

# Annual Report 2021



**SOLANO COUNTY  
MOSQUITO ABATEMENT  
DISTRICT**

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*Protecting public health from mosquito-  
borne disease since 1930*

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## Letter from the District 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 2021 annual report.

Solano County has many diverse habitats within its 909 sq. miles. Many of these habitats support breeding grounds for the 24 known mosquito species found within the District. These habitats include but are not limited to: 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 water 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.

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 adult mosquito samples, dead bird samples, and two confirmed human cases.

The SCMAD has a total staff of nine full time employees and is governed by a board of eight trustees which are appointed by each of the seven cities within the district as well as one trustee appointed by the county. The district again faced the challenges of operating with the Covid 19 virus still prevalent in our world. With proper precautions in place district staff were able to protect themselves as well as the public. Our District continued to provide mosquito control services to the residence of the district without interruption.

The SCMAD Board of Trustees and staff are committed to suppressing both disease carrying and nuisance mosquitoes with the most ecologically 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.

Respectfully,



District Manager  
Solano County Mosquito Abatement District  
707-437-1116



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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.

## 2021 Board of Trustees

**President:** Mike White (*Benicia*)  
**Vice President:** Ronald Schock (*Trustee-at-Large*)  
**Secretary:** Joe Anderson (*Dixon*)  
**Trustee:** Daniel Glaze (*Vallejo*)  
**Trustee:** Robert C. Meador (*Vacaville*)  
**Trustee:** Marlon Osum (*Suisun*)  
**Trustee:** Ron Stevenson (*Rio Vista*)  
**Trustee:** Charles Tonnesen (*Fairfield*)

## SOLANO COUNTY Mosquito Abatement District



## Solano County Mosquito Abatement District Staff

### Administration

**Manager:** Richard Snyder  
**Administrative Assistant:** Tami Wright

### Laboratory

**Biologist:** Bret Barner

### Operations

**Mosquito Control Technicians:**

Tommy Bosson  
Ian Caldwell  
Ryan Dawson  
Gary Dula  
Damon Gray  
Mark McCauley  
Brian Slover





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## 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 species of mosquitoes known to be found within the SCMAD boundaries, 12 of which are important either as disease vectors (i.e., capable of transmitting disease) or pests.



The function of the SCMAD is to control all mosquitoes that may bring disease or harassment to humans and domestic animals. At the SCMAD, we fulfill this function by evaluating and selecting the most effective and economical management techniques that result in the least possible damage to non-target organisms and to the environment. SCMAD deploys a variety of preventive management techniques to control mosquitoes including natural, physical, and chemical control measures. We also emphasize preventive measures, principally natural and physical control methods; however, chemical control is also integrated with other measures when necessary.

## History of the SCMAD

The SCMAD was founded in 1930 in order to control the *Aedes* mosquitoes that were being produced in the 184 square mile Suisun Marsh. It was formed according to guidelines set forth by the Mosquito Abatement Act of 1915 and the California Health and Safety Code.



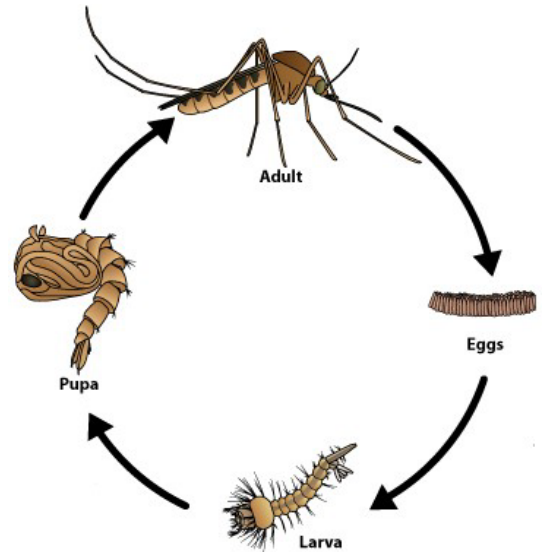
## Working with the Public

SCMAD technicians work diligently to monitor and suppress mosquito populations within Solano County's 909 mi<sup>2</sup> boundaries. However, it is nearly impossible to predict the mosquito population trends with any degree of certainty; the SCMAD relies on information and service requests from the public. Information from the public allows the SCMAD to pinpoint mosquito breeding areas and assists us in allocating our resources to respond effectively and efficiently. In 2021, SCMAD's mosquito control technicians responded to approximately 905 service requests. During service requests, SCMAD technicians conduct habitat evaluation and make treatment applications if necessary. If you would like to make a service request you can do so by calling the SCMAD at (707) 437-1116 or by placing an online service request at <https://www.solanomosquito.com/contact-us>.

# Mosquito Biology & Development

Of the 24 mosquito species that are known to occur in Solano County, each has a specialized set of environmental preferences. While all of the mosquitoes in Solano County share the same basic requirement for standing water to complete their life cycle, some species within the county can complete their lifecycle very quickly with only a small amount of water. Only a bottle cap full of water present for a period of 5 days is all that is required to produce the next generation of mosquitoes. This makes identifying and abating the breeding sources of these mosquitoes very challenging.

All mosquito species have a four-stage lifecycle: eggs, larvae, pupae, and adult. For mosquitoes, this is a process referred to as complete metamorphosis. Adult male and female mosquitoes feed primarily on sucrose from plants; the female mosquito requires blood meals in order to produce viable eggs. It is during this blood feeding period that both humans and domestic animals in Solano County are bitten, causing not only a nuisance but also a means of disease transmission.



# Mosquito Abatement Methods



It is the goal of the SCMAD to cause a significant interruption in the mosquito lifecycle whenever possible in order to reduce the overall mosquito population in Solano County. Keeping the mosquito population at low levels not only reduces the nuisance to our community but also reduces the likelihood of arbovirus transmission, such as West Nile virus, from spreading to members of the public.

To achieve this goal the SCMAD utilizes an Integrated Vector Management (IVM) program. IVM is a rational decision-making process 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 3 main method types: physical control, biological control, and chemical control.



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## Physical Control

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

### Source Elimination/Reduction

This type of physical control eliminates a larval habitat by modifying the landscape to allow for better drainage or by eliminating a source entirely. Habitat modification or elimination can be as complex as adding drainage canals to a marsh or as simple as cleaning gutters, flushing dog water bowls frequently, or even covering a pool/spa that is unmaintained. While the SCMAD 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, as well as infrastructure maintenance, like flood gate maintenance. 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 applying a chemical treatment only 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 SCMAD utilizes biological and chemical control methods to prevent mosquitoes from completing their lifecycle.

## Biological Control Methods

When a water body does not drain regularly or is permanent but not suitable for physical control -such as source elimination, reduction, or maintenance- it may be selected as a candidate for biological control. Biological control is when control of the mosquito population is accomplished by introducing/increasing the predator population in the mosquitoes' ecosystem.

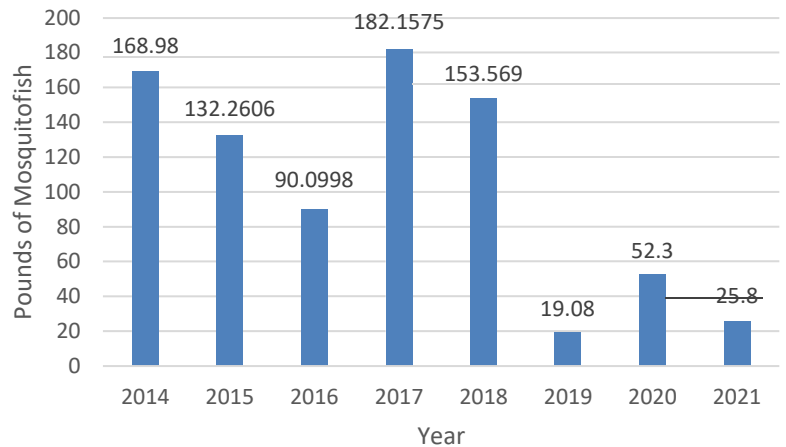


SCMAD breeds -and may also purchase- live mosquitofish that are then distributed to the public free of charge for use on private properties in Solano County. Mosquitofish are commonly stocked in places like ornamental ponds, cattle troughs, stagnant swimming pools, and large fountains. The SCMAD staff will also stock the mosquitofish in other environments, including golf courses, country club ponds, water treatment facilities, and stock ponds that do not have a population of predatory fish. In 2021 mosquitofish pick-up times were scheduled over the phone and fish were set outside the district office due to contactless COVID-19 precautions.

Mosquitofish are ideally suited for biological control because they are small (under 2.5 in length) and able to reproduce quickly. These fish have also been observed eating up to two times their body mass in mosquito larvae per day. Mosquitofish are also extremely resilient to 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. Before the 2020 pandemic, the SCMAD staff went to special events across the county to educate the public about mosquito control programs in Solano County. The SCMAD took this opportunity to distribute mosquitofish to the public while they were at the events. In 2021 the SCMAD distributed an estimated 25.8 lbs. of mosquitofish throughout Solano County providing long lasting, pesticide free mosquito abatement to an estimated 104 acres.

Pounds of Mosquitofish Distributed by Technicians 2014-2021





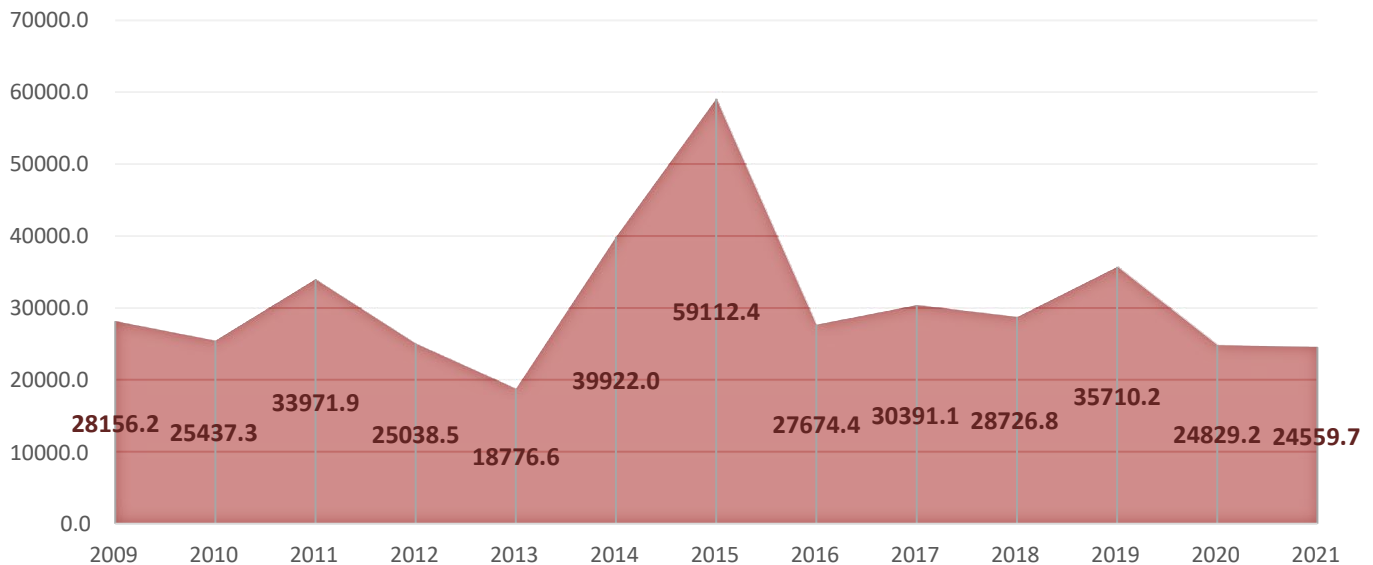
## Chemical Control Methods

When physical and biological control methods are not viable options to reduce the mosquito population, the SCMAD can select a chemical control method to reduce the number of mosquitoes to acceptable levels. The SCMAD works diligently to select and use all of our chemical pesticides in a manner that poses the lowest possible risk to both the public and the environment.

The chemical pesticides used by SCMAD can be classified into two different categories: larvicides and adulticides.



## TOTAL ACRES TREATED WITH PESTICIDE 2009-2021



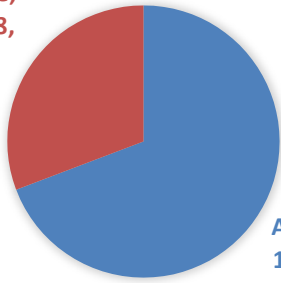
### Larvicides

Larvicides are insecticides that target mosquitoes in the larval stage of their lifecycle. Larvicides are by far the most heavily used form of insecticide used by the SCMAD, although adulticide applications treated a greater area per application. Most larvicides used by the SCMAD contain the active ingredient methoprene. Methoprene is frequently used as a public health pesticide because it poses a very low risk to residents and their animals, while at the same time reducing the amount of biting adult mosquitoes that emerge from an aquatic environment.

In 2021 the SCMAD deployed larvicides by ATV, hand, and even aircraft. Larvicides are important in controlling the mosquito populations that develop in the tidal marshes in late winter, spring and summer. The SCMAD also uses larvicides to control mosquito populations that develop in the fall when duck clubs are flooding prior to duck hunting season.

## 2021 PROPORTION OF TOTAL ACRES TREATED LARVICIDE VS. ADULTICIDE

Larvicide,  
7,556.18,  
31%



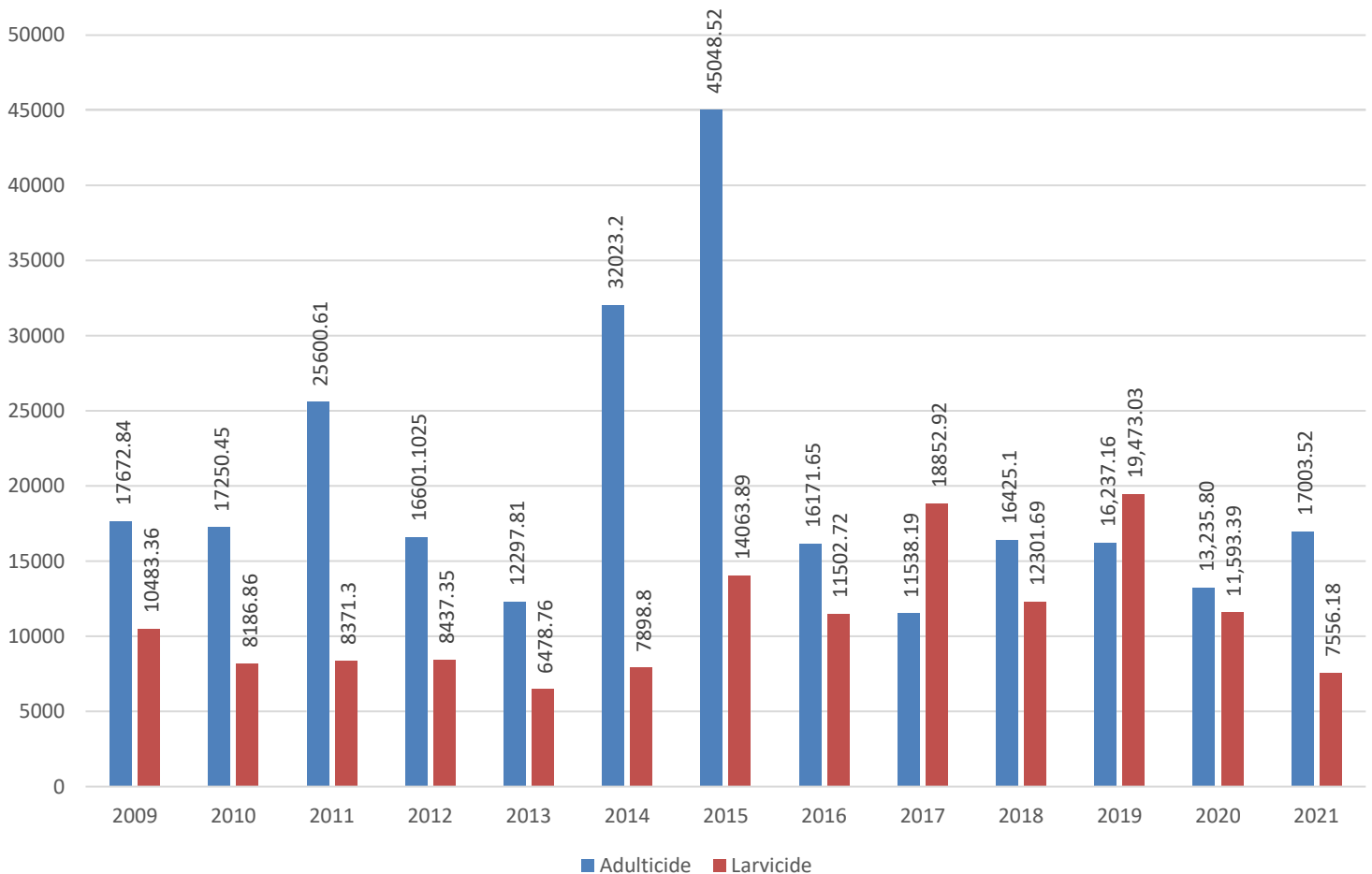
Adulticide,  
17,003.52,  
69%

### Adulticides

Adulticides are chemical pesticides that target mosquitoes in their adult life stage. Adulticides utilized by the SCMD are effective in rapidly reducing the adult mosquito population in a specific area for a short period of time; however, if the mosquito habitat is not abated adulticide treatments will not provide long lasting results.

Adulticides used by the SCMD are not target-specific and could affect the beneficial insect population. For this reason, the SCMD generally only applies adulticides in/around areas that have known arbovirus activity to reduce the risk of arbovirus transmission. To date in Solano County adulticides are ONLY deployed by ground vehicles or using a hand applicator. The SCMD has never applied adulticides using aircraft.

Total Acres Treated 2009-2021  
Larvicide vs. Adulticide



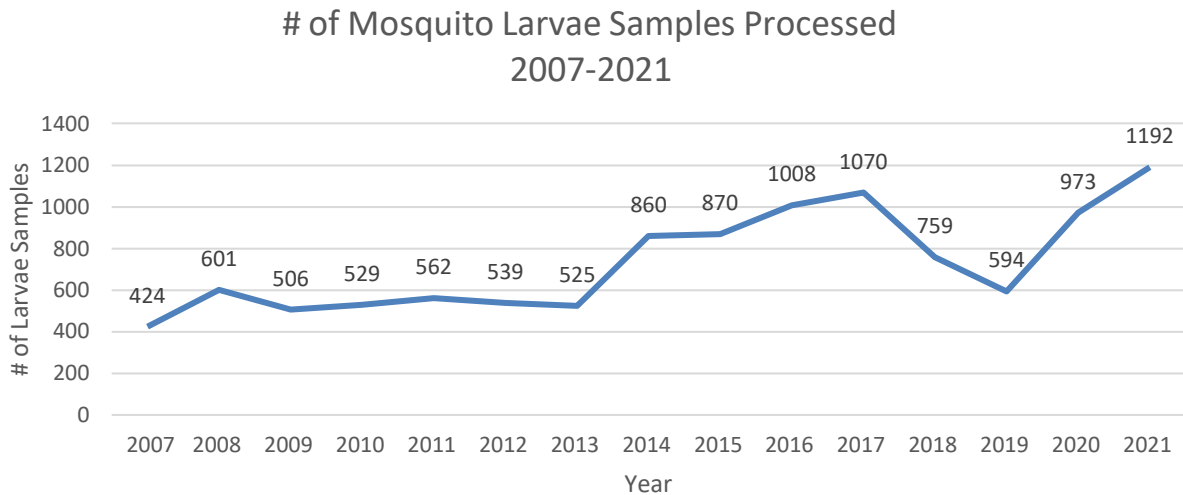
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## 2021 Mosquito Surveillance

In 2021 the 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

In an effort to identify mosquito breeding sources and plan abatement efforts, the 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 the SCMAD laboratory where the specimens are inspected and all mosquito larvae are identified to species. This population data allows the 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 2021, the SCMAD laboratory processed 1,192 mosquito larvae samples.



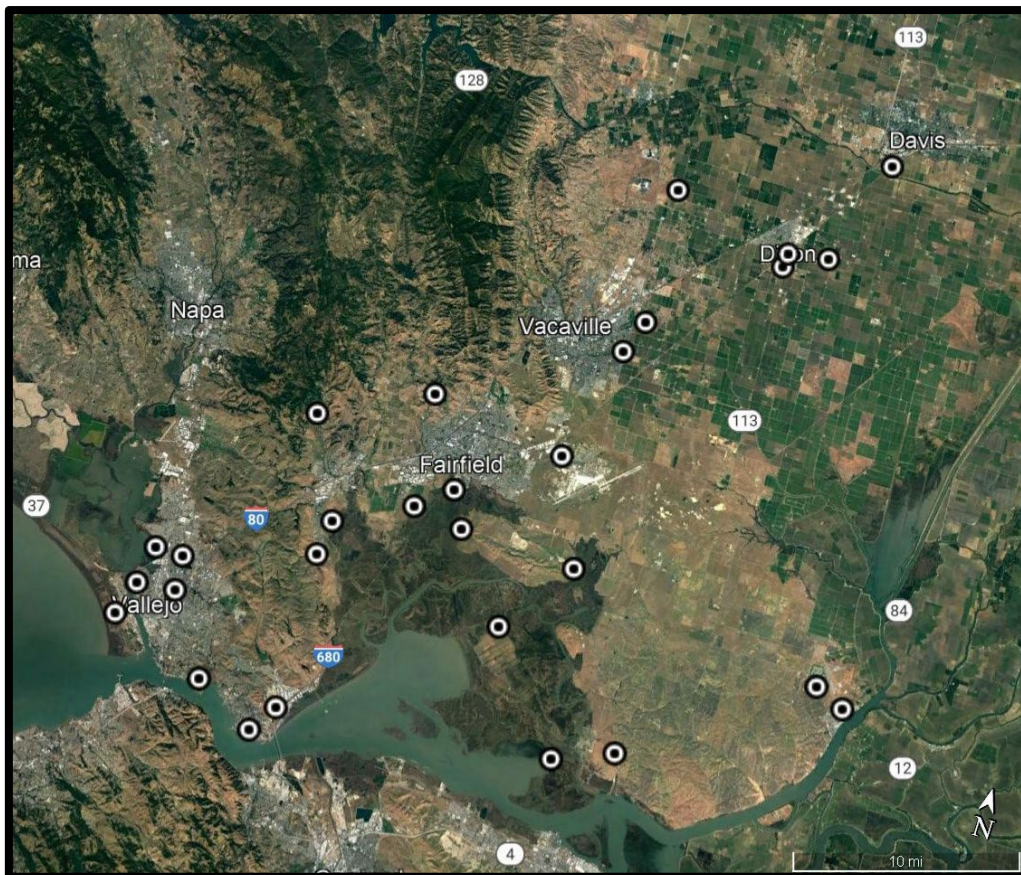
### New Jersey Light Traps

The SCMAD uses New Jersey Light Traps as semi-permanent monitoring stations for mosquito surveillance. The SCMAD deploys these traps for roughly 9 months a year throughout the county by partnering with local land owners. New Jersey Light Traps use light to attract mosquitoes at night, then traps and kills them. These traps are very effective in providing the SCMAD staff with mosquito diversity and long-term comparable population data used for resource allocation

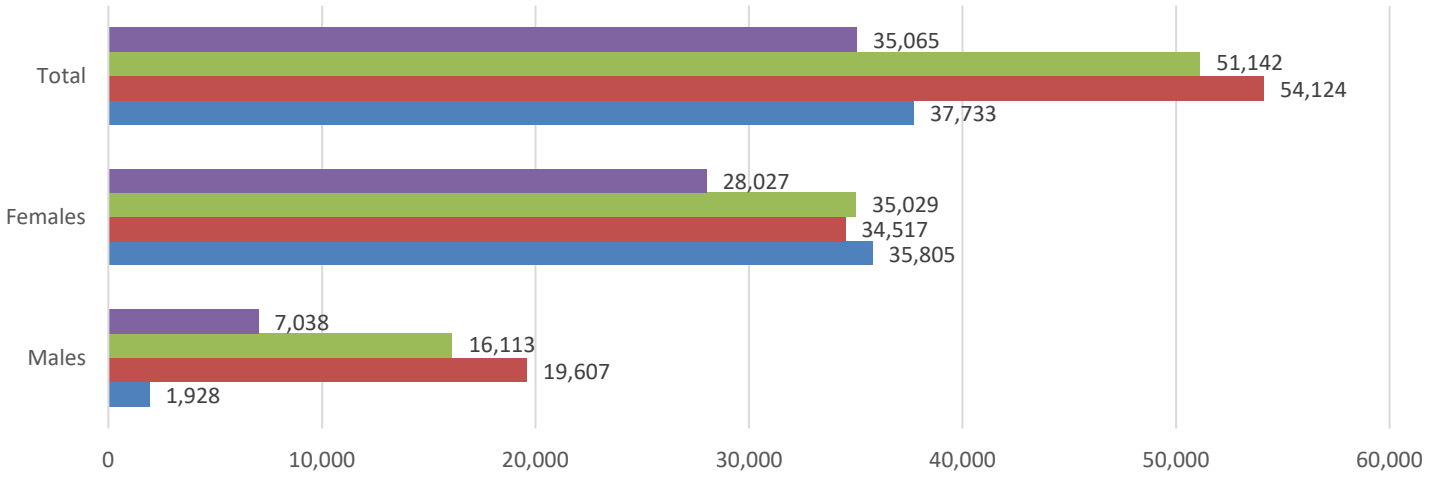


decisions. The trap numbers and locations are roughly the same year to year, which allows the SCMAD to use the data from previous years to compare and identify trends and patterns in the adult mosquito population.

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 2021, 29 light traps were collected and reset on a weekly basis from March through October. The map below plots the location for each of the NJLTs deployed in 2021.



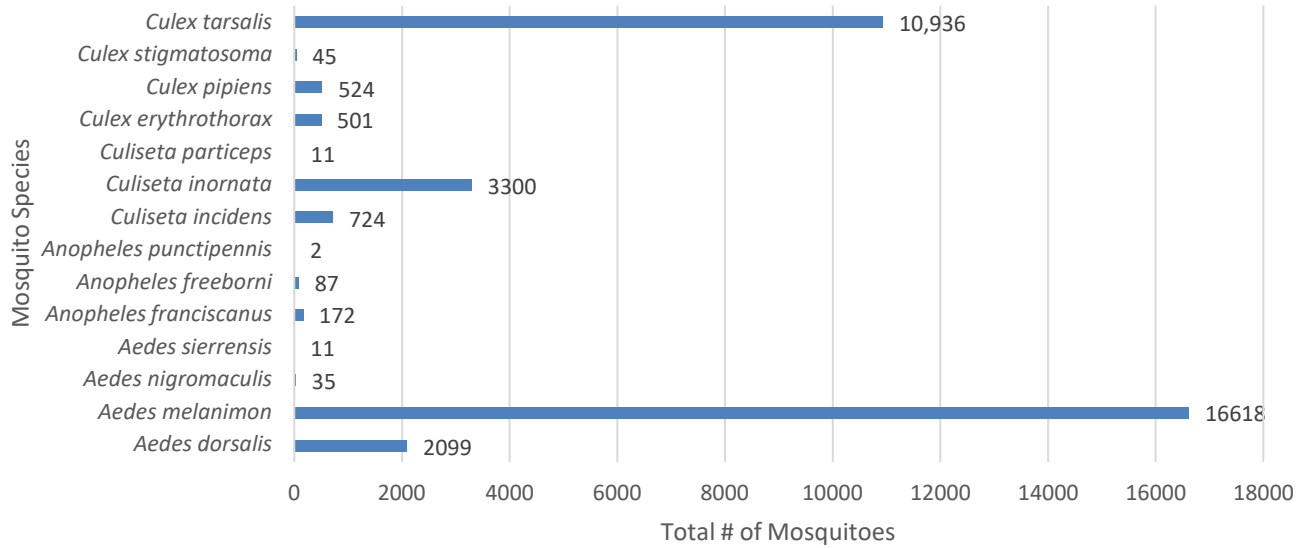
### NJLT Adult Totals 2018-2021



	Males	Females	Total
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

2021 2020 2019 2018

### 2021 NJLT Mosquito Species Diversity



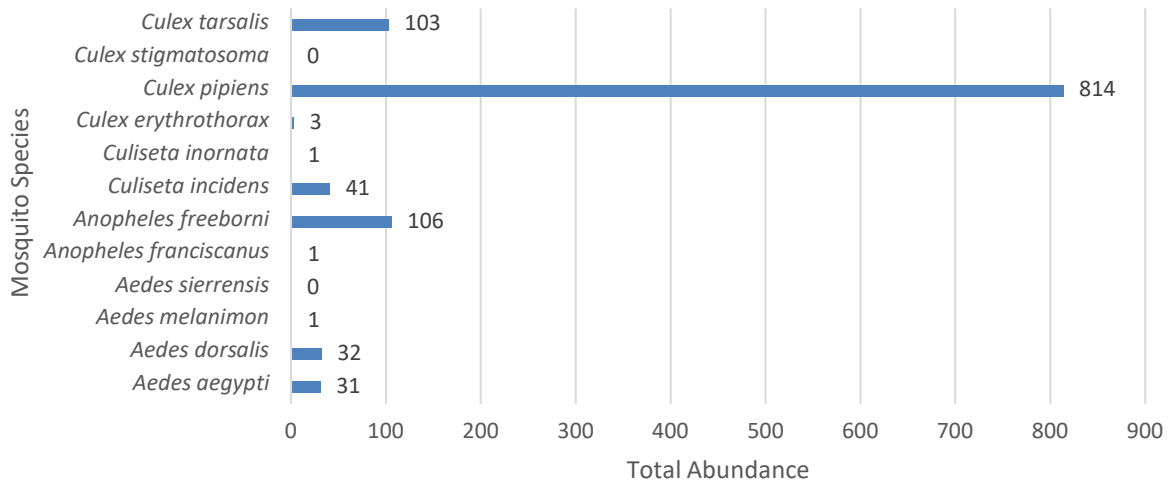
## BG Sentinel Trap

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.

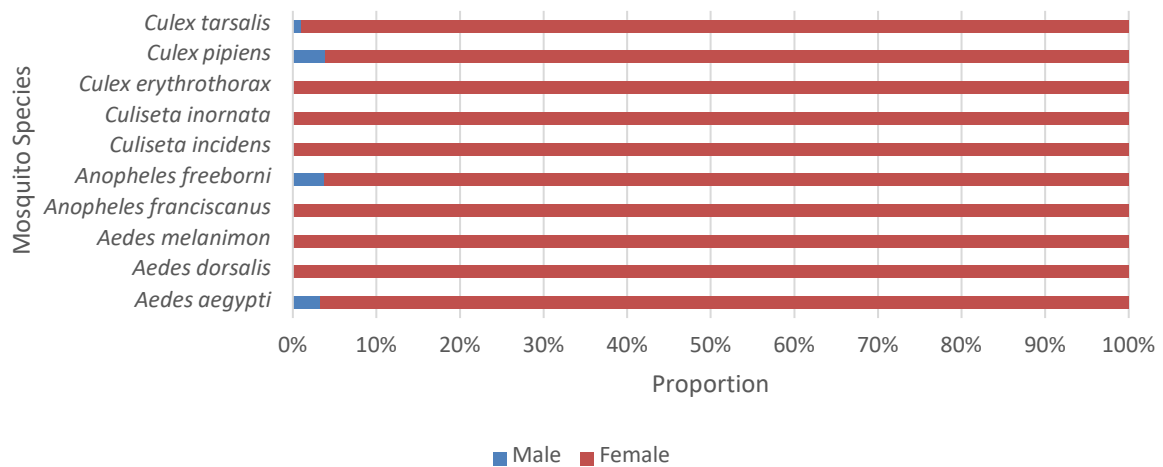
BG Sentinel traps attract female mosquitoes in search of a host and are used mainly to monitor for invasive *Aedes aegypti* and *Aedes albopictus*. In 2021, the most abundant species this trap collected was *Culex pipiens*. *Culex* mosquitoes captured in BG Sentinels were pooled and tested for arbovirus, making this trap useful for the SCMAD arbovirus surveillance program.



### 2021 BG Sentinel Mosquito Species Abundance



### 2021 BG Sentinel Adult Male to Female Ratio







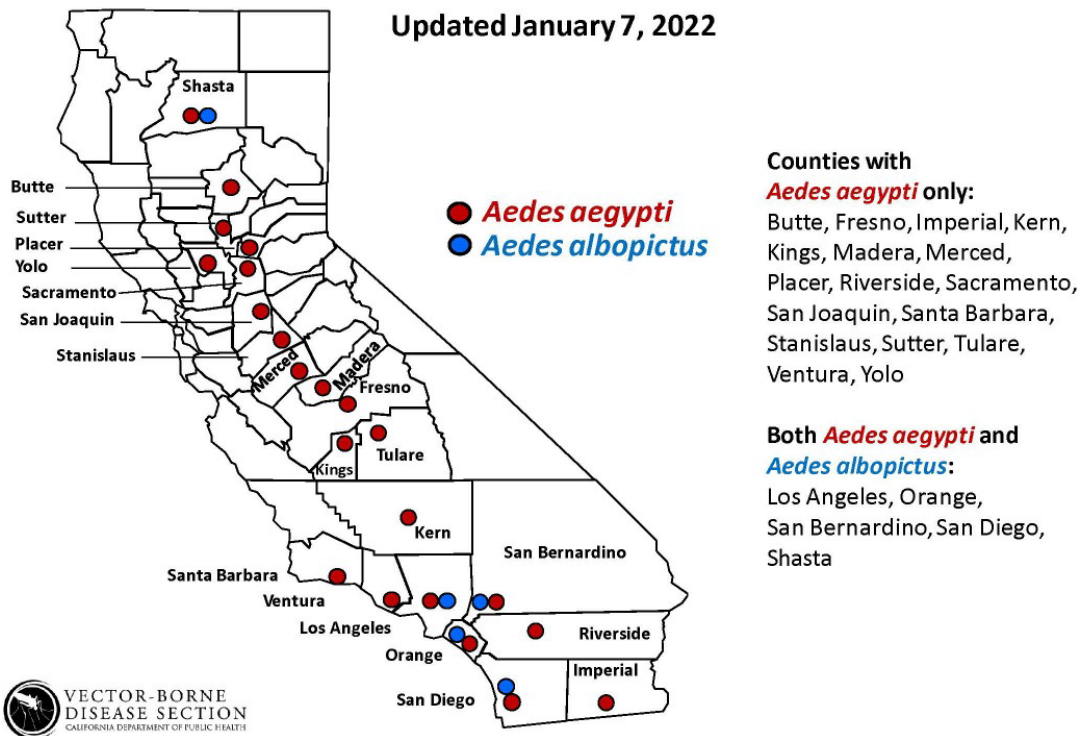
## Invasive *Aedes* Mosquitoes

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 (associated with microcephaly). *Aedes aegypti* were detected in surveillance traps deployed in 2021. This was the official first detection of *aegypti* in Solano County. Neighboring counties of Solano including Stanislaus, San Joaquin, Placer and

Sacramento counties all made their first detection of *Aedes aegypti* in 2019. Yolo county had their first detection of *Aedes aegypti* in Winters, CA in 2020. The first Yolo detection site was located less than 100 yards from the Solano County northern border. SCMAD conducted a long-term surveillance effort to monitor for *aegypti* in Winters. Our first detection was on August 18, 2021. Below is an updated distribution map of all counties in California that have one or both of these invasive mosquito species.

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

Updated January 7, 2022



# Arbovirus Surveillance

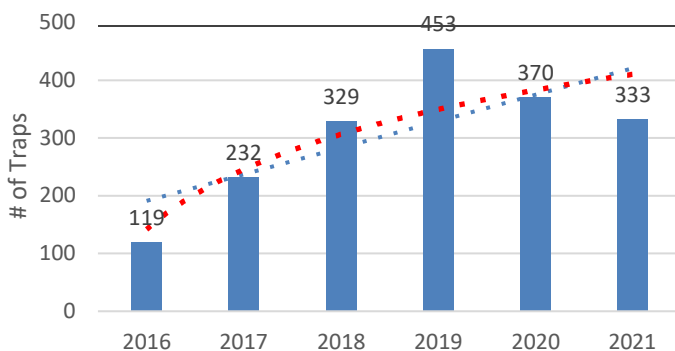
## Mosquito Population Testing

A robust mosquito sampling program is very important in order to identify areas where arboviruses are active in order to prevent human transmission from occurring. In 2021, there were 333 CO<sub>2</sub> traps deployed from which 43,297 mosquitoes were captured and then identified in the SCMAD laboratory. From this total there were 15,180 mosquitoes pooled and tested for arbovirus.

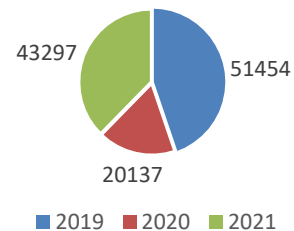
The purpose of this testing is to identify areas within Solano County where the human population was at risk of contracting mosquito-borne disease, such as West Nile virus which is most active between the months of August and September in Solano County. When these areas are identified, mosquito control 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.



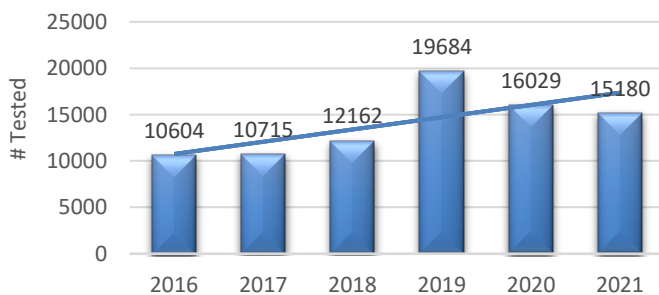
# of CO<sub>2</sub> Traps Deployed 2016-2021



CO<sub>2</sub> Trap Adult Mosquito Totals 2019-2021



Number of Female Mosquitoes Tested 2016-2021

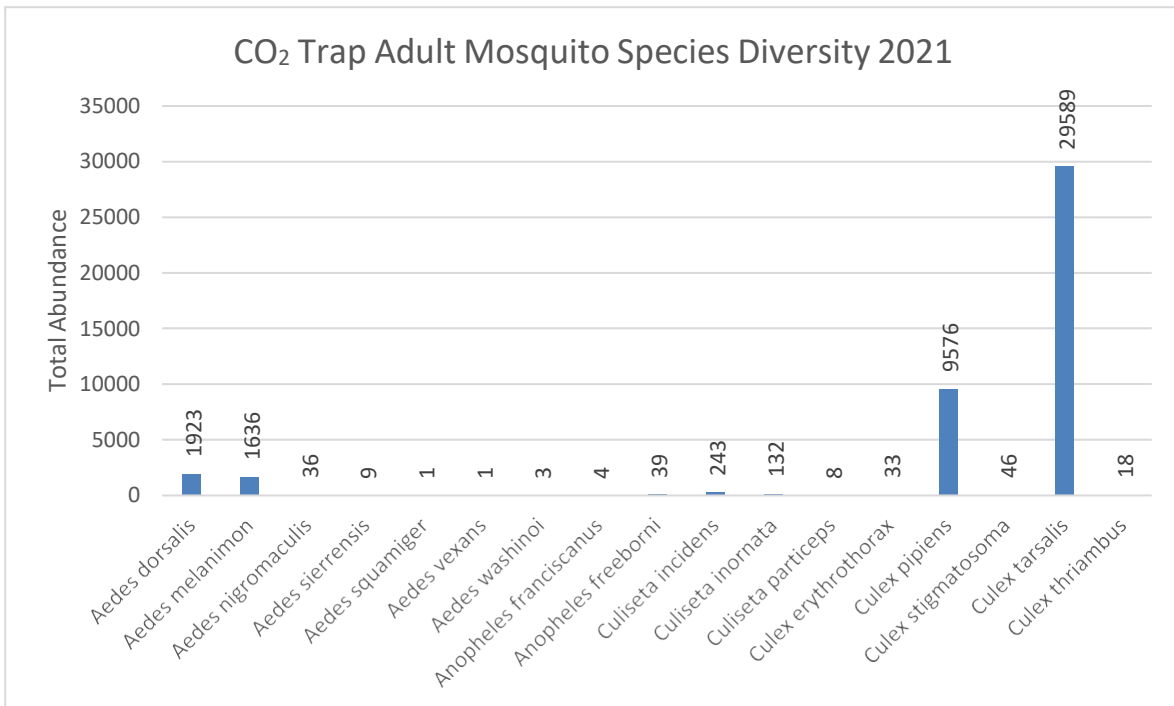


## CO<sub>2</sub> Mosquito Trapping

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

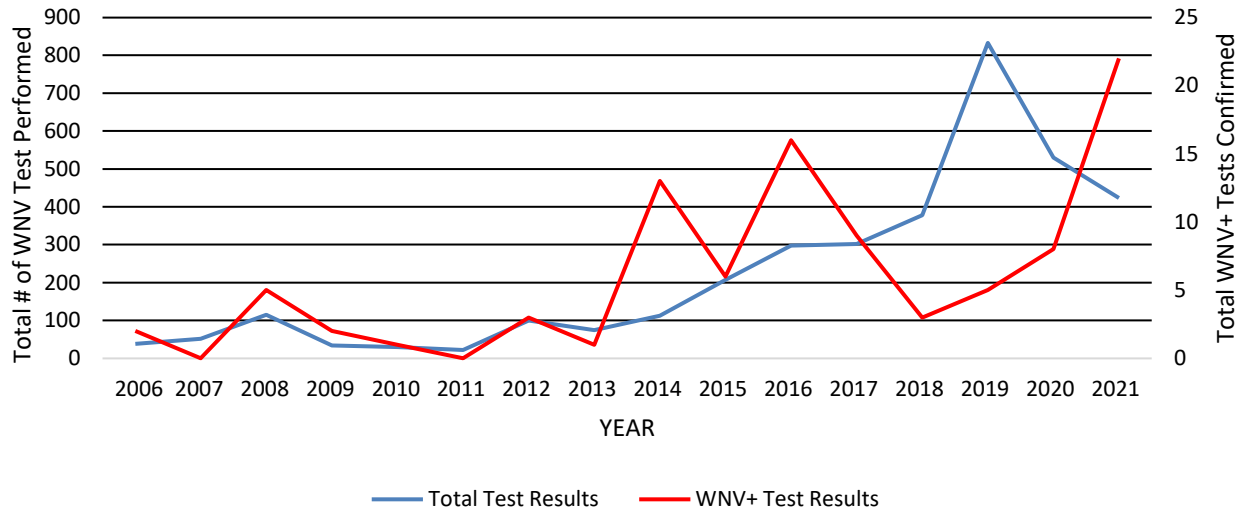
trapped in CO<sub>2</sub> traps do not yield the same population information as New Jersey Light Traps. Instead, CO<sub>2</sub> traps attract host seeking female mosquitoes. Male mosquitoes are certainly captured by these traps as well, but it is thought that they are attracted to the female mosquitoes 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) in order to mate with the females that will be attracted to said host.

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





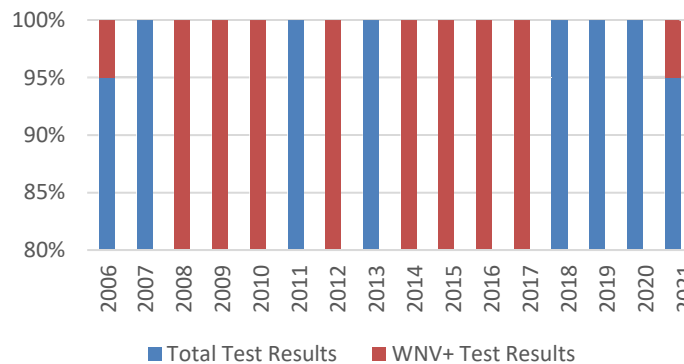
### Total WNV Tests VS WNV+ Test Results

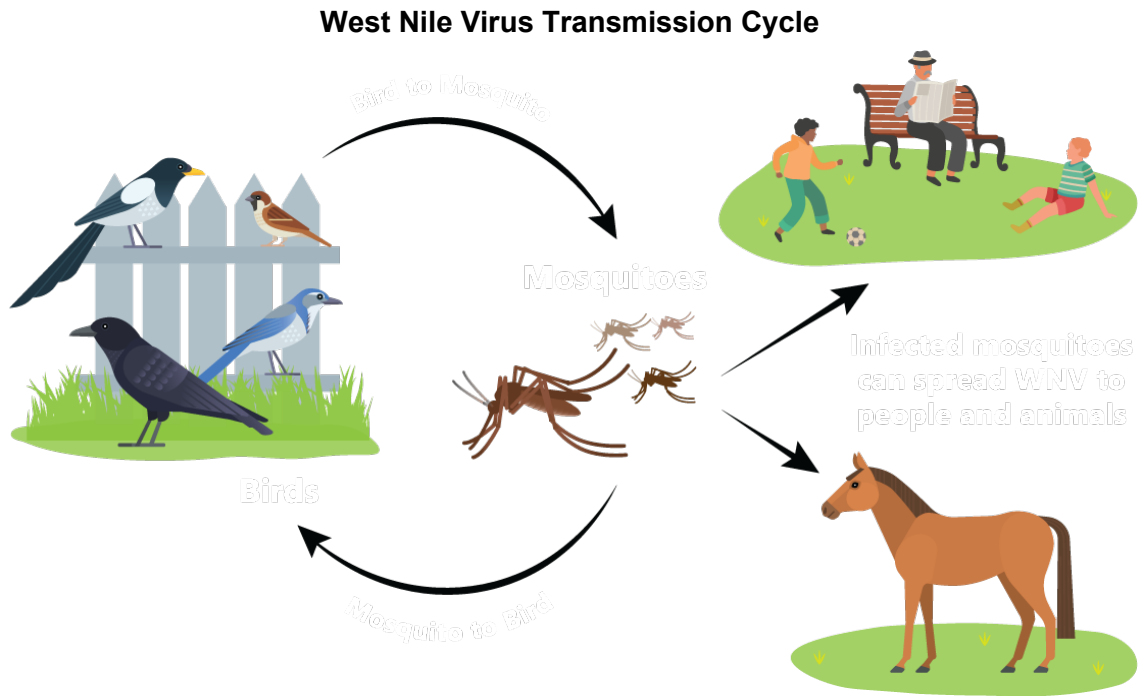
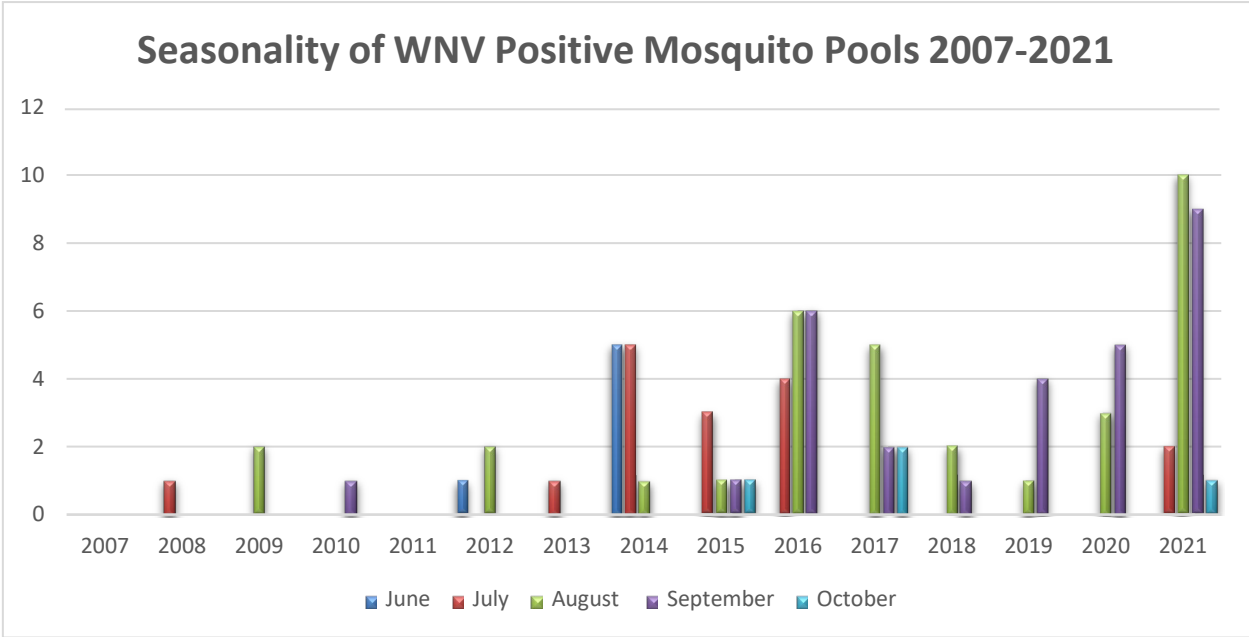


Species	2021			2020			2019		
	# Pooled	Total Pools (# pools +)	Average # per Pool	# Pooled	Total Pools (# pools +)	Average # per Pool	# Pooled	Total Pools (# pools +)	Average # per Pool
<i>Culex stigmatosoma</i>	2	1 (0)	2	N/A	N/A	N/A	N/A	N/A	N/A
<i>Culex erythrothorax</i>	N/A	N/A	N/A	300	7 (0)	42.86	N/A	N/A	N/A
<i>Culex pipiens</i>	3,840	124 (1)	30.97	3,577	164 (0)	21.81	3,194	275 (1)	11.61
<i>Culex tarsalis</i>	11,338	299 (21)	37.92	12,152	359 (8)	33.85	16,490	558 (4)	29.55
<b>TOTAL</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

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



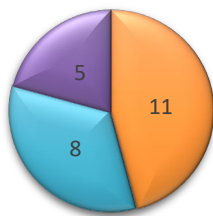


## Dead Bird Testing

The 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. This year there were 7 bird species collected. In 2021, a total of 65 dead birds were reported, 24 dead birds were collected and tested, and 2 birds tested positive for WNV.

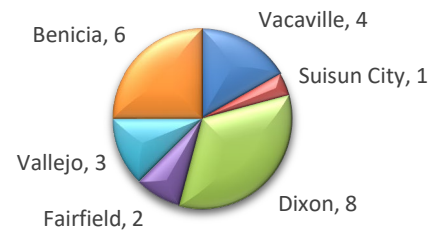


### 2021 # of Dead Birds per Condition Status



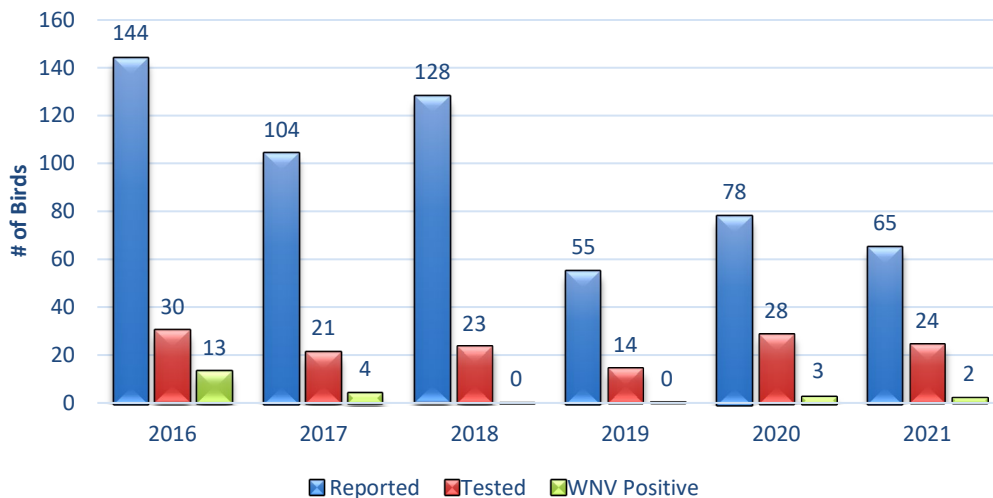
■ Dead less than 24 hours   
 ■ Dead greater than 24 hours  
■ Dead less than 48 hours

### 2021 Dead Bird Submissions by Solano County City



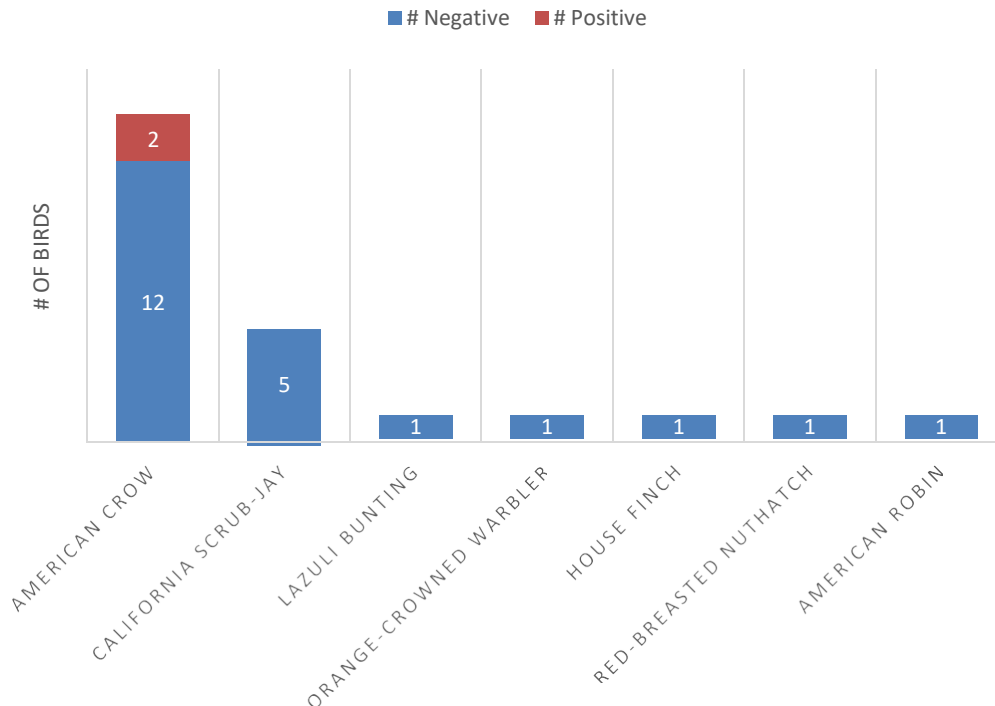
■ Vacaville   
 ■ Suisun City   
 ■ Dixon   
 ■ Fairfield   
 ■ Vallejo   
 ■ Benicia

### Dead Bird Activity 2016-2021



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## 2021 TOTAL BIRD SPECIES TESTED FOR WNV W/ TEST RESULTS

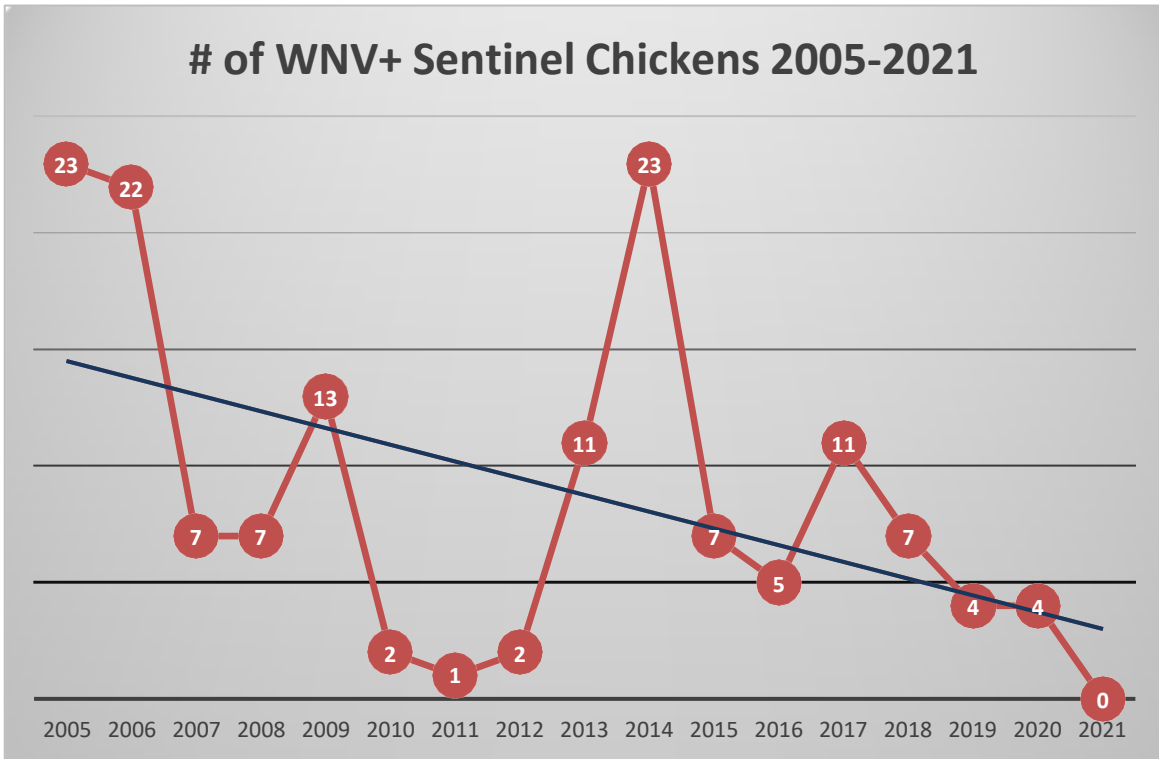


### Sentinel Chickens

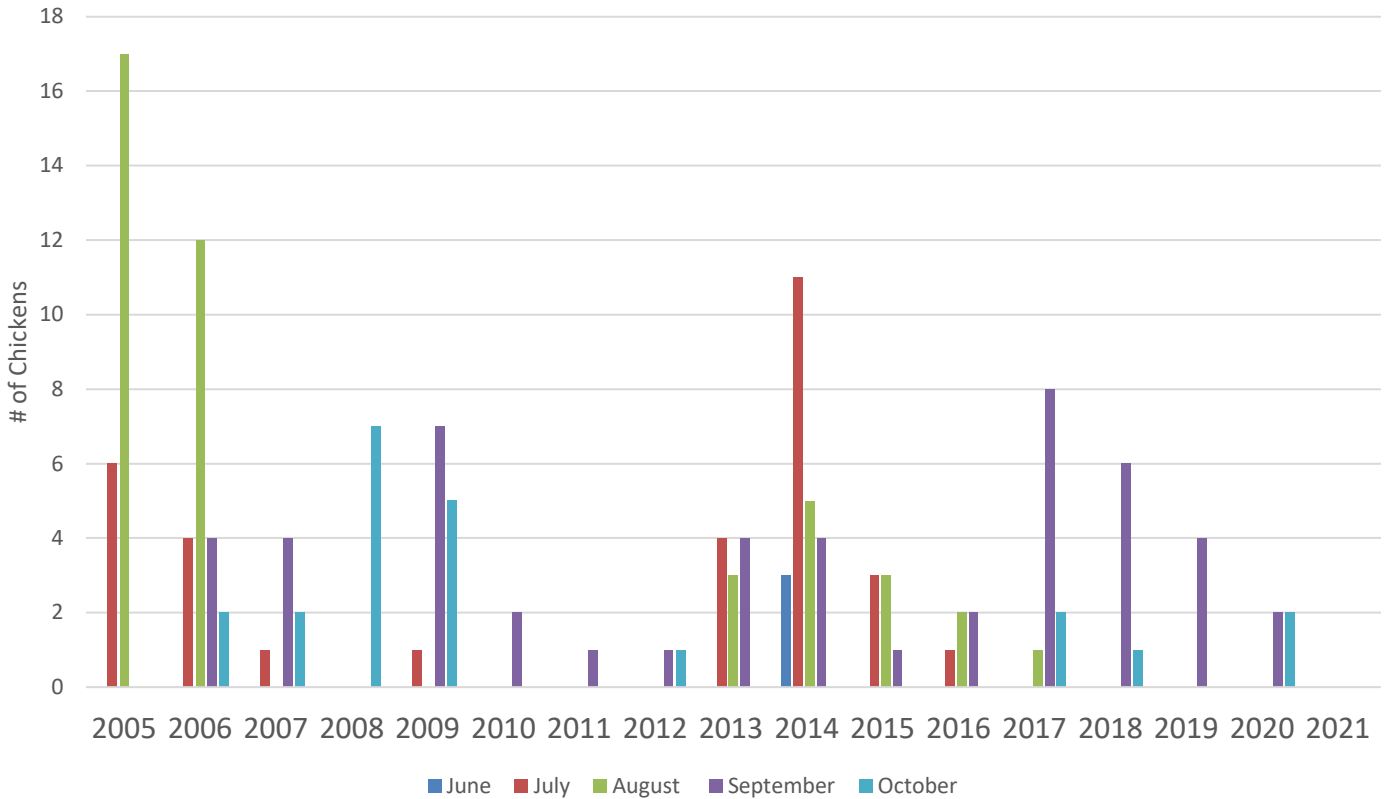
Sentinel chickens provide the SCMD with crucial information about arbovirus activity within Solano County. Three sentinel chicken flocks are located throughout Solano County. Chickens develop antibodies in response to arbovirus exposure. Chickens cannot transmit West Nile virus back to mosquitoes; they 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 this season 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 2021.







Monthly Seroconversions in SCMA D Sentinel Chickens 2005-2021

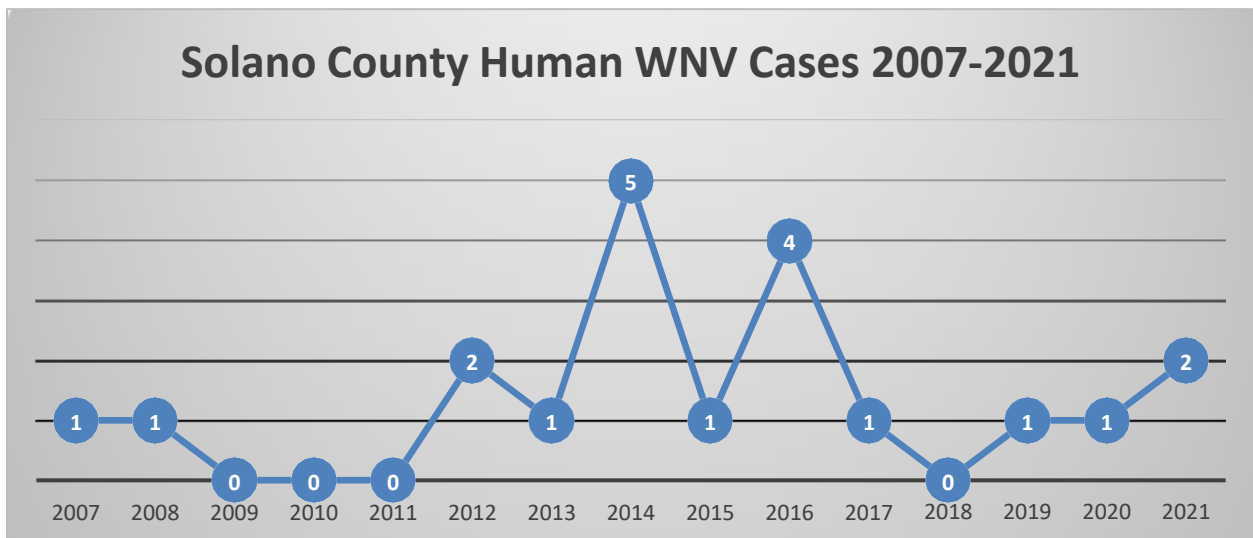


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## Human Arbovirus Case Response

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 Solano County Mosquito Abatement District 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 in order 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 2021 there were 2 confirmed human cases of arbovirus infections (both WNV) within Solano County. By comparison, there was one confirmed human case of WNV in 2020.



# Public Outreach

## Public Events

In-person events were not conducted by the Solano County Mosquito Abatement District during 2021 due to the ongoing COVID-19 pandemic. Presentations are conducted free of charge to the public upon request. To schedule an appointment, please call the Solano County Mosquito Abatement District.



## Advertising

In 2021, the Solano County Mosquito Abatement District continued to develop our official website and several advertising campaigns. In order 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 Vallejo Times Herald, Daily Republic, Solano Senior Living magazine, and Vacaville Reporter.

The District also aired a radio interview with biologist Bret Barner and ran advertisements on radio commercials on KUIC's local radio station and website. It is our hope that 2021's advertising campaign will yield positive long-term results, and allow us to interact with more residents of Solano County.

**Protect your home against MOSQUITOES**

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....

1. Don't over-irrigate lawns, lawns, and gardens. Use a timer to help you control watering.
2. Don't leave your car's water reservoir full. Empty it out.
3. Empty your gutters. Remove any debris.
4. Use traps for mosquitoes. They can hold water.
5. Use traps for mosquitoes. They can hold water.
6. Use traps for mosquitoes. They can hold water.
7. Use traps for mosquitoes. They can hold water.
8. Use traps for mosquitoes. They can hold water.
9. Use traps for mosquitoes. They can hold water.
10. Use traps for mosquitoes. They can hold water.

**SOLANO MOSQUITO ABATEMENT DISTRICT**  
**707-437-1116**  
<http://solanomosquito.com/>

**Solano, state agencies warn seniors to avoid mosquito bites as risk of West Nile virus rises**

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

**TYPE OF SOURCE** | **WHAT TO DO...**

Leaking barrels and tires	Empty or repair defective gas containers.
Water under buildings	Install water traps and periodic drainage for leaks.
Barrel gutters	Monitor and replace and clean pipes that drain.
Water tanks	Use only clean water for drinking.
Swimming pools	Use proper pool maintenance.
Decorative fountains	Use clean water for decorative fountains.
Watering cans & barrels	Use the water and clean up any spilled water.
Watering equipment	Use clean water for watering equipment.
Watering equipment	Use clean water for watering equipment.
Watering equipment	Use clean water for watering equipment.

**Solano County Mosquito Abatement District**  
**707-437-1116**



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## FINANCE

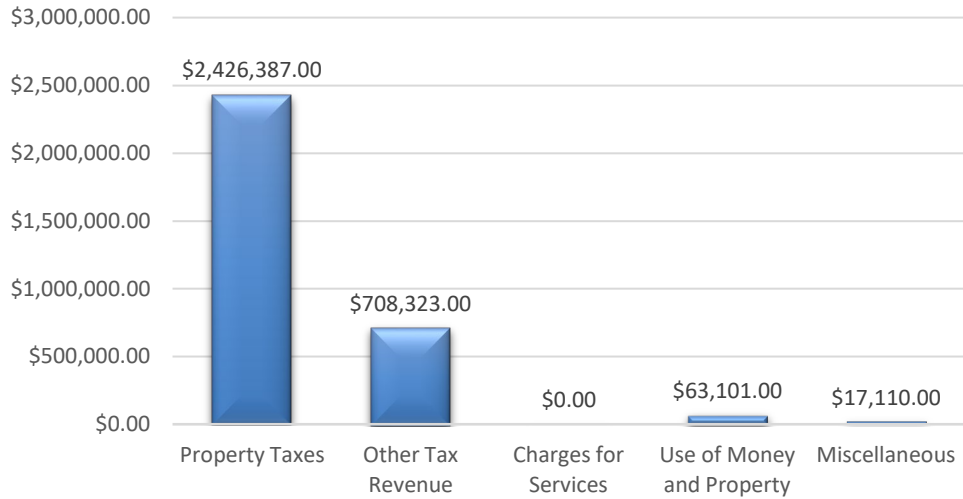
The District Manager, the Board of Trustees and the District's Administrative Assistant manage the budgeting, accounting, and record keeping. The finances are also audited annually by a certified third-party public accountant (Maze & Associates). The SCMAD is committed to the ethical and fiscally responsible 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>2020-2021</b>
Property Taxes	\$2,426,387.00
Other Tax Revenue	\$708,323.00
Charges for Services	\$0.00
Use of Money and Property	\$63,101.00
Miscellaneous	\$17,110.00
<b>Total Revenues</b>	<b>\$3,214,921.00</b>

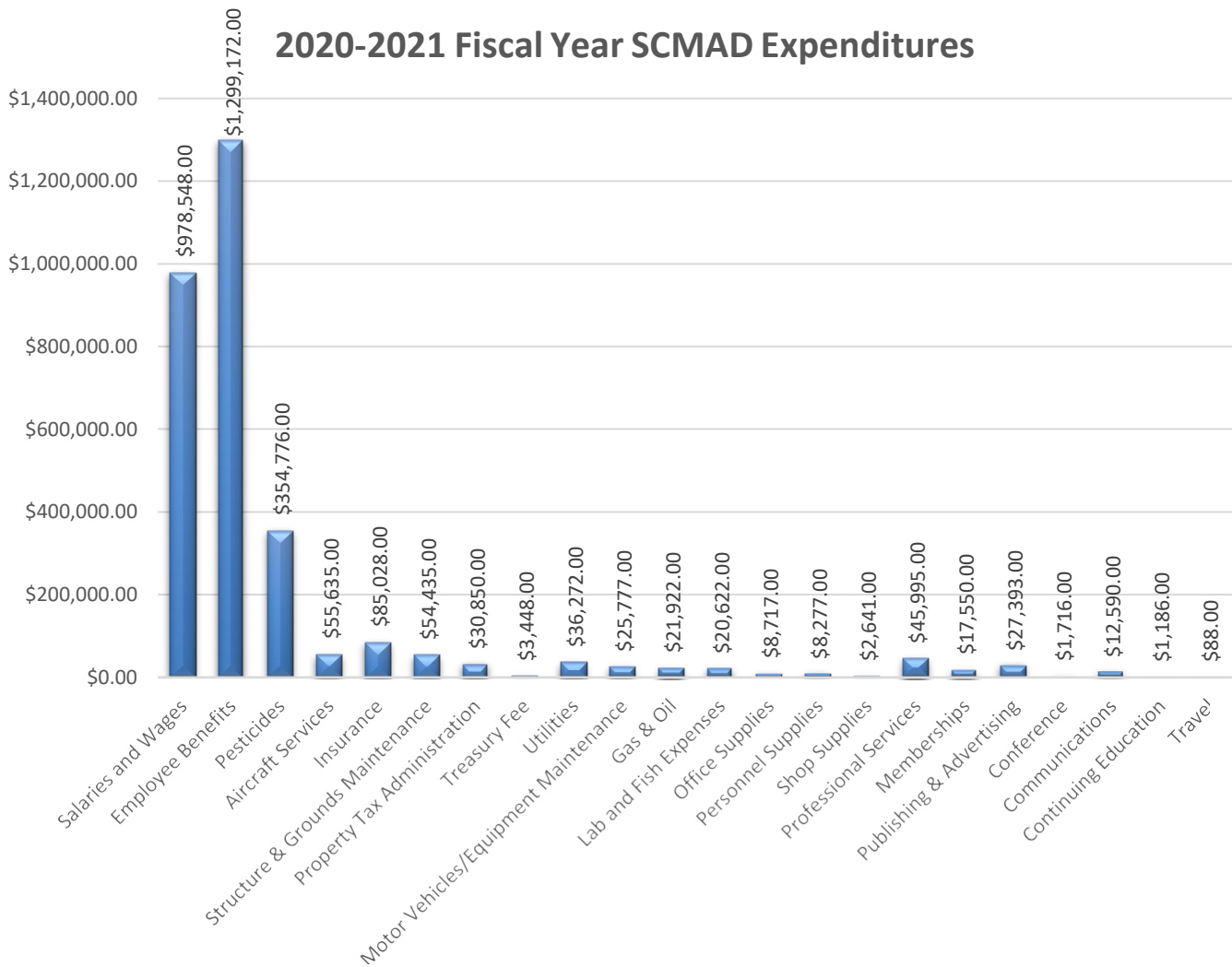
<b>Expenditures</b>	<b>2020-2021</b>
Salaries and Wages	\$978,548.00
Employee Benefits	\$1,299,172.00
Pesticides	\$354,776.00
Aircraft Services	\$55,635.00
Insurance	\$85,028.00
Structure & Grounds Maintenance	\$54,435.00
Property Tax Administration	\$30,850.00
Treasury Fee	\$3,448.00
Utilities	\$36,272.00
Motor Vehicles/Equipment Maintenance	\$25,777.00
Gas & Oil	\$21,922.00
Lab and Fish Expenses	\$20,622.00
Office Supplies	\$8,717.00
Personnel Supplies	\$8,277.00
Shop Supplies	\$2,641.00
Professional Services	\$45,995.00
Memberships	\$17,550.00
Publishing & Advertising	\$27,393.00
Conference	\$1,716.00
Communications	\$12,590.00
Continuing Education	\$1,186.00
Travel	\$88.00
<b>Total Expenditures</b>	<b>\$3,092,638.00</b>



## 2020-2021 Fiscal Year SCMAD Revenues



## 2020-2021 Fiscal Year SCMAD Expenditures





Front and back cover photographs by Michael Funk Photography. The Solano County Mosquito Abatement District (SCMAD) thanks Michael Funk for the use of his incredible photos. Michael has also given SCMAD permission to use his work on our website, [solanomosquito.com](http://solanomosquito.com)



