



# 2017 ANNUAL REPORT

protecting public health since 1919



# Foreword



**Our Mission:**  
"To protect the public's health from vector-borne disease and nuisance, through a comprehensive mosquito and vector control program focused on innovation, experience and efficiency."

Residents of the Shasta Mosquito and Vector Control District,

On behalf of the Board of Trustees and staff of the District, we are pleased to present the 2017 Annual Report for the Shasta Mosquito and Vector Control District. This year, when selecting our format and theme for the Annual Report layout, we decided to shake things up a little and, instead of our classic organization, attempted to tell the story of the four seasons of our District operations. Throughout the year our staff and Board are confronted with different challenges, exciting programs, and unpredictable environmental conditions. Our hope is this report will provide a window into the wide variety of projects our District is engaged in during Spring, Summer, Fall and Winter, and hopefully answer the question: "What do you do in the winter?"

For the second season in a row, our precipitation was at or above normal, suggesting a year that could provide operational challenges. Although we encountered a strong year for the Western Treehole mosquito, *Aedes sierrensis*, we actually saw relatively lower numbers of the mosquitoes that transmit West Nile virus (WNV), *Culex pipiens* and *Culex tarsalis*. Although for our district, one case of WNV is too much, we did see fewer incidences, with one human case confirmed. Other diseases continued to stay in the District's crosshairs with close attention still being paid to the evolving emergence of Zika virus in the United States. Although the US has seen a reduction in Zika cases in 2017, the District received CDC grant monies to prepare and enhance surveillance for the mosquitoes that transmit Zika virus. In addition to Zika virus, District staff kept a close eye on the reemergence of St. Louis Encephalitis (SLE), which continues to climb up California. SLE is transmitted by the same mosquitoes as WNV, and has been found as far north as Butte County in 2017.

2017 was highlighted by the District's focus and commitment to new program involvement and technology. For the first time, the District collaborated with Shasta College and their Agricultural and Natural Resources internship program. This allowed the District to provide an opportunity for a student to get real experience with mapping, vector ecology, storm water management and GIS technologies. This year we also expanded our canine heartworm surveillance and outreach, collaborating with a graduate student and veterinarian, assessing the knowledge level of residents regarding canine heartworm and the prevalence of cases and positive mosquitoes. On a statewide level, the District worked to help pass legislation that will facilitate the District's potential use of remote piloted aircraft for control applications. We also began training staff and investigating the equipment and regulation requirements to position the District to take advantage of this growing technology field when it becomes available.

Finally, this year saw the majority of our laboratory remodel project coming to fruition. This has been a long process, but staff is excited to begin using the new space when the New Year starts. This lab will provide District staff with sufficient space and insectary capacity to support our growing surveillance and control efficacy programs into the future. For information on the remodel and all programs found within the Annual Report, please go to our newly redesigned website [shastamosquito.org](http://shastamosquito.org). As always, we would like to thank District staff, the Board of Trustees, and our District residents for working with us to help promote the importance of public health mosquito control. We are ready to face whatever new challenges come our way in 2018.

Sincerely,

A stylized, handwritten signature in black ink.

Peter Bonkrude  
District Manager

A handwritten signature in black ink, appearing to read "Vickie Marler".

Vickie Marler  
President



# Contents

	Page
Board of Trustees	4
District Staff	
History of the District	5
Integrated Vector Management	



## Spring

Service Requests	6
Treehole Mosquitoes	
Vernal Pools	7
Biological Control	



## Summer

Immature Mosquito Control	8
Larvicide Efficacy Testing	
Adult Mosquito Control	9
Summer Pool Project	
West Nile Virus	10
Community Events	
Public Education	11



## Autumn

Cache Valley Virus	12
Physical Control	
Training & Education	13
Catch Basin Program	
Dead Bird Surveillance	14
Sentinel Chicken Surveillance	
Trap Surveillance	15



## Winter

Tick Surveillance	16
Overwintering Mosquitoes	
Rodent Surveillance	17
Winter Pool Project	

Disease Updates	18
Financials	19



# Board of Trustees



**Vickie Marler**  
*President  
Shasta County*



**Larry Mower**  
*Vice President  
City of Anderson*



**Michael McNamara**  
*Secretary  
City of Redding*



**Ann Morningstar**  
*City of Shasta Lake*



## Protecting public health since 1919

### Staff

Left to right - Back row: Darrell Bible, Pete Ledbetter, Corey Boyer, Al Shabazian, Robert Ault, Mike Alexander, Kelly Cleland, Darcy Buckalew, John Albright, Peter Bonkrude, Mark Mulcahy, Jenna Ingebretsen  
Front row: Kendra Angel-Adkinson, Haley Bastien, Guangye Hu





# District History

Creation of Redding Mosquito Abatement District (MAD)

**1919**



Merger of Anderson, Clear Creek and Cottonwood MAD to Shasta MAD

**1970's**



Annexation of Lakehead, Castella, French Gulch, Igo, Ono, Shingletown and Viola (1086 sq mi)

**2000**



**1950's**

Annexation of Palo Cedro and Balls Ferry area (130 sq mi)



**1990's**

Annexation of Shasta Lake, Shasta, Centerville, Cloverdale, Happy Valley, Olinda, West Cottonwood, Mountain Gate, and Jones Valley (384 sq mi), creating the Shasta Mosquito & Vector Control District



# Integrated Vector Management



Shasta Mosquito and Vector Control staff utilize Integrated Vector Management (IVM), a process that seeks to find the most effective and appropriate control strategy based on the information gathered by the District.

Before more completely defining IVM, it is first important to answer the question, "What is a Vector?" A vector is a living organism that can transmit disease between humans, or from other animals to humans. Many of these vectors are blood sucking insects and arthropods like mosquitoes, ticks, fleas, sandflies and triatomine bugs.

IVM is defined as a "science-based decision-making process that seeks to improve efficacy, cost-effectiveness, and ecological soundness." Put another way, an auto mechanic would not start tearing out a transmission based on a report of car troubles. They would collect data and find the likely culprit for the trouble based on their diagnostic investigation. This "diagnostic" process in mosquito control is our surveillance, and it serves as the basis for all of our control strategies.



# Spring

## Service Requests

Being responsive and connected to our District residents is of utmost importance to the SMVCD staff. One of the ways we strive for that connection is through the District service requests. Service requests give staff the opportunity to not only listen and respond to the needs of our community, but also to share information with the public

regarding public health mosquito control. These requests cover a wide range of mosquito and vector related questions and issues including: mosquito fish requests, mosquito complaints, neglected swimming pool reports, and general questions about insects and our services. We rely on these requests, not to direct control treatments, but to help guide District surveillance. This allows staff to focus on areas where potential mosquito

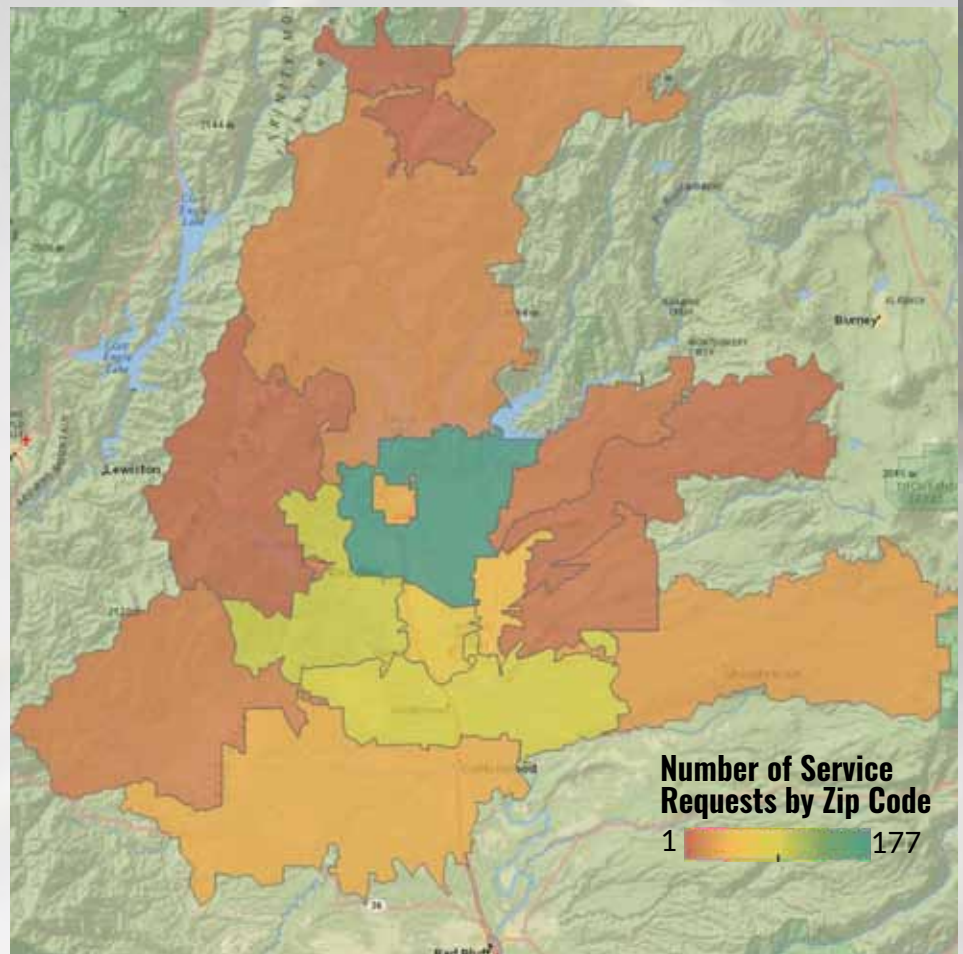
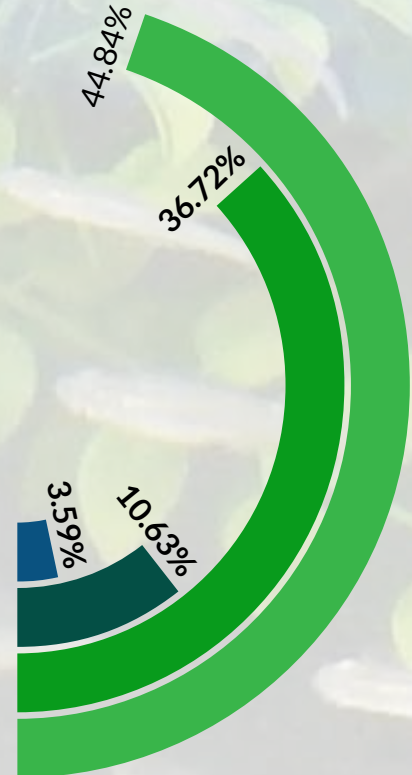
problems are occurring. The public can issue service requests via the telephone, or 24 hours a day on the District's website.

## Service Requests by Community



## Types of Service Requests Received

Neglected Pool  
Mosquito Fish & Service Request  
Mosquito Fish Only  
Service Request Only







**Sampling treehole mosquito larvae and pupae.**

## Treehole Mosquitoes

During the spring and early summer months, holes and cavities in trees can hold water that breeds the treehole mosquito, *Aedes sierrensis*. Female treehole mosquitoes bite during dawn and dusk, becoming a severe nuisance to humans and transmitting canine heartworm disease among dogs and other animals.

This year, the staff treated more than 200 treeholes in several areas of the District with water absorbing polymer crystals (polyacrylamide). This product absorbs water in treeholes to eliminate mosquito larval breeding, and remains effective throughout multiple seasons.

The District also conducted adulticiding with truck-mounted ULV machines to control adult mosquitoes that are active during dawn and dusk.

## Vernal Pools

In the spring and early summer, vernal pools can be prolific mosquito sources. While we control mosquitoes breeding in vernal pools, we do not disrupt the healthy, balanced ecosystem of other dwellers such as fairy shrimp, dragonflies, damselflies, and diving beetles, most of which are mosquito hunters. We use only EPA approved products such as Bti and Bsph which have no effect on non-target organisms.

**Treating a vernal pool.**



**Constructing breeder boxes.**

## Biological Control

Biological control is the use of other organisms that prey on, parasitize, compete with, or otherwise reduce mosquito populations. Our district uses the mosquito fish, *Gambusia affinis*, which effectively preys on mosquito larvae and pupae when released into mosquito breeding water bodies.

This year, the District released mosquito fish to 820 confined water bodies with a total area of 460 acres. Mosquito fish can survive in various water qualities and reproduce quickly within short periods of time.

Our indoor fish rearing facility provides mosquito fish for field releases all year round, especially during the spring and the early summer when outdoor mosquito fish are not otherwise available. By working with California Fish and Wildlife fish biologists, we were able to recognize and effectively treat fish bacteria that had become resistant to conventional treatment.

A total of 308 service requests from the public were received for mosquito fish. The mosquito fish are free of charge.



# Summer

## Immature Mosquito Control

The most efficient way to control mosquitoes is to find and eliminate them at their immature stages (larvae and pupae) where they are concentrated, contained, and accessible to staff. In order to find these habitats, District staff look for immature mosquitoes in the more than 6,800 known potential breeding locations throughout the District. Although adult mosquito control is more noticeable to the public, District staff spend the vast majority of time inspecting and treating water sources where mosquitoes are found breeding.

The products used to control mosquito larvae are called larvicides. The products aim to prevent mosquitoes from ever becoming adults. The larvicides used in our program are naturally occurring bacteria (e.g. Spinosad and Bti), insect growth regulators (IGR, methoprene), or surface oils.

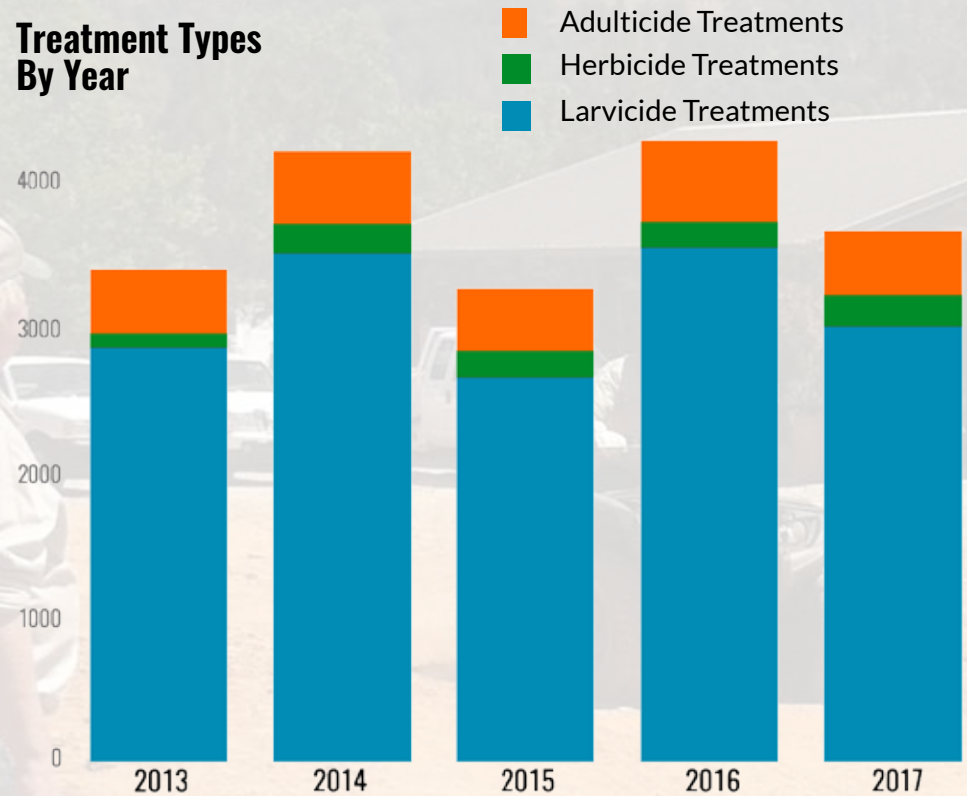
District staff inspected 16,100 sites for mosquito breeding and conducted 3,009 applications to control mosquito larvae and pupae living in ponds, ditches, puddles, catch basins, neglected swimming pools, vernal pools, and tree holes.

## Organic Mosquito Control

Our District makes every attempt to educate and be educated by our organic growers. Our current process includes making contact with the Shasta County Agricultural Department to get a list of currently registered organic growers so we can send them a notification letter or email detailing our programs and the products we use to protect

public health. We ask that those growers confirm their status and give us specific locations of their growing operations so that we can ensure we are only using organically labeled control products on or near those areas. If you are not registered organic but plan to become registered, you must contact the District so we are aware of your operation location.

## Treatment Types By Year



## Larvicide Efficacy Testing

In 2017, we continued testing the field efficacy of larvicide products for their residual effects. The results from testing these extended release

products help us select larvicide products and schedule re-inspection times after application based on habitat types and water qualities.

### Conducting a larvicide efficacy inspection



LARVICIDE PRODUCTS

ADVERTISED ON LABEL

Efficacy tested in organic waters

30 DAYS

01

PRODUCT ONE

46.5 DAYS

02

PRODUCT TWO

21.4 DAYS





## Map of Treatments

- Mosquito Fish
- Herbicide
- Adulticide
- Larvicide



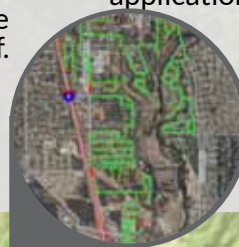
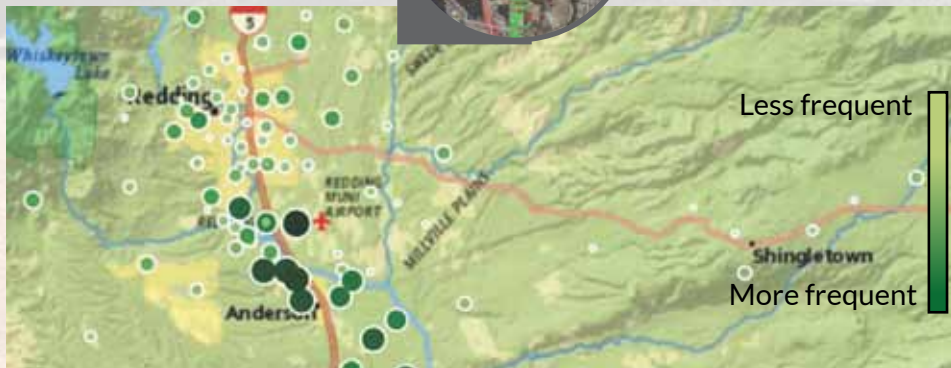
## Adult Mosquito Control

Adult mosquito control, referred to as adulticiding, is the practice of controlling adult mosquitoes by applying chemical products. Adulticides are an integral component of a comprehensive IVM program because they can immediately reduce the number of adult mosquitoes in an area, with the goal of reducing the number of infected mosquitoes that can bite people and transmit mosquito-borne diseases. Adult mosquito control products are used for public health mosquito control programs without posing significant risks to the general population or to the environment when applied according to the label by trained District staff.

The products used by the District include: permethrin, pyrethrin, etofenprox, and malathion. These products are applied at rates of less than an ounce per acre utilizing Ultra-low volume (ULV) to provide target specificity to our targets. These applications are made at dusk and dawn, when mosquitoes are the most active, to avoid our applications contacting non-target insects like pollinators.

This year, District staff completed 443 adulticiding routes and treated over 100,000 acres. Residents can go to our website, [shastamosquito.org](http://shastamosquito.org), to review where and when our adult mosquito applications will be conducted, or to subscribe to our spray notification list.

## Map of ULV Fogging Routes



Each ULV fogging route is recorded and time-stamped through GPS.

## Swimming Pool Program

Unmaintained or abandoned swimming pools create a favorable breeding ground for mosquitoes. Just one neglected swimming pool can produce millions of mosquitoes capable of infecting the neighborhood and putting the entire community at risk for West

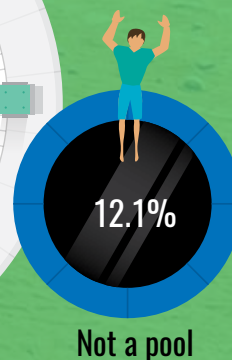
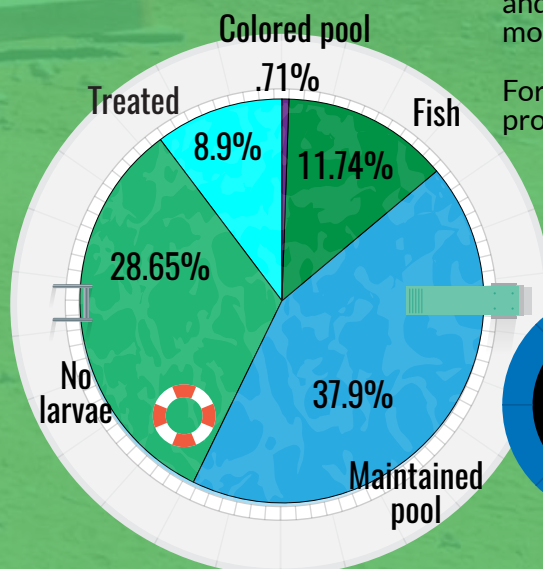
Nile virus. In the summer of 2017, we employed an aerial service to detect neglected swimming pools within our District boundaries.

A total of 562 pools were selected to be inspected by staff on the ground. Of the pools inspected, 66 pools had mosquito fish present and 50 were treated either with mosquito fish and/or pesticides.

For some properties, no owner provided consent for treatment, or the property was abandoned. Consequently, 16 warrants were issued for the staff to gain legal access to the properties.

**562** SUMMER POOLS CHECKED

**16** WARRANTS ISSUED





# Summer

## West Nile Virus in the District

The number of West Nile virus (WNV) indicators has fallen every year since 2015. In 2017, there were just 7 incidences of WNV across all types of surveillance (mosquito samples, e.g.). None of the 544 mosquito samples tested were positive for WNV, which is very unusual as the District generally finds at least one positive mosquito sample annually. The last time this occurred was in 2010 when none of the 325 samples were positive.

Incidences of human cases, sentinel chickens and dead birds detected in 2017 were comparable to those detected in 2016. Both 2016 and 2017 experienced the fewest incidences of WNV positive indicators in 5 years (since 2011).

# 80%

OF PEOPLE  
INFECTED  
WITH WNV  
WILL NOT  
DEVELOP  
SYMPTOMS



**District-wide Positive WNV Indicators  
2014-2017**

	2014	2015	2016	2017
Human Cases	2	2	1	1
Horses	1	2	1	0
Dead Birds	6	15	3	2
Mosquito Samples	33	48	12	0
Sentinel Chickens	11	18	3	4
Total	46	68	16	7

**Positive Cases of  
West Nile Virus  
within our  
District  
boundaries  
this year**





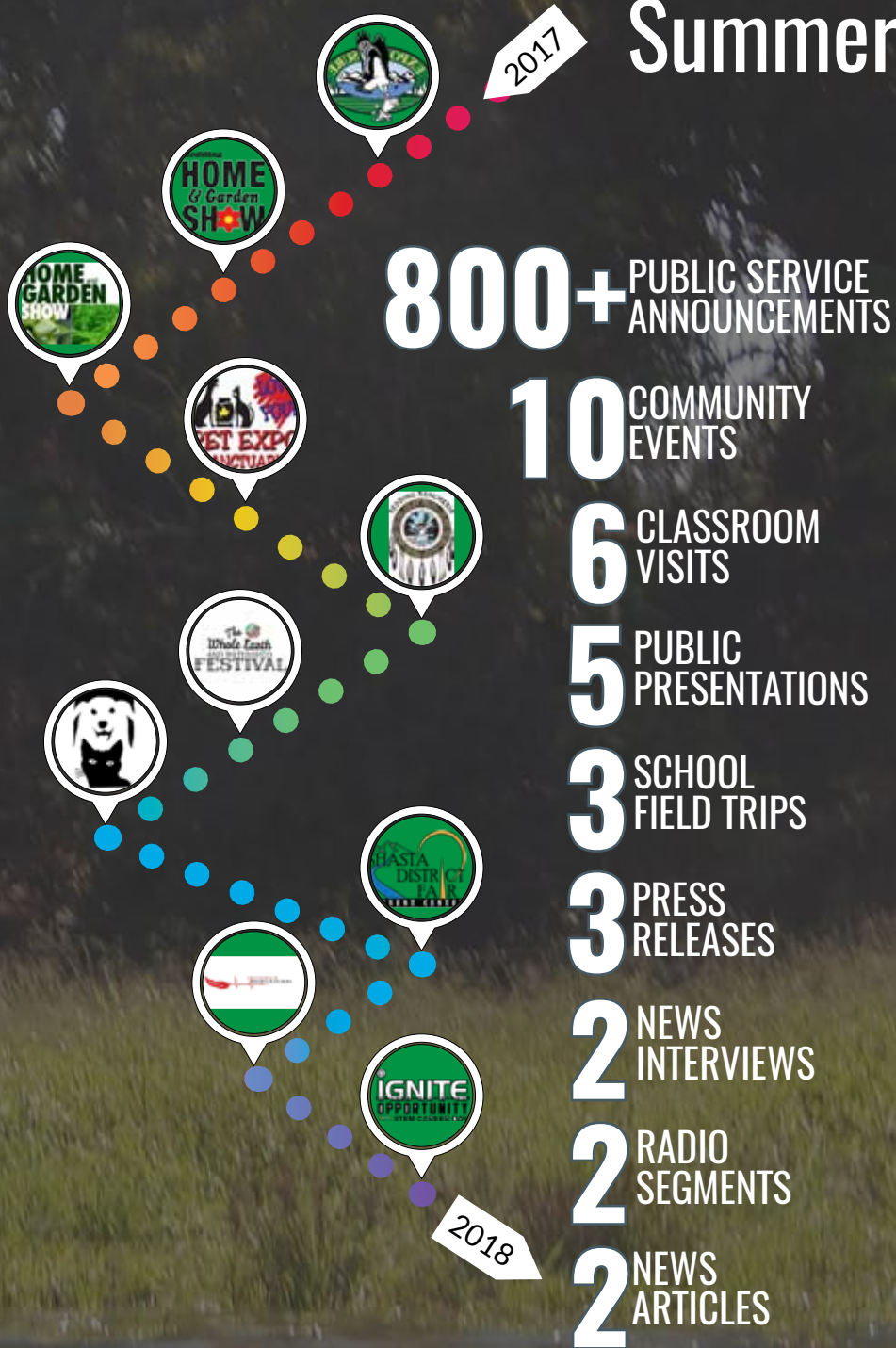
## Community Events & Public Education

Despite extensive mosquito control efforts, comprehensive mosquito surveillance, and very low levels of West Nile virus detection, there was still one human case of WNV confirmed within the District in 2017. This shows that there is no substitute for public awareness about mosquito-borne diseases and the importance of personal mosquito prevention and avoidance measures taken by the public. Therefore, the District works to constantly improve its efforts at public education and outreach as a key part of its comprehensive Integrated Vector Management program.

Although the District has existed for decades, there are still residents who are not familiar with our mission. Participating in community events offers staff the opportunity to speak one on one with members of the public and answer any questions he/she has regarding our agency, objectives, and operations. A District booth can be found at home and garden shows, pet expos/festivals, health fairs, and earth day/sustainability festivals.

Springtime is a frenzy of community events which leads up to our big event of the summer: the Shasta District Fair. Tens of thousands of Northstate residents flock to the fair every year and District staff are on hand passing out mosquito repellent wipes and mosquito education. With the bulk of our community outreach events behind us, District staff fully turn their attention to mosquito control operations as summer drives mosquito population to their peak.

# Summer



New Website

Public Info

Community Events

School Visits

New Mosquito Mascot





# Autumn



Collecting resting mosquitoes.

## Cache Valley Virus Surveillance

In 2013, the District received a report of an occurrence of mosquito-borne Cache Valley Virus in the Oak Run area. In this incident, a number of ewes gave birth to malformed or aborted fetuses. At the time, District resources had to be focused elsewhere. Recently, however, the District began to conduct surveillance for Cache Valley Virus from September through November of 2017 in the proximity of where the initial report occurred. Staff collected adult mosquitoes from EVS traps, resting units, and aspiration of live adults seeking shelter in protected structures. The surveillance is currently being conducted, and the captured adult samples will soon be sent in for testing.

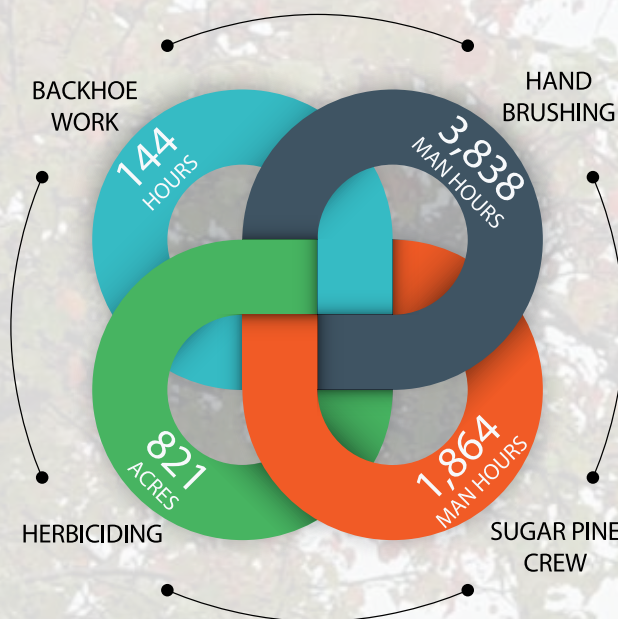
Setting a resting unit surveillance trap.



## Physical Control

Physical control, or source reduction, is the use of physical or mechanical means to eliminate and reduce the number, size, and frequency of mosquito breeding grounds and habitats. It also provides access to facilitate inspecting and treating mosquito sources by our staff.

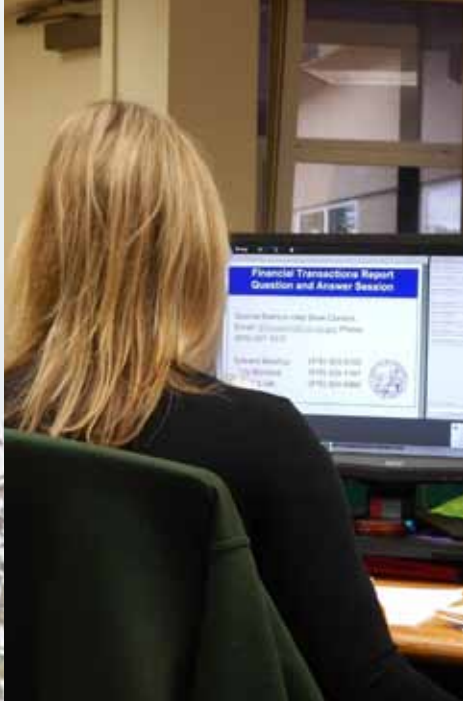
Physical control measures can be as simple as turning over a bucket or getting rid of an old tire, which can be accomplished by residents. Our District, however, focuses on removal and burning of brush, herbiciding, and heavy equipment work (ditch repairing and cleaning), which provides more extensive source reduction. The District utilized CAL FIRE Sugar Pine Conservation crews to physically remove brush and burn debris piles.



Clearing brush.







Training online.

## Training & Education

District field employees attend continuing education (CE) sessions conducted by vector control and public health professionals in-house and via webinar, as well as at state, regional and national meetings. Between 20 and 36 hours of CE is required per certificated employee to maintain their licensing under a cooperative agreement with the California Department of Public Health.

Vector Technician, Haley Bastien, presented and was awarded the Grass Roots Award at the 2017 AMCA conference.



## Catch Basin Program

Catch basins can cause a serious mosquito-breeding problem in the urban and suburban areas. They collect rainwater and overflow from excessive irrigation of lawns and gardens. This retained water then breeds *Culex* mosquitoes that transmit West Nile virus.

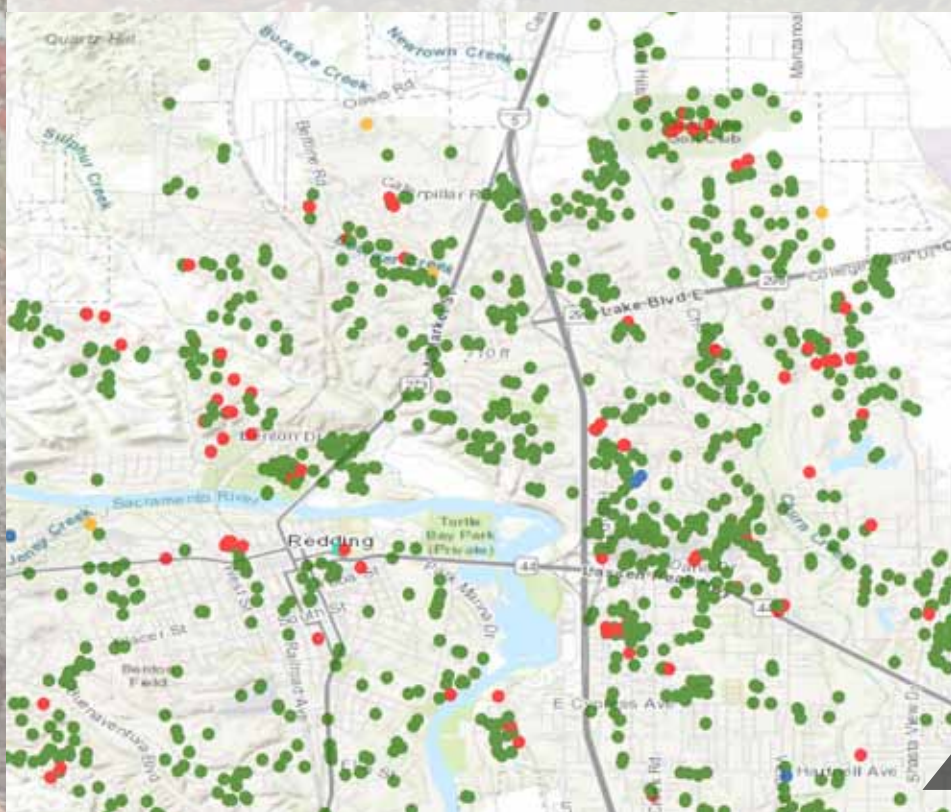
In 2017, staff inspected 6,983 catch basins within the District boundaries. Of the catch basins inspected, 965 (13.8%) were treated. The catch basins in higher risk areas (with heavy traffic) were treated in the early morning (3:00-6:30 AM). The catch basins in other areas were treated during regular shift hours. A total of 461 man-hours were utilized on this program.

## Inspecting a catch basin.

This summer, an intern was hired from Shasta College to conduct inventory on storm drains within the District. Using a smartphone GPS application, she mapped and categorized all the District storm drain systems by type and current status. The database will help staff monitor and treat the storm drains in the future.

- 1- Currently Breeding
- 2- Heavy Veg/Organic
- 3- Moderate Veg/Organic
- 4- Clean, Stagnant Water
- 5- Clean Flowing Water

## District Catch Basins and Water Condition





# Autumn

## How is disease detected? Surveillance

The District uses multiple surveillance types to detect active disease transmission. Testing mosquitoes, dead birds, and sentinel chickens, as well as receiving veterinarian confirmed reports of infected horses, are all tools which indicate where and when the virus has been circulating. The District is given very limited information on infected human cases. Like horses, human infection is a very serious indicator of virus transmission.

### Sentinel Chicken Surveillance

Seven sentinel chicken flocks were used to detect arboviruses circulating in the ecosystem this year. Mosquitoes infect and receive viruses from wild birds in natural disease cycles. Sometimes, the mosquitoes infect the sentinel chickens rather than wild birds. District staff detect this transmission by periodically sampling the chickens' blood. When a sentinel chicken is infected, staff use this information to decide which control options to deploy.

Infected sentinel chickens do not suffer any illness from the virus, and are retired from the flock every autumn.

## 4 POSITIVE CHICKENS



## 2 POSITIVE DEAD BIRDS

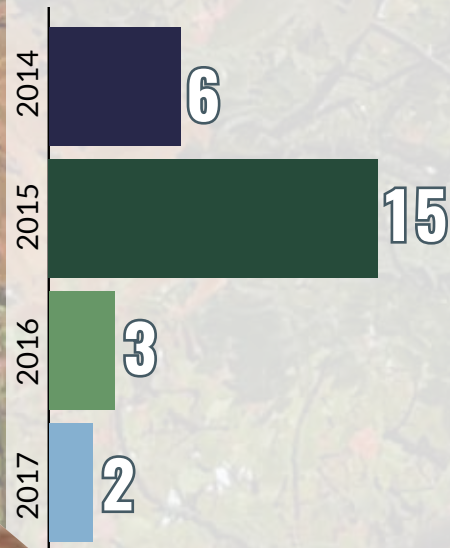


### Dead Bird Surveillance

Birds of the Corvid family, such as crows, jays, ravens and magpies, are acutely susceptible to West Nile virus infection. In fact, West Nile virus is often fatal to these birds. Members of the public may find these critically ill or recently deceased birds in parks, walking trails, around their homes and schools, or near shopping centers. After a find, residents are urged to contact the state Dead Bird Hotline at 877-WNV-BIRD (877-968-2473) or report the bird online at [www.westnile.ca.gov](http://www.westnile.ca.gov).

The District staff receives the reported information, then collects and submits the bird sample for testing. A WNV infected bird detection warrants further inspection in the area and helps guide operational control activities.

### Positive Dead Birds in the District 2014-2017







## Trap Surveillance

Trapping mosquitoes is an easy, efficient way to regularly monitor population size and virus transmission. From the very first warm spring afternoons to the frosty fall mornings, District staff sets several kinds of traps to gather information on mosquito activity. The peak of mosquito activity and trapping occurs during the summer months, and starts wrapping up in autumn. Staff sets dozens of traps every week to stay informed of the latest trends in the District mosquito population, and in turn, make decisions about mosquito control.

Some mosquitoes caught by our traps are sent to UC Davis for virus testing. A positive mosquito sample indicates active virus transmission in the area and mosquito control operations are adjusted accordingly.

15,628  
MOSQUITOES  
TESTED

0 POSITIVE

In 2017, 544 mosquito samples of from 8 to 50 mosquitoes each (15,628 total mosquitoes) were submitted to be tested for the presence of mosquito-borne diseases. Despite this extensive surveillance of adult mosquitoes, no mosquito-borne diseases of any kind were detected within the District in 2017.

Widely scattered, isolated populations of invasive *Aedes* spp. mosquitoes have been confirmed in areas of California in recent years, but currently none near the Shasta Mosquito and Vector Control District. These mosquitoes transmit important diseases such as yellow fever, dengue, chikungunya, and Zika. The District set eleven traps throughout the summer of 2017 in areas of the District that present a high risk of introduction of these mosquitoes to detect any possible occurrence of them within the District. The traps called CDC-AGO (Centers for Disease Control Autocidal Gravid Ovitraps) use stagnant water to attract and collect egg-laying invasive *Aedes* spp. mosquitoes. Following two years of local CDC-AGO trapping, no invasive *Aedes* spp. mosquitoes have been detected within the District.

## Mosquito Traps Found in the District



CDC-AGO Trap  
for invasive *Aedes*  
surveillance



EVS Trap  
for encephalitis virus  
surveillance



Gravid Trap  
for egg-carrying  
mosquito surveillance



New Jersey Light Trap  
for mosquito population  
surveillance



# Winter

## Tick Surveillance

In the fall and winter months, District personnel visit various areas throughout the District where tick habitat intersects with human activity. Ticks are collected by dragging a cloth along vegetation to snag "questing" ticks. Ticks are identified, counted, and submitted for disease testing to assess tick populations and tick-borne disease risks within the District.

Ticks are important vectors that can spread diseases such as Lyme disease and Rocky Mountain spotted fever (RMSF).

*Ixodes pacificus* ticks, which transmit Lyme disease in California, are regularly tested for *Borrelia burgdorferi*, the causative agent for Lyme disease, and for *Borrelia miyamotoi*, another type of tick-borne bacteria that causes human disease.



Local "questing" ticks, ready for a meal.


4.61%

TICK SAMPLES  
TESTED POSITIVE  
FOR TICK-BORNE  
DISEASES

Collecting local tick samples for testing.

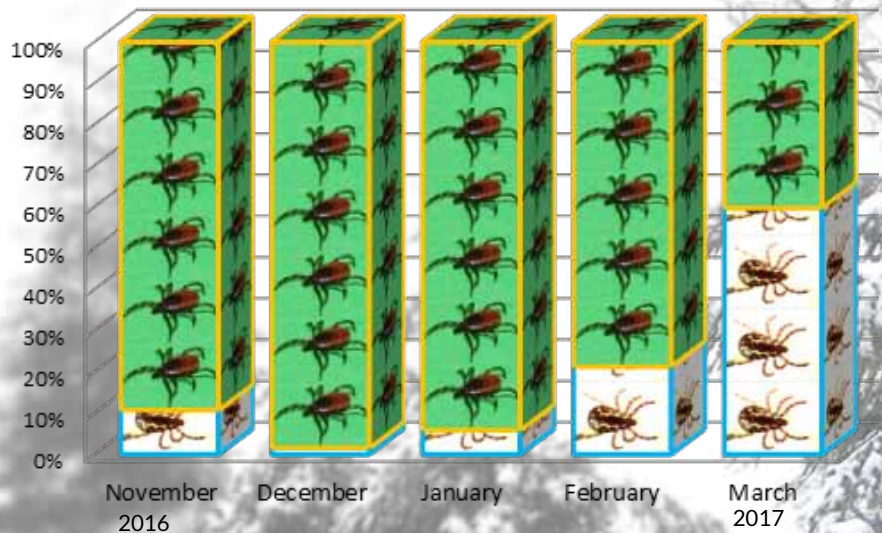


 *Ixodes*

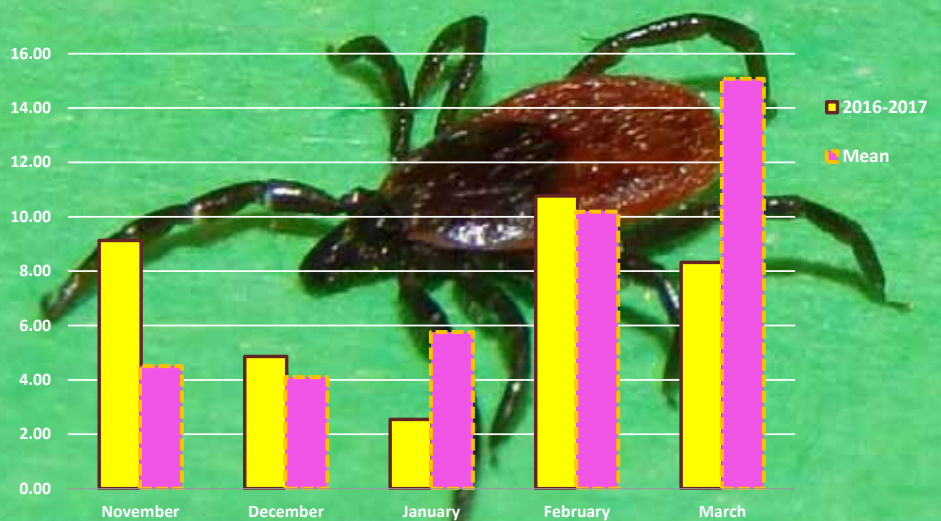
 *Dermacentor*

## Mean Distribution of Ticks By Species

(2016 - 2017 at 15 Sites in Shasta MVCD)



## 2016-2017 Ticks per Hour vs Seasonal Average\*



\*20 Sites Mean Count November 2009 - March 2017





Collecting overwintering mosquitoes.

## Overwintering Mosquitoes

For several years, the District has sampled overwintering mosquito populations. During the months of November-February, staff collect more than 1,000 overwintering mosquitoes, and test dozens of *Culex* spp. mosquitoes for encephalitis virus infection. This project has assembled data on both the species composition through the winter months, and the types of harborage overwintering mosquitoes prefer.

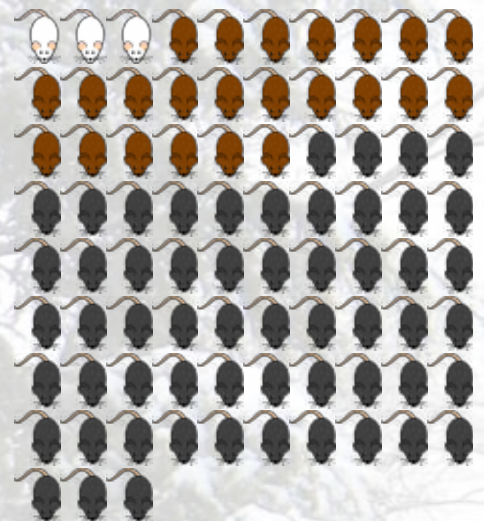
**1,000+**  
**OVERWINTERING  
MOSQUITOES  
COLLECTED**



Rodent-borne disease surveillance at the Lava Beds National Monument.

## Rodent Surveillance

In 2017, operations staff assisted biologists from the California Department of Public Health, Vector-Borne Disease Section, in conducting rodent trapping for plague (*Y. pestis*) and hantavirus (SNV) surveillance at the Lava Beds National Monument. Over a period of 2 days, a total of 226 traps were set and 83 rodents were captured and processed. The process included: anesthetizing, identifying, combing for ectoparasites, obtaining a blood sample, and returning live rodents back to the location where each trapping occurred.



- Positive plague (*Y. pestis*)
- Positive hantavirus (SNV)
- Negative

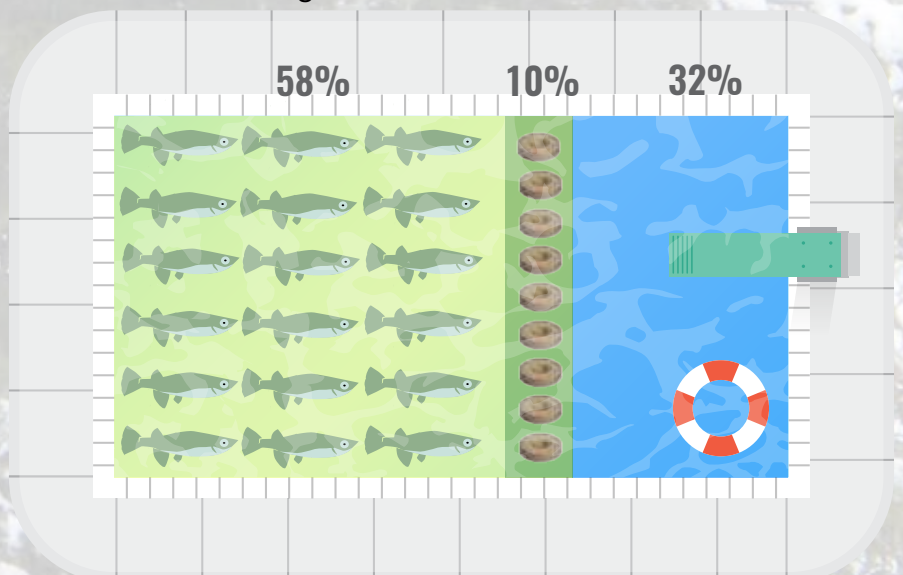
## Winter pool program

Our District staff inspected 71 neglected swimming pools in the winter and spring months, in follow-up to fish releases and pesticide treatments in the previous season. Of the pools inspected, 65 were found still having fish and 7 were treated with larvicide products and/or mosquito fish.

report neglected swimming pools to our District. To respond to the request, our professionally trained staff will inspect and treat the pools for mosquito breeding.

- Contained fish
- Treated with larvicide
- Treatment not required

Residents are encouraged to





# Disease Updates

## West Nile Virus

With the exception of dead birds, the number positive indicators of West Nile virus statewide are largely in line with 2016.

In 2017, there were far fewer incidence of WNV+ dead birds discovered compared to 2016 and previous years. It is thought that fewer dead birds are being reported as West Nile virus loses the public's attention. Conversely, more counties experienced some sort of WNV+ incidence during 2017 and more human cases were reported as well.

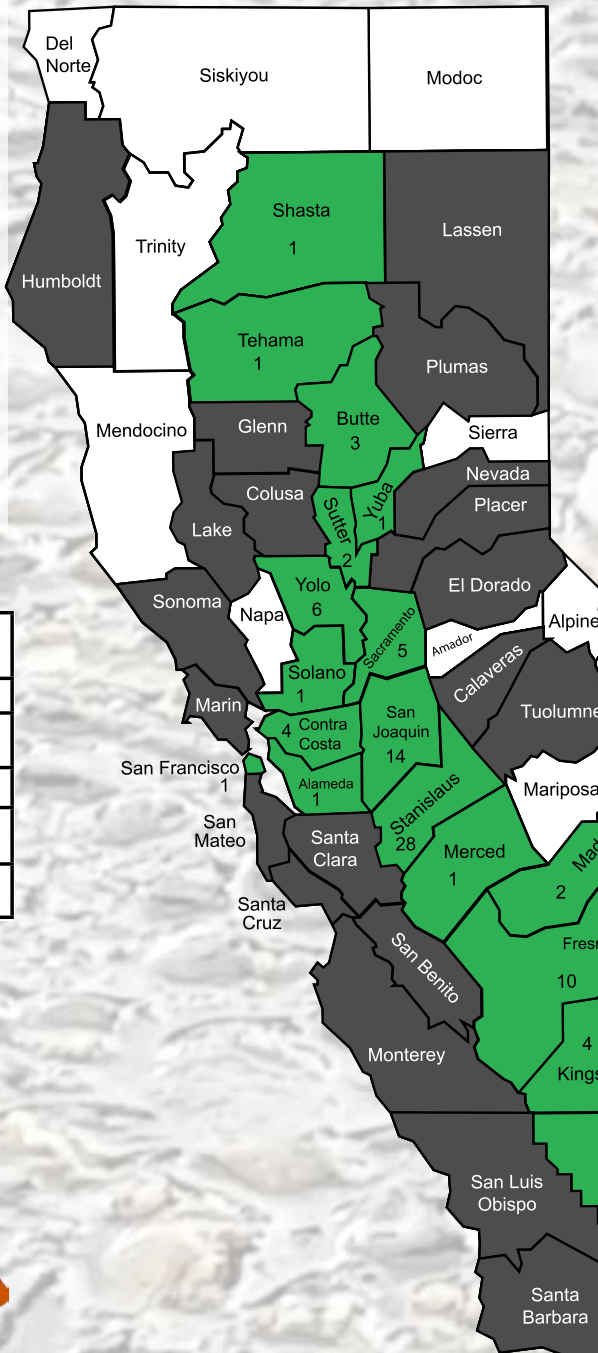
## St Louis Encephalitis Virus

Saint Louis encephalitis virus (SLE) is an arbovirus which circulates between mosquitoes and birds, occasionally infecting humans. Human infection and detection through surveillance declined for decades, culminating in an 11 year period in which there was no SLE observed through surveillance. However, in 2015 SLE was unexpectedly identified in southern California. Detection of the virus has surged and grown to include central and northern California.

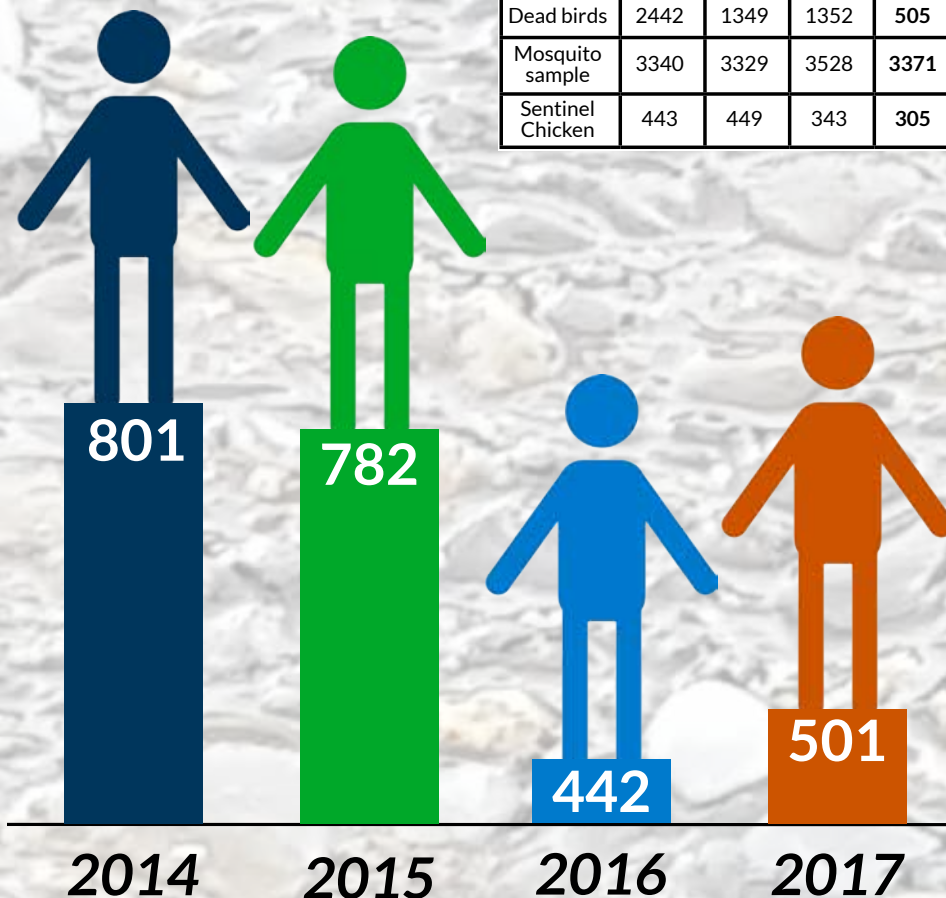
Within the District, SLE was last detected in 1993. There is a good possibility, given the SLE resurgence, that it will be detected again in the near future.

## California WNV Positive Indicators by County

- Counties with West Nile virus activity (no human cases)
- Counties with West Nile virus activity (number of human cases)



## Human Cases of West Nile Virus in California 2014-2017



Statewide Positive WNV Indicators 2014-2017				
	2014	2015	2016	2017
Human cases	801	782	442	502
Dead birds	2442	1349	1352	505
Mosquito sample	3340	3329	3528	3371
Sentinel Chicken	443	449	343	305



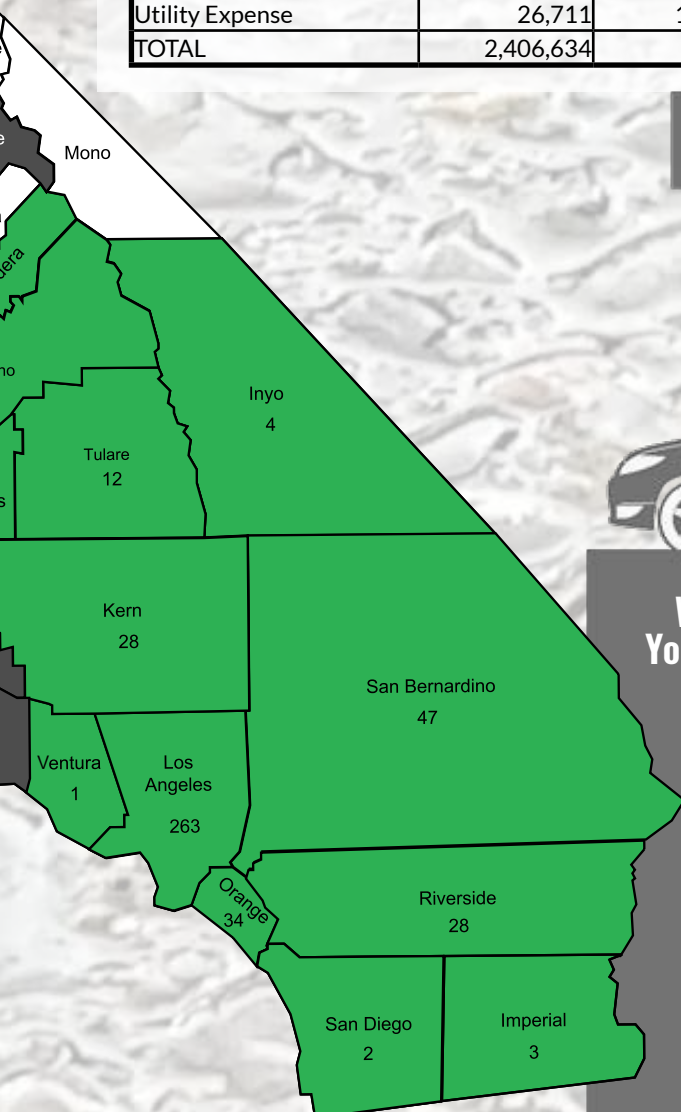
# Financials

The Shasta Mosquito and Vector Control District depends on property tax revenues and benefit assessments to fund its operations. The District's objective is to be fiscally responsible in accordance with Generally Accepted Accounting Principles (GAAP), Governmental Accounting, Auditing and Financial Reporting (GAAFR), as well as State Controller reporting guidelines.

In 2015, the District separated their treasury management system from the Shasta County Auditor-Controller's office to an outside financial institution. Over these past two years, this financial system has proven to be a success for the District. The monthly financial reports, as well as annual budgeting for each fiscal year, is more transparent. This financial system will continue to support the needs of the District for years to come.

2016-2017	
<b>Assets</b>	
Cash and cash equivalents	\$3,364,593
Due from other governments	38,313
Inventories	88,503
Non-depreciable capital assets	51,273
Depreciable capital assets, net	464,774
Other Post Employment Benefit Liability	142,428
<b>TOTAL ASSETS</b>	<b>4,149,884</b>
<b>Liabilities</b>	
Accounts payable	\$23,097
Net pension liability	2,047,890
Compensated Absences	153,989
<b>TOTAL LIABILITIES</b>	<b>2,224,976</b>

2016-2017 REVENUES		
Property Taxes	1,146,841	47.21%
Assessments	1,205,596	49.63%
Interest & Miscellaneous	76,960	3.17%
<b>TOTAL</b>	<b>2,429,397</b>	<b>100%</b>
2016-2017 EXPENDITURES		
Salaries and Benefits	1,761,558	73.20%
Service and Supplies	618,365	25.69%
Utility Expense	26,711	1.11%
<b>TOTAL</b>	<b>2,406,634</b>	<b>100%</b>



— For around \$29 per year —



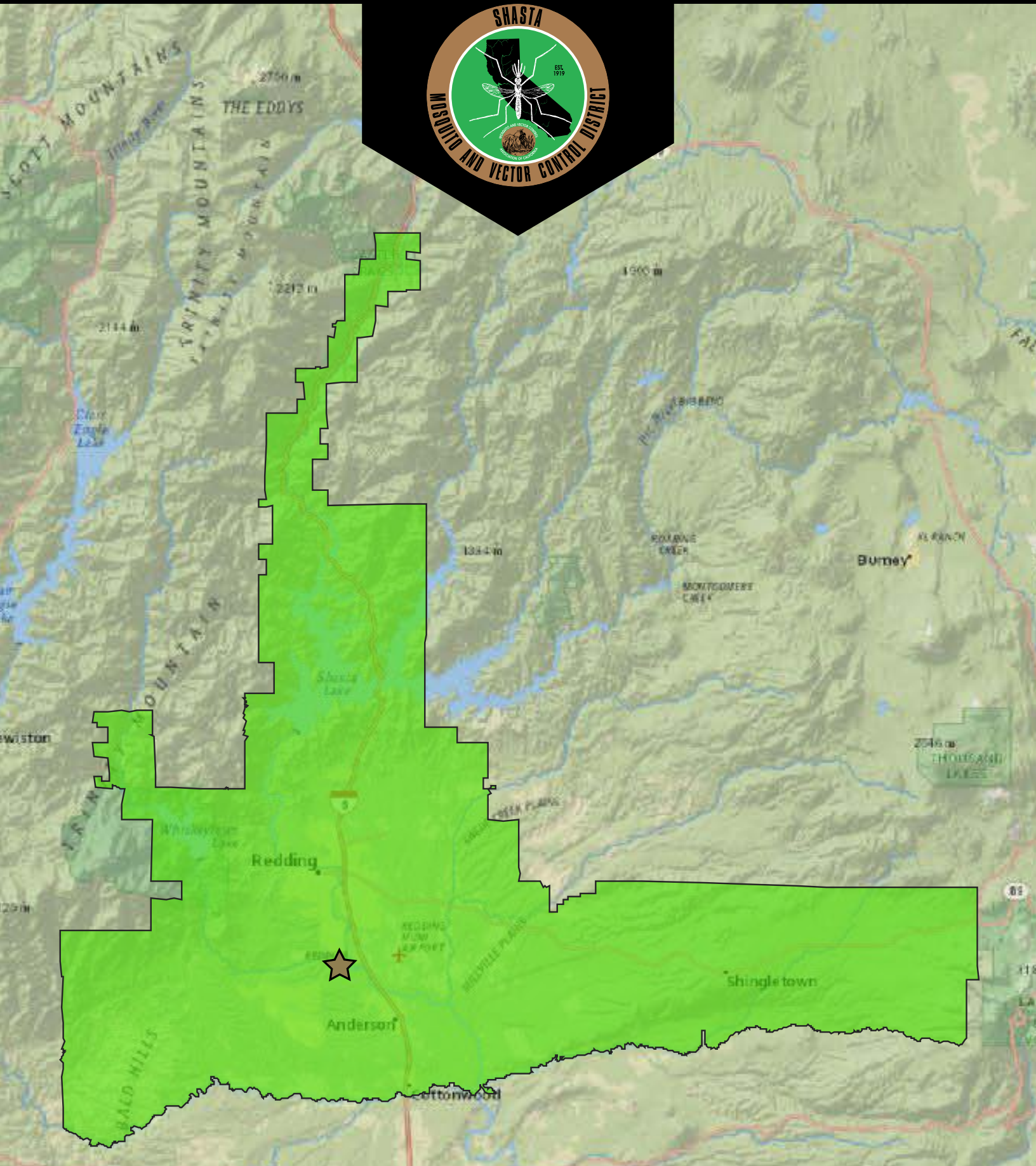
## What You Get From Your Local Fuel Station

- About 10 gallons of gas

## What You Get From Your Local Vector Control

- Property inspections from state-certified specialists
- Informational pamphlets and downloadable content
- Vector ecologists monitoring diseases in your community
  - Vector control specialists reducing breeding sources in your community
- Mosquitofish for your ornamental fountain, pond, or pool
- School and classroom visits by District staff
- Speakers and staffing for your next community event





19200 Latona Road, Anderson, CA 96007  
P: 530-365-3768 F: 530-365-0305  
[www.shastamosquito.org](http://www.shastamosquito.org)