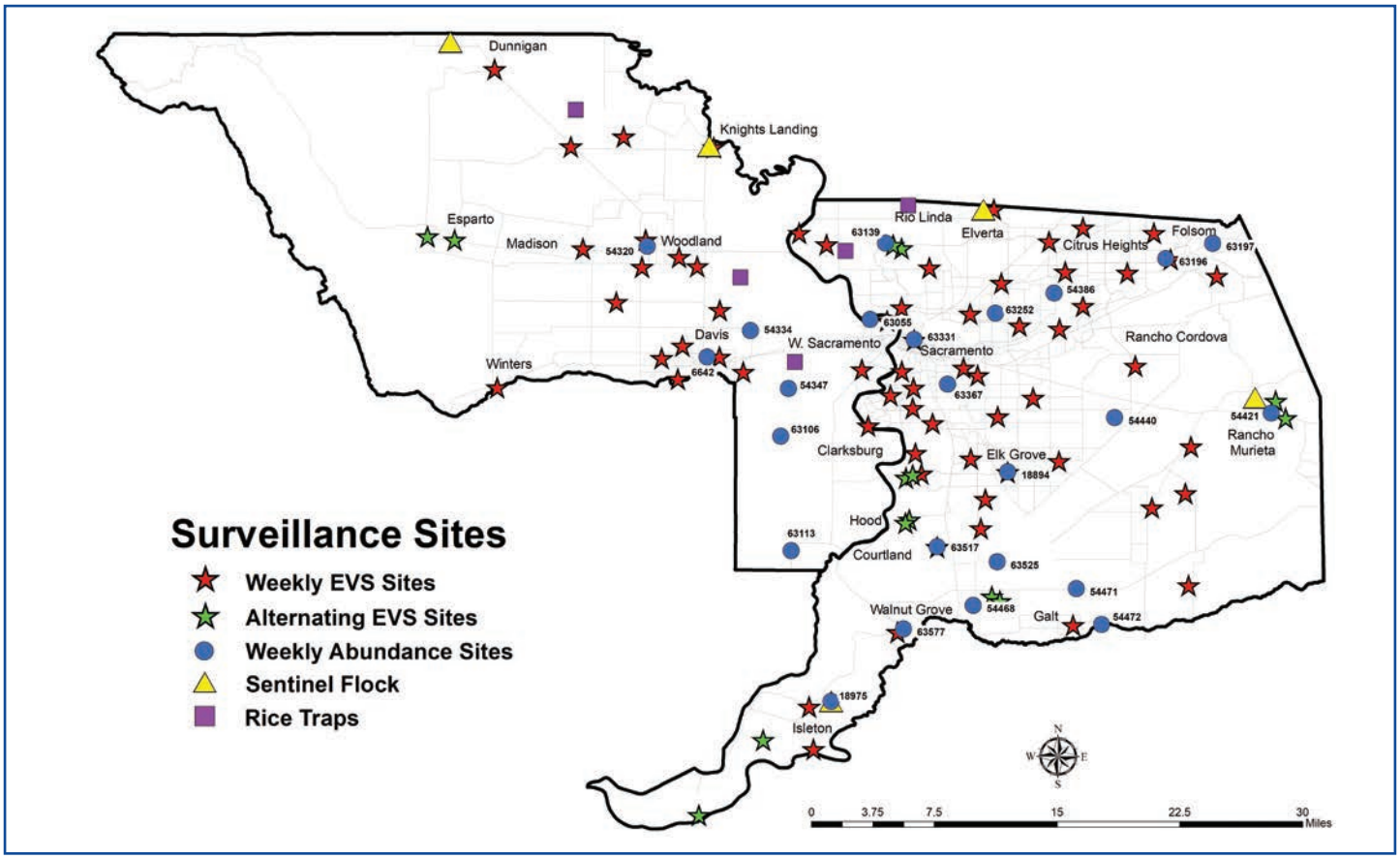
2022 YOLO COUNTY MOSQUITO ABUNDANCE SURVEILLANCE

Species	Clarksburg–63113	Clarksburg–63106	Davis–54334	Davis–6642	Davis–54347	Woodland–54320
Aedes aegypti						1
Aedes melanimon	2119	183	26	3	934	
Aedes nigromaculis	3				2	
Aedes vexans	3	1	2		8	
Anopheles franciscanus			2		24	
Anopheles freeborni	22	30	387	13	1797	89
Anopheles punctipennis	1					
Culex erythrothorax	628			1	5	
Culex pipiens	212	185	1374	1520	345	4557
Culex stigmatosoma	1	8	173	1	220	30
Culex tarsalis	425	6609	12746	1307	25555	395
Culiseta incidens	22	3	39	15	9	28
Culiseta inornata	557	149	198	23	1823	18

2022 SACRAMENTO COUNTY MOSQUITO ABUNDANCE SURVEILLANCE

Species	Sacramento–63055	Sacramento–63252	Sacramento–54440	Carmichael–54386	Folsom–63197	Orangevale–63196	Sacramento–63331	Sacramento–63367	Sloughhouse–54421	Sacramento–63139	Galt–54471	Galt–54472	Elk Grove–63525	Elk Grove–63517	Galt–54468	Walnut Grove–63577	Iselton–18975	Elk Grove–18894
Aedes aegypti						1												
Aedes melanimon	4	0	95	2	1		9	7	10	9	2	89	10	29	385	118	2751	
Aedes sierrensis		0			8	1	29	0	2		0	14		3		16	1	
Aedes vexans		2	19		2		1	1	1			379	4	95	35	38	21	
Aedes washinoi					1								1		3	33		
Anopheles franciscanus			1						1	1			1		1	2		2
Anopheles freeborni	119	53	16	56	4	7	32	13	34	602	3	20	38	125	191	10	17	227
Anopheles punctipennis									1									
Culex erythrothorax			15						4			4	1	6	24	2	22	187
Culex pipiens	973	416	527	925	2509	2356	1289	2846	509	139	2060	2630	10361	19122	355	65	1539	2062
Culex stigmatosoma	3	21	5	1	16	8	2	5	12	1	9	64	3	47	18	14	22	7
Culex tarsalis	203	51	531	100	141	136	42	333	69	860	175	861	413	1696	694	50	1569	2609
Culiseta incidens	86	19	8	41	267	91	224	293	30	2	236	66	7	126	11	22	61	79
Culiseta inornata	19	4	74	15	15	6	19	3	8	92	18	11	54	302	30	205	219	11
Culiseta particeps			1													1	51	
Orthopodomyia signifera									1									

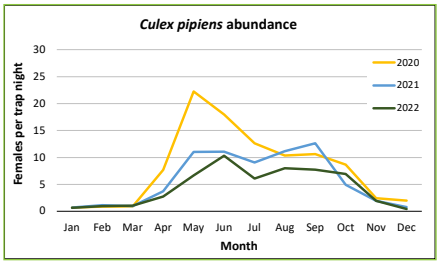
2022 LAB SURVEILLANCE MAP

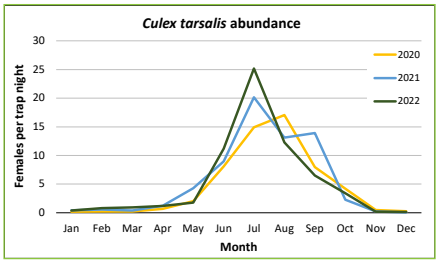


ADULT MOSQUITO ABUNDANCE TRENDS

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.

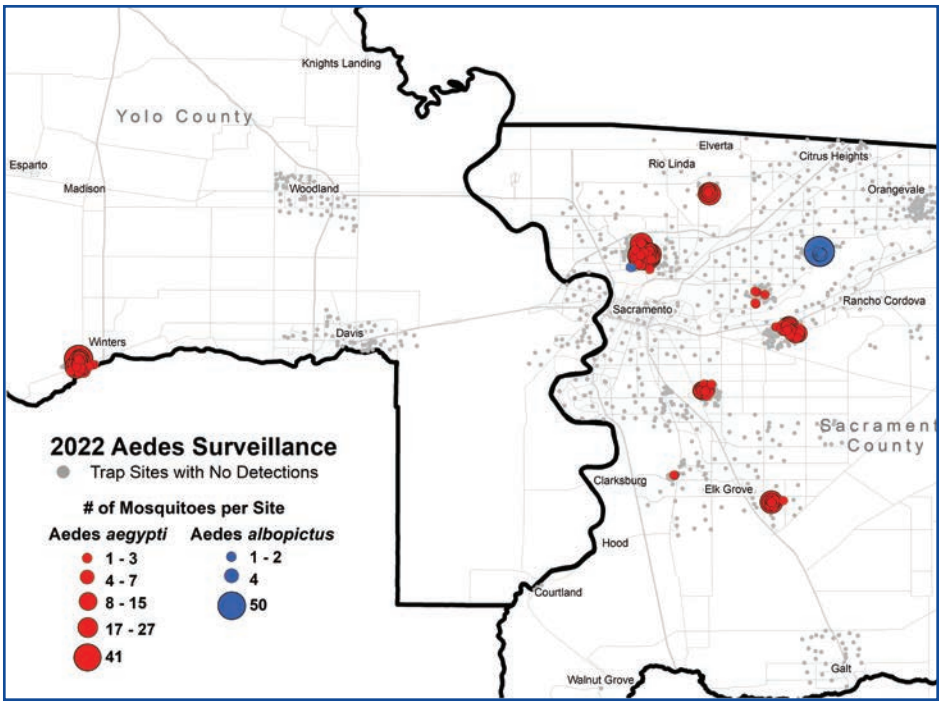
The charts below show the mean number of female mosquitoes per trap night captured in both locker and gravid traps set at 24 sites abundance surveillance sites across Sacramento and Yolo Counties. The previous three years of abundance trends for *Culex tarsalis* and *Culex pipiens* is shown.





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.

2022 INVASIVE *AEDES* SURVEILLANCE MAP



ENCEPHALITIS VIRUS SURVEILLANCE

SENTINEL CHICKENS

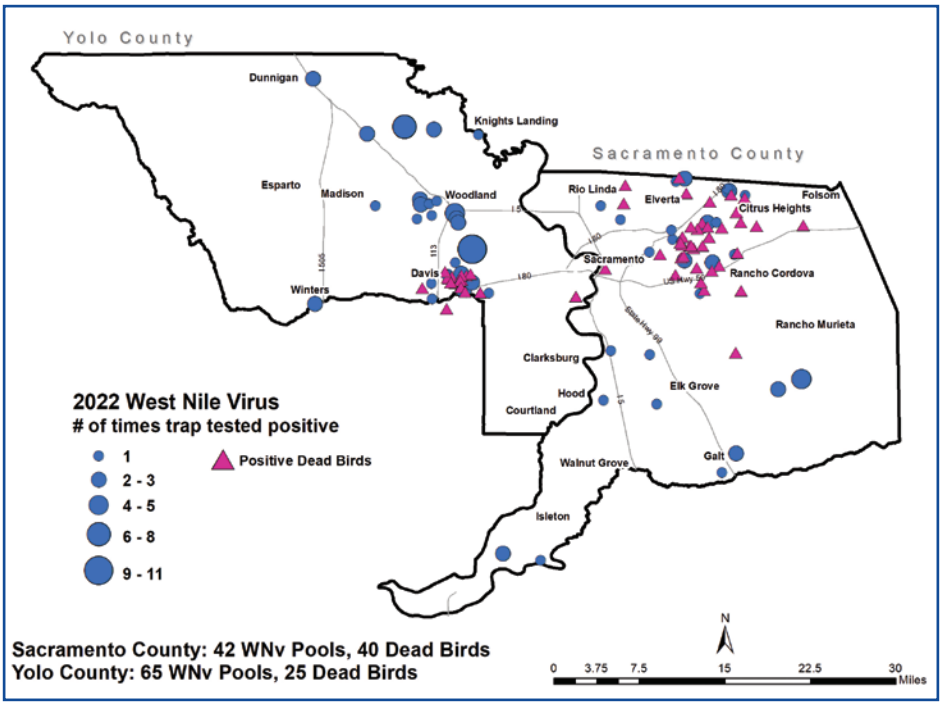
Chickens are readily fed upon by host-seeking *Culex tarsalis* and *Culex pipiens*. When chickens are bitten by a WNV-infected mosquito, they become asymptomatically infected and develop antibodies against WNV. Chickens are dead-end hosts for WNV; meaning they do not pass the virus to other mosquitoes. 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 2022 are shown on the **2022 Laboratory Surveillance Map.** During 2022, 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 three out of five flocks.

2022 SENTINEL CHICKEN TESTS

SACRAMENTO COUNTY			
Flock Location	Flock size	WNV antibody positive	Date of first seroconversion
Iselton	5	5	8/11/22
Gibson Ranch	5	1	9/6/22
Rancho Murieta	5	0	

YOLO COUNTY			
Flock Location	Flock size	WNV antibody positive	Date of first seroconversion
Knights Landing	5	3	8/8/22
Dunnigan	5	0	

2022 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 **2022 Laboratory Surveillance Map,** but trap locations shift in response to WNV detections. Mosquito collections are returned to the lab, identified to species and sex, counted, and *Culex pipiens* and *Culex tarsalis* are pooled in collections of up to 50 females by location and trap type. Pools are tested in-house for the SLEV, WEEV, and WNV using reverse transcriptase quantitative polymerase chain reaction (RT-qPCR).

During 2022, 93,975 female and 4,042 male mosquitoes from 19 species were captured in EVS and gravid traps deployed for encephalitis virus surveillance. Of these, 30,655 female *Culex tarsalis* (2,177 pools; Sacramento County = 1378; Yolo County = 799) and 33,119 female *Culex pipiens* (3,262 pools; Sacramento County = 2413; Yolo County = 849) were tested. Overall, 69 pools of *Culex tarsalis* (Sacramento County = 20; Yolo County = 49) and 38 pools (Sacramento County = 22; Yolo County = 16) of *Culex pipiens* tested positive for WNV (see **2022 West Nile Virus Surveillance Map**). The first WNV-positive pool was detected in Sacramento County on June 2, 2022 and the last was detected in Yolo County on October 4, 2022; SLEV and WEEV were not detected in mosquito pools.

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). 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 2022, 794 dead birds were reported to the WNV Call Center from Sacramento and Yolo Counties. Of these, 473 birds (Sacramento County = 271; Yolo County = 73) were collected and tested for WNV, SLEV, and WEEV. Overall, 64 (Sacramento County = 40; Yolo County = 24) dead birds tested positive for WNV (see **2022 West Nile Virus Surveillance Map**). Three corvid species made up 84% of the WNV-positive birds including American crows (32), California scrub-Jays (12), and yellow-billed magpies (10). Lesser encountered WNV-positive species included: black phoebe (1), California quail (1), common raven (1), cooper's hawk (3), house finch (2), and white-breasted nuthatch (2).

TICK AND LYME DISEASE SURVEILLANCE

Lyme disease is caused by the bacterium *Borrelia burgdorferi* and 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 2022, *Borrelia burgdorferi*-positive ticks were found at six sites including: East Lake Natoma, Mississippi Bar, Black Miners Bar, Sacramento Bar, Snipes-Pershing Park, and Willow Creek.

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.

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 2022

RICE FIELDS STOCKED WITH MOSQUITOFISH

Number of Fields..... 139
Pounds of Fish* 2,175
Acres Stocked..... 9,043

WILDLIFE REFUGES AND DUCK CLUBS STOCKED WITH MOSQUITOFISH

Number of Fields..... 34
Pounds of Fish..... 1,114
Acres Stocked.....2,631

SOURCES STOCKED WITH GUPPIES

Number of Sources 3
Pounds of Guppies.....0.2
Acres Stocked..... 0.011

MOSQUITOFISH SUPPLIED TO TECHNICIANS

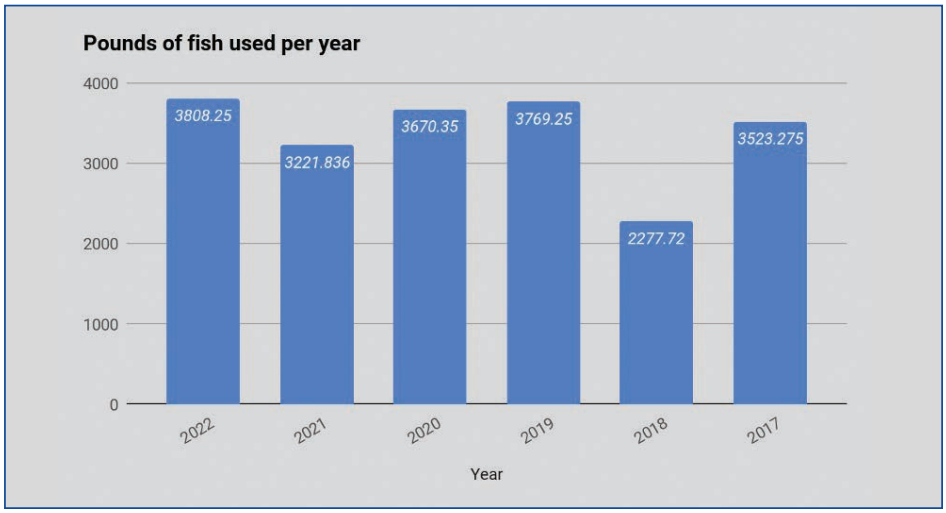
Woodland Facility..... 104
Elk Grove Facility 415

SUMMARY OF ALL MOSQUITOFISH PLANTS IN 2022

Number of Sources 2,946
Pounds of Fish..... 3,808.25
Acres Stocked..... 14,128

* 1 pound of fish equals approximately 450 fish.

A COMPARISON OF MOSQUITOFISH USED 2017-2022



Ecological Management

The Ecological Management Department manages the physical and cultural control aspects of the District's Integrated Pest Management Program by actively pursuing 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. The Department provides assistance to all District departments on an as needed basis, including assisting with mosquito control applications.

MOSQUITO REDUCTION BEST MANAGEMENT PRACTICES (BMP) MANUAL

In 2022 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/.

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.

ECOLOGICAL MANAGEMENT PROJECTS IN 2022

Technician zone project requests remain a Department priority, with the Department handling twenty eight individual work requests including thirteen mowing projects throughout the year in 2022. The mowing projects are designed to improve site access for the technician and in many cases provide the necessary base maintenance required for the property owner to continue the required maintenance for the remainder of the year. Each work request was evaluated for implementation of BMPs as outlined in the District's BMP Manual. Landowners were contacted and worked directly with the Department to reduce standing water, mosquito breeding, improve mosquito control product efficacy, and ensured safe technician access. Many sites required the District to remove brush and debris to secure safe access to mosquito sources utilizing District owned heavy equipment. These mowing and access projects were designed to keep access routes open for mosquito control operations around dairies and other water sources. All projects improved cooperative relationships and site conditions that resulted in mutually acceptable courses of action and responsibilities while upholding the District's responsibilities to protect public health.

PLANNING REVIEW PROGRAM

In 2022, the Ecological Management Department reviewed nine 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. The Department evaluated each plan or project for areas of concerns and responded to the appropriate agencies with comments where appropriate.

STORMWATER/DRAINAGE PROGRAM

The Department's Stormwater Program continues to monitor the various types of storm water conveyance and treatment facilities. The Department continued to address drainage blockages, access issues associated with dense riparian or vegetated stream banks, and upland mosquito breeding within drainage corridors. Department staff responded to multiple West Nile virus and high mosquito abundance hotspots near stormwater and stream corridors in 2022.

Flooding due to beaver dams has been an on-going problem for several years and causes significant mosquito breeding development sites to form in flooded pastures or other nearby dry grassy land. The Ecological Management Department utilizes an integrated approach to reducing the mosquitoes with regular inspection and removal of beaver dams by hand or with equipment as the first approach. Due to repeated annual lower spring and summer flows, beaver issues remained at a minimum for the 2022 season; however existing dams and blockages were managed in conjunction with local agencies and with the use of mosquitofish by Control operations.

The Ecological Management Department also worked closely with numerous Federal, State, and local Agencies to remove blockages and perform vegetation maintenance to prevent water from backing up into areas where mosquito breeding would occur on respectively owned and controlled properties.

MANAGED WETLAND PROGRAM

The practice of flooding previously dry land, during the late summer and early fall season for the purposes of creating waterfowl habitat for conservation and recreational purposes creates favorable mosquito development habitat. High temperatures may promote rapid mosquito development as well as amplification of some vector-borne viruses (e.g., West Nile Virus). In addition, dense emergent vegetation and the relatively slow speed of flooding during the early months of fall may also increase the numbers of mosquitoes produced and impede the success of other mosquito control practices such as the use of larvicides and mosquito fish. The District works throughout the year with public and private landowners of waterfowl hunted and other preserved properties to implement BMPs that will reduce mosquito breeding or enhance mosquito control activities during major water events such as early flooding. The District meets annually with wetland managers to develop annual management plans and to coordinate all irrigation and flooding activities.

Staff participated in multiple stakeholder meetings over the year on a variety of local and statewide policy, wetland restoration and management concerns. In addition to promoting the implementation of BMPs, the Department administered the tiered fall flooding cost share program designed to discourage early flooding prior to October 1st of each year.

In 2022 eight private and agency owned wetland properties were flooded prior to October 1st and where appropriate, were billed for mosquito control costs under the cost share program. The wetland program requires a significant amount of staff time to properly monitor and respond to site changes that zone technicians experience on a weekly basis throughout the season. Wetland managers routinely request advice from the Ecological Management Department to assist with maintaining their habitat goals while reducing mosquito production.

AGRICULTURE PROGRAM

The Department responded to eight technician requests to reduce standing water or improve access in or around irrigated agricultural lands. Often off-site drainage issues are resolved by reducing irrigation runoff and encouraging sound BMP implementation as outlined in the District's BMP Manual. The department provided springtime mowing of key agricultural sumps and access roads and organized seasonal brush cutting projects to enhance District technician safety and product efficacy. The Department utilized the mapping and modeling of agricultural fields and drainages to help analyze and develop the BMP projects.

URBAN/INDUSTRIAL PROGRAM

Cemeteries

Staff inspected cemeteries throughout the District during the summer months. No major violations were noted; however minor issues were resolved with brief site meetings with cemetery management. Vases were emptied and flipped over in their holders or treated with water absorbing crystals with the Department helping where necessary. The Department experimented with making a limited supply of single use water soluble packets of water absorbing crystals and will be expanding their use in future seasons based upon cemetery feedback.

Property Access and Unmaintained Swimming Pool Enforcement Program

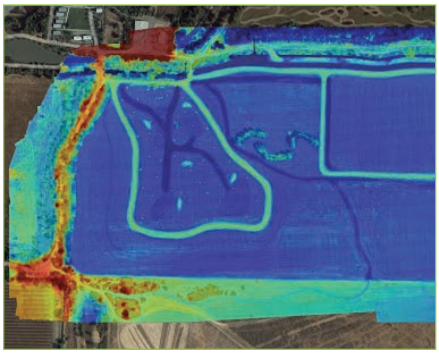
The District's backyard swimming pool enforcement program involves the Department making additional attempts to contact pool owners or obtain legal access for the purpose of treating the unmaintained pool with mosquito control products and mosquitofish. Within this program, District policies direct the Ecological Management Department to pursue legal access and enforcement in the form of Superior Court authorized Abatement and Inspection Warrants when all other communication attempts have failed. The District utilizes a series of seasonal aerial imagery and mailers to residents with unmaintained pools requesting pictures of compliant pools, or to schedule an inspection.

The Department responded to over one hundred and sixty-seven pool inspection and enforcement requests from zone supervisors in 2022. Many of the requests were resolved by contacting the property owners with a Final Notice or from Department organized additional weekday and Saturday inspections. In 2022, twenty-nine Inspection and Abatement Warrants were granted to the District by the Sacramento County Superior Court and served in conjunction with local Law Enforcement Agencies.

UAS (DRONE) PROGRAM

The District's Unmanned Aerial Systems(UAS) program currently consists of four FAA Licensed UAS pilots, five imaging UAS units, and one heavy lift pesticide application unit. The program provides aerial imagery, precision mapping, surveying, wind speed monitoring, BMP project design analysis, topographic modeling, and UAS based mosquito control applications and support. The Department works closely with the FAA to conduct safe and legal flights throughout the District.

In 2022 Departmental staff conducted individual imagery flights for a variety of operational needs including the mapping of standing water, and mosquito reducing BMP project design and management.



In addition to conducting imagery missions, the Department also coordinated pesticide applications over four thousand three hundred and seventy-two acres utilizing a private UAS contractor. Applications were conducted using granular larvicides over irrigated pastures, rice fields, fall flooded wetland areas, and rural riparian areas.

Staff participated in industry continuing education events and conferences regarding the use of UAS technologies in mosquito control and will continue to be involved with industry venues as they become available.

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 conduct year round inspections of various types of mosquito breeding sources. When breeding sources are found, the 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. When WNV activity is spread over large urban areas, aerial applications may also be conducted in order to protect public health. Aerial spraying over known agricultural sources that produce mosquitoes are also performed in order to reduce nuisance mosquitoes and/or respond to WNV activity.

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 yellowjacket.

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.

The District's primary goal is to protect public health by managing immature and adult mosquitoes so they do not present a significant health risk to our community. In the event mosquito populations pose a threat or become a significant public nuisance, the District will respond by implementing its Mosquito and Mosquito-borne Disease Management Plan. This plan has been approved by the District's Board of Trustees.

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 2022, this department continued its routine treatments and inspections of drains across both counties, augmenting its water abundance and catch basin mosquito breeding records with another season of data collection. Efficient treatment and catch basin larval sampling responses were made to West Nile Virus incidents and new detections of *Aedes aegypti* and – in the latter part of the season – *Aedes albopictus*.

This year also presented the first full-season use of a mobile application created and optimized over the course of the previous season. The application aided technicians by giving them a quick reference to catch basin history and the ability to log treatment and sampling information that is visible to the whole department in real-time. Used in tandem with bicycles, electric scooters, and the right-hand drive Jeep Wranglers acquired the previous year; technicians were able to move through the District's vast service area in a timely manner each day.

SWIMMING POOL PROGRAM

In 2022, 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 1,741 swimming pools that require annual inspections

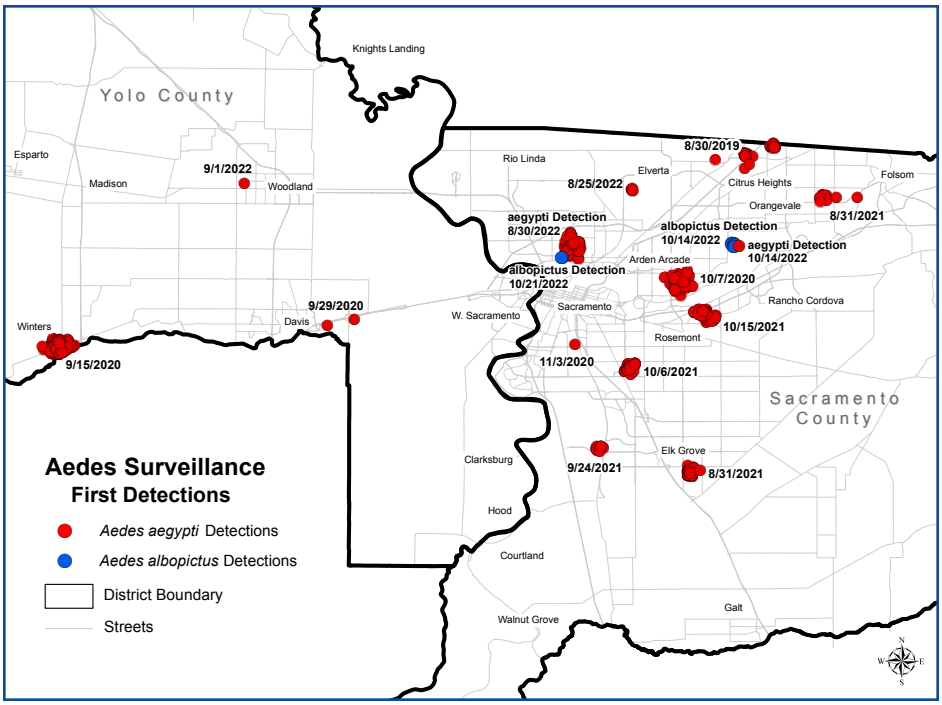
DETECTION OF INVASIVE *AEDES AEGYPTI* MOSQUITOES

In 2022, the District continued its ongoing surveillance and control efforts to detect and manage the invasive mosquito species, *Aedes aegypti* and *Aedes albopictus*. Throughout the year, the District identified new sites where *Aedes aegypti* and *Aedes albopictus* were present and made significant efforts to educate residents and reduce the population of these harmful mosquitoes.

The first detection of *Aedes aegypti* for the season occurred in April in the city of Winters, a known infestation site from the previous year. In late April the District detected *Aedes aegypti* in the area of Arden in Sacramento County. Continued surveillance efforts by the district generated new detections found in Rosemont, Orangevale, Rio Linda, South Natomas, and Carmichael, in Sacramento County and in Woodland within Yolo County.

In addition to the *Aedes aegypti* detections, the District also made its first *Aedes albopictus* detections within its boundaries in Carmichael and South Natomas. The discovery of *Aedes albopictus* in Carmichael was the result of a service request inspection performed by one of the District's control technicians, while the detection in Natomas was the result of trapping being performed in the area by a lab technician. After each new finding, the District launched public outreach efforts to educate residents about invasive mosquitoes and conducted door-to-door inspections and localized backyard treatments to reduce breeding sites and overall adult mosquito populations in affected neighborhoods.

2022 INVASIVE *AEDES* SURVEILLANCE MAP—FIRST DETECTIONS



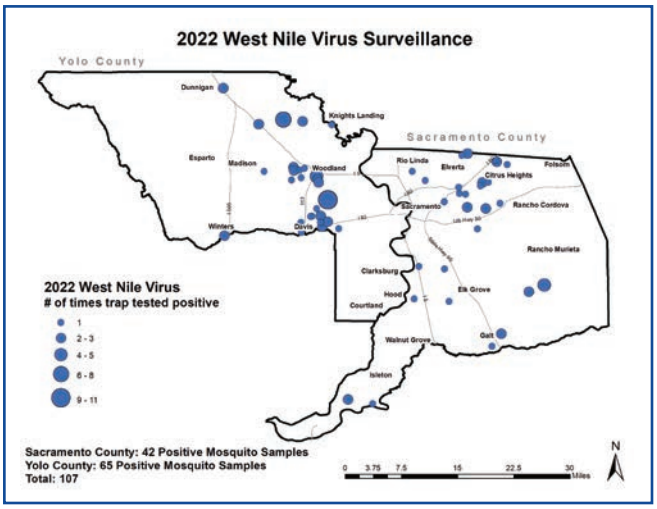
2022 MATERIALS USAGE

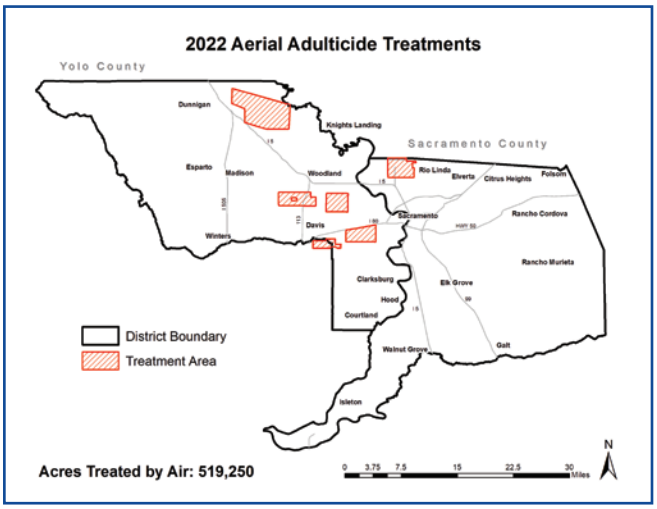
LARVICIDE MATERIALS	ACRES TREATED	AMOUNT OF MATERIAL	NUMBER OF APPLICATIONS
Agnique MMF	2	2 gal	102
Agnique MMF G	<1	6.3 lb	20
Agnique MMF G Pak35	<1	3.8 lb	41
Altosid Briquete	<1	1 lb	29
Altosid Liquid and Liquid Concentrate	1,169	9.25 gal	577
Altosid P35	2,462	12,895 lb	882
Altosid Pellets	<1	<1 lb	9
Altosid XR Briquets	<1	6.9 lb	51
Altosid XR-G	5,247	26,574 lb	244
Lambda 9.7 CS	9.1	1.5 gal	300
Mosq oil BVA2/Cocobear/Kontrol	180.5	843.2 gal	624
Natular DT	<1	1.8 lb	327
Natular G30	2,759	14,330 lb	1,140
Natular G30 WSP	1.5	27.5 lb	176
Natular XRT	1.2	50.6 lb	259
Natular2EC	927	10.8 gal	434
OneGuard	17	5.7 gal	769
Sumilarv 0.5G	301	33 lb	478
Suspend Polyzone/SC	9.5	2.4 gal	213
Vectobac 12AS	9,903	1,161 gal	1,823
VectoBac GR	16,826	103,106 lb	245
VectoBac GS	65,970	366,455 lb	1,017
Vectobac WDG	8,952	2,072 LB	77
VectoMax FG	529	3,491 LB	242
Vectomax WSP	7.6	148 lb	1,246
VectoPrime FG	578	4,877 lb	12
LARVICIDE MATERIALS CATCH BASIN	**BASINS TREATED**	**AMOUNT OF MATERIAL**	**NUMBER OF APPLICATIONS**
Agnique MMFG DWSP	397	28 lb	397
Altosid Briquets	126	1.5 lb	126
Altosid Pellets WSP	890	14 lb	890
Altosid XR-B	25,112	2,020 lb	25,112
Natular G30 DWSP/WSP	25,180	553 lb	25,180
Natular XRT	20,581	1,815 lb	20,581
Sumilarv 0.5g	25,903	576 lb	25,903
Vectomax FG DWSP	14,307	314 lb	14,307
Vectomax WSP	38	1 lb	38
ADULTICIDE MATERIALS	**ACRES TREATED**	**AMOUNT OF MATERIAL**	**NUMBER OF APPLICATIONS**
Organophosphates (Naled)	292,679	1,405 gal	49
Pyrethrins	229,902	1,544 gal	41
Deltamethrin (Adult Mosquito)	35,814	188 gal	1,049
YELLOWJACKET CONTROL MATERIAL	**AREA TREATED**	**AMOUNT OF MATERIAL**	**NUMBER OF APPLICATIONS**
Drione	<1	15	66
PT 565+ XLO	<1	<1	24

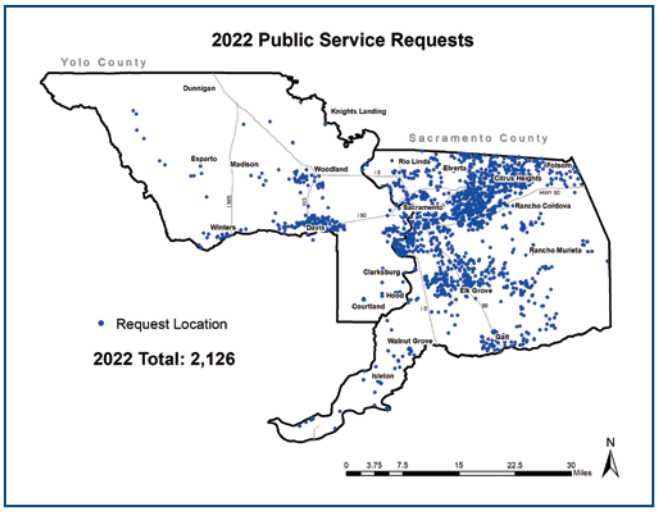
Geographic Information Systems & Information Technology

In 2022 the GIS Department recorded mosquito control treatments to 688,544 acres, which included 19,525 known mosquito breeding sources, 259,528 catch basins, 2,126 requests for service from the public, and 17,225 acres of rice. Besides the EPA registered products, mosquito eating fish were used in 14,288 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.

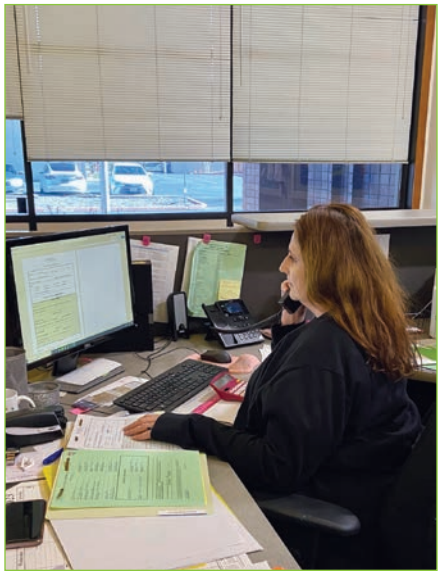






Administration

The District's Administrative Department serves both the residents of Sacramento and Yolo Counties as well as the District's employees. Functions performed by the Department include Customer Service and general reception, Human Resources (payroll, benefits, administering staff programs (*i.e.,* training), etc.) and Finance (general accounting, coordinating the annual audit and annual budget, accounts payable/receivable, etc.), in addition to critical administrative responsibilities, such as maintaining public records and reporting to the Board of Trustees. The Administrative Department strives for excellence in each of these areas as a supporting Department to the public, District operations, and District management.



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 three Automotive Service Excellence–certified mechanics at the Elk Grove facility. The shop maintains 105 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 Wheel Tractors, 1 backhoe tractor, 1 case skid steer tractor, 17 London ULV Foggers, 7 Curtis Dyna foggers, 6 Longray electric backpack sprayers, 2 turbine sprayers, 1 Cobra turbine sprayer and 1 Acrease 57" mower.

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.

Financial Statements

Sacramento–Yolo Mosquito & Vector Control District Statement of Net Position June 30, 2022

Statement of Revenues & Expenditures for the Fiscal Year Ended June 30, 2022 ***UNAUDITED***

The District's financial audit for the Fiscal Year ending **June 30, 2022** is currently in progress. Audited financial information relating to Assets, Liabilities, and Net Position is expected to be available by September 1, 2023.

		GENERAL FUND
REVENUES		
Property taxes	$	16,643,695
Interest		40,026
Other tax revenue		1,167,295
Other revenues		58,771
Total Revenues	**$**	**17,909,787**
EXPENDITURES		
Aircraft Services		1,035,133
Auditing/Fiscal		16,000
Capital Outlay		62,211
Communications		85,048
Control Operations		52,208
District Office Expenses		23,435
Ecological Management		4,606
Fisheries		37,680
Gas & Petroleum		217,183
Geographic Information Systems		3,768
Information Technology		60,418
Insecticides		825,263
Insect Growth Regulator		1,024,260
Laboratory Services		195,891
Liability Insurance		212,157
Materials & Supplies		18,444
Member/Training		95,247
Microbial		1,076,682
Professional Services		203,111
Public Information		428,688
Research		50,000
Rents & Leases		9,586
Safety Program		2,586
Salaries & Benefits		10,787,585
Structure & Grounds		101,132
Utilities		103,780
Vehicle Parts & Labor		146,370
Total Expenditures	**$**	**16,878,472**

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
Hours: 7:00 am to 3:30 pm

Yolo County
1234 Fortna Avenue
Woodland, CA 95776
Phone: 1-800-429-1022
Fax: 530-668-3403
Web site: www.FIGHTtheBITE.net
Hours: 7:00 am to 3:30 pm