



# ANNUAL REPORT 2022

Solano  
County  
Mosquito  
Abatement  
District

# A Letter from the Manager

On behalf of the Board of Trustees and Staff of the Solano County Mosquito Abatement District (SCMAD) it is my pleasure to present the SCMAD 2022 annual report.

Solano County has a diverse landscape included within its 909 sq. miles. Many habitats that support breeding grounds for the 24 known mosquito species found within the district include: reclaimed marshes, tidal marshes, irrigated pastures, streams-creeks, ponds, retention basins, catch basins, woodland areas, waste-sewer ponds, agricultural operations, unmaintained swimming pools as well as an abundance of seasonal fresh water/rain sources in urban, suburban, and rural areas.

In August of 2021, the district had its first detection of an invasive mosquito species, *Aedes aegypti*, which is capable of transmitting diseases such as Zika virus, dengue fever virus, yellow fever virus and chikungunya virus. This species is capable of reproducing in sources as small as a bottle cap full of water. In 2022 the district did not detect *Aedes aegypti* within our county. The district will continue to monitor this species.

West Nile virus has been detected in Solano County since 2004. West Nile viral activity was documented again this year within the district, being detected in 12 adult mosquito pool samples, 9 dead bird samples as well as 2 confirmed human cases.

The SCMAD has a total staff of 9 full time employees and is governed by a board of 8 trustees which are appointed by each of the seven cities within the district as well as one trustee appointed by the county.

The SCMAD Board of Trustees and staff are committed to suppressing both disease carrying and nuisance mosquitoes with the most ecological friendly and cost-effective methods available. I want to thank the SCMAD Board of Trustees and staff for their continued dedication to mosquito control, making Solano County a healthier place where its citizens and visitors can live, work and visit. Our District is committed to providing effective, responsive, courteous, and prompt service to you.

We look forward to providing our services to you, if you have questions, comments, concerns or need any further information, please contact me.

I will be retiring in December 2023 with 39 years of service to the district. It has been a privilege working with and for many outstanding people. I want to express my sincere gratitude to the Board of Trustees and coworkers, both past and present, for the opportunity working with them in protecting the health of the residents and visitors of Solano County. Again, to all the folks I have worked with, thank you for the friendship and support. Blessings to you all!

Sincerely,



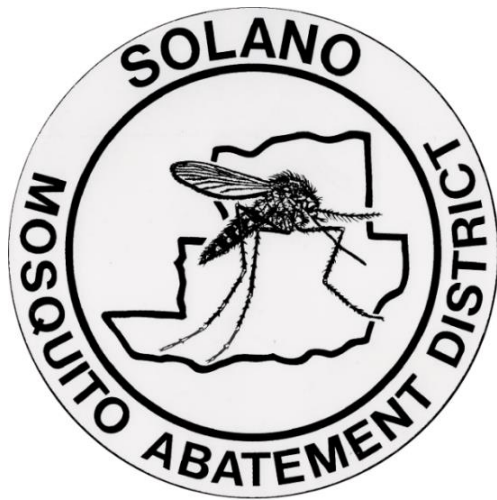
District Manager  
Solano County Mosquito Abatement District

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# Independent Special District

The Solano County Mosquito Abatement District (SCMAD) is an independent special district and is not a part of the Solano County governmental system. Rather, each city within the district's jurisdiction appoints a trustee to represent their community on the SCMAD's Board of Trustees; in addition to the trustees that represent the municipalities, the county at large is also given a representative trustee position called the Trustee-at-Large. Independent special districts are formed by residents and sanctioned by the State of California Government Code to provide local services.



## 2022 Board of Trustees

**President:** Ronald Schock, Trustee-at-Large

**Vice President:** Joe Anderson, Dixon

**Secretary:** Daniel Glaze, Vallejo

**Trustee:** Robert C. Meador, Vacaville

**Trustee:** Marlon Osum, Suisun City

**Trustee:** Walt Stanish, Rio Vista

**Trustee:** Paul Wade, Fairfield

**Trustee:** Mike White, Benicia

## SCMAD Staff

**Manager:** Richard Snyder

**Supervisor:** Mark McCauley

**Administrative Assistant:** Tami Wright

**Biologist:** Bret Barner

**Mosquito Control Technicians:**

Tommy Bosson

Ian Caldwell

Ryan Dawson

Damon Gray

Tanner Nelson

Brian Slover



# Mission Statement

The SCMAD is a special district responsible for mosquito abatement throughout the incorporated and unincorporated areas of Solano County, which covers 909 square miles. Within this area, SCMAD contends with an extremely diverse range of aquatic habitats and temperature regimes. There are 24 mosquito species known to occur within Solano County, 12 of which are significant either as disease vectors (i.e., capable of transmitting disease) or as nuisance pests.

SCMAD functions to control all mosquitoes that may bring disease or harassment to humans and domestic animals. Our program evaluates and selects the most effective and economical techniques to carry out this mission, all while prioritizing the least possible damage to non-target organisms and the environment. SCMAD deploys a variety of preventative management techniques, known as Integrated Vector Management (IVM), to control mosquitoes including biological, physical, and chemical control measures.

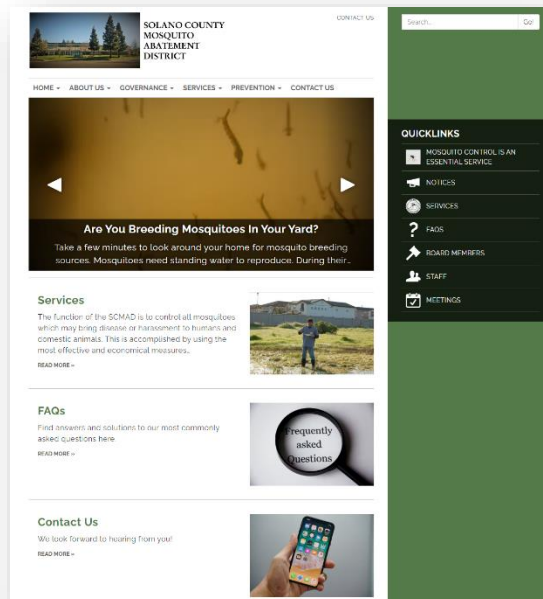


## History of SCMAD

Founded in 1930 to control the *Aedes* mosquitoes produced in the 184 square mile Suisun Marsh, the SCMAD was formed according to the guidelines set forth by the Mosquito Abatement Act of 1915 and the California Health and Safety Code.

## Working with the Public

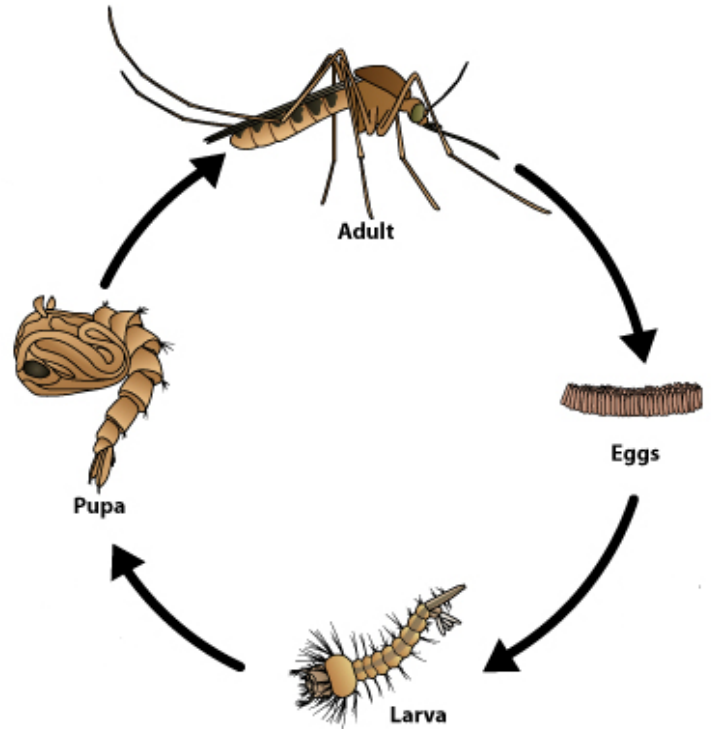
SCMAD staff works diligently to monitor and suppress mosquito populations within Solano County's 909 square miles boundary. It is, however, nearly impossible to predict the mosquito population trends with any degree of certainty. SCMAD relies on information provided by the public, which assists us in allocating our resources to respond effectively and efficiently. In 2022 SCMAD's mosquito control technicians responded to approximately 739 service requests. During service request, SCMAD mosquito control technicians conduct habitat evaluations and make treatment applications if necessary. If you would like to make a service request, you can do so by calling the SCMAD office at (707) 437-1116 or visiting **SolanoMosquito.com**.



# Mosquito Biology

In general, mosquitoes can be broken into two categories: standing water species and floodwater species. Standing water species require water to be present at the time of oviposition (egg laying), while floodwater mosquitoes require a dry surface for oviposition in areas that are prone to flooding. Eggs of standing water mosquitoes will all hatch sequentially within days of being deposited, whereas the eggs of floodwater species require a prolonged period of dormancy before they can hatch in a nonsequential pattern.

All mosquitoes undergo a four-stage life cycle, a process known as complete metamorphosis, which includes egg, larvae, pupae, and adult mosquito. Adult male and female mosquitoes feed primarily on sucrose from plants; the female mosquito also requires the addition of protein found in a bloodmeal to produce viable eggs. It is during this blood feeding stage that both humans and domestic animals are prone to mosquito bites, causing both annoyance to the host and exposure to disease transmission.



## Mosquito Abatement Methods

SCMAD utilizes an Integrated Vector Management (IVM) strategy. IVM is a rational, decision-making process used to optimize the use of resources for vector control. The purpose of IVM is to improve the efficacy, cost-effectiveness, ecological soundness, and sustainability of disease-vector control. Additionally, when compared to traditional pest control methods, IVM is a more environmentally conscious method of mosquito control. The SCMAD's IVM program integrates biological and disease surveillance information into selecting the appropriate abatement method. The vector control methods of IVM can be broken into three methods: physical control, biological control, and chemical control.



# Physical Control

The most effective method of controlling mosquitoes is to drain or eliminate standing water where mosquitoes may breed; this method of physically modifying mosquito breeding habitat is referred to as physical control. Physical control can be broken into two types: source elimination/reduction and source management.

## Source Elimination/Reduction

This form of physical control eliminates larval habitat by modifying the landscape to allow for better drainage or by eliminating the source entirely. Habitat modification or elimination can be as simple as cleaning gutters, flushing pet water bowls, or covering an unmaintained spa or it could be as complex as adding drainage canals to a marsh. While SCMD does not conduct these more complex types of habitat modification or land management strategies that eliminate habitats conducive to mosquito breeding (such as ditching and vegetation management), we do work closely with landowners to promote this method of mosquito control on their own properties.



## Source Management

When a source of mosquitoes cannot be eliminated completely, source management is a practice that can reduce the population of mosquitoes. Source management often includes water management, vegetation management, and infrastructure maintenance like floodgate repairs. This method of habitat modification is often employed at duck clubs when lowlands are flooded to create a desirable duck habitat prior to duck hunting season. Source management requires more labor hours to monitor for mosquito larvae and often results in the application of a chemical treatment when necessary.

Physical control may not always be a practical method of mosquito abatement due to the practical limitations of source size, logistical hurdles, or cost. For this reason, the SCMD utilizes biological and chemical control methods to prevent mosquitoes from completing their lifecycle.

# Biological Control

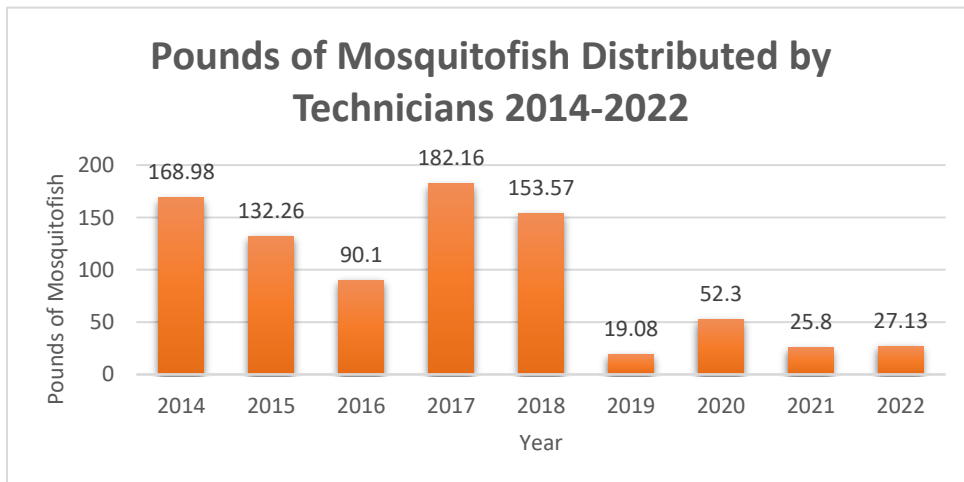
When a body of water does not drain regularly or is a permanent feature not suitable for physical control, such as source elimination, reduction, or maintenance, it may be selected as a candidate for biological control. Biological control takes place when the mosquito population is managed by introducing a predator population into the mosquitoes' ecosystem. Mosquitofish (*Gambusia affinis*) are a prime example of biological control.



SCMAD distributes free mosquitofish to the public for use on private properties in Solano County. Mosquitofish are commonly stocked in places like ornamental ponds, livestock troughs, neglected swimming pools, and large fountains. The SCMAD staff will also stock mosquitofish in other locations including golf course ponds and sedimentation ponds.

Mosquitofish are ideally suited for biological control because they are small (under 2.5 inches in length) and are able to reproduce quickly. These fish have also been observed eating up to two times their body weight in mosquito larvae per day. Mosquitofish are also extremely resilient in harsh environmental conditions and can be successfully stocked where other aquatic predators might not survive. Stocking mosquitofish in a permanent water feature can result in months, or even years, of effective mosquito control.

The SCMAD mosquitofish program has become very popular with the public. These fish are distributed at special events through Solano County where staff educate the public about mosquito control. In 2022, 27.13 lbs. of mosquitofish were distributed county wide, providing long-lasting, pesticide-free mosquito abatement to an estimated 100 acres.

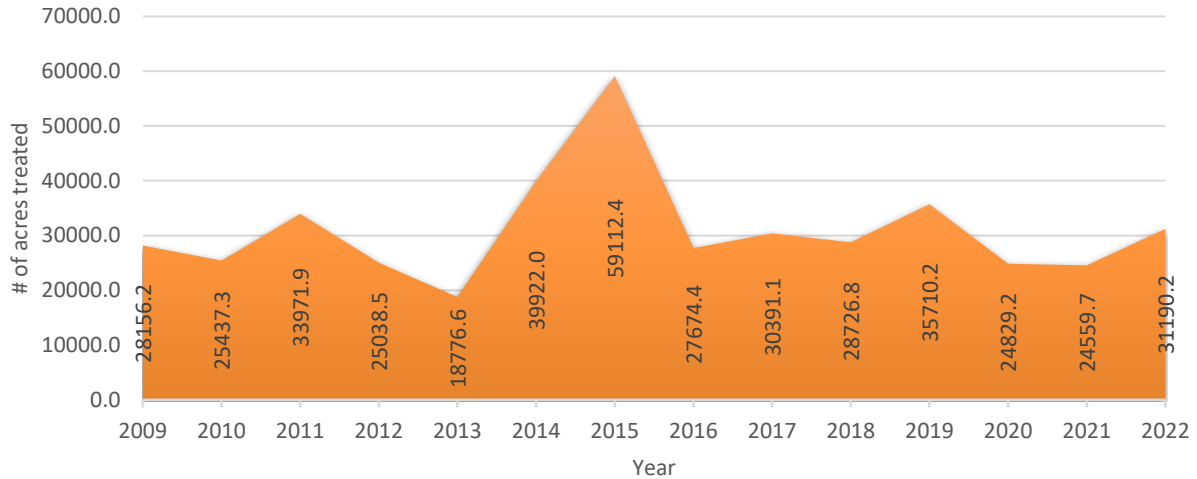




# Chemical Control

When physical and biological control methods are not viable options to reduce the mosquito population, SCMAD selects a chemical control method to reduce the number of mosquitoes. SCMAD works diligently to select and use all chemical pesticides in a manner that poses the lowest possible risk to both the public and to the environment. Chemical pesticides used by SCMAD are classified into two categories: larvicides and adulticides.

### Total Acres Treated with Pesticide 2009-2022



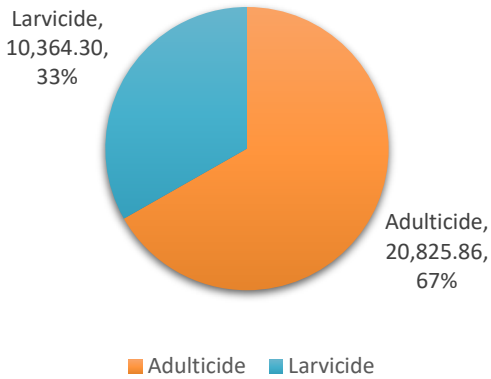
## Larvicides

Larvicides are insecticides that target mosquitoes in the larval stage. Larvicides are -by far- SCMAD's most frequently used form of pesticide, although adulticide applications treated a greater area per application. Most larvicides used by SCMAD contain the active ingredient (AI) known as (S) Methoprene, an AI frequently used as a public health pesticide because of its low toxicity to people, animals, and non-target aquatic organisms. It can be highly effective at reducing the number of mosquitoes that emerge from any treated aquatic environment.



In 2022, SCMAD applied larvicides by hand, by ATV, and even aircraft. Larvicides are important in controlling the mosquito populations that develop in tidal marshes in late winter, spring, and summer. Larvicides are also utilized to control mosquito populations that develop in the fall when duck clubs are flooding prior to duck hunting season.

## 2022 Proportion of Total Acres Treated Larvicide vs. Adulticide

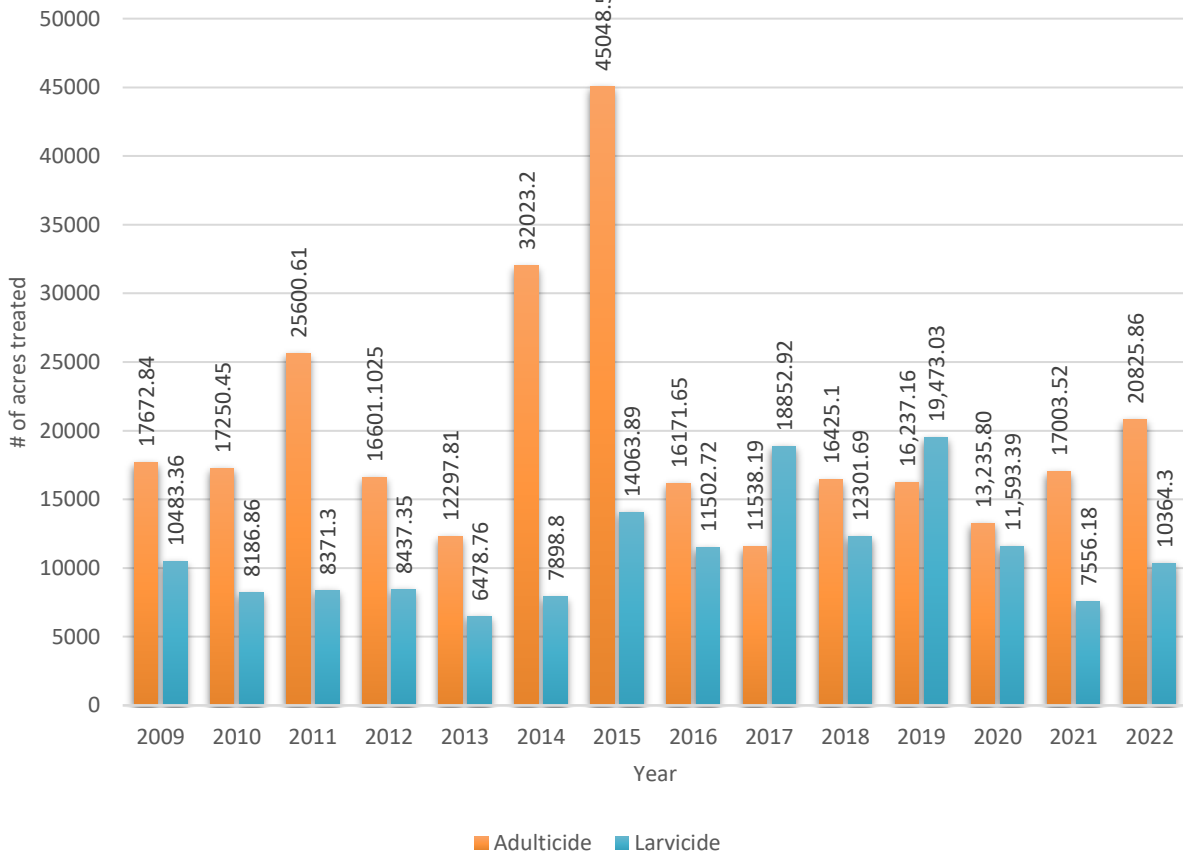


## Adulticides

Adulticides are chemical pesticides that target mosquitoes in their adult life stage. Adulticides utilized by SCMAD are effective in rapidly reducing the number of adult mosquitoes in a specific area for a short period of time; however, if the mosquito source is not abated, adulticide treatments will not provide long-term control.

Adulticides used by SCMAD are not target-specific and could negatively impact the beneficial insect population. For this reason, SCMAD only applies adulticides in or around areas that have known arbovirus transmission actively occurring. In Solano County adulticides are ONLY deployed by ground vehicle or with a hand applicator. SCMAD has never applied adulticides using aircraft.

## Total Acres Treated 2009-2022 Larvicide vs. Adulticide

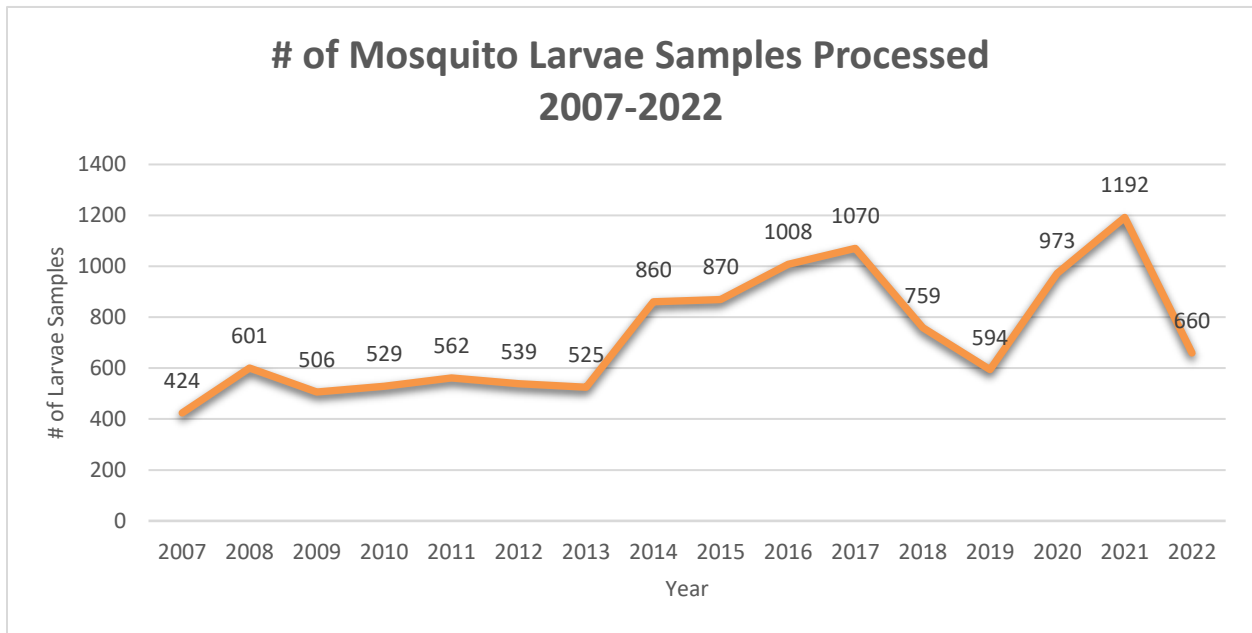


# 2022 Mosquito Surveillance

In 2022, SCMAD used a variety of surveillance techniques to monitor and lower the mosquito population for both public nuisance and public health reasons. Mosquito surveillance yields a cornucopia of data that is useful for district staff. For example, the species and abundance of adult mosquitoes trapped in a specific time period could yield valuable information about where the mosquitoes are breeding, what flight range the mosquitoes have and whether the public is at risk of disease transmission; larvae mosquito samples give us information about when the next generation of mosquitoes might emerge, their potential population size if unabated, how far they could travel, whether the species is a known vector of disease, and if pesticides applied are effective.

## Larval Surveillance

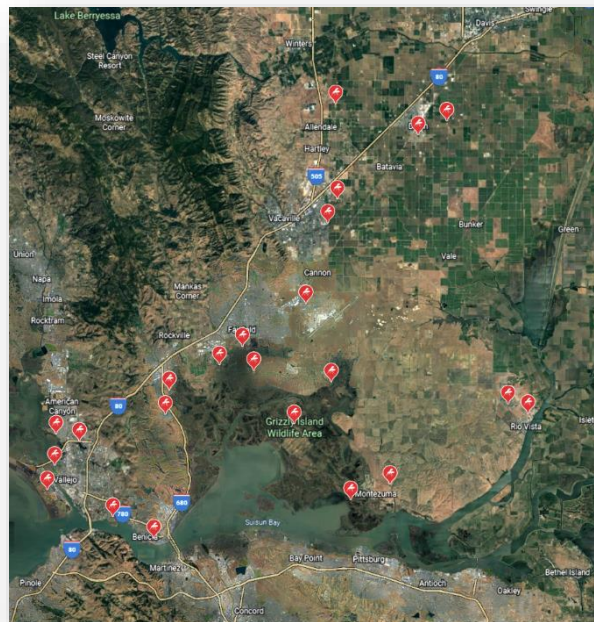
To identify mosquito breeding sources and plan abatement efforts, SCMAD technicians collect larval samples from aquatic habitats as a response to service requests or from known breeding sources. These samples are brought back to SCMAD laboratory where the specimens are inspected, and all mosquito larvae are identified to species. This population data allows SCMAD to assess the upcoming risk to the public and the future adult mosquito population if unabated. Larval surveillance is crucial to not only achieving mosquito control before the mosquito population emerges as biting adults, but it also allows us to monitor our pesticides' effectiveness. In 2022, SCMAD laboratory process 660 mosquito larvae samples.



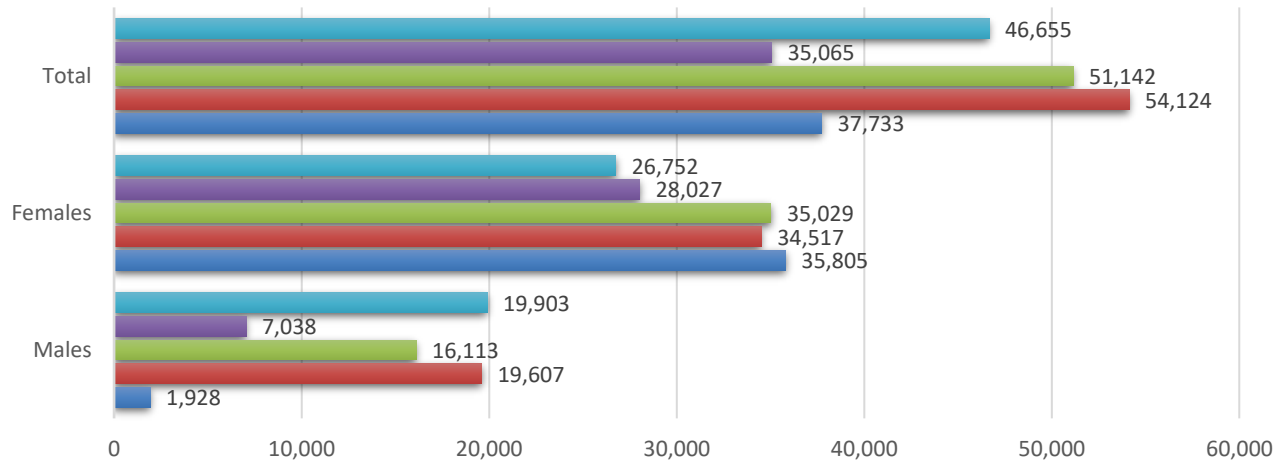
## New Jersey Light Traps

SCMAD uses New Jersey Light Traps (NJLTs) as semi-permanent monitoring stations for adult mosquito surveillance. The SCMAD deploys these traps throughout the county for roughly 9 months a year by partnering with local landowners. NJLTs use light to attract mosquitoes at night, capturing and killing them. These traps are very effective in providing SCMAD staff with mosquito diversity and long-term comparable population data used for resource allocation decisions. The trap numbers and location are roughly the same year to year, which allows the SCMAD to use the data from previous years to compare and identify trends and patterns in the adult mosquito population.

Light traps are a very effective method in measuring the mosquito population overall because they attract a wide range of mosquito species. These traps are also useful in measuring the male adult mosquito population, too. The number of male mosquitoes captured in a NJLT provides useful information in terms of source proximity to the trap site. Male mosquitoes in general do not fly far from their source of origin. Male mosquitoes are, in general, not strong fliers nor do they possess the need to fly great distances in the way female mosquitoes may to attain a blood meal. Interpreting both the species and sex ratio of the trapped mosquitoes will aid technicians in determining where a particular type of source may be located. In 2022, 23 light traps were collected and reset on a weekly basis from March through November. The map below plots the location for each of the NJLTs deployed in 2022.



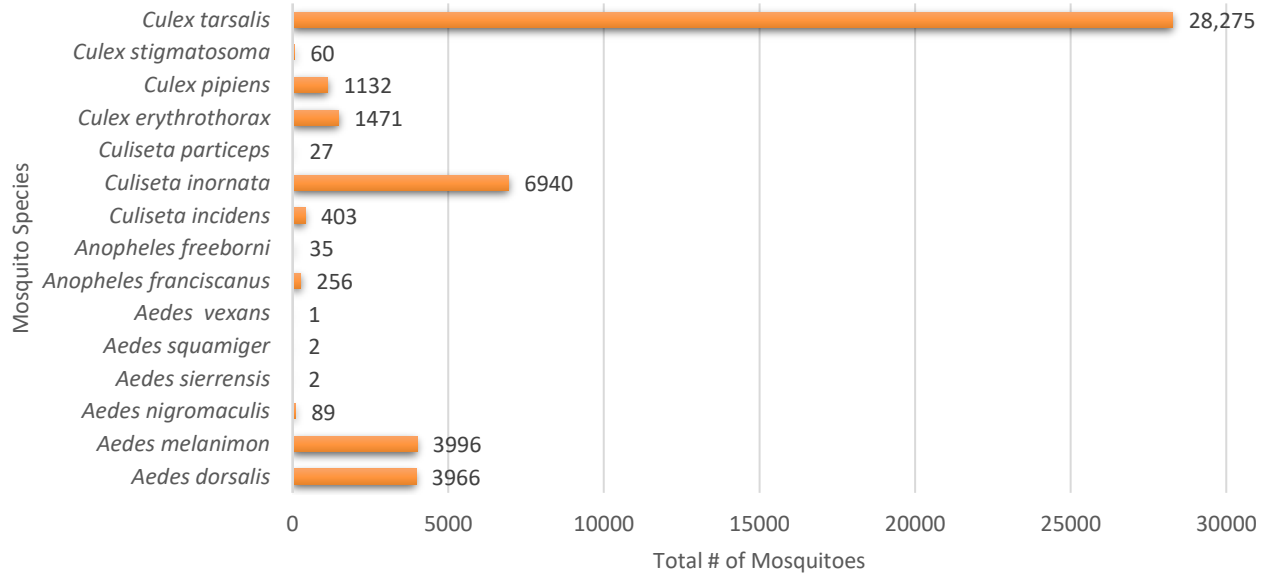
### NJLT Adult Totals 2018-2022



	Males	Females	Total
2022	19,903	26,752	46,655
2021	7,038	28,027	35,065
2020	16,113	35,029	51,142
2019	19,607	34,517	54,124
2018	1,928	35,805	37,733

2022 2021 2020 2019 2018

### 2022 NJLT Mosquito Species

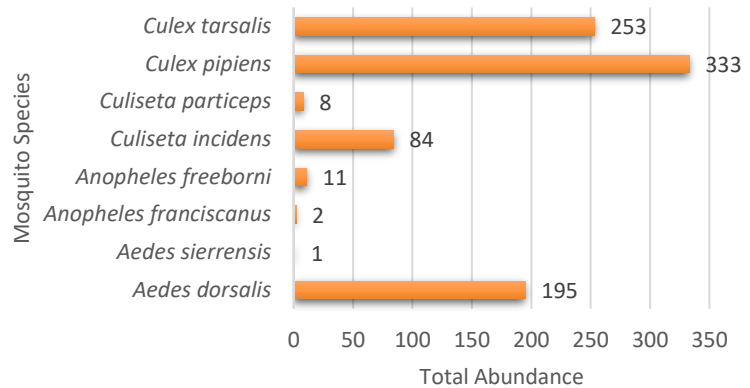


## BG Sentinel Trap

BG Sentinel traps contain a battery-powered motor that pulls in mosquitoes flying near the top of the trap. These traps can also be retrofitted to receive power from an electrical outlet. Mosquitoes are attracted to the octenol, carbon dioxide, and BG-Lure with which this trap is baited. The overall black and white design of the BG Sentinel trap is attractive to *Aedes* mosquitoes.

BG Sentinel traps attract female mosquitoes in search of a host and are used mainly to monitor for invasive *Aedes aegypti* and *Aedes albopictus*. In 2022, the most abundant species this trap collected was *Culex pipiens*. *Culex* mosquitoes captured in BG Sentinel traps were pooled and tested for arbovirus, making this trap useful for the SCMAD arbovirus surveillance program.

## 2022 BG Sentinel Trap Mosquito Species

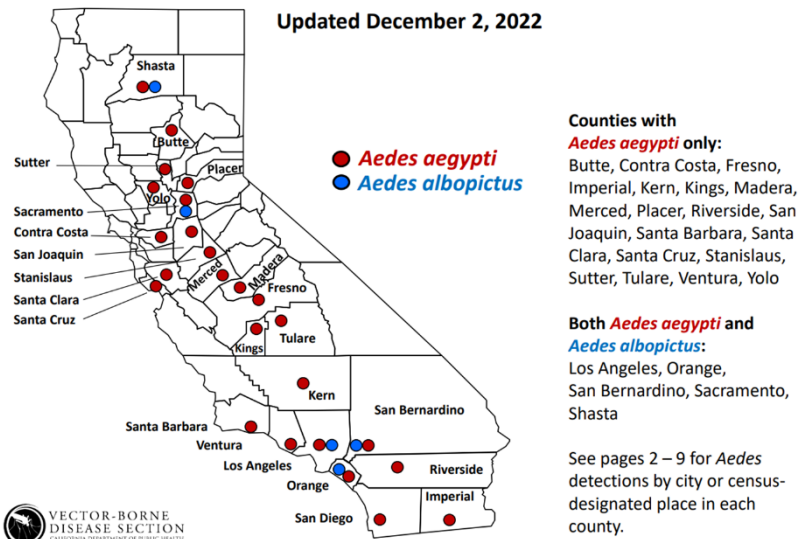


## Invasive Aedes Mosquitoes

SCMAD incorporates two trap types into the invasive mosquito surveillance program. These traps are specifically designed to attract and capture the invasive *Aedes aegypti* (Yellow Fever mosquito) and *Aedes albopictus* (Asian Tiger mosquito). These two mosquito species were introduced to North America and act as highly competent vectors of diseases not transmitted by any of our other mosquito species; these diseases include yellow fever, dengue, chikungunya virus and Zika virus. SCMAD conducts a long-term surveillance effort to monitor for *aegypti*. Our first detection was on August 18, 2021, but no invasive *Aedes* were detected in 2022.

### *Aedes aegypti* and *Aedes albopictus* Mosquitoes in California by County/City

Updated December 2, 2022



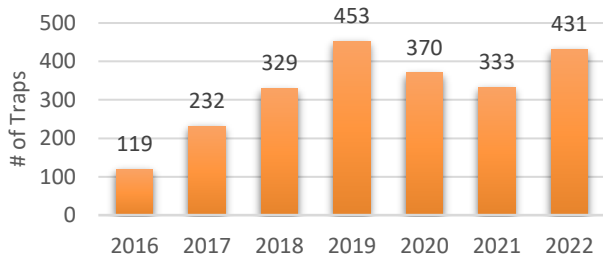
# Arbovirus Surveillance

## Mosquito Population Testing

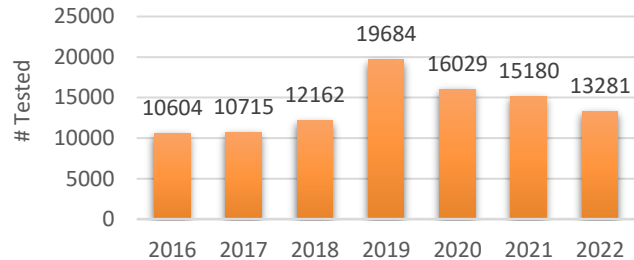
A robust mosquito sampling program is very important to identify areas where arboviruses are active to prevent human transmission from occurring. In 2022, there were 431 CO<sub>2</sub> traps deployed from which 48,283 mosquitoes were captured and then identified in the SCMAD laboratory. From this total there were 13,281 mosquitoes pooled and tested for arbovirus.

The purpose of this testing is to identify areas within Solano County where the human population was at risk of contracting mosquito-borne disease, such as West Nile virus, which is most active between the months of August and September in Solano County. When these areas are identified, mosquito control technicians respond by conducting a habitat assessment and developing and implementing an effective abatement strategy to quickly lower the mosquito population in these areas. Solano County Public Health and the Municipalities City Managers are also notified of any positive test results.

### # of CO<sub>2</sub> Traps Deployed 2016-2022



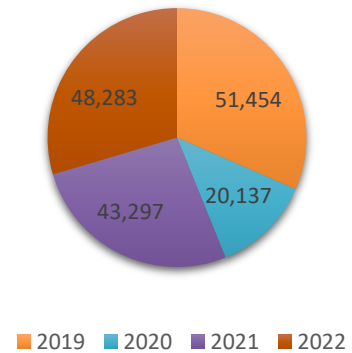
### Number of Female Mosquitoes Tested 2016-2022



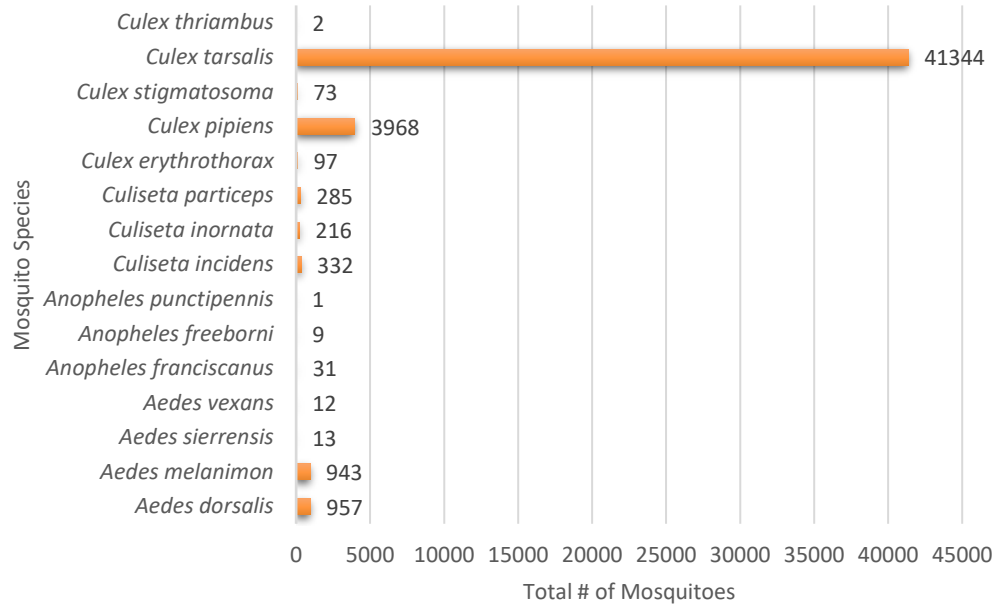
## CO<sub>2</sub> Traps

CO<sub>2</sub> mosquito traps emit carbon dioxide to attract adult mosquitoes, and these traps yield a very high catch rate. However, due to battery and bait limitations, they can only be deployed for less than 24 hours; adult mosquitoes are still alive and viable for arbovirus testing when these traps are collected the next day. Mosquitoes must be fresh in order to test for the viral RNA that is present in an arbovirus-infected mosquito. The mosquitoes that are trapped in CO<sub>2</sub> traps do not yield the same population information as New Jersey Light Traps. Instead, CO<sub>2</sub> traps attract host seeking female mosquitoes. Male mosquitoes are certainly captured by these traps as well, but it is thought that they are attracted to the female mosquitoes that have already been trapped. Another theory is that males will swarm around a host animal (or in this case a CO<sub>2</sub> baited trap) to mate with the females that will be attracted to said host.

### CO<sub>2</sub> Trap Adult Mosquito Totals 2019-2022



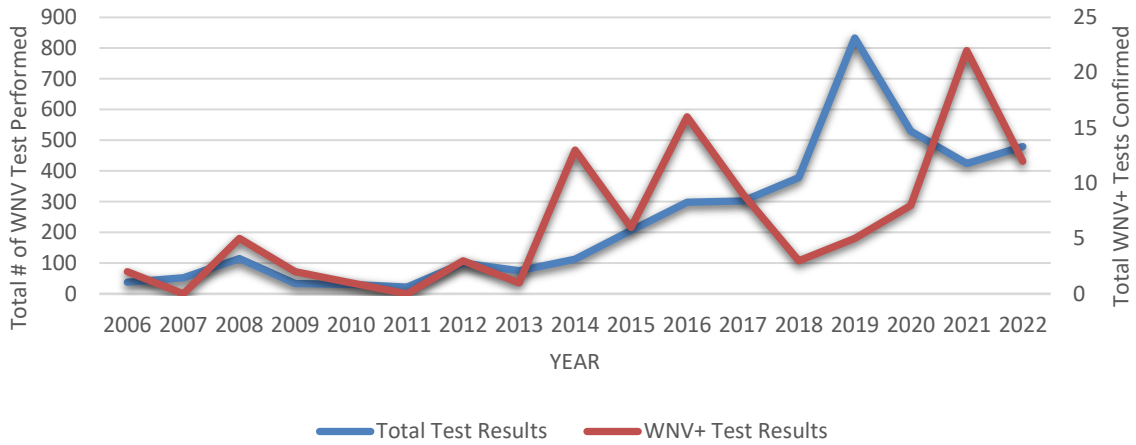
## 2022 CO<sub>2</sub> Trap Total Adult Mosquito Species



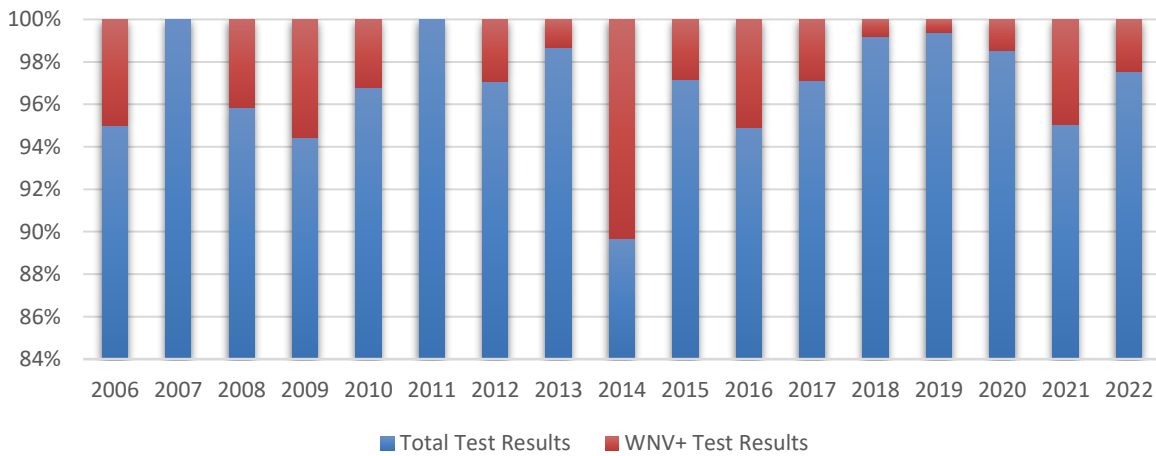
2019-2022 CO <sub>2</sub> Trap Species Abundance				
Mosquito Species	2019 Total	2020 Total	2021 Total	2022 Total
<i>Aedes dorsalis</i>	48	252	1923	957
<i>Aedes melanimon</i>	8042	256	1636	943
<i>Aedes nigromaculis</i>	144	5	36	0
<i>Aedes sierrensis</i>	44	19	9	13
<i>Aedes squamiger</i>	7	0	1	0
<i>Aedes vexans</i>	11	3	1	12
<i>Aedes washinoi</i>	6	0	3	0
<i>Anopheles franciscanus</i>	15	40	4	31
<i>Anopheles freeborni</i>	58	42	39	9
<i>Anopheles punctipennis</i>	1	0	0	1
<i>Culiseta incidens</i>	1257	414	243	332
<i>Culiseta inornata</i>	752	31	132	216
<i>Culiseta particeps</i>	22	3	8	285
<i>Culex erythrothorax</i>	1806	566	33	97
<i>Culex pipiens</i>	3212	3534	9576	3968
<i>Culx stigmatosoma</i>	119	71	46	73
<i>Culex tarsalis</i>	35910	14901	29589	41344
<i>Culex thriambus</i>	0	0	18	2
<b>TOTAL</b>	<b>51454</b>	<b>20137</b>	<b>43297</b>	<b>48283</b>



### Total WNV Tests VS WNV+ Test Results



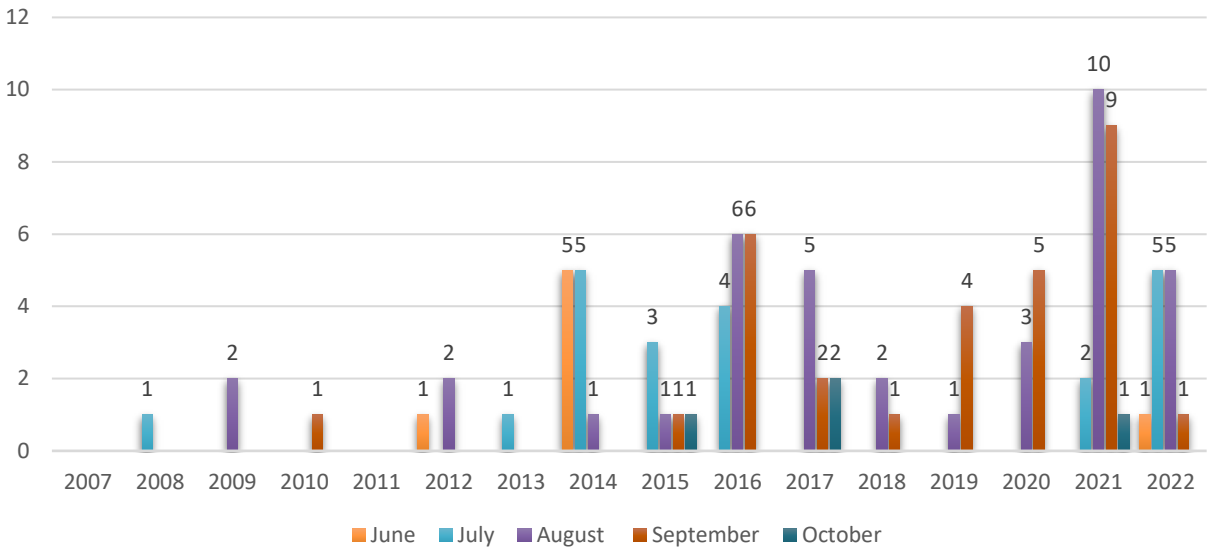
### Proportion of WNV + Test Result / Total # of Test



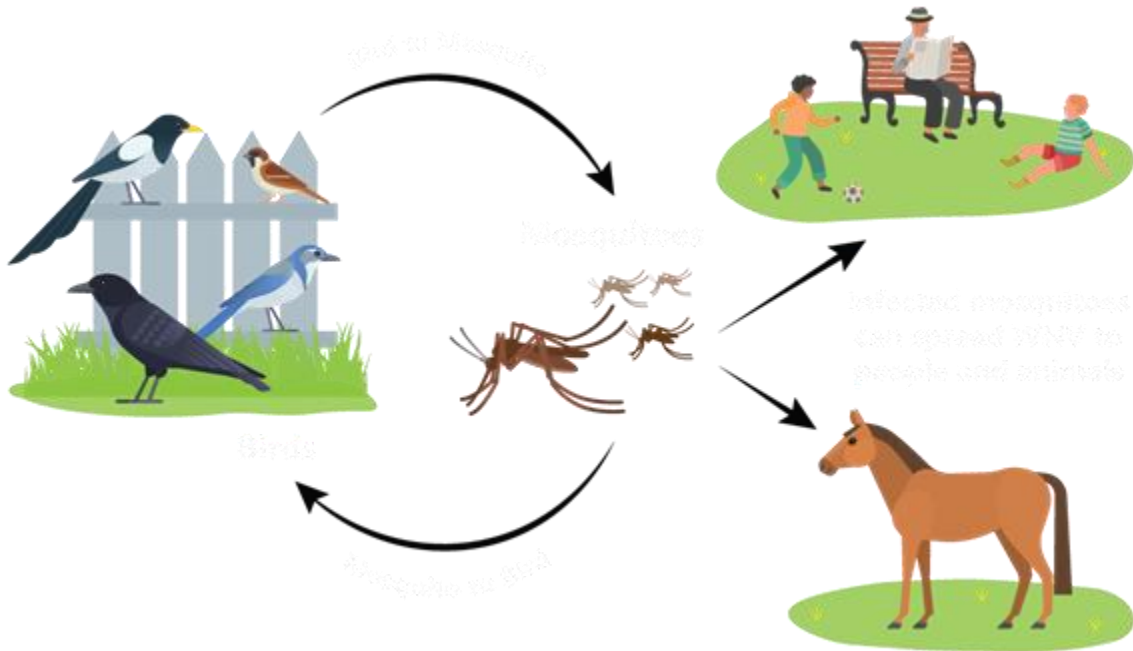
Culex Species	2022			2021			2020			2019		
	# Pooled	Total Pools (# pools +)	Average # per Pool	# Pooled	Total Pools (# pools +)	Average # per Pool	# Pooled	Total Pools (# pools +)	Average # per Pool	# Pooled	Total Pools (# pools +)	Average # per Pool
<i>thriambus</i>	2	2 (0)	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>stigmatosoma</i>	18	9 (1)	2	2	1 (0)	2	N/A	N/A	N/A	N/A	N/A	N/A
<i>erythrothorax</i>	N/A	N/A	N/A	N/A	N/A	N/A	300	7 (0)	42.86	N/A	N/A	N/A
<i>pipiens</i>	3,744	152(2)	24.63	3,840	124 (1)	30.97	3,577	164 (0)	21.81	3,194	275 (1)	11.61
<i>tarsalis</i>	9,517	317(9)	30.02	11,338	299 (21)	37.92	12,152	359 (8)	33.85	16,490	558 (4)	29.55
<b>TOTAL</b>	<b>13,281</b>	<b>480</b>	<b>27.67*</b>	<b>15,180</b>	<b>424</b>	<b>35.80*</b>	<b>16,029</b>	<b>530</b>	<b>30.24*</b>	<b>19,684</b>	<b>833</b>	<b>23.63*</b>

\* Average of the total amount of pools

## Seasonality of WNV Positive Mosquito Pools 2007-2022

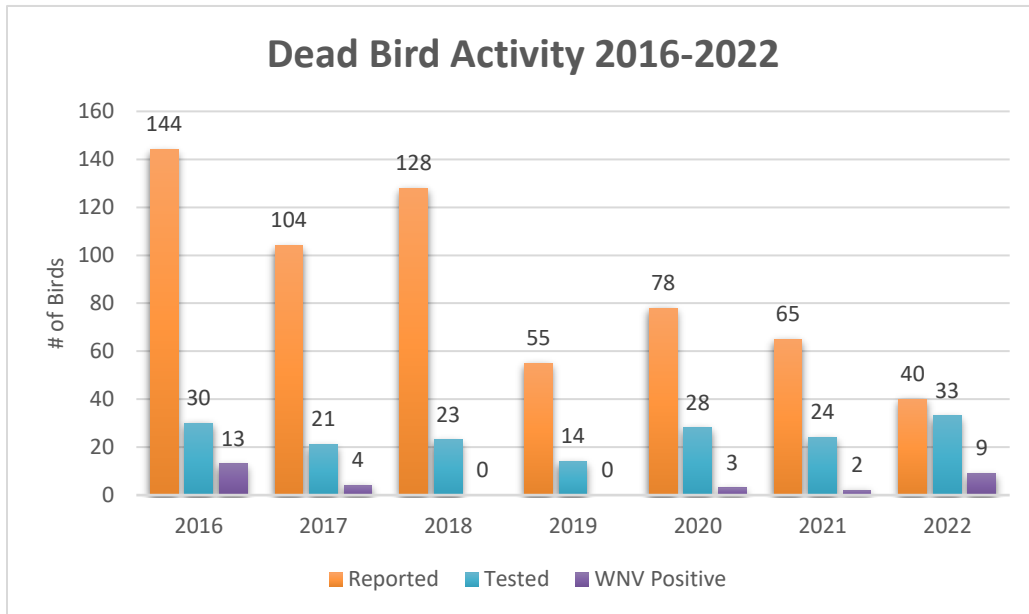


## West Nile Virus Transmission Cycle

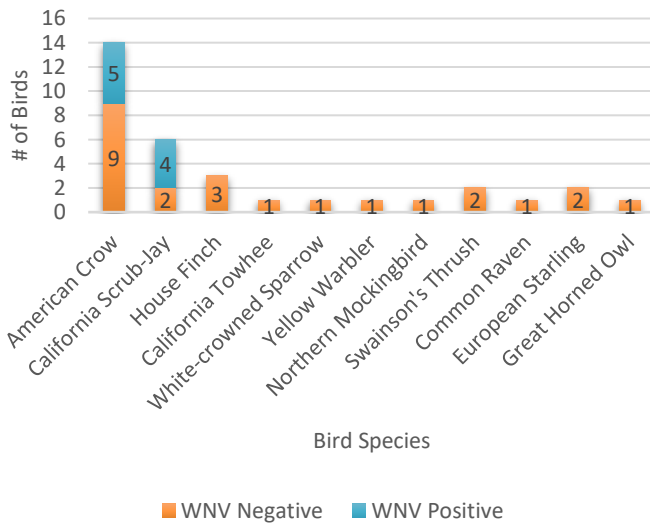


## Dead Bird Testing

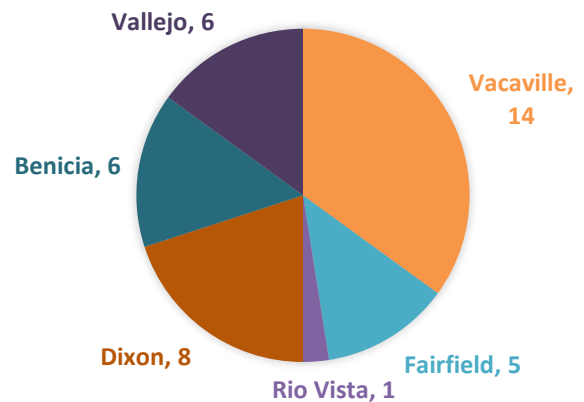
SCMAD works with the California Department of Public Health (CDPH) and the University of California Davis to collect and test dead birds within Solano County for arboviruses. Dead birds are reported by calling **1 (877) 968-2473** or by reporting them online at <http://westnile.ca.gov> to the CDPH West Nile Virus and Dead Bird Call Center. In 2022, SCMAD sampled 11 bird species; a total of 40 dead birds were collected, 33 dead birds were tested, and 9 birds tested positive for WNV.



### 2022 Total Bird Species Test for WNV



### 2022 DEAD BIRD SUBMISSION BY CITY

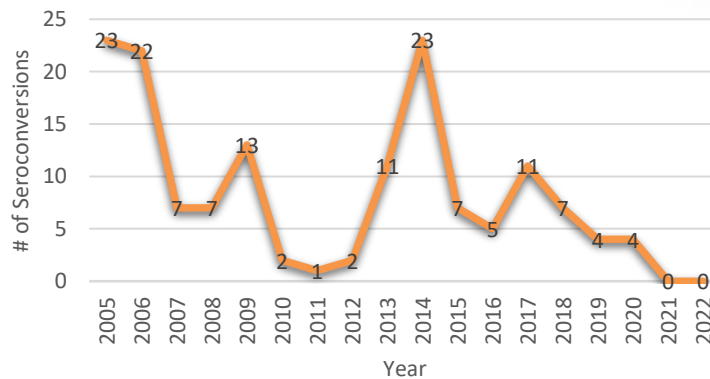


## Sentinel Chickens

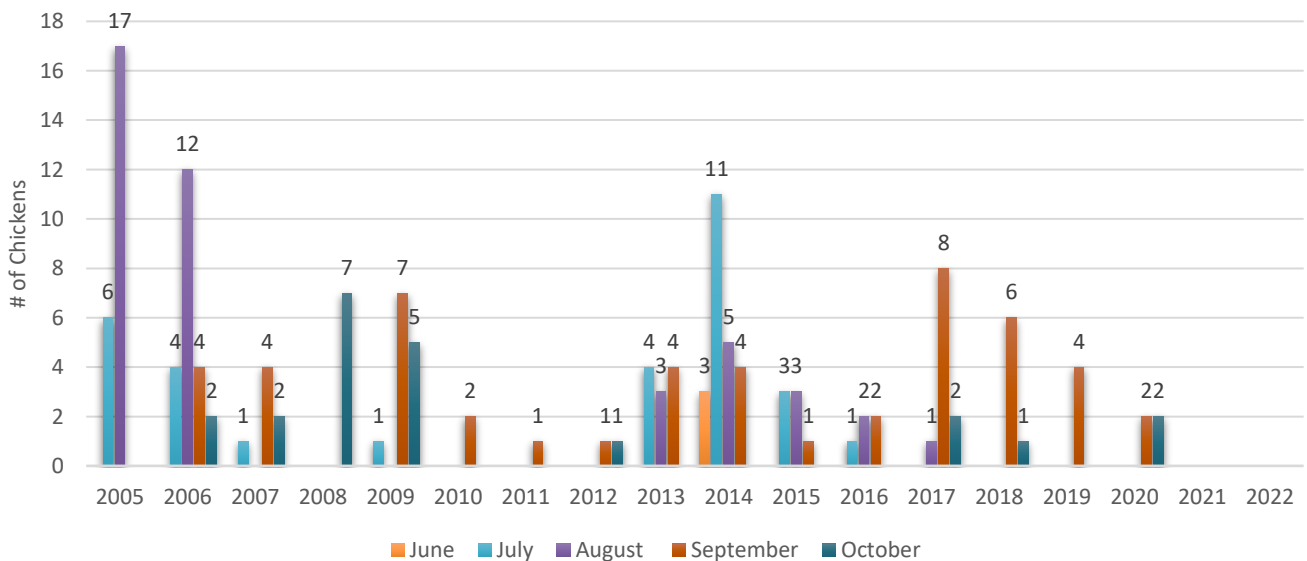
Sentinel chickens provide the SCMD with crucial information about arbovirus activity within Solano County. Three sentinel chicken flocks are located throughout Solano County. Chickens develop antibodies in response to arbovirus exposure. Chickens cannot transmit West Nile virus back to mosquitoes; they do not serve as a reservoir for the virus. Every two weeks a blood sample is taken from each chicken in our program. Flocks were downsized in 2020 to allow for faster sample collecting, increased space per chicken and cost-savings to the district; historically there have been 12 birds per flock, until 2020 when we started using 7 birds per flock. No sentinel chicken tested positive in 2022.



### # of WNV+ Sentinel Chickens 2005-2022



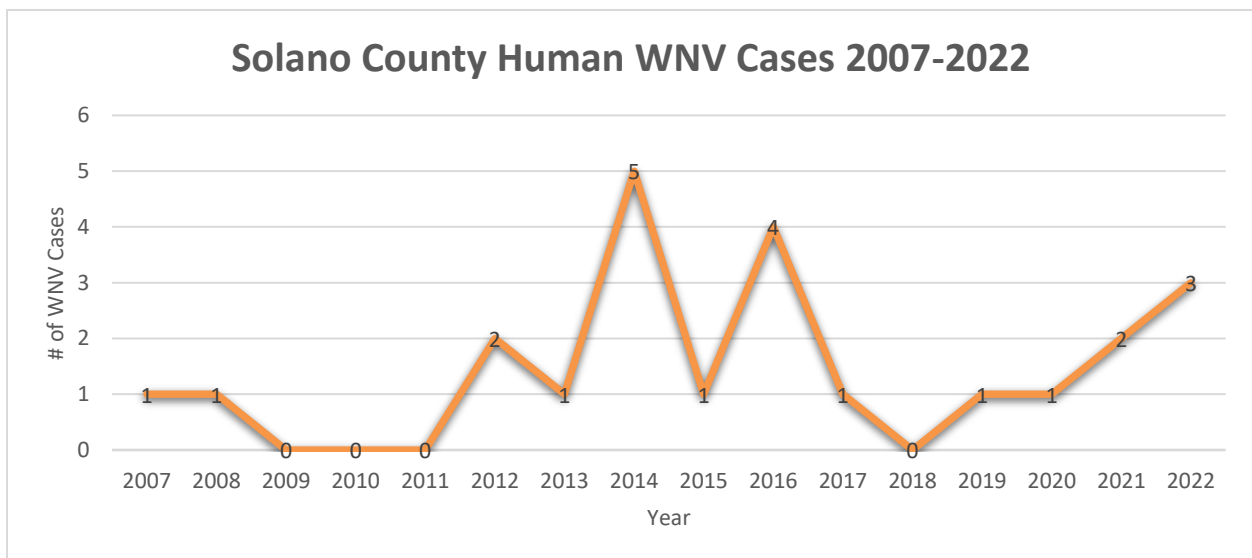
### Monthly Seroconversions in Sentinel Chickens 2005-2022



## Human Arbovirus Case Response

It is our goal at the SCMAD to identify areas where arbovirus transmission is present and reduce the risk of disease to the residents of Solano County. In the event of a human infection, the occurrence is reported to the SCMAD by the Solano County Public Health Department (SCPHD). All information that is supplied the SCMAD is provided in a manner that is compliant with all HIPAA regulations and guidelines. When possible, the SCMAD will collaborate with the SCPHD to determine the likelihood of the disease transmission occurring in Solano County by conducting trapping and habitat surveys. For human case responses traps are deployed, sampled and tested for arboviruses. *Culex* spp. are the target vector for West Nile virus cases. Malaria response trapping focuses on *Anopheles* spp. and dengue and/or Zika virus response trapping focuses on invasive *Aedes* spp.

Mosquito abatement is conducted in areas where arbovirus activity is confirmed to rapidly reduce the risk of disease transmission to the public. Any areas where arbovirus activity occurs is then monitored for 14 to 21 days to ensure a low risk to the public. In 2022 there were three confirmed human cases of arbovirus infections (all WNV) within Solano County. By comparison, there were two confirmed human case of WNV in 2021, and only one human case of WNV in 2020.



# Public Outreach

## Advertising

It is our intention that 2022's advertising campaign yielded positive, long-term results and would allow us to interact with more residents of Solano County. Public education about mosquito control is an essential component of SCMD's mission. Our agency relies on public awareness about mosquito-related issues like reporting neglected swimming pools or calling about high mosquito adult numbers.



In 2022, SCMD continued to develop our official website and several advertising campaigns. To educate and conduct outreach to the public, bus ads were created and ran on busses in Fairfield, Suisun, and Vacaville. In addition to bus ads, newspaper ads were printed in The Reporter and the Vallejo Times Herald. Below is a complete list of all 2022 advertisements:

*Daily Republic* Sunday newspaper ads ran March through July (pictured below)

*Solano Life* half-page advertisement

*Solano Senior Living* magazine spring, summer, and fall issues

*The Reporter* Monthly Package ran March 27 through September 6 (6-month campaign)

The Dixon May Fair (one time advertisement at fair & in *The Reporter* newspaper)

Bus ads ran March 28 through July 17 (top of page)

KUIC radio advertisement ran March 1 through June 12, including an on-air interview

Solano County Fair Guide full-page advertisement

Tomato & Vine Festival Program, half-page advertisement

**Report Dead Birds to 1-877-WNV-BIRD**  
 Stop the spread of West Nile virus in your community

Michael Furk Photography

Solano County residents are encouraged to report dead birds to the West Nile Virus and Dead Bird Call Center at 1-877-WNV-BIRD (968-2473), or go online to [westnile.ca.gov](http://westnile.ca.gov) to submit an electronic report. Dead birds will be tested for West Nile virus (WNV) as part of the Solano County Mosquito Abatement District (SCMD) mission to monitor for mosquito-borne disease throughout the county of Solano.

Birds act as reservoirs for WNV. When an infected bird is bitten by a mosquito, that mosquito then becomes infected with WNV. As that mosquito continues to take multiple blood meals from uninfected birds, it passes around the virus, infecting more and more birds. These birds continue the transmission cycle by infecting other mosquitoes. Many bird species are especially vulnerable to WNV, and will usually perish once infected.

The SCMD encourages residents to report these birds to the West Nile Virus and Dead Bird Call Center so that we can utilize the information obtained from the carcass. Birds that test positive for WNV will help in our surveillance efforts to track and control it in the areas of the county where it is detected. SCMD does not accept doves, pigeons, chickens, or quail in our surveillance program as these species do not die from WNV exposure.

**What types of dead birds should I report?**

**Individual birds**  
 Except: pigeons, doves, poultry & ducks

WNV testing performed  
 Call 877-WNV-BIRD  
 or go online to [westnile.ca.gov](http://westnile.ca.gov)  
 to submit an electronic report

**Clusters of 3 or more**  
 Sick or dead birds

WNV & additional testing performed  
 Call 877-WNV-BIRD

**How do I collect a dead bird?**  
 The bird must be fresh to be tested for diseases (i.e. dead less than 24 hours). Put the bird in a bag and leave it in an accessible location. Never handle a dead bird with bare hands – use gloves, shovel or cover hands with intact waterproof bag before handling. Wash hands after.

**Solano County Mosquito Abatement District**  
**707-437-1116**  
[www.solanomosquito.com](http://www.solanomosquito.com)

**CONTROL MOSQUITOES TO PREVENT DISEASES**

**Fight the bite**

**SOLANO COUNTY MOSQUITO ABATEMENT DISTRICT**

- WEST NILE VIRUS
- DENGUE
- ZIKA VIRUS
- MALARIA
- ST. LOUIS ENCEPHALITIS

**PROTECT YOURSELF FROM BITES**

**WEAR PROTECTIVE CLOTHING: LONG PANTS & SLEEVES SHOES & SOCKS**

**USE INSECT REPELLENTS DEET IS BEST**

**BE AWARE OF DISEASES IF TRAVELING**

**AVOID AREAS OF HIGH MOSQUITO ACTIVITY DURING BOTH DAY AND NIGHT**

**REDUCE BREEDING SITES**

**DUMP STANDING WATER IN BUCKETS, FLOWERPOTS, TOYS, BOTTLES, ETC.**

**SPRAY WATER-HOLDING PLANTS WITH SOAPY SOLUTION WEEKLY**  
 1 TEASPOON LIQUID DISHWASHING SOAP PER 1 QUINCE SPRAY BOTTLE OF WATER

- Clean your gutters and downspouts weekly
- Repair screens and seal windows to keep mosquitoes out of your home
- Empty standing water in buckets, bottles, etc.
- Use soapy water on plants with soapy solution
- Fix leaks: floors and outdoor hoses that drip water


**CLEAR GUTTERS AND DRAINS**

**USE LARVICIDE OR INTRODUCE FISH TO PONDS**

**CLOSE SEPTIC SYSTEM**

**REPAIR WINDOW & DOOR SCREENS**

**SOLANO COUNTY MOSQUITO ABATEMENT DISTRICT**  
**707-437-1116**  
[www.solanomosquito.com](http://www.solanomosquito.com)




**West Nile virus detected in Vacaville, CA**  
**Protect yourself from mosquito bites!**  
 Solano County Mosquito Abatement District  
 (707) 437-1116 SolanoMosquito.com

Summer 2022


Multiple dead birds and several mosquito samples have tested positive for West Nile virus (WNV) in northern Vacaville. Throughout the month of July, the Solano County Mosquito Abatement District (SCMAD) has been conducting surveillance efforts to monitor the situation. District officials have been continuously monitoring sources of mosquito production, setting traps for mosquitoes, and testing dead birds that residents have reported to the California Department of Public Health Call Center at 1-877-WNV-BIRD.

**Residents near northern Gibson Canyon Rd., northern Browns Valley Rd., along Cantelow Rd., and south of Peaceful Glen Rd. are all encouraged to protect themselves and their families from mosquito bites.**




**Figure 1** Birds act as reservoirs for West Nile virus (WNV). A mosquito becomes infected when it feeds on an infected bird. That mosquito can then transmit WNV to people and unvaccinated horses.

Mosquitoes reproduce in any source that contains standing water. Some typical sources include discarded tires, bird baths, clogged gutters, boats, water troughs, and neglected swimming pools. The SCMAD provides mosquito fish free to Solano County residents. If you need free mosquito fish, visit SCMAD online at SolanoMosquito.com or call 707-437-1116.




**Figure 2** A mosquito trap deployed in Vacaville. These traps are highly effective at capturing mosquitoes for disease surveillance.

Avoid being outdoors during dawn and dusk as these are the peak hours of activity for mosquitoes. Be sure that all doors and windows have properly fitted screens to prevent mosquitoes from entering your home. There are several options of mosquito repellents available, too. Wearing long-sleeves and pants will decrease the likelihood of mosquito bites and light-colored clothing is also less attractive to mosquitoes. **Remember to inspect yards for any sources of standing water. Dump and drain anything that is holding water!** Report neglected swimming pools to SCMAD. We rely on your help to combat mosquitoes in Solano County! More resources are available at WestNile.CA.gov



**Figure 3** Mosquitofish consume mosquito larvae in permanent water sources like neglected pools or troughs.

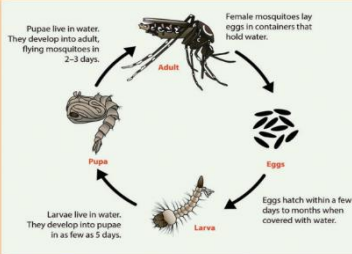
During the summer of 2022, lab results indicated that West Nile virus activity was reaching epic proportions in the rural neighborhoods of northern Vacaville. A newsletter was published and delivered to 3,300 residents of the impacted area. The newsletter (*pictured left*) contained details pertinent to the situation and provided helpful information about protection from infected mosquitoes. Raising public awareness about the situation prepared residents of increased SCMAD personnel in the area setting traps and performing inspections on properties. This newsletter was also a great method of encouraging residents to report dead birds.



**REDUCE THE RISK**  
 of Becoming Infected with West Nile Virus

A number of types of sources found within residential neighborhoods are capable of producing enough adult mosquitoes to bother not only the residents of one home but a number of homes in the area. These mosquitoes are also capable of transmitting West Nile virus! Water left standing for seven to ten days can produce mosquitoes during warmer weather. There are a number of simple precautions that can be taken to prevent this from happening...

Solano County Mosquito Abatement District  
 707.437.1116 • solanomosquito.com



**Help us fight the bite this season** by reporting dead birds to the West Nile Virus Call Center at 1-800-WNV-BIRD or go online to [westnile.ca.gov](http://westnile.ca.gov) to report electronically. Dead birds are an important tool for early virus detection. Birds act as a reservoir for West Nile virus, infecting the mosquitoes that feed on them. Dead birds are often the first indicator that West Nile virus may be present in an area.

DAILY REPUBLIC — Sunday, August 28, 2022 Solano Life 2022 | 35

## Public Events

Our staff is always engaging with the public during service requests, routine inspections, and other types of daily interactions. Part of SCMAD's public outreach includes conducting presentations free of charge to the public upon request. To schedule an appointment, please call the SCMAD office. PowerPoint presentations are catered to meet the abilities of each audience. Examples of presentations given in 2022 are listed below:

April 28: Alamo Elementary School

September 15: Solano County Grounds Seminar (*pictured bottom left*)

September 21: Suisun Resource Conservation District workshop (*pictured bottom right*)

September 30: Rio Vista Rotary Club



# 2021-2022 Financial Statement

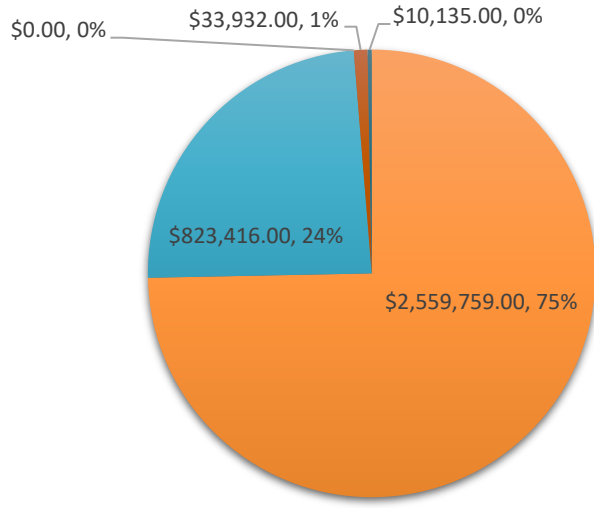
The District Manager, the Board of Trustees, and the District’s Administrative Assistant manage the budgeting, accounting, and record keeping. The finances are also audited annually by a certified third-party public accountant (Fecther & Co.). The SCMAD is committed to the ethical and fiscally responsible management of public funds in the efforts to reduce the risk of disease transmission and nuisance to members of the public in Solano County.

<b>Revenues</b>	<b>2021-2022</b>
Property Taxes	\$2,559,759.00
Other Tax Revenue	\$823,416.00
Charges for Services	\$0.00
Use of Money and Property	\$33,932.00
Miscellaneous	\$10,135.00
<b>Total Revenues</b>	<b>\$3,427,242.00</b>

<b>Expenditures</b>	<b>2021-2022</b>
Salaries and Wages	\$936,343.00
Employee Benefits	\$1,289,376.00
Pesticides	\$311,929.00
Aircraft Services	\$75,800.00
Insurance	\$74,612.00
Structure & Grounds Maintenance	\$51,873.00
Property Tax Administration	\$39,817.00
Utilities	\$42,236.00
Motor Vehicles/Equipment Maintenance	\$37,502.00
Gas & Oil	\$37,577.00
Materials and supplies	\$42,017.00
Professional Services	\$88,659.00
Memberships	\$18,704.00
Publishing & Advertising	\$36,559.00
Conference	\$7,297.00
Communications	\$9,794.00
Continuing Education	\$1,704.00
Travel	\$750.00
Capital outlay	\$85,327.00
<b>Total Expenditures</b>	<b>\$3,187,876.00</b>

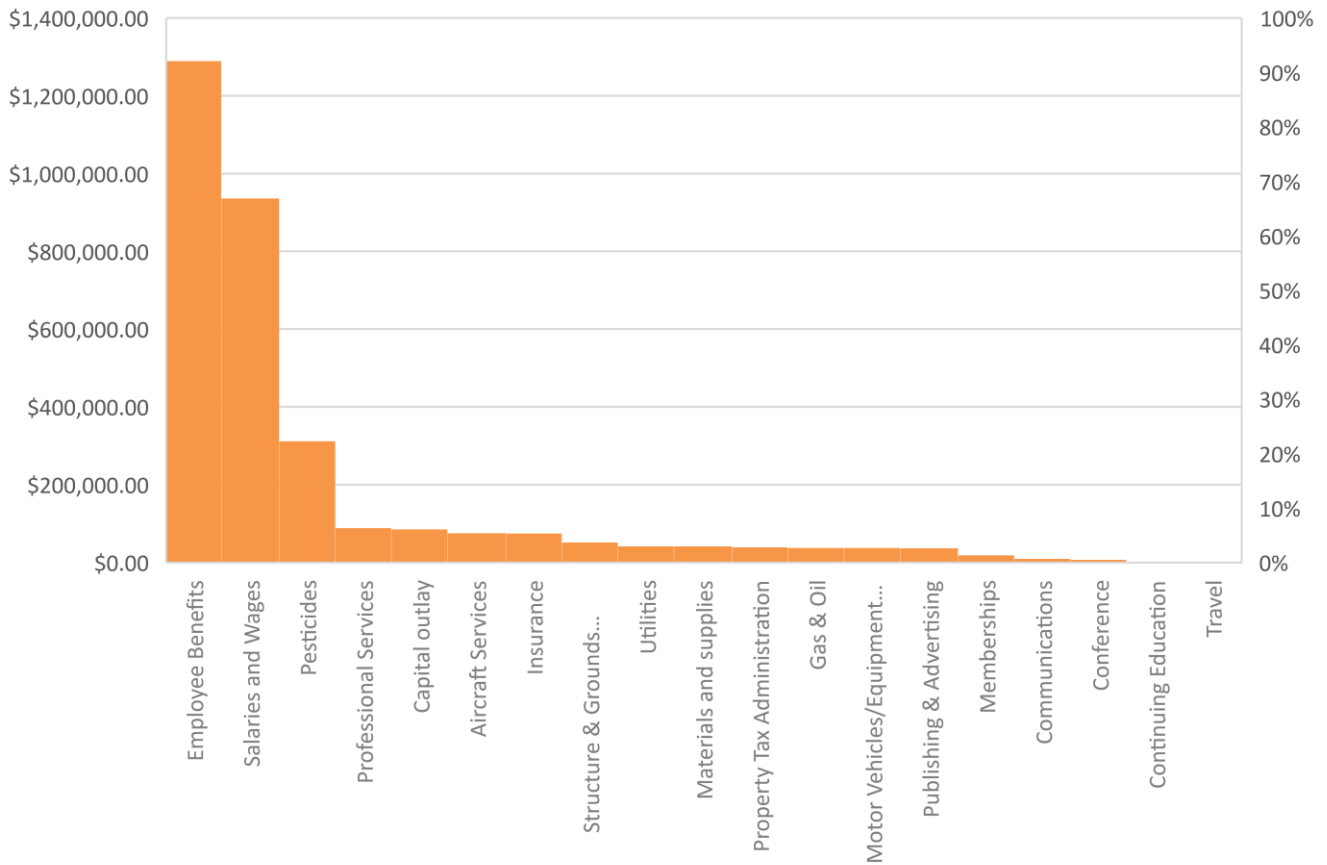


## 2021-2022 Fiscal Year SCMAD Revenues



Property Taxes Other Tax Revenue Charges for Services Use of Money and Property Miscellaneous

## 2021-2022 Fiscal Year SCMAD Expenditures





Solano County Mosquito Abatement District

2950 Industrial Court

Fairfield, CA 94533

Phone: (707)437-1116

Fax: (707)437-1187

[SolanoMosquito.com](http://SolanoMosquito.com)