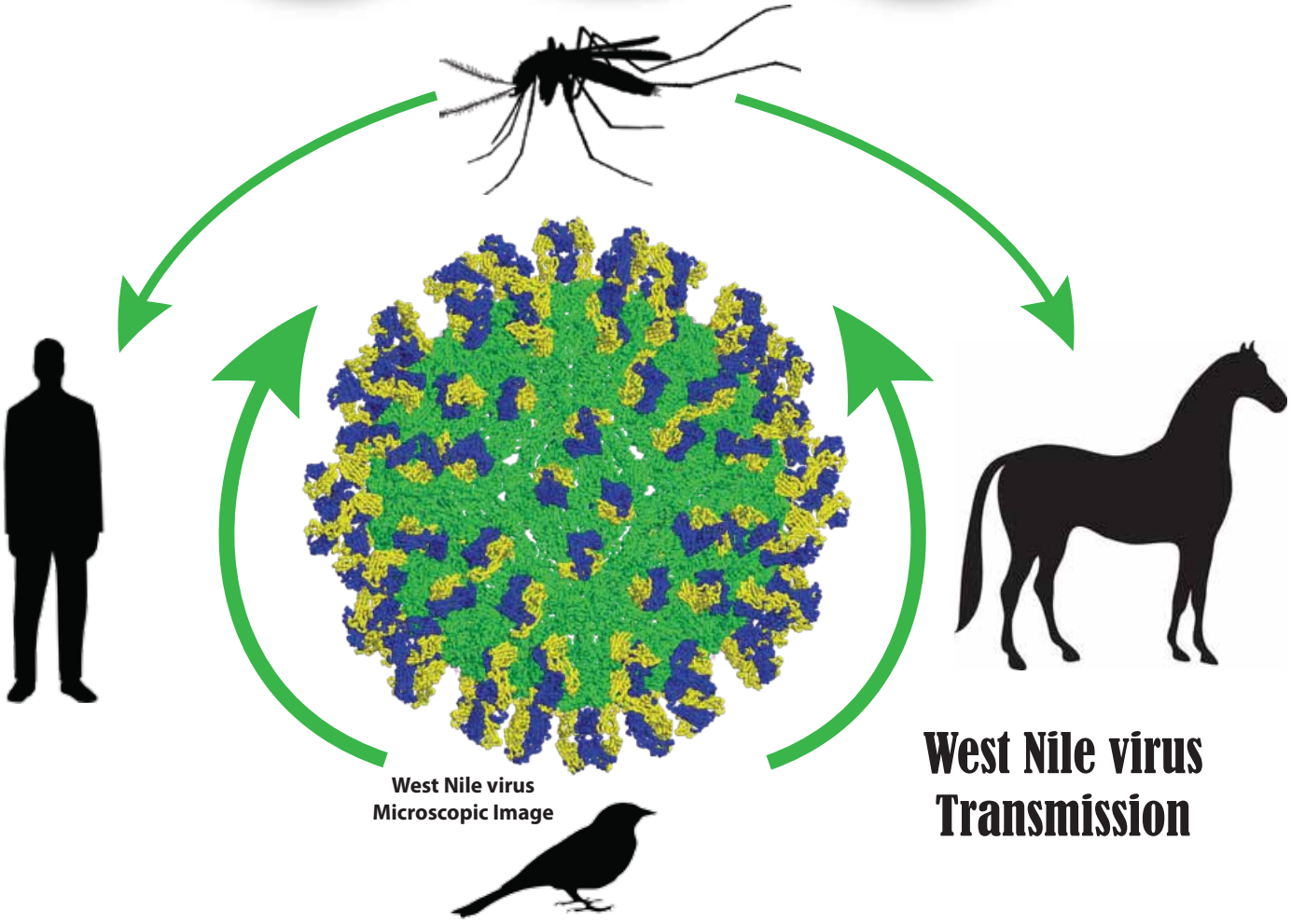


SHASTA MOSQUITO AND VECTOR CONTROL DISTRICT
EST. 1919

annual report 2015

protecting public health since 1919

Foreword

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 2015 Annual Report for the Shasta Mosquito and Vector Control District. Throughout the annual report, the reader will notice images of different mosquito-borne diseases, most captured through electron microscopy. The hope of including these images is the reader will gain a greater appreciation for not only the public health impact of these diseases, but also the artful design nature can attain. It is important to note that although globally and nationally our District is on the lookout for the spread of these diseases, not all of them currently occur in Shasta County. During this year the drought continued to impact District operations. Although we saw lower overall numbers of mosquitoes, we continued to see high levels of West Nile virus (WNv) infection in the mosquitoes collected. This year, Shasta County experienced three human cases, sixteen positive birds, twenty-two positive sentinel chickens and a record setting forty-eight positive mosquito samples. Although statewide the total numbers of West Nile virus incidences are lower than 2014, the numbers remain much higher than average and WNv will continue to be the main focus of the District's public health operations.

On the administrative front the District has seen some turnover, with the hiring of two new Vector Technicians; Darrell Bible and Robert Ault. Additionally, Kelly Cleland, thirty-plus year employee with the District was promoted to Field Supervisor. We are excited to see where these newly hired and promoted employees will take the District in the coming future. In 2015, we also said goodbye to Kevin Pearson, the District's Vector Technician/Maintenance Specialist. For 20 years Kevin has been responsible for fixing, building and innovating on District equipment, operations and facilities, and his mark will be left on every inch of the District. The last major update from the administrative field is on July 1, 2015 we officially moved our Treasury Management to a District managed Wells Fargo account. We are already enjoying the new process and will continue to evolve our financial systems as needed by District operations and reporting.

For 2016 the District will look to begin implementing the strategic initiatives Board and staff compiled for the next five years. These initiatives set a clear path for the District to continue to meet and exceed the public's expectations for fast and effective public health and vector control. In that regard, the District will be moving forward with the expansion of the laboratory and insectary. This remodeled space will ensure that District staff will be able to effectively provide District residents surveillance and operational research capacity for years to come. Finally, the District would like to extend our thanks to Trustee Tom Mancuso. 2015 will be his final year serving the City of Redding on the Board of Trustees and we appreciate his hard work and involvement.

The District continues our commitment to the residents of the District. We look forward to providing our services to you in the future. If you have any questions about this report or District services, please visit our website at www.shastamosquito.org or call us at (530) 365-3768.

Sincerely,

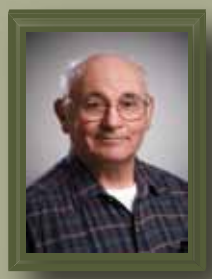
Peter Bonkrude
District Manager

Stephen Morgan
President, Board of Trustees

Microscopic images on the following pages are courtesy of The European Bioinformatics Institute

Board of Trustees

Tom Mancuso
Redding



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Peter Bonkrude

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Analyst

Field Supervisors
Vector Control
Technicians

Assistant
Vector Ecologist

Staff

Guangye Hu, Darrell Bible, Mike Alexander, Valerie Peterson, Corey Boyer, Robert Ault, Al Shabazian, Darcy Buckalew, Peter Bonkrude, Mark Mulcahy, Kevin Pearson, Haley Bastien, Kendra Angel-Adkinson, Kelly Cleland, John Albright (inset)

District History

1919

Creation of Redding Mosquito Abatement District (MAD)

1950's

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

1970's

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

1990's

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

2000

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

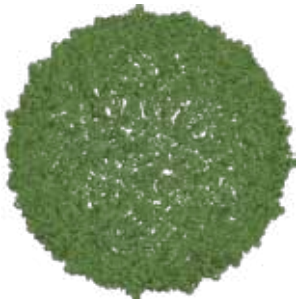
Integrated Vector Management

What is a vector?

An organism, typically a biting insect or tick that transmits a disease or parasite from one animal to another.

What is Integrated Vector Management (IVM)?

IVM is a "rational decision-making process for the optimal use of resources for vector control" (WHO, 2008). The approach seeks to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of disease-vector control. In the case of our District, we consider IVM as a tool box approach to mosquito and vector control. We maintain a wide variety of tools, and the IVM process is assessing the problem and putting together the right order and choice of tools to make the most effective control stratagy. Common tools utilized by our District include: advocacy and community involvement/outreach, collaborating with other agencies and companies, integrating chemical and non-chemical control methods, a focus on staff training and expertise and a strong surveillance system that helps to give staff evidence and information regarding the potential problem areas and direction to actively control those areas.



West Nile virus

Roughly 80% of people infected with WNv are asymptomatic. The most severe–and rare–cases produce West Nile meningitis or encephalitis, a reaction to the virus that distresses the nervous system and the brain.

West Nile virus

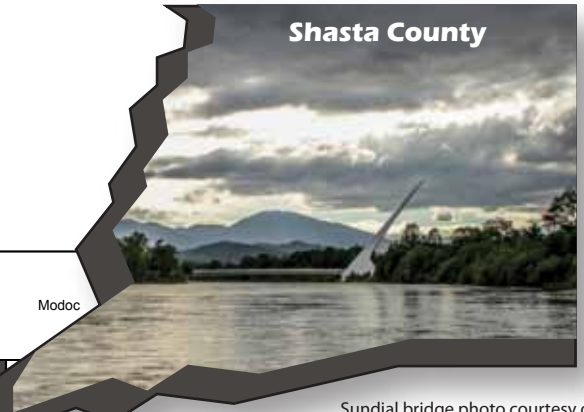
Statewide Drought Suspected of Contributing to High West Nile virus Activity

The drought continues to have far reaching effects on many industries-even mosquito control. Experts with the California Department of Public Health (CDPH) stated that it is possible that the drought has amplified the transmission of the virus. Fewer water sources, often in residential neighborhoods, attract birds and mosquitoes alike. Closer proximity and greater contact between vector and host results in greater virus transmission.

West Nile virus Activity

WNv Positives	Shasta MVCD			CA		
	2015	2014	2013	2015	2014	2013
Humans	2	2	1	641	754	379
Horses	2	1	0	0	16	13
Sentinel Chickens	18	11	21	449	440	485
Mosquito Samples	*48	33	15	3,287	3,338	2,528
Dead Birds	15	6	*38	1,333	2,430	1,251

*All-Time District Record



Sundial bridge photo courtesy of JPearson Photography

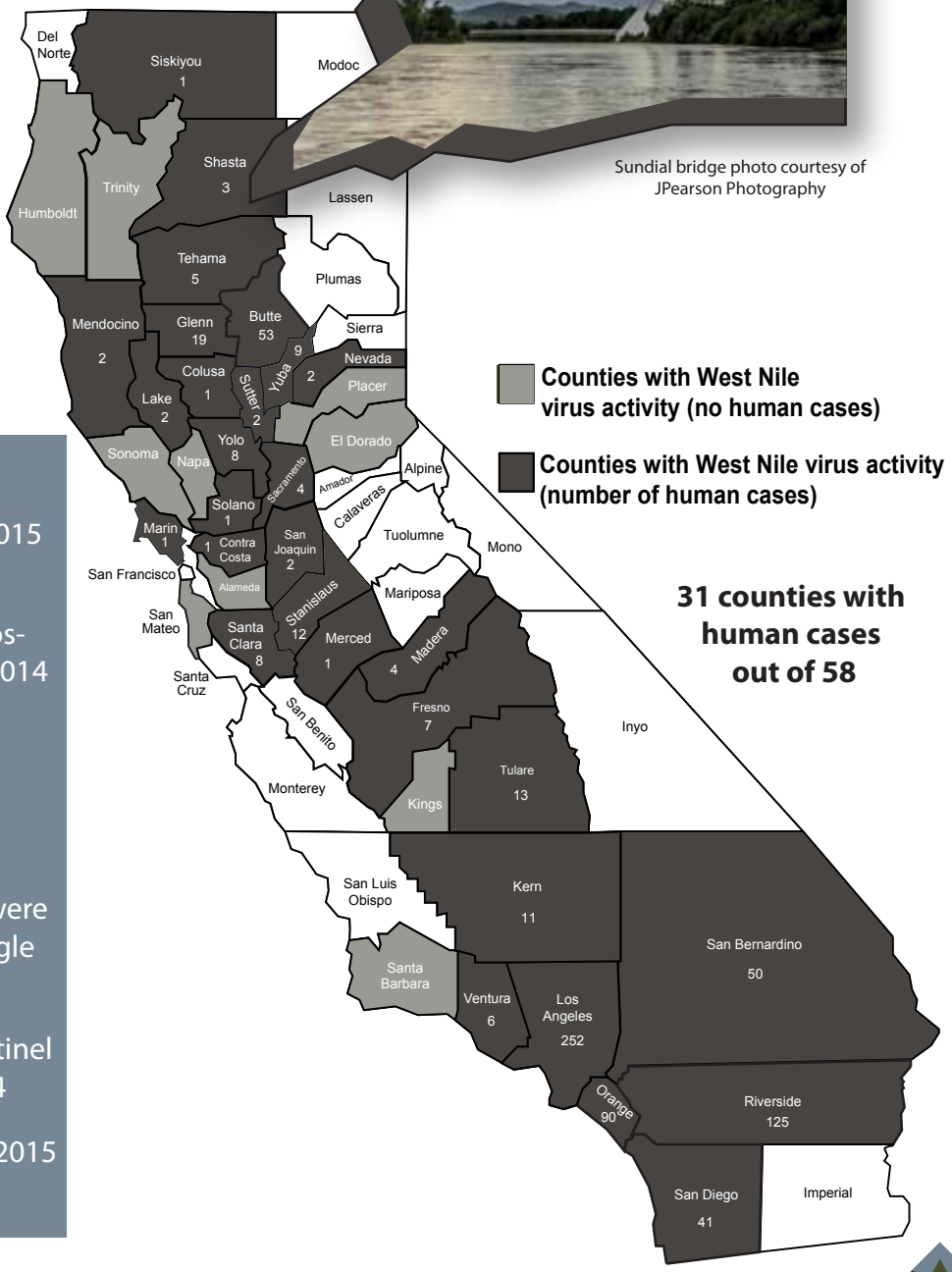
West Nile virus (WNv) Activity Highlights

Shasta MVCD:

- Overall higher levels of virus activity in 2015 compared to 2014
- More WNv positive sentinel chickens, mosquito samples and dead birds in 2015 vs 2014 (see chart for details)

State of California:

- Fewer human cases than in 2014
- More WNv fatalities than in 2014. There were 45 fatalities in 2015, the most ever in a single year
- WNv positive mosquito samples and sentinel chicken samples were comparable to 2014
- Fewer WNv positive dead birds found in 2015 (see page 16 'dead birds')

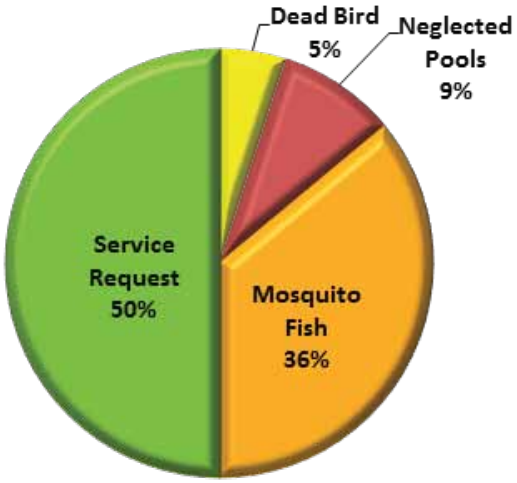


Service Request

Community	Qty.
Anderson	91
Bella Vista	11
Castella	8
City of Shasta Lake	43
Cottownwood	47
Enterprise	28
French Gulch	1
Happy Valley	19
Igo & Ono	7
Jones Valley	1
Lakehead	23
Millville	7
Mountain Gate	9
Palo Cedro	49
Redding	330
Shasta	6
Shingletown	33
Grand Total	**713**

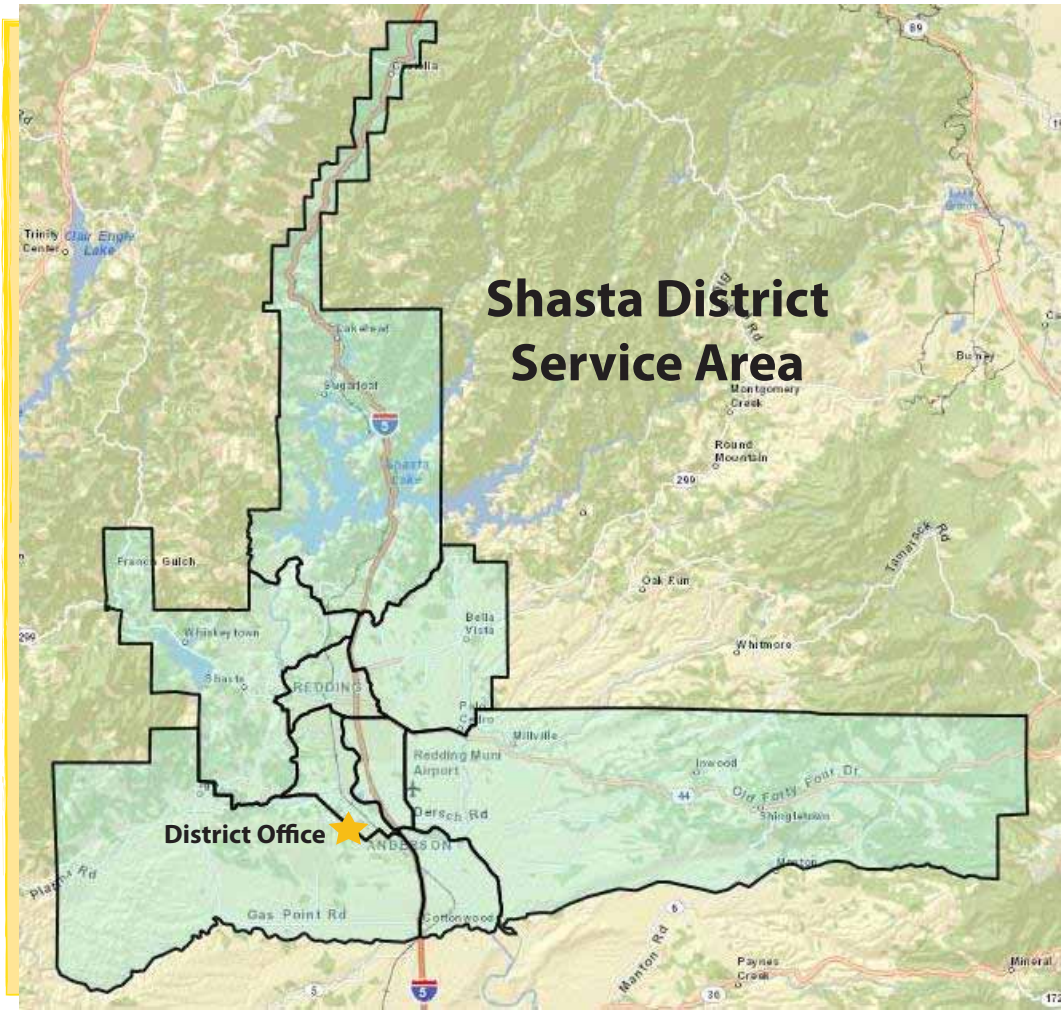
Throughout the year, the District gains valuable information and more importantly a close connection with our public through resident requests for service. These requests are for a wide range of mosquito and vector related issues including mosquito fish requests, biting mosquitoes, neglected pool reports, and general questions about insects. Not only are these requests important to help drive District operations and response, they are also great opportunities for District staff to conduct outreach and education to residents on an individualized and personalized basis.

Service Request by Type

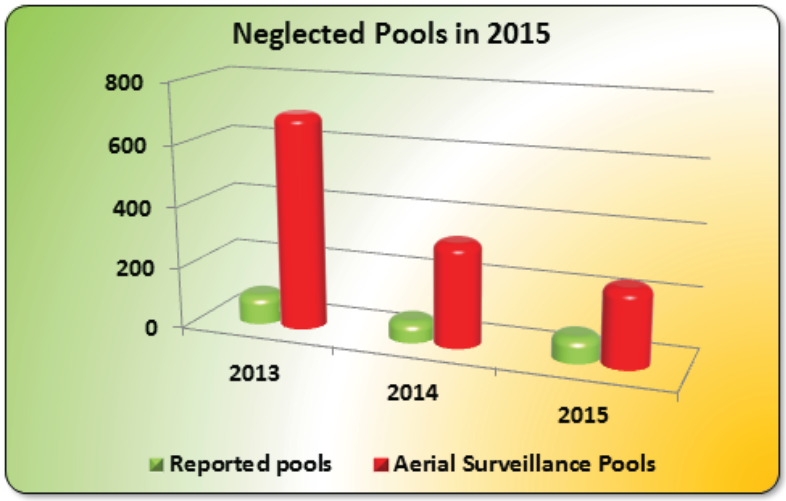


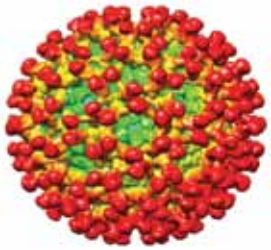
Dengue Fever

Dengue is an infectious tropical and subtropical virus. Incidences of dengue have risen at an alarming rate in the last 50 years. There are approximately 50-100 million dengue infections worldwide every year.



Neglected Pools





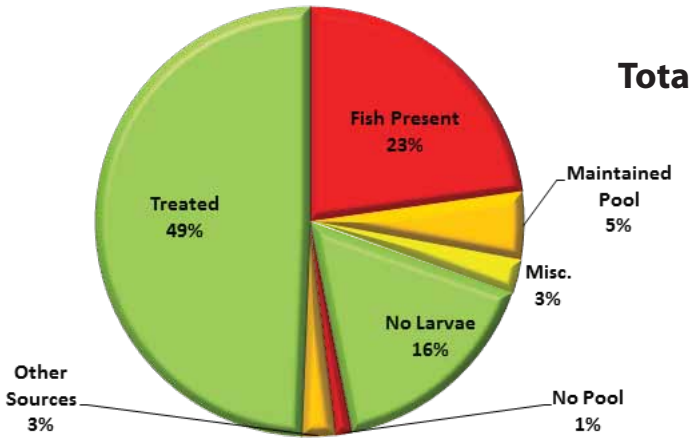
Chikungunya virus
Chikungunya is a mosquito-borne disease. The initial phase lasts 2-5 days and then ends abruptly. The joint pain can continue for years.

Neglected, unmaintained and in some cases abandoned swimming pools continue to be a concern for the District. These pools lack the regular treatment that keeps them from becoming stagnant. Although we have begun to see a reduction in the number of new pools identified due to fewer foreclosures, the problem still remains. Neglected pools are an enormous public health issue because in a short time they can produce millions of mosquitoes, creating a West Nile virus threat in an entire neighborhood.

In 2015, a total of 325 pools were inspected by the District, including 69 reported by residents and 246 identified by aerial surveillance, in comparison with 2014 (331) and 2013 (697). The neglected pools that were found breeding mosquitoes were treated with mosquito fish or another product utilized by the District.

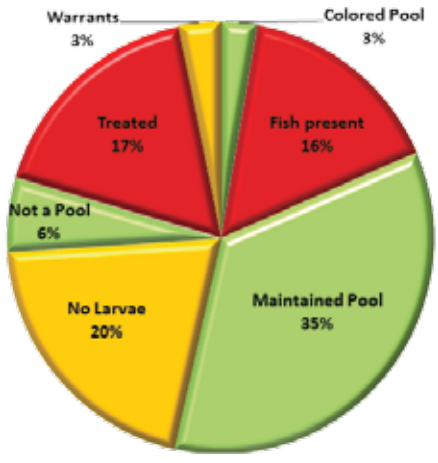
In the rare cases where property owners cannot be contacted or District staff is unable to gain access to property, the District will request a warrant to inspect and abate. This allows staff to inspect and treat neglected pools in a timely manner, therefore preventing mosquito breeding. A total of seven warrants were issued in 2015, far fewer than 2014 (28) and 2013 (43). The decrease of issued warrants indicates a reduction in foreclosed properties, and an increase in public knowledge regarding the public health threat of neglected swimming pools.

79 - Reported Pools



Total - 325 pools

246 - Aerial Pools



Biological Control

Biological control (or biocontrol) is using an organism to control a pest organism. For the control of mosquitoes, *Gambusia affinis* or mosquito fish are an effective biocontrol agent. Mosquito fish are released into confined water bodies where their appetite for mosquito larvae quickly reduces the mosquito population before they can even bite or transmit disease.

Biocontrol by the Numbers

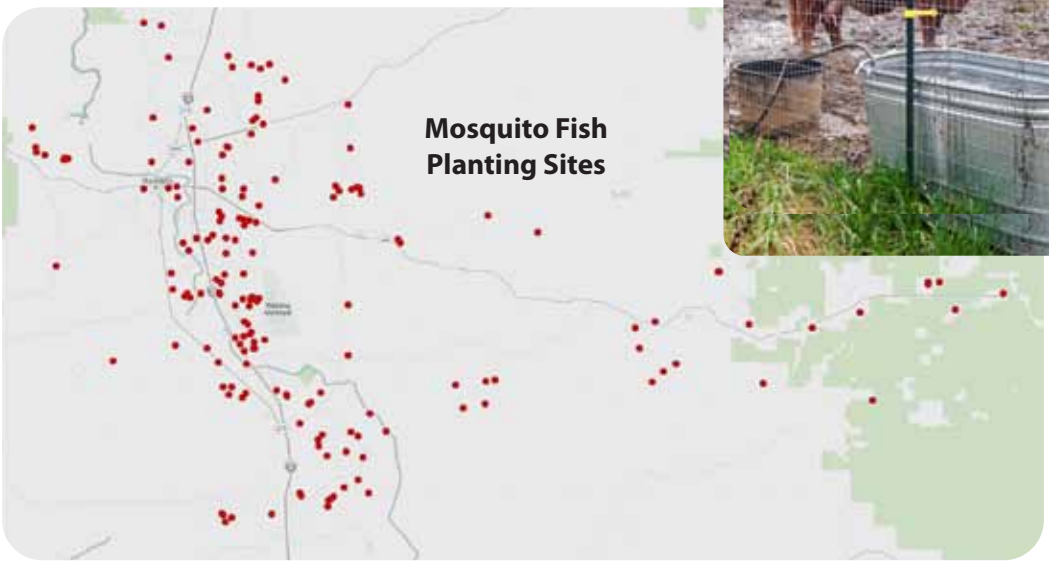
Applications of Mosquito Fish
638

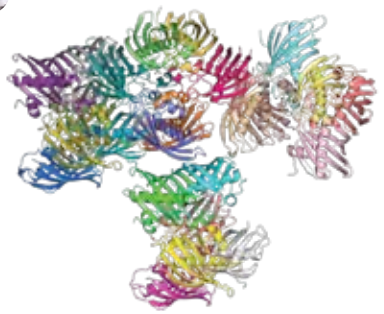
Total Acres Stocked with Mosquito Fish
372.51

Service Requests for Mosquito Fish
322

2015 marks the third year that the District's indoor fish rearing program has been operational. In this carefully monitored environment, mosquito fish are able to continuously reproduce, an achievement that was previously unattainable due to seasonally persistent cold water temperatures in natural water bodies. Steady growth of the mosquito fish population has made it possible to release fish in early spring to preempt excessive mosquito development, another achievement made possible by the fledgling program.

Mosquito fish can be used in sources as small as a stock trough to a large pond





Malaria is spread by the *Anopheles gambiae* mosquito and has been plaguing humans for a millenia. It has been widely eradicated in most parts of the world. Malaria still causes thousands of deaths each year, the majority is in Africa.

Mosquito fish are provided to residents free of charge. They are perfect for confined water sources that cannot be emptied frequently enough (every 3 days) to prevent mosquito breeding. Neglected swimming pools, ornamental ponds or fountains, animal water troughs, and bird baths are just a few of the common features that may breed mosquitoes and require mosquito fish. Just a handful of mosquito fish can quickly populate the largest of ponds due to their ability to reproduce rapidly.

Physical Control

Physical control is a critical component of our Integrated Vector Management (IVM) program and effectively reduces larval mosquito sources as well as adult mosquito harborage habitats. It can be as simple as shutting off the flow of an irrigation system to turning over a bucket to prevent standing water. Major projects, however, may require working with other agencies and involve intensive manpower and heavy equipment.

Our District accomplished multiple physical control projects in 2015 in order to gain access to treating mosquito sources and to help facilitate adult mosquito control operations. The activities of the projects include cleaning, repairing, and restoring ditches with heavy equipment. It also involves cutting paths through overgrown vegetation around the breeding sources with hand tools, collecting and hauling away debris, burning debris piles on sites, and herbiciding.

Physical Control Efforts in 2015

Staff Man Hours
520

Cal-Fire Man Hours
3,368

Backhoe Hours
245

Forestry Cutter Hours
35

Herbicide Acres
178

The District utilizes Cal-Fire Sugar Pine inmate crews to do hand brushing and burning in order to overcome the shortage of manpower and budget. This collaboration is a low cost option for the District and benefits Cal-Fire with needed supplies and training.

The District also collaborates with California Department of Fish and Wildlife (CDFW) for environmental concerns and Anderson-Cottonwood Irrigation District (ACID) to address mosquito sources associated with canal systems.

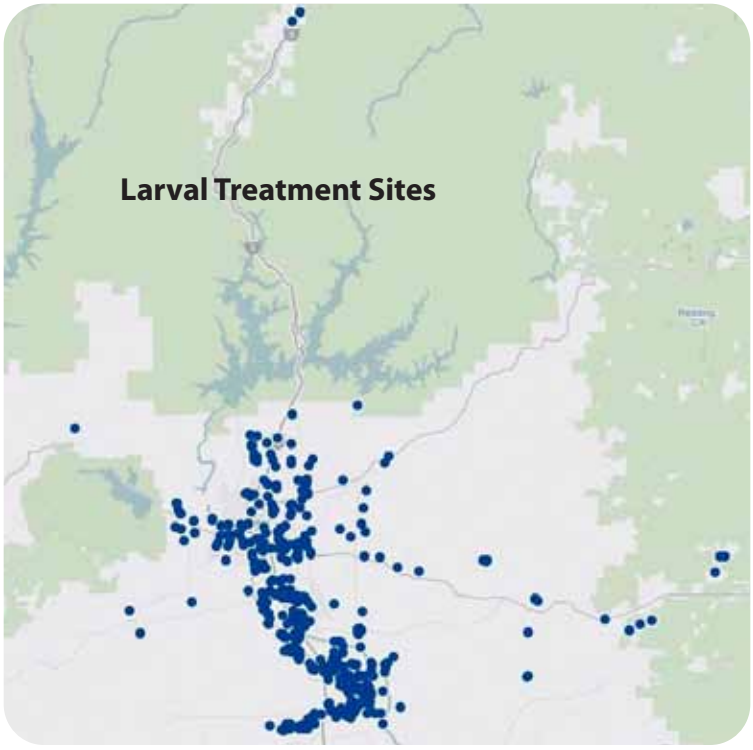
Japenese encephalitis virus can cause severe illness but is preventable. There is a vaccine available for humans.

Immature Mosquito Control

Log Decks

The black specks are mosquito egg rafts, they are about 1/4" long. One to two hundred mosquitoes can hatch from a single raft.

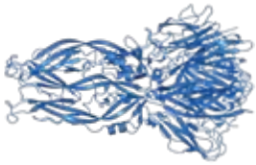
Egg Rafts



Control of larval mosquito populations is usually the most effective method of controlling mosquitoes. This is due to the populations being concentrated, relatively immobile, and often readily accessible for our staff. When assessing immature mosquito control methods, physical control and biological control are more long-term solution. Use of biorational control products, however, is a much quicker intervention to control immature mosquitoes.

The District staff inspected 18,865 sites for mosquito breeding and treated a total of 1,732 sites with 2,811 acres of standing water to control mosquito larvae and pupae. The larvicides used include: natural bacteria, insect growth regulators, and products that form a coating on top of the water to prevent larvae from emerging as adult mosquitoes.

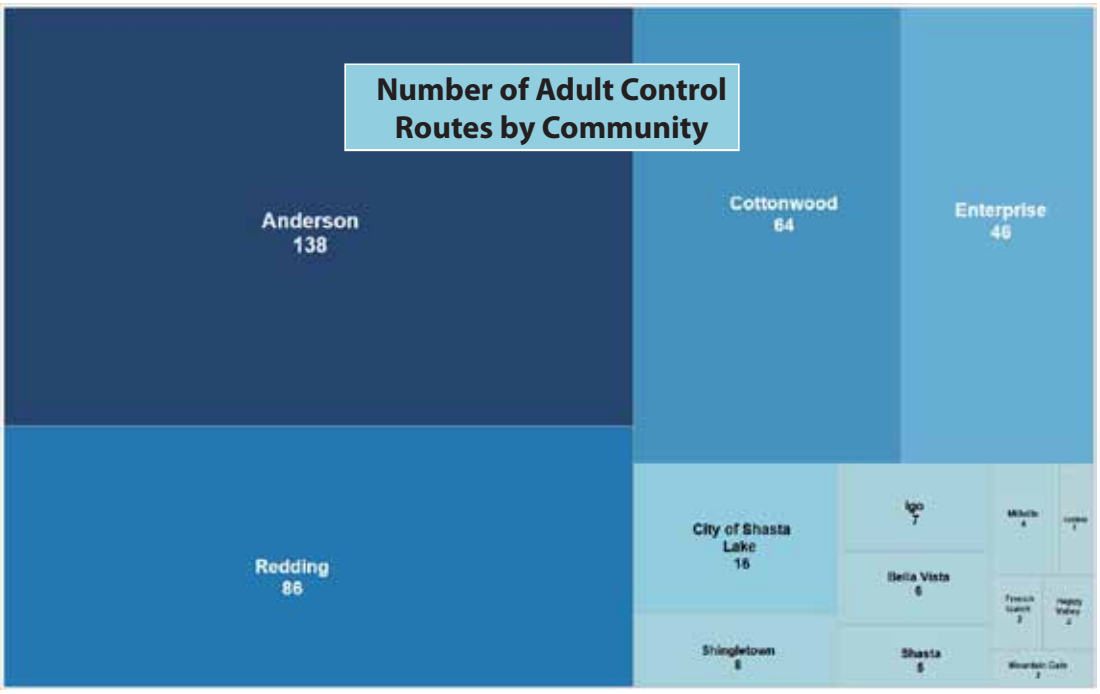
The major breeding sources treated include catch basins, pastureland, ponds, ditches, log mill operations, agricultural drains, and neglected swimming pools.



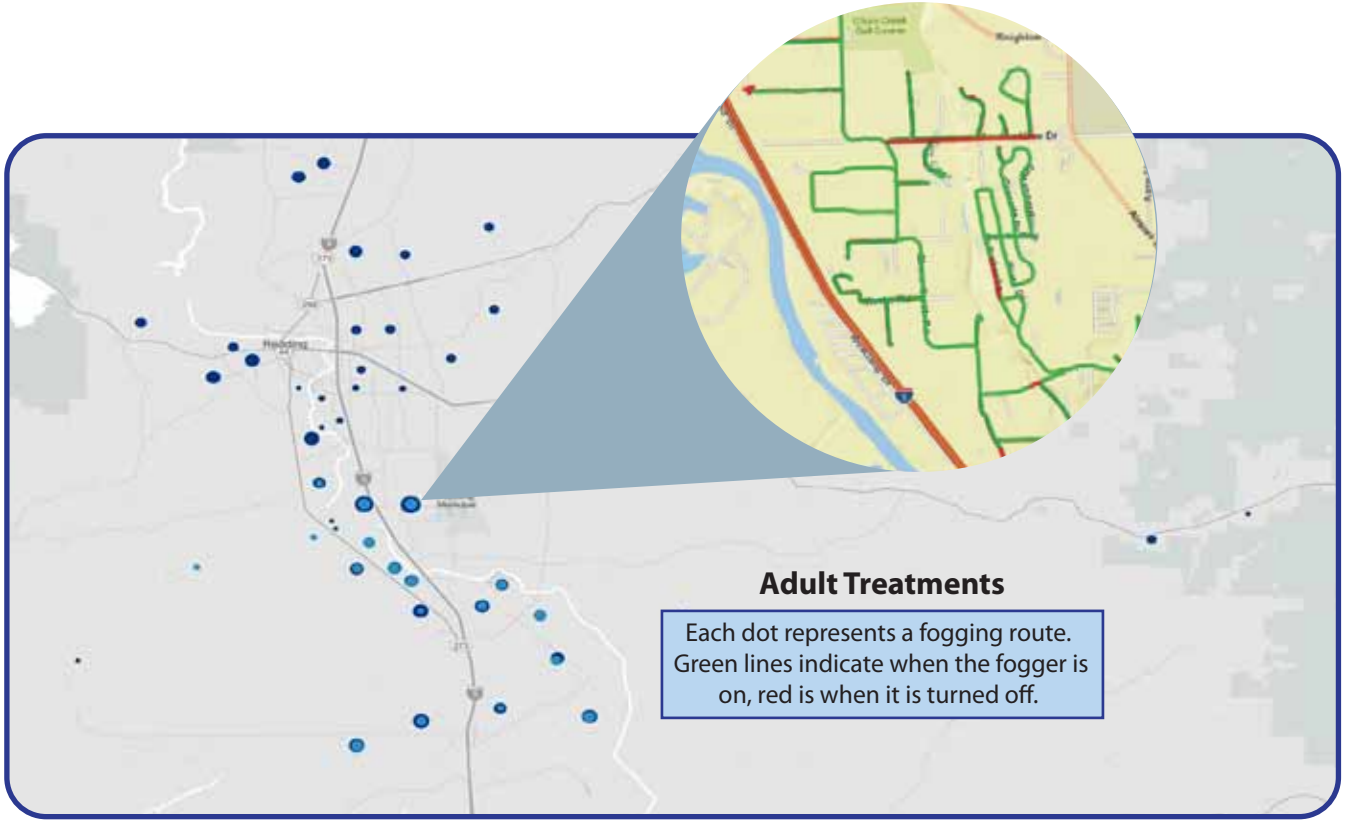
St. Louis encephalitis virus cases have occured in eastern and central states. Less than 1% of St. Louis encephalitis virus (SLEV) infections are clinically apparent and the vast majority of infections remain undiagnosed. Severe neuroinvasive disease (often involving encephalitis, an inflammation of the brain) occurs more commonly in older adults. In rare cases, long-term disability or death can result.

Adult Control

Adult mosquito control is an important component of any Integrated Vector management program. Utilizing chemical control products that target mosquitoes at the adult life stage is the only way to slow disease transmission once a pathogen is actively being transmitted in the environment. Making a quick and immediate reduction in the adult mosquito population helps to reduce the risk to the public. These adult mosquito control operations are based on surveillance results and the risk to the public. Applications rely on techniques and products that are regulated by federal and state agencies.



Mosquito adulticides are applied as ultra-low volume (ULV) sprays. ULV sprayers dispense very fine droplets that stay aloft and contact flying mosquitoes; these products have a very short lifespan in the environment and break down readily in sunlight. ULV applications involve small quantities of the product active ingredients in relation to the application area, typically less than 1-3 ounces per acre. In 2015, District staff completed 388 adulticide routes and treated approximately 61,757 acres.



Other Vectors


Ixodes pacificus

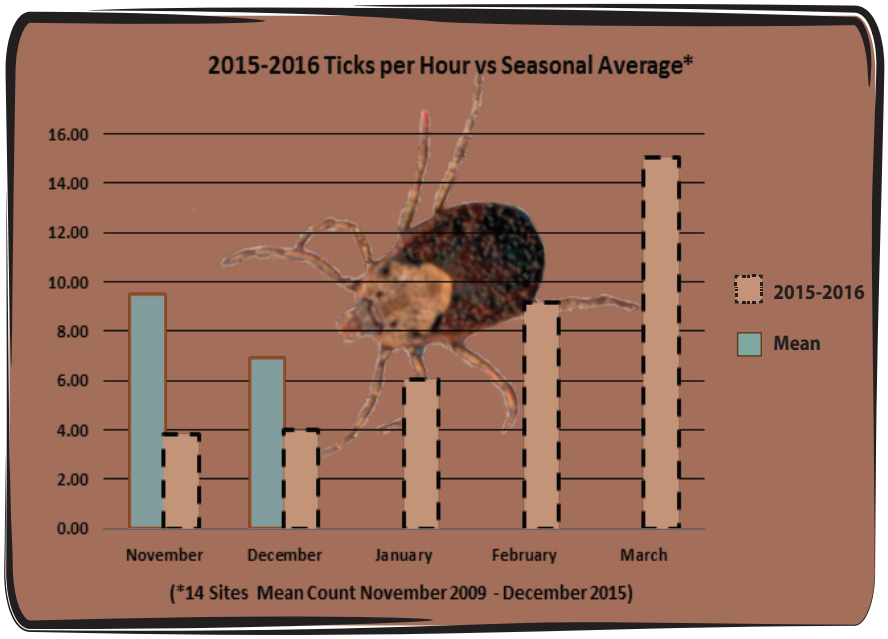
2015 marks the 6th year of the District's tick surveillance program. Between November and March, District staff sampled 15 locations on a weekly basis. The ticks collected are identified and counted; this process builds statistics on tick populations over time.

Samples of *Ixodes pacificus*, the western black-legged tick were tested by Placer MVCD for the presence of *Borrelia burgdorferi*, the causative agent for Lyme disease and *Borrelia miyamotoi* a lesser known tick borne bacterium. Both diseases were found in ticks at five locations in the northern and western portions of the District.

Test Results for Ticks Gathered between Nov 2014 - Mar 2015

Positive Samples found of 299 Total Samples

Infectious Agent	Positive Samples	Percent of Samples Positive	Minimum Infection Rate (%)
Borrelia burgdorferi	7	2.34	.50
Borrelia miyamotoi	12	4.01	.87



Ticks prefer moist environments, and it is likely that their populations have been suppressed in recent years by California's persistent drought. Wetter weather has occurred at the beginning of the 2015 – 2016 tick surveillance season (November–March). This has led to higher than normal tick populations in November and December 2015.


Technicians flagging for ticks

The District has historically assisted the California Department of Public Health in trapping and testing of rodents for the presence of vector-borne diseases such as plague and hantavirus. In October 2015 blood samples were taken from rodents trapped west of Redding. No rodent-borne diseases were detected within the District in 2015.

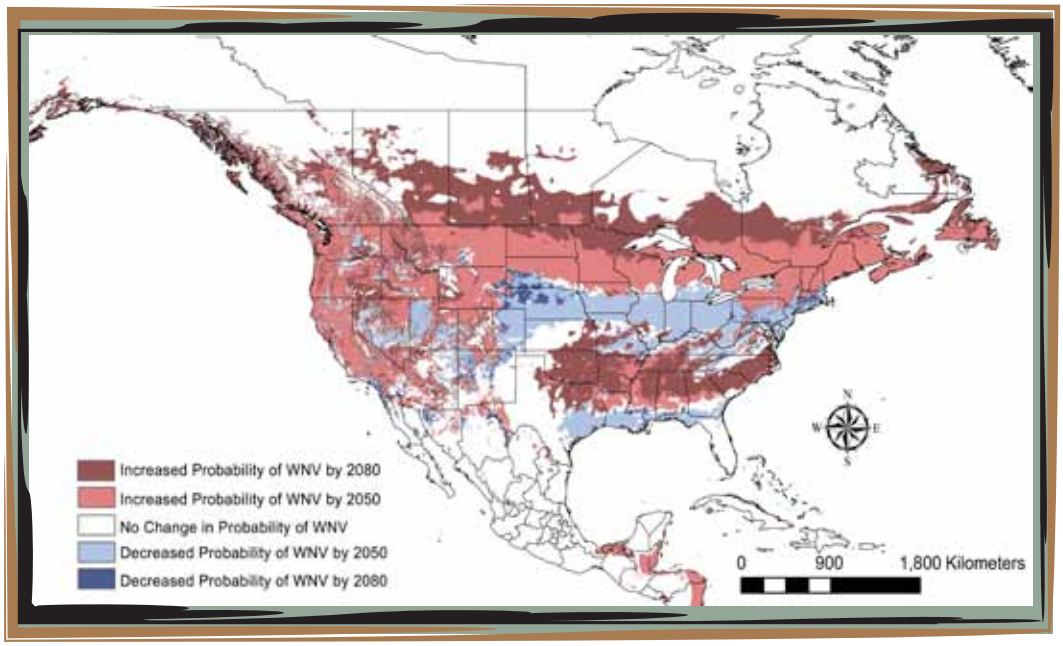

Sampling rodents for vector-borne diseases

Climate Change & Mosquito Borne Diseases

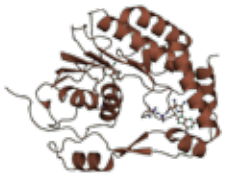
What is Climate Change?

Climate change refers to any significant change in the measures of climate that last for an extended period of time. These measurements include worldwide patterns of temperature, precipitation, humidity, wind and seasons. These changes can have a fundamental role in shaping natural ecosystems. The Earth's climate is always changing, with periods that can last for thousands or millions of years. However, the change researchers are currently measuring seems to be rapidly progressing, a change that is faster than any change detected in over 2,000 years. There are many causes for climate change including distance from the sun, volcanic activity, and human activity. Because these climate changes can have such a dramatic impact on Earth's ecosystems, the question for public health mosquito and vector control is what impact will these changes have on our disease/vector interactions?

How is it impacting Mosquito and Vector Control?



It is difficult to know exactly how these climate changes will impact our efforts to protect public health, but in general climate plays an important role in the distribution of vectors and the diseases they can transmit. There is evidence that due to the current climate change, the geographic ranges of vector species have also changed. Important vector-borne diseases including dengue, chikungunya, malaria, West Nile virus, Lyme disease and the now-surging Zika virus, are expanding their borders. It is estimated that by 2100 average global temperatures will have risen by 1.0-3.5 degree Celsius (WHO 2000). This increase in temperature will increase the likelihood of vectors moving into new areas and the diseases they carry following them. This shift in species, already being experienced by some Districts will change the way the District will need to allocate resources and surveillance efforts. It is important that the District continue to monitor the spread of these vectors and their diseases to ensure we will be prepared if we begin to experience the effects of their expansion. The short answer to the impact of climate change is new diseases, new vectors, a need for increased awareness and a shift of priorities by local jurisdictions toward addressing these emerging public health concerns.



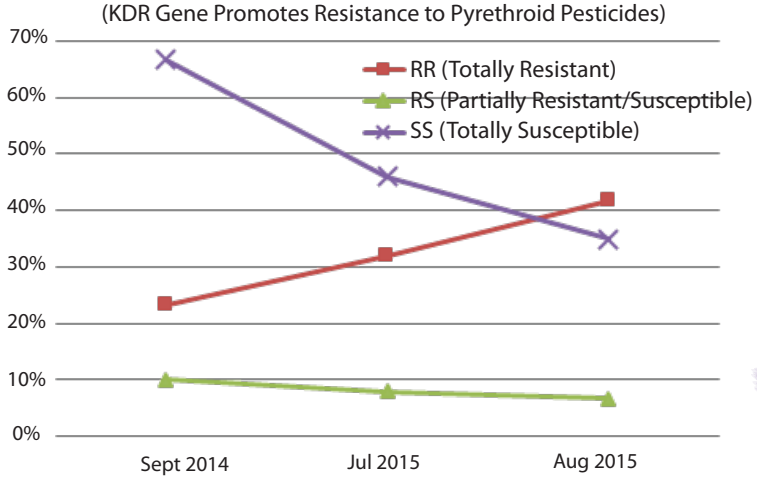
Yellow fever virus can cause severe illness. It is estimated that 20-50% of people who develop severe symptoms succumb to the virus.

What is the District Doing in Response to These Changes?

Beyond maintaining strong connections with state, national and international agencies that are currently controlling these diseases and vectors, and an awareness of potential threats; the District is strengthening our local training and resources to provide surveillance and control efforts quickly. This preparedness could make the control and potential eradication of any exotic invasive vector borne disease more probable. The District is revising its emergency mosquito and vector response to prepare surveillance and operations departments for new techniques, control strategies and outreach needs. Additionally, the District maintains an emergency response reserve fund to address new emerging issues in the short term until resource allocation can be addressed for longer term response efforts. Although it is impossible for the District to prepare for every unforeseeable challenge climate change could send our way, recognizing the need to support public health programs in the long term ensures we have the infrastructure in place to respond quickly and effectively.

Research

In 2015 research was done in the lab and the field to help the District better understand the efficacy of its current adult mosquito control products and methods. Research was also conducted to assess new techniques for the control of adult mosquitoes in problem areas.

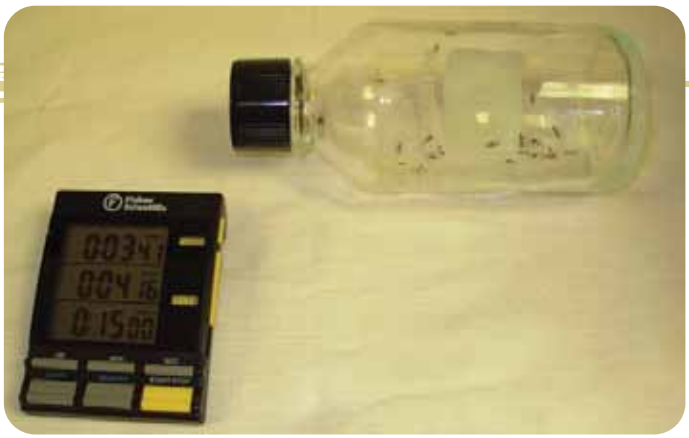


Knock-down Resistance Testing

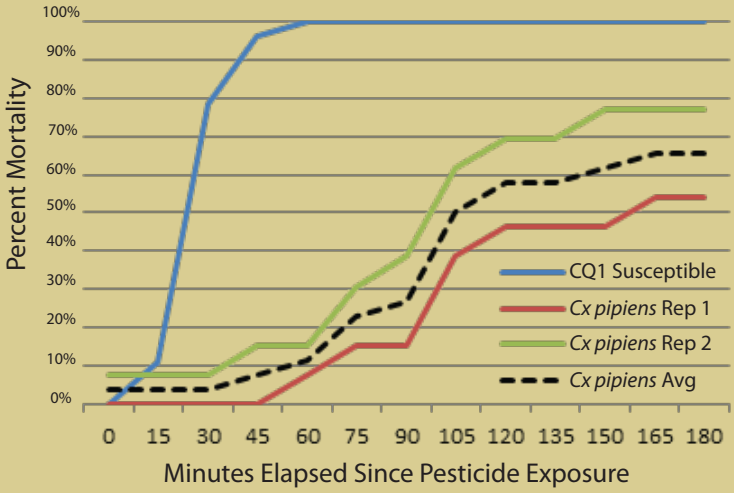
Knock-down resistance (KDR) is a genetic mutation that leads to resistance to pyrethroid chemicals, the most common products used for adult mosquito control. Samples of *Culex pipiens* mosquitoes from an area with high mosquito populations have been tested beginning in 2014. The presence of the KDR gene seems to be increasing in that mosquito population over time.

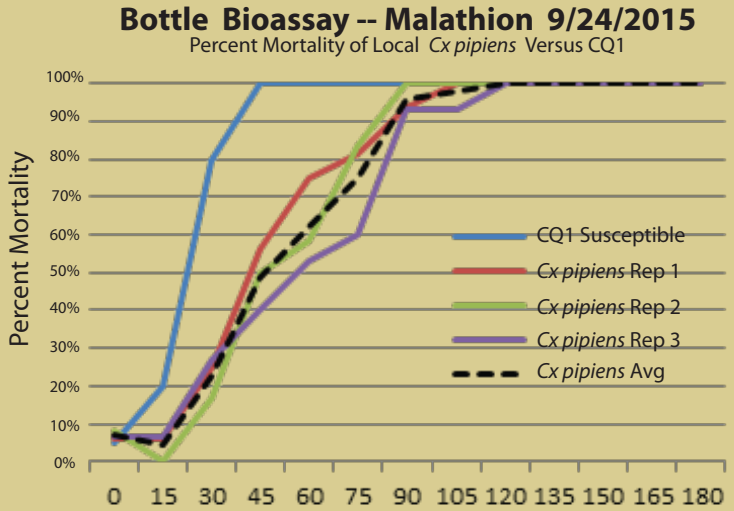
Bottle Bioassays

Comparison of wild local mosquitoes to lab reared (CQ1) mosquitoes in pesticide coated bottles provides an effective early-warning of changes in the susceptibility of the mosquitoes we control to the products we use. The presence of the KDR gene in local wild mosquitoes was first detected in bottle bioassays testing pyrethroid active ingredients.



The bottle bioassay works by determining how long it takes different populations of mosquitoes to succumb to a particular pesticide product. If a wild local sample of mosquitoes survives longer than the control (CQ1 susceptible mosquitoes represented by the blue line on either graph to the right), they are said to be somewhat resistant to the product used.





Bottle Bioassay using Non-pyrethroid Active Ingredient

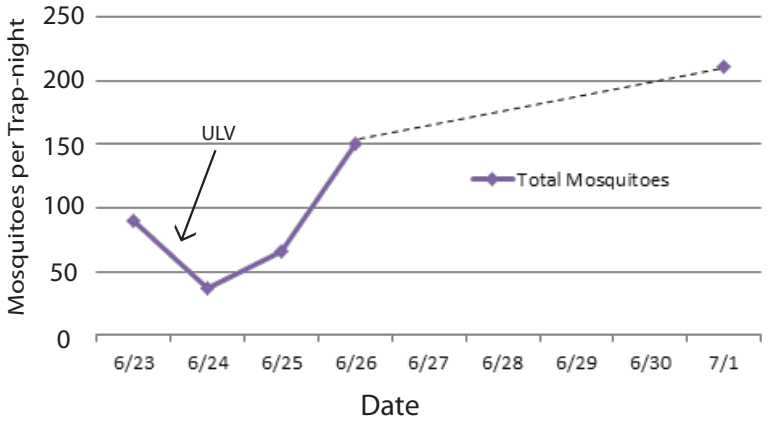
Research

Mosquito Recruitment

Within a week following treatment for adult mosquitoes their populations often rise back up to or beyond pre-treatment levels. This phenomenon called "recruitment" occurs because mosquitoes continue to breed and migrate from areas within and surrounding the treatment area. A trap was set on consecutive nights following ULV treatment with an adult mosquito control product to assess how quickly adult mosquito populations recover due to recruitment following adulticide treatments.

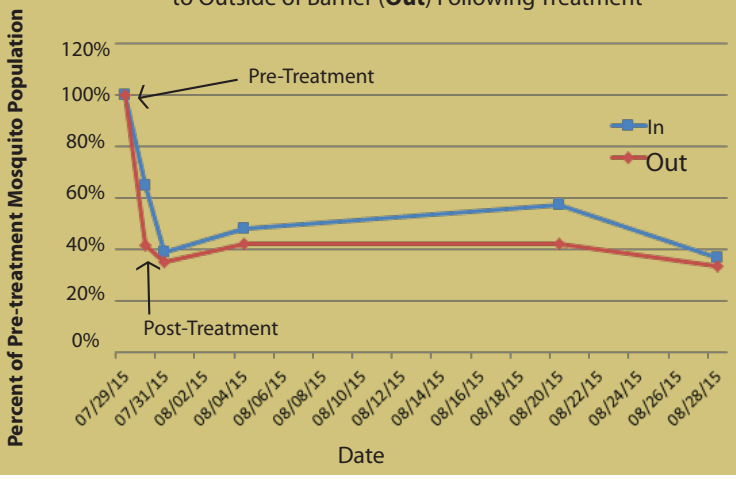
Adult Mosquito Recruitment

Following ULV Adulticide Treatment



Percent of Original Mosquito Population Following Barrier Treatment

Comparison of All Mosquito Species Adjacent to Breeding Area (**In**) to Outside of Barrier (**Out**) Following Treatment



Barrier Treatment

A residual pesticide (barrier treatment) was applied to a heavily vegetated resting area for adult mosquitoes between an area of known mosquito breeding and an area of industrial human activity. Traps were set on the breeding side (In) and on the industrial side (Out) to see if populations outside the barrier would be reduced compared to mosquito populations closer to the breeding site.

Barrier Treatment Application to Vegetation

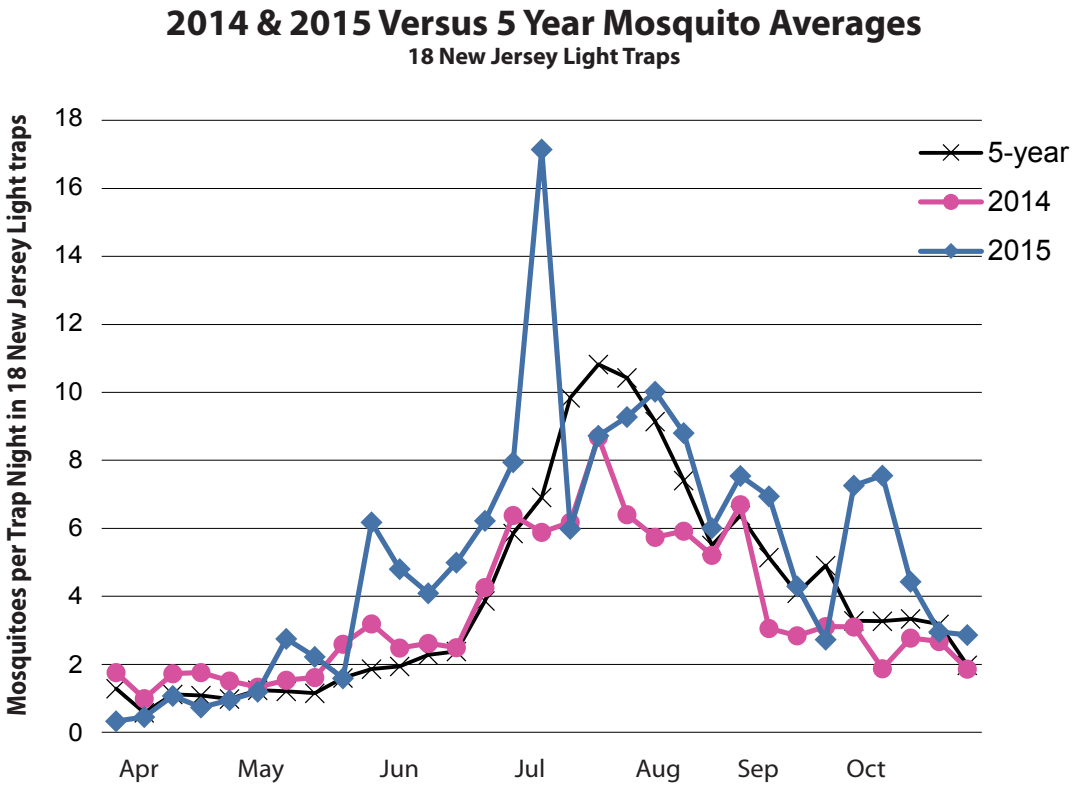
Mosquito populations outside the barrier treatment were reduced compared to populations closer to the breeding site. Populations on both sides of the barrier were significantly reduced for about a month compared to pre-treatment levels.

Barrier Treatment Bioassay

Vegetation from the barrier treatment area was placed in cups with lab-reared pesticide-susceptible mosquitoes 15-days post treatment to assess the residual effects of the applied pesticide. All susceptible mosquitoes exposed to the treated leaves promptly died.

Vector & Disease Surveillance

One of the most essential components of a successful IVM Program is the surveillance of vectors and the diseases they transmit. By effectively monitoring the abundance of vectors and the occurrence of disease, the District is better able to provide effective and focused public health vector control. Historically, malaria, Saint Louis encephalitis, western equine encephalomyelitis, canine heartworm and West Nile virus have been transmitted by mosquitoes within the District.



New Jersey Light Traps

New Jersey light traps placed at 18 fixed locations throughout the District use a timed light source to attract mosquitoes overnight in jars that are collected on a weekly basis. Mosquitoes from the jars are identified to sex and species and counted from April through October. These traps provide useful mosquito population trend information since they have been generating data for nearly 40 years.

Dead Bird Surveillance

Since West Nile virus (WNv) first arrived in the western hemisphere its activity has been tracked by testing dead birds for the presence of the virus. 23 WNv positive dead birds were found within the District in 2015. The number of WNv positive birds has been quite low in 2014 & 2015, while other virus indicators (WNv positive mosquito samples, e.g.) have been high. Likely reasons for this discrepancy include the development of natural immunity in the birds, fluctuations in the level of public participation in dead bird reporting, and limitations put on dead bird testing due to budget cuts at the state level.

Magpies gather in a residential neighborhood

Magpies and jays belong to the same family of birds called corvids. Along with ravens and crows, they are highly susceptible to West Nile virus infections and important to the dead bird surveillance program. Residents are encouraged to report dead birds, especially corvids.

Vector & Disease Surveillance

Encephalitis Virus Surveillance Traps

Encephalitis virus surveillance (EVS) traps use CO_2 gas to attract and collect mosquitoes seeking a blood meal. EVS traps are set for one night per week at each of the 41 fixed locations throughout the District. The following morning they are collected and the mosquitoes are identified and counted. Additional "floater" traps are set in other problem areas as needed based on service requests, infected birds and other factors.

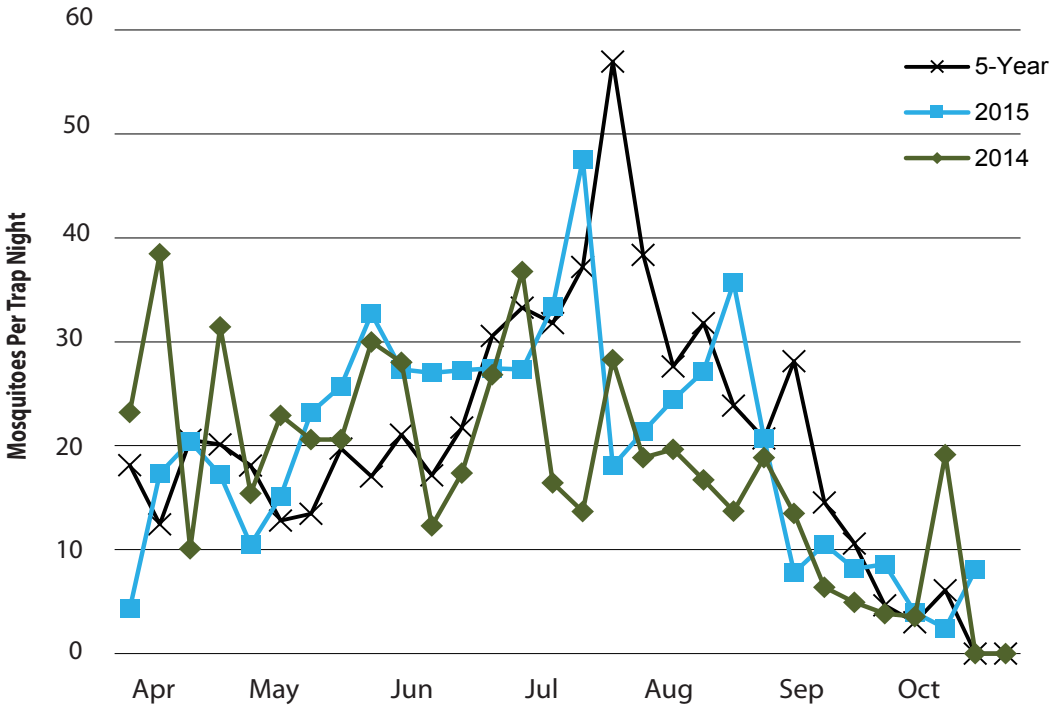
EVS Samples & Test Results 2013-2015

Year	Number of samples submitted	Number of WNv+ samples
2013	264	15
2014	509	33
2015	552	48

Mosquitoes from these traps are submitted in samples of 8 to 50 mosquitoes each to UC Davis on a weekly basis to be tested for the presence of infectious agents. A new record number of mosquito samples (48) were found to be positive for West Nile virus in 2015. The previous record was set only the year prior in 2014 with 33 WNv positive samples.

2014 & 2015 Versus Five Year Adult Mosquito Averages

CO_2-Baited EVS Traps Set Weekly at 41 Locations



Incidence of West Nile virus in 2015

Mosquito Samples-48

Dead Birds - 15

Sentinel Chickens - 18

Human Cases - 2

Horse Cases - 2

Sentinel Chickens

Since birds are a major reservoir host of mosquito-borne diseases, chickens have long been used to detect these diseases spreading within the environment. The staff monitored five sentinel chicken flocks of eight birds each located throughout the District. Blood samples were taken from each bird between May and October when mosquito populations are at their highest. In 2015, antibodies to WNv were found in 18 of the District's 40 sentinel chickens.

Picture courtesy of Contra Costa MVCD

Outreach

Outreach by the Numbers

Brochures
1,678

Promotional items
3,392

Mailers via Utility Bill
15,000

Web Visits
5,029

Events, Fairs and Presentations
(approximately)
100,000

The District's outreach program is a significant part of connecting with the public about mosquito awareness. Staff manned booths at The Shasta District Fair, home and garden shows, health fairs, career and earth day fairs. In addition to these events, class room and service group presentations were also conducted.

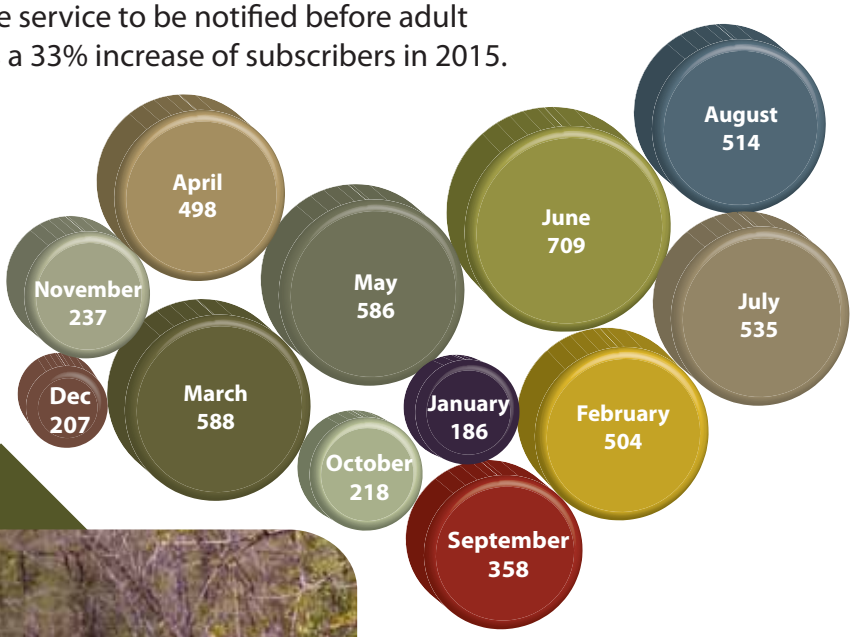
Students gather for the STEM fair before breaking into groups to explore the booths

District staff discusses the application of STEM fields in mosquito control

District staff spoke to the Shasta Board of Realtors with the intent to encourage them to report neglected pools. Unoccupied homes with a pool that is not being maintained can put an entire neighborhood at risk to the diseases that mosquitoes carry such as West Nile virus.

In 2014 a spray notification system was added to the District's website. Residents can subscribe to this free service to be notified before adult spraying will take place. There was a 33% increase of subscribers in 2015.

Website Visits by the Month



Students try their hand at tick collecting Whiskeytown NRA

A representative from Whiskeytown National Recreation Area invited the District to lecture science students from a local high school about vectors found within the park. The event was a hit! District and Whiskeytown NRA staff are planning more collaborative outreach events in 2016.

Financial Highlights

Fiscal Year 2014-2015

Assets	
Cash and cash equivalents	$3,187,273.00
Accounts Receivable	$5,222.00
Due from other governments	$42,592.00
Inventories	$55,781.00
Non-depreciable capital assets	$51,273.00
Depreciable capital assets, net	$591,239.00
Other Post Employment Benefit Liability	$63,665.00
Total Assets	**$3,997,045.00**

Liabilities	
Accounts payable	$18,511
Net pension liability	1,620,184
Compensated Absences	110,438
Total Liabilities	**$1,749,133**

Budget to Actual			
Income:	Budget	Actual	% Budget
Taxes	$1,153,450	$1,017,808	88%
Benefit Assessment	$1,171,992	$1,116,066	95%
Other	$174,400	$92,508	53%
Total Income	**$2,499,842**	**$2,226,381**	**89%**
Expenses:			
Services and Supplies	$750,247	$658,752	88%
Payroll Expenses	$1,745,214	$1,614,670	93%
CERBT Contribution	$23,180	$23,180	100%
Total Expenses	**$2,518,641**	**$2,296,602**	**91%**

2014-2015 REVENUES		
Property Taxes	$1,105,932	47.26%
Assessments	$1,193,431	51.00%
Interest &	$40,531	1.73%
TOTAL	**$2,339,894**	**100%**

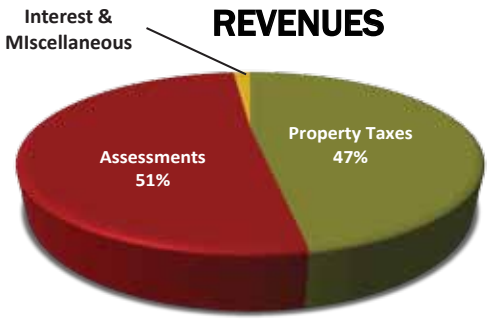
2014-2015 EXPENDITURES		
Salaries and Benefits	$1,566,991	68.96%
Service and Supplies	$614,131	27.03%
Utility Expense	$22,972	1.01%
Depreciation	$68,173	3.00%
TOTAL	**$2,272,267**	**100%**

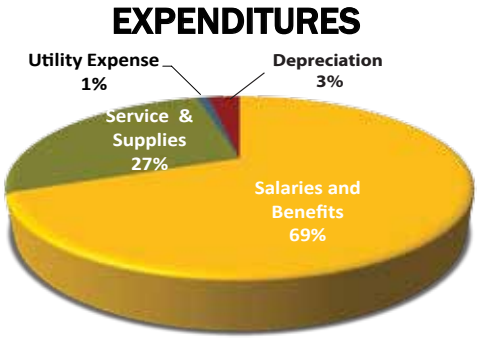
Financial Administration

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.

The District has completed the process of transferring the treasury management to an outside financial institution separate from the Shasta County Auditor-Controller's office. Having more control has given the district a more accurate up to date reporting process. This separation has been a more efficient and positive move for the district.

Futhermore, staff members and Board of Trustee members worked on creating a new strategic plan for the District. The 2015-2019 Strategic Plan was adopted in September 2015. The staff is currently working on various department improvements as well as capital improvements such as a lab expansion. This was a successful experience and will support planning for the future growth of the district.





Causes of Human Fatalities

Number of people killed by animals per year

10 Shark

10 Wolf

100 Lion

100 Elephant

500 Hippopotamus

1000 Crocodile

2000 Tapeworm

2,500 Ascaris roundworm

10,000 Freshwater snail (schistosomiasis)

10,000 Assassin bug (Chagas disease)

10,000 Tsetse Fly (sleeping sickness)

25,000 Dog (rabies)

50,000 Snake

475,000 Human

725,000 Mosquitoes

Diseases Mosquitoes Carry:

- Malaria (kills more than 600, 000 people every year)
- Dengue fever
- Rift Valley fever
- Yellow fever
- Chikungunya
- West Nile virus
- Lymphatic flariases
- Japanese encephalitis
- Zika virus

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