



◆ 2009

San Joaquin County
Mosquito & Vector Control District

Annual
Report

Main Office
7759 S. Airport Way
Stockton, CA 95206
(209) 982-4675 or 1-800-300-4675
district@sjmosquito.org



**In Memoriam of
Trustee Avin C. "Al" Inman
Representing San Joaquin County
1988 - 2009**

Trustee Alvin Inman served the residents of the San Joaquin Mosquito and Vector Control District from 1988-2009. "Big Al", as he was called by some of his fellow trustees, was appointed to the Board of Trustees in 1988 by the San Joaquin County Board of Supervisors, representing the county-at-large. Mr. Inman's experience in local government and involvement with various civic organizations provided the basis for his participation with the District, including serving as President of the Board of Trustees in 1992 and 1993. Additionally, he was an active member of the Mosquito and Vector Control Association of California, representing trustees from local vector control agencies in Calaveras, Merced, San Joaquin and Stanislaus counties. Mr. Inman's contributions to the District were many, and he will be remembered as an advocate for delivering the highest level of service possible to the residents and visitors of San Joaquin County.

Forward

On behalf of the Board of Trustees and staff of the San Joaquin County Mosquito and Vector Control District, I am pleased to submit the 2009 Operational and Fiscal Year Report. This report includes information on administration and operations during the year.

Financially, the District continues to experience a downward trend in revenues from property taxes due to declining property values and the ongoing real estate foreclosure crisis. Additionally, local property taxes earmarked for the District continue to be diverted to the State of California's Educational Revenue Augmentation Fund (ERAF) and local municipal redevelopment projects. These revenue diversions have prompted the District to continue implementing the Mosquito, Vector, and Disease Control assessment approved by local landowners in 2005. This nominal charge generates a revenue stream that helps address vector-borne disease surveillance and control, community education and outreach activities, and related vector control program operations.

Operationally, field and laboratory staff levels were maintained to meet the challenges of West Nile virus in Northern California. Emphasis was placed on detecting virus in local mosquito populations, and using that information to manage their populations to the lowest level possible. In 2009, more emphasis was placed on requiring land owners to prevent the development of mosquitoes on property under their control. This practice is imperative, as the District is experiencing a decline in the effectiveness of certain mosquito control products, and new state and federal regulations limit how mosquito control can be implemented in aquatic sites.

We continue to experience a high number of foreclosed and vacant homes with swimming pools and other aquatic features that are prolific mosquito breeding sources. The District increased its staffing during the summer to inspect and treat these pools to reduce mosquito populations in the urban and suburban areas of San Joaquin County.

Surveillance and control measures, when necessary, were provided consistent with the District's integrated pest management (IPM) plan and the California Mosquito-Borne Disease Surveillance and Response Plan. These plans have been the backbone of our efforts to detect and respond to West Nile virus since its first detection in San Joaquin County in 2004. For 2010, we will refine our surveillance system to include improved diagnostics in the laboratory, as well as increased evaluation of the effectiveness of our control products. We will also expand our tick and tick-borne disease surveillance program to include information and specimens collected from local veterinarians and their clients.

In February 2009, San Joaquin County lost a pioneer in local mosquito control with the passing of Lodi resident Robert Mullen. Mr. Mullen championed the cause of mosquito control in the early 1940's, and worked with the San Joaquin County Board of Supervisors and the Lodi City Council to form the Northern San Joaquin County Mosquito Abatement District, the predecessor of today's agency and program.

Mosquito and vector control is an important and basic public health function. The rapid spread of West Nile virus across the U.S. in the last ten years demonstrates the continuing need for organized mosquito control activities. States and local communities are challenged to develop and maintain these essential vector control programs, especially in tight budgetary times and when emergency situations have quieted. To this extent, the Board of Trustees and staff should be commended for their continued dedication and hard work in providing a quality vector control program for the residents and visitors of San Joaquin County.

Respectfully submitted,

John R. Stroh
John R. Stroh, Manager

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Mission Statement

Adopted by the Board of Trustees

On May 21, 1996

San Joaquin County Mosquito and Vector Control District provides comprehensive vector surveillance and control services to enhance the public health and quality of life for the residents and visitors of San Joaquin County. As a locally controlled independent agency we seek to fulfill our mission through the following commitments:

- ü To utilize the most advanced administrative and operational technology available;
- ü To provide stewardship for public funds by stressing efficiency in our operations;
- ü To encourage citizen participation in achieving our mission;
- ü To educate the public regarding the health implications of disease transmitting pests;
- ü To provide services consistent with an awareness and concern for environmental protection;
- ü And lastly, to provide and maintain a safe and effective public health pest management program.

The District's Board of Trustees meets on the third Tuesday of each month at 1:00 p.m. at the District's office: 7759 S. Airport Way Stockton, CA 95206

District Overview

San Joaquin County Mosquito and Vector Control District is an independent special district. The District's operations are funded by San Joaquin County property taxes, a special tax and a benefit assessment. The District is governed by a ten member Board of Trustees, seven representing each incorporated city and three representing the county at large. The Board employs a manager who oversees program functions, hires and supervises staff. The staff consists of full and part-time employees to facilitate the daily district operations.

1932

San Joaquin County health officials enlisted the aid of Civilian Conservation Corps to remove brush along streams to reduce mosquito producing stagnant water.

1942

Local citizens organized a petition signed by 3,800 residents to form a district.

1945

The Board of Supervisors form the Northern San Joaquin County Mosquito Abatement District.



Staff of the Northern San Joaquin County
Mosquito Abatement District 1950

1955

A second district, the San Joaquin Mosquito Abatement District, was formed for the remaining portion of the county. Due to the growing concern of encephalitis in the county, demands for mosquito control continued to increase.

1980

By mutual consent of their governing bodies, the two independent districts combined to form San Joaquin County Mosquito Abatement District.

1992-1993

The District expanded it's mission to include two other vectors, ticks and feral bees. To reflect the newly adopted tasks, the District changes it's name to San Joaquin County Mosquito & Vector Control District.

“Vector” Defined

According to the California State Health and Safety Code, Section 2002(K): “Vector” means any animal capable of producing discomfort or injury, including, but not limited to arthropods (mosquitoes, flies, fleas, lice, ticks, mites, etc.), small mammals (rabbits, rodents, etc.) and other vertebrates, but not including domestic animals.

Vectors can transmit infectious organisms that cause human and animal diseases. These diseases can be serious and sometimes fatal. Arthropods, particularly haematophagous insects, are the major group of vectors transmitting diseases (vector-pathogen) including encephalitis (mosquito-virus), malaria (mosquito-protozoan), typhus (flea/lice-bacterium), plague (flea-bacterium), dog heartworm (mosquito-roundworm), and Lyme disease (tick-bacterium). Encephalitis-causing viruses transmitted by arthropods are called arboviruses (Arthropod-borne viruses). The California Arbovirus Surveillance Program emphasizes forecasting and monitoring activity of St. Louis encephalitis (SLE), western equine encephalomyelitis (WEE), and West Nile virus (WNV). These viruses are maintained in the wild bird-mosquito cycles, and therefore are not dependent upon infections of humans or domestic animals for their persistence. Infections of humans and domestic animals by these viruses are transmitted by bites of infected mosquitoes that have fed on infected wild birds. WNV is currently of most concern in San Joaquin County. It was first detected in San Joaquin County in 2004 and reached epidemic levels in 2005, 2006, 2007 and 2008.

There are 17 mosquito species found in San Joaquin County. Three of them are of public health concern; *Culex tarsalis*, is the principal vector of WEE and WNV, *Culex pipiens*, is the vector of WNV, and *Anopheles freeborni*, the vector of malaria.

Mosquitoes of San Joaquin County

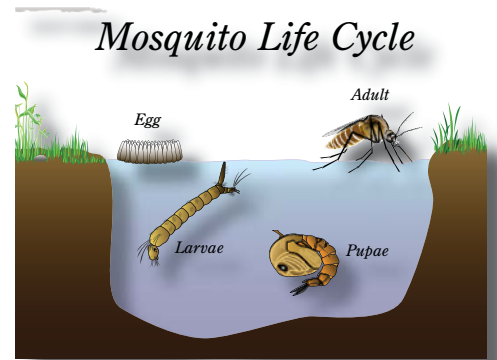
1. *Culex tarsalis*
Western Encephalitis Mosquito
2. *Culex pipiens*
Northern House Mosquito
3. *Culex stigmatosoma*
Banded foul water mosquito
4. *Culex erythrothorax*
Tule mosquito
5. *Anopheles freeborni*
Western malaria mosquito
6. *Anopheles franciscanus*
No common name
7. *Anopheles punctipennis*
Woodland malaria mosquito
8. *Aedes nigromaculis*
Irrigated pasture mosquito
9. *Aedes melanimon*
No common name
10. *Aedes dorsalis*
No common name
11. *Aedes sierrensis*
Western treehole mosquito



12. *Aedes washinoi*
No common name
13. *Aedes vexans*
Inland flood water mosquito
14. *Culiseta incidens*
Cool-weather mosquito
15. *Culiseta inornata*
Large winter mosquito
16. *Culiseta particeps*
No common name
17. *Orthopodomyia signifera*
No common name

Mosquito Development

Mosquitoes complete a full metamorphosis: egg, larva, pupa, and adult. Critical to the mosquito's life cycle is water. Egg rafts are laid on still or standing water. Each raft contains 100 - 300 eggs. The eggs hatch to larvae. The larvae grow through 4 instars, shedding their outer skin as they grow to the next stage. Once the larvae reach the 4th stage (or instar), they then transform to pupae. The pupal stage is the equivalent of the cocoon, where the adult insect body develops. Once development is complete, the pupae hatch off the water as adult mosquitoes. The adult female then needs to take a "blood meal" to provide necessary nutrients to her eggs. In warmer weather, mosquitoes complete a full metamorphosis, on average, in seven to ten days.



Got Mosquitoes?

Dump and drain standing water

Mosquito Life Cycle

Fight the Bite!

- ◆ **Dusk & Dawn** are when mosquitoes are most active, so limit outdoor activities or take precautions to avoid mosquito bites.
- ◆ **DEET** is an effective ingredient to look for in insect repellents. Always follow label instructions.
- ◆ **Drain** standing water where mosquitoes lay their eggs, including: tires, cans, flowerpots, clogged rain gutters, buckets and any other items holding water.

Mosquito Facts:

- ▶ Many urban mosquitoes come from standing water around homes.
- ▶ Mosquitoes need standing or still water to develop!
- ▶ Female mosquitoes use blood as food for their eggs.
- ▶ One mosquito can have 1200 young.
- ▶ A five-gallon bucket of water has the potential to develop enough mosquitoes to infest an entire city block.

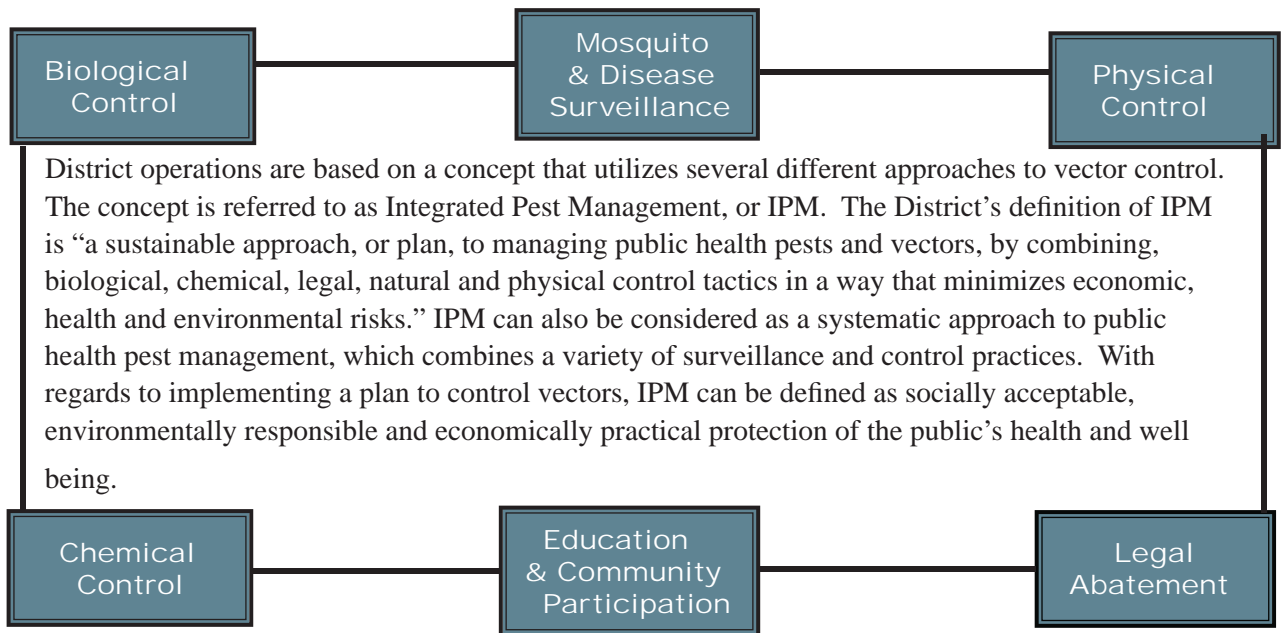
San Joaquin County Mosquito and Vector Control District
 We serve city and county areas within San Joaquin County

For more information:
 Call 1-800-300-4675 or (209) 982-4675
 or find us on the web at www.sjmosquito.org

In rural areas, agricultural water management is crucial in the reduction of mosquito development.

Mosquito development around residential properties is the primary source for urban mosquitoes. Residential mosquito development sites include: neglected swimming pools and spas, ornamental ponds, leaking and broken pipes / faucets / sprinklers, tires, buckets, clogged rain gutters, bird baths, and boats.

Integrated Pest Management (IPM)



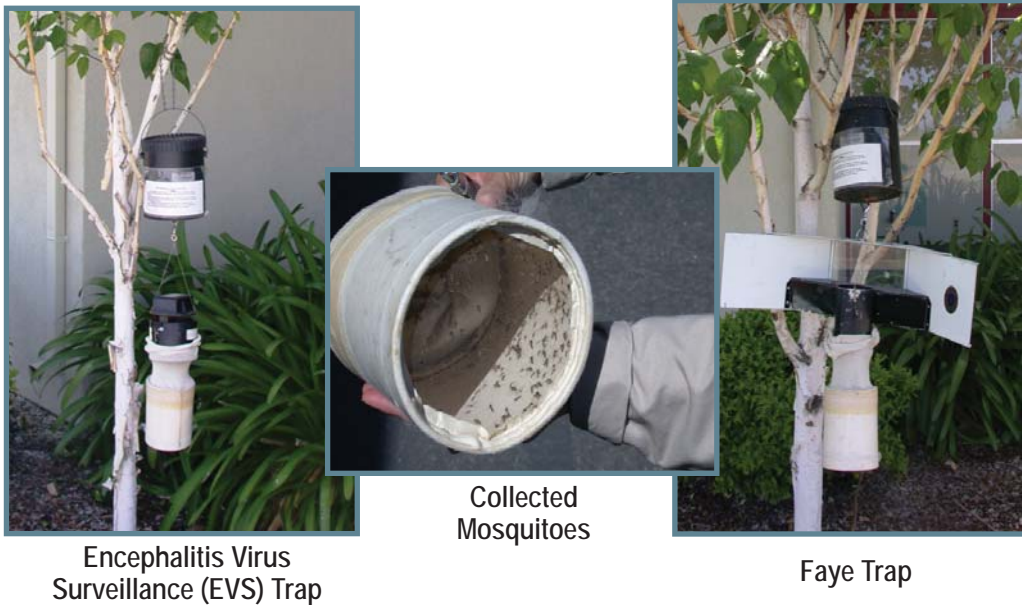
Integrated Mosquito Management (IMM)

Since the need for mosquito control was recognized in the early twentieth century, increased knowledge of mosquito biology has driven the formulation of a variety of methodologies designed to successfully reduce both mosquito nuisance levels and mosquito-borne disease transmission. As the technologies and knowledge base from which these methodologies were derived have matured, they have been increasingly seen as mostly complimentary or synergistic in nature, providing optimal control as part of an overall strategy. This has ultimately evolved into a strategy termed Integrated Mosquito Management (IMM). IMM has been developed to encourage a balanced usage of cultural and insecticidal methodologies and habitat manipulations in order to minimize adverse environmental impacts. IMM is knowledge-based and surveillance-driven, and when properly practiced is specifically designed to accomplish the following:

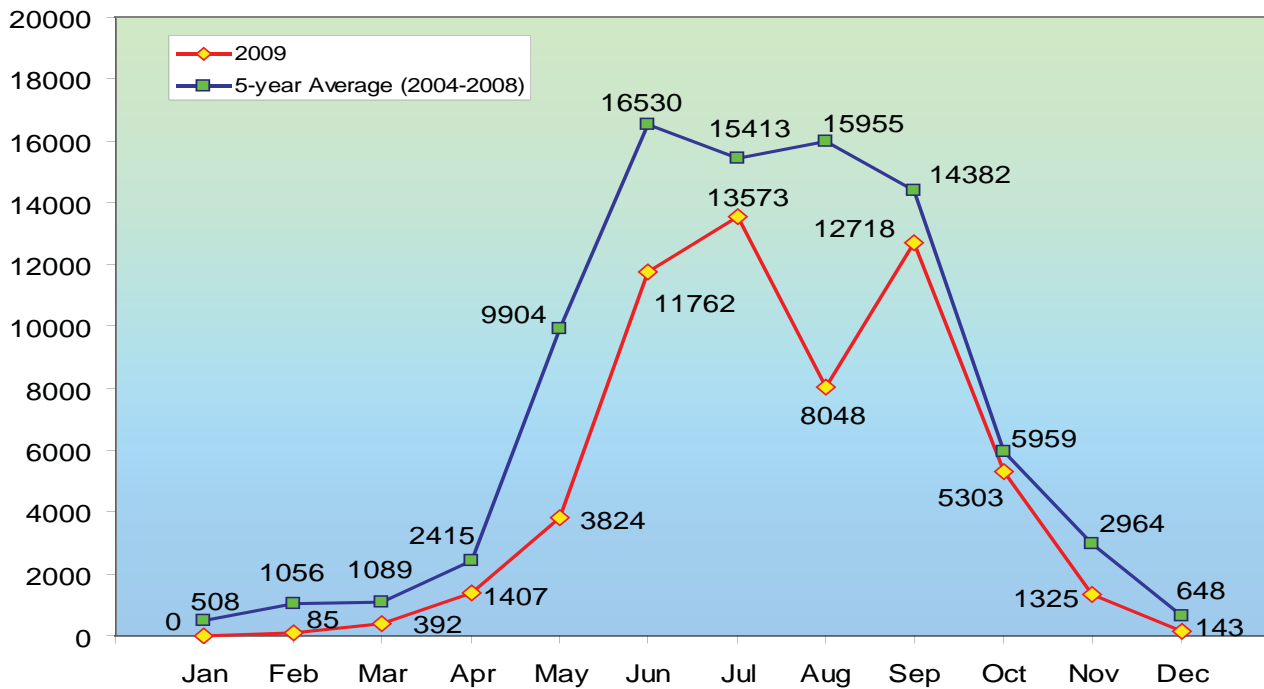
1. Protect human, animal and environmental health.
2. Promote a rational use of pesticides.
3. Reduce environmental contamination to soil, ground water, surface water, pollinators, wildlife and endangered species.
4. Utilize natural biological controls to conserve and augment other control methods.
5. Use target specific pesticides to the extent possible.
6. Emphasize the proper timing of applications.
7. Minimize pesticide resistance problems.

Mosquito Population Surveillance

Mechanical traps are used extensively throughout the District. Upon placement, the traps run for 24 hours prior to collection. Contents of the traps are analyzed each week. Each trap's contents indicate the population in a specific area along with information about the mosquito species distribution. The data are submitted to the California Vector Borne Disease Surveillance Gateway for compilation with other vector control agency data.



Total Mosquito Collection



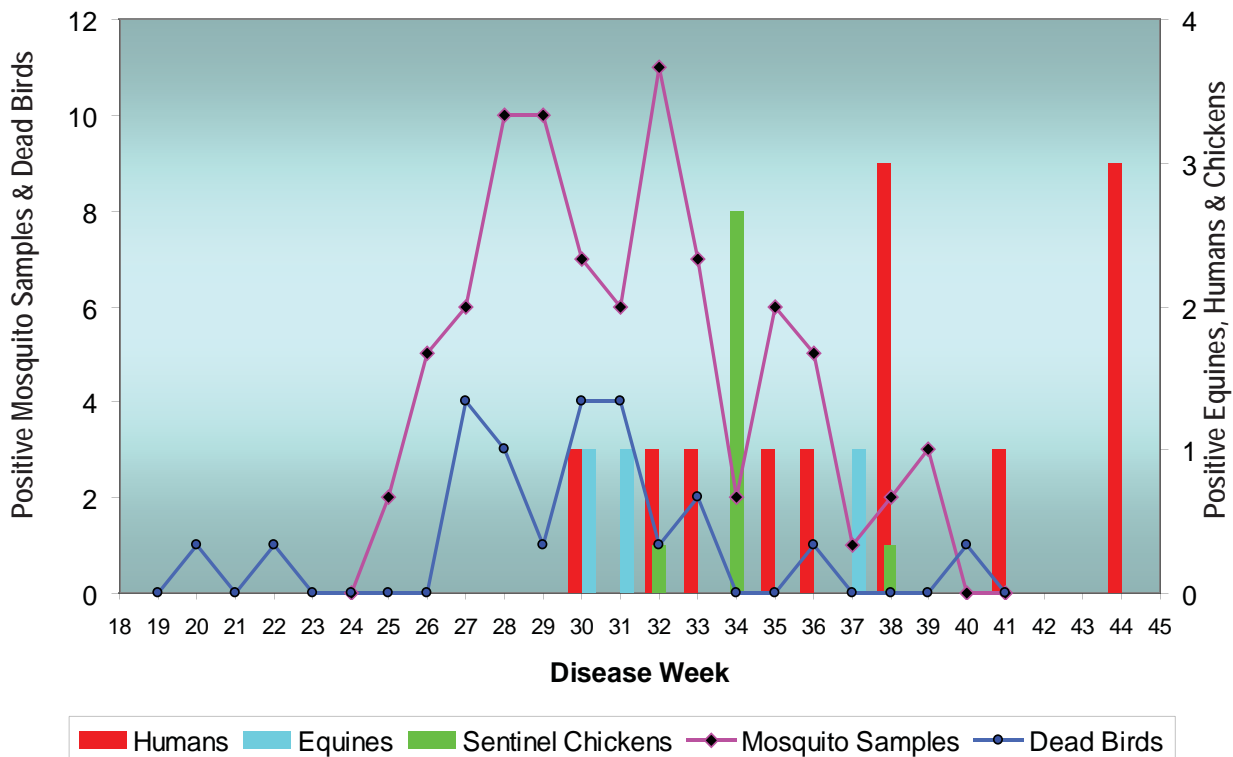
Mosquito-Borne Disease Surveillance

In California for 2009, West Nile virus was detected in 42 of 58 counties, with 112 human cases and 4 fatalities. West Nile virus activity in San Joaquin County reached emergency planning levels following four years of epidemic levels, with 12 human cases. In combination with mosquito population surveillance, early detection of mosquito borne disease is critical to developing an effective control response.

Several surveillance methods are used to test for these viruses. These methods include testing groups of mosquitoes for virus within their bodies, checking wild birds (including dead birds), and testing sentinel chickens for the presence of the antibodies to disease.

The District collects mosquitoes in various types of traps to target specific mosquito species. The trap types are referred to as Encephalitis Virus Surveillance (EVS) traps and gravid traps. These collected mosquitoes are tested in groups of 12 - 50 for the presence of virus. For 2009, there were 1221 mosquito collections tested for disease, resulting in 84 collections testing positive for WNV. West Nile virus positive mosquitoes were detected two weeks later than the previous year.

WNV Activity in San Joaquin County, 2009

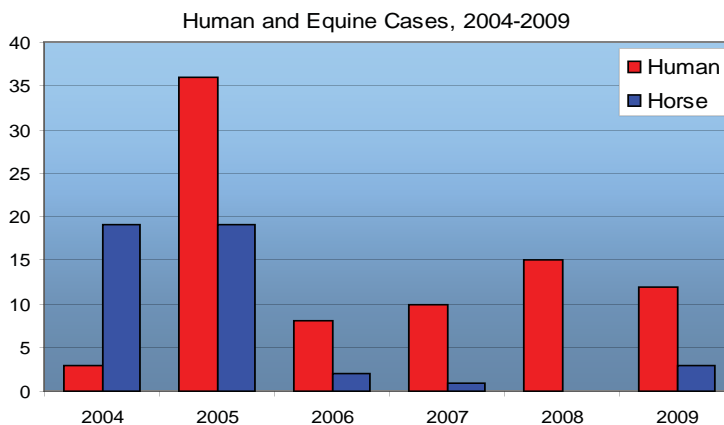
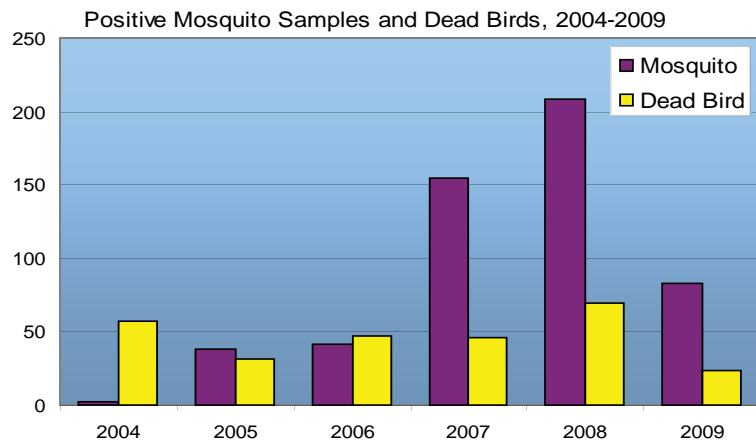


Mosquito-Borne Disease Surveillance

The District received 561 dead bird reports from residents through the statewide WNV hotline (1-877-968-2473). The reports are used by the California Department of Public Health to create statewide risk maps. These maps assist the District in targeting areas for additional mosquito control efforts. The District tested 136 dead birds, of which 23 tested positive for WNV.

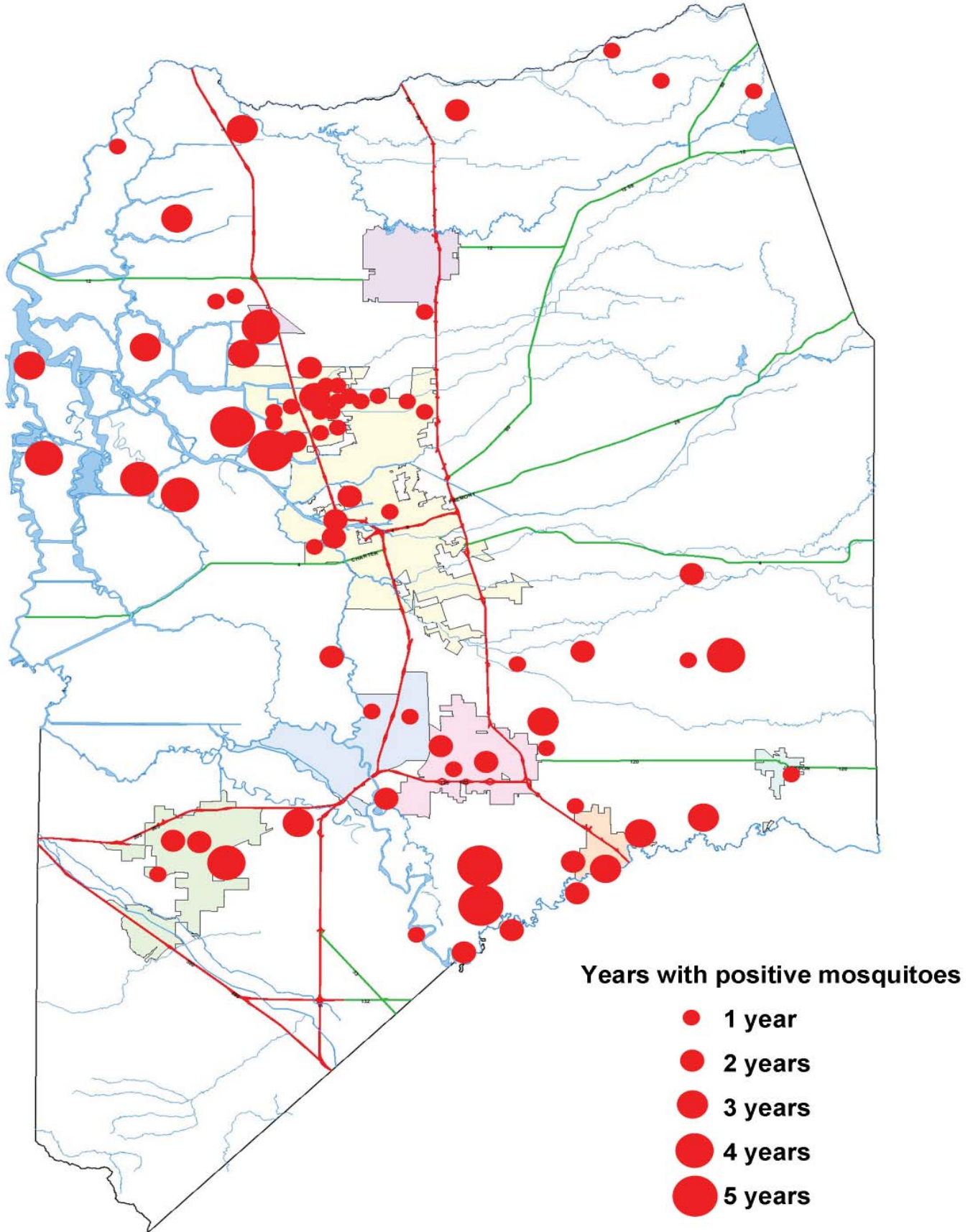
The District maintained one sentinel chicken flock from April through November. Blood samples were taken bi-weekly and sent to the California Department of Health -Vector Borne Disease Section to detect viral antibodies of WNV, SLE, and WEE. Positive antibodies in the blood indicate the chickens were exposed to a disease carrying mosquito. For the year, 100% of the sentinel chickens tested positive for WNV compared to 95% in 2008.

A Six-Year Summary of WNV Activity in San Joaquin County, 2004-2009

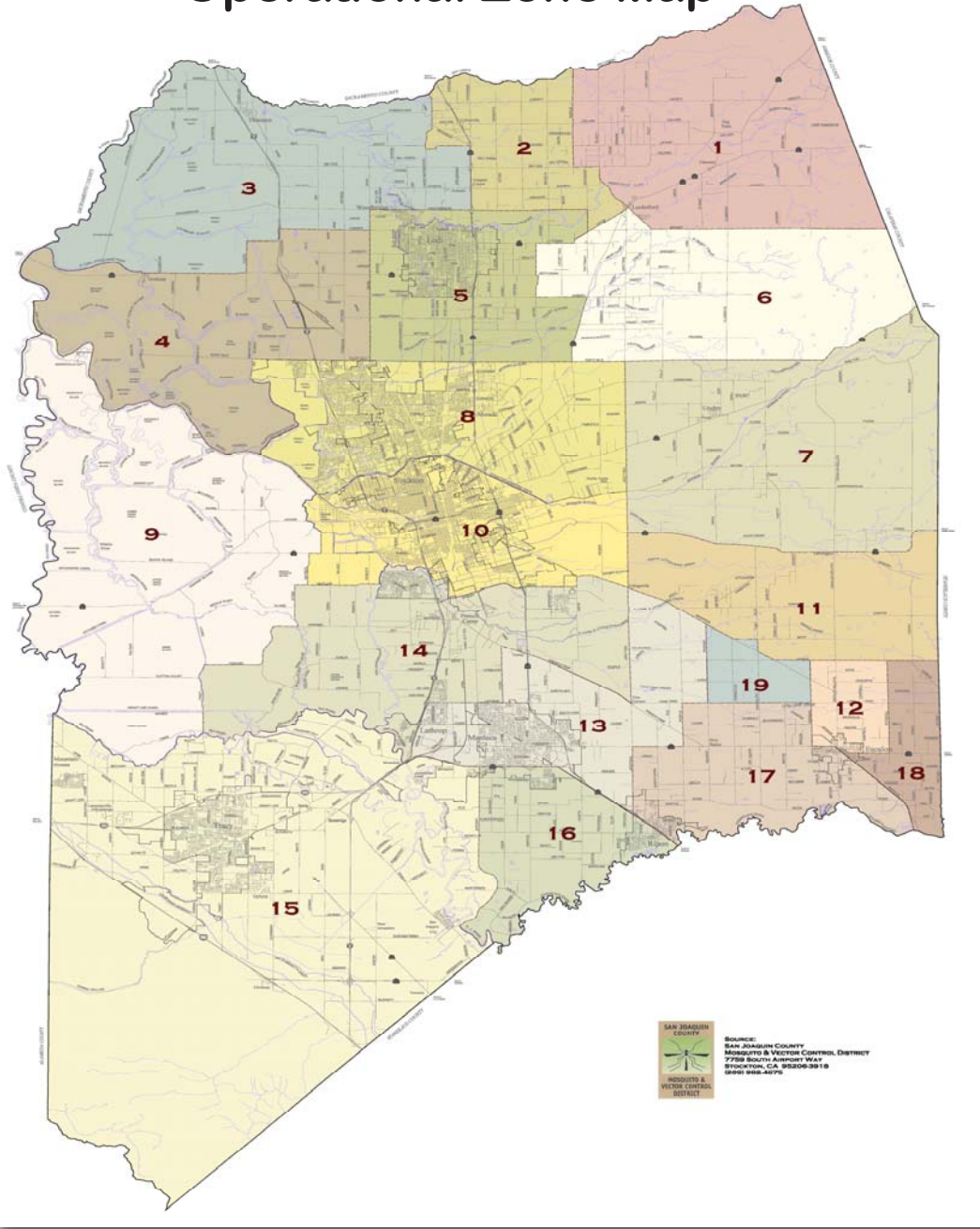


West Nile virus (WNV) was first detected in San Joaquin County in 2004 with 3 human cases and 19 horse cases, followed by intensive amplification with 36 human cases and 19 more horse cases in 2005. WNV activity subsided thereafter to its maintenance levels. This pattern generally agrees with what has been seen nationally. From 2004 to 2009, a total of 9404 mosquito pools of nine mosquito species were tested by VecTest™, RAMP® and/or RT-PCR. There were 535 positive pools (5.69%) that were all of *Cx. tarsalis* (206) and *Cx. pipiens* (329), the two dominate mosquito species in the county. Geographic mapping indicated that hot spots of WNV activity in mosquitoes are located in the Delta area, northeast Stockton and southern borders. Dead birds and mosquitoes are earliest indicators of WNV activity in San Joaquin County. The District will continue to employ sensitive methods to monitor WNV activity in dead birds and mosquitoes.

WNV Mosquito Activity in San Joaquin County, 2004-2009



Operational Zone Map



The District is divided into 19 operational zones, each staffed with a state certified mosquito control technician. Zones are grouped into one of three regions under the direction of a regional supervisor. There are a total of 115 mosquito source types categorized by agricultural, natural, residential, and industrial/commercial sources. Examples include: field crops, animal waste ponds, irrigation ditches, natural drains, treeholes, containers, septic tanks, ornamental ponds, roadside ditches, railroad borrow pits, tires, storm water retention ponds, and catch basins.

Zone Regions:

Zones 1-6, Northern Region; Zones 7-11 & 14, Central Region; Zones 12, 13, 15 - 19 Southern Region

Public Outreach

The District provides a comprehensive communication strategy to respond to the public’s demand of timely and accurate information. News releases and alerts, web site postings, paid media ads, educational material distribution, and presentations are all components of the communication strategy.

With West Nile virus reaching an endemic status in California, the District is continually challenged to promote mosquito prevention in urban, suburban and rural areas. During 2009, two new presentations were developed. For the agricultural industry, a presentation titled “Water Management For Agricultural Mosquito Control” is currently being used for Future Farmer’s of America and agricultural students at the high school level. A second presentation for service clubs and community groups discusses new potential mosquito-borne diseases in California.

The information provided below is a synopsis of the efforts performed by the District for the year.

News Releases:

The District sent a total of 8 news releases and 24 news alerts. News releases are generally sent on new information such as the first find of West Nile Virus in San Joaquin County for the year. News alerts are generally sent to inform the public of on going situations including additional West Nile virus activity or continued adult mosquito control operations. As a result, the District provided multiple interviews to local newspapers, local television stations, private radio and Capitol and National Public Radio.

Other Outreach Activities:

The following are some most notable outreach activities that the District performed during 2009.

- **21** paid newspaper ads or inserts were placed in local papers
- **35** Veterinarian offices were given informational Canine Heartworm and Tick Prevention flyers.
- **132** contacts were made through the District’s second mosquitofish giveaway. The event was held in each city throughout San Joaquin County and in conjunction with National Mosquito Control Awareness week.

Community Events:

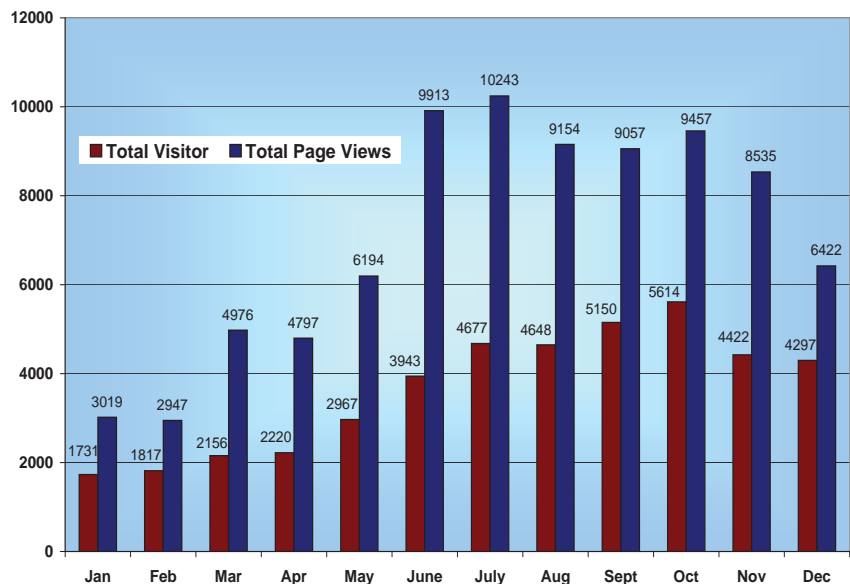
- San Joaquin Home and Garden Show
- Senior Awareness Day at Micke Grove Park
- San Joaquin County Fair
- Ag Venture Day/Lodi & Manteca
- Mosquitofish Giveaway in each city of San Joaquin County

Presentations:

Elementary School presentations: 59, with 87 classes and 2,967 students in attendance. Ag Venture ten minute presentations: 64, with 1457 students in attendance. In addition, to the classroom presentations, the District gave: 11 presentations to Rotary, Kiwanis, Boy Scouts, and First Five parents. Presentations were also given to Manteca and Tracy Board of Realtors. The Realtor presentations are based on general mosquito education and problems associated with neglected swim pools. Establishing relationships with local Realtors helps in the District’s ability to locate and treat neglected pools.

District Web site:

The District web site is posted with all news releases and adult mosquito control news alerts. In addition, all informational ads include the District’s web site www.sjmosquito.org. Below is a synopsis of the total visitors to the web site and the number of pages viewed by those visitors.

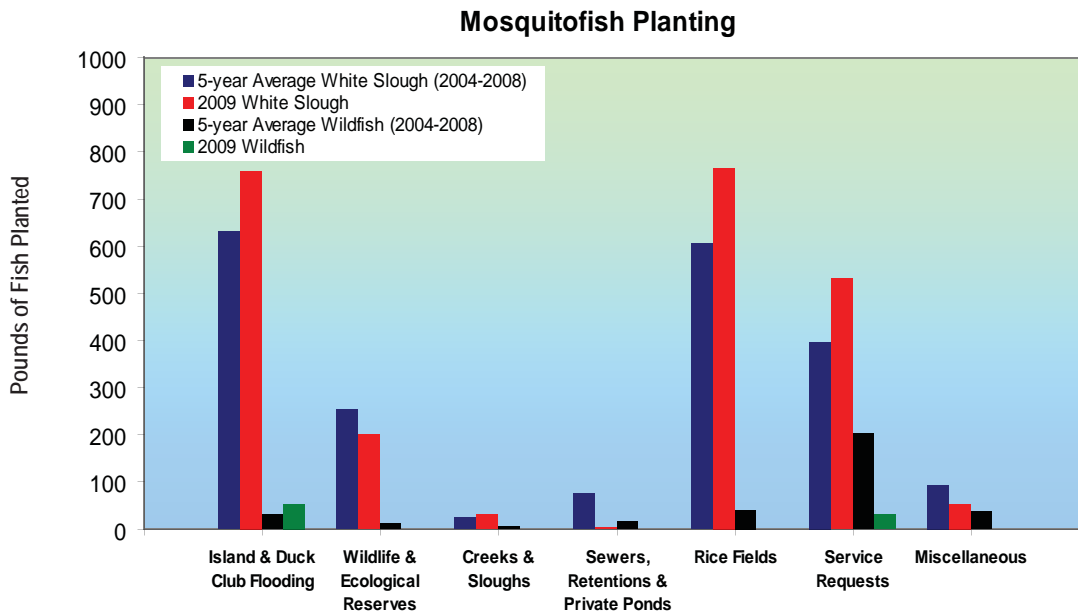
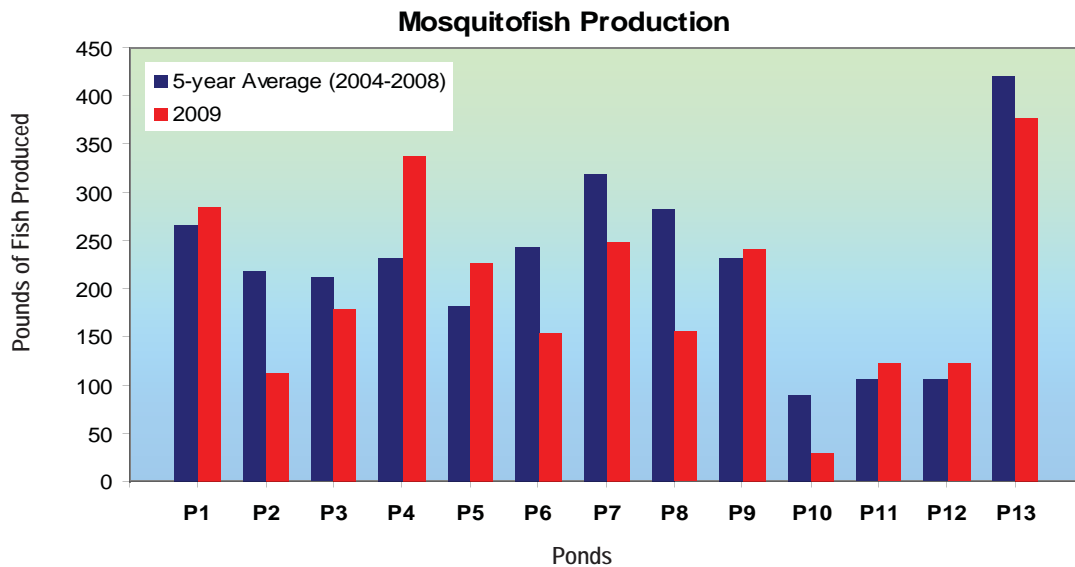


Biological Control

Biological mosquito control is one of the mainstays in protecting the public from mosquitoes and the transmission of mosquito-borne diseases. Biological mosquito control agents include a wide variety of pathogens, parasites and predators. The primary biological control agent used by the District is *Gambusia affinis*, the mosquitofish.

Mosquitofish are small live-bearing minnows closely related to the common guppy. These fish are a vivacious consumer of mosquito larvae and pupae and can survive in varying water temperatures. Because mosquitofish are surface feeders, they are extremely efficient mosquito predators. Mosquitofish have been said to consume upwards of 80-100 mosquito larvae per day, and are capable of quickly populating a source if conditions are favorable. The fish are placed in a variety of permanent and semi-permanent fresh water habitats, including dirty swimming pools, water troughs, rice fields, and wetlands.

The District's White Slough Fish Rearing Facility is located at the City of Lodi's waste water treatment plant. The facility consists of thirteen rearing ponds and four above ground tanks. The ponds are capable of rearing 3,500 pounds of fish per year.



Physical Control

The term physical control refers to making an environmental or physical change to a mosquito-breeding source by physical or mechanical means. Physical control is also known as “source reduction”. Ultimately, physically changing the source can make the site less suitable for mosquito production. Physical control can be accomplished by a variety of methods. Agricultural, industrial, residential and commercial sites all have specific situations which are conducive to producing mosquitoes. An example of physical control is vegetation management around storm retention ponds and agricultural waste ponds. Vegetation provides harborage for mosquito development and hinders effective chemical and biological control. In 2009, the District treated 858 acres of vegetation for the prevention of mosquitoes.

Property owners and residents can reduce mosquito production by eliminating or properly managing standing water on their properties. In urban and suburban areas, District personnel inspect for mosquito-breeding conditions when conducting a survey of properties. Owners are encouraged to make appropriate repairs or alterations to prevent mosquito development. Examples include draining water from above ground swimming pools, fishponds, and other water holding receptacles that are not actively used by the homeowner. Plumbing repairs to pipes under buildings and properly maintained septic systems will also prevent mosquito breeding.

Neglected and abandoned swimming pools in San Joaquin County

In 2009, neglected and abandoned pools continued to be a significant source of mosquito development in urban areas. The abandoned pools were a direct result of a large foreclosed home situation that continues throughout San Joaquin County.

The District maintains a list of neglected pools for monitoring mosquito development. Once the pool is being maintained, the pool is removed from the list. The District monitored a total of 2,547. Below are the number of pools the District monitored for 2009 per area.



Chemical Control

Chemical control of mosquitoes is the application of natural or man-made compounds (insecticides) to reduce mosquito populations to tolerable levels. Chemical control methods are applied to obtain immediate control when physical and biological control methods fail to maintain mosquito numbers below a tolerable level or during an epidemic of mosquito-borne disease when immediate control measures are needed.

The District follows accepted principles of proper pesticide usage which includes: 1) Using pesticides as a last resort to complement biological, physical or natural controls; 2) Applying pesticides in a manner that minimizes harm to non-target organisms; 3) Using pesticides to treat specific sites where mosquitoes (which are causing annoyance or creating a public health problem) are breeding; 4) Applying pesticides selectively to the proper life stage of the mosquito; 5) Applying pesticides in a manner that will minimize personal hazard to the applicator and other persons in the vicinity; 6) Applying pesticides in accordance with federal and state laws and regulations.

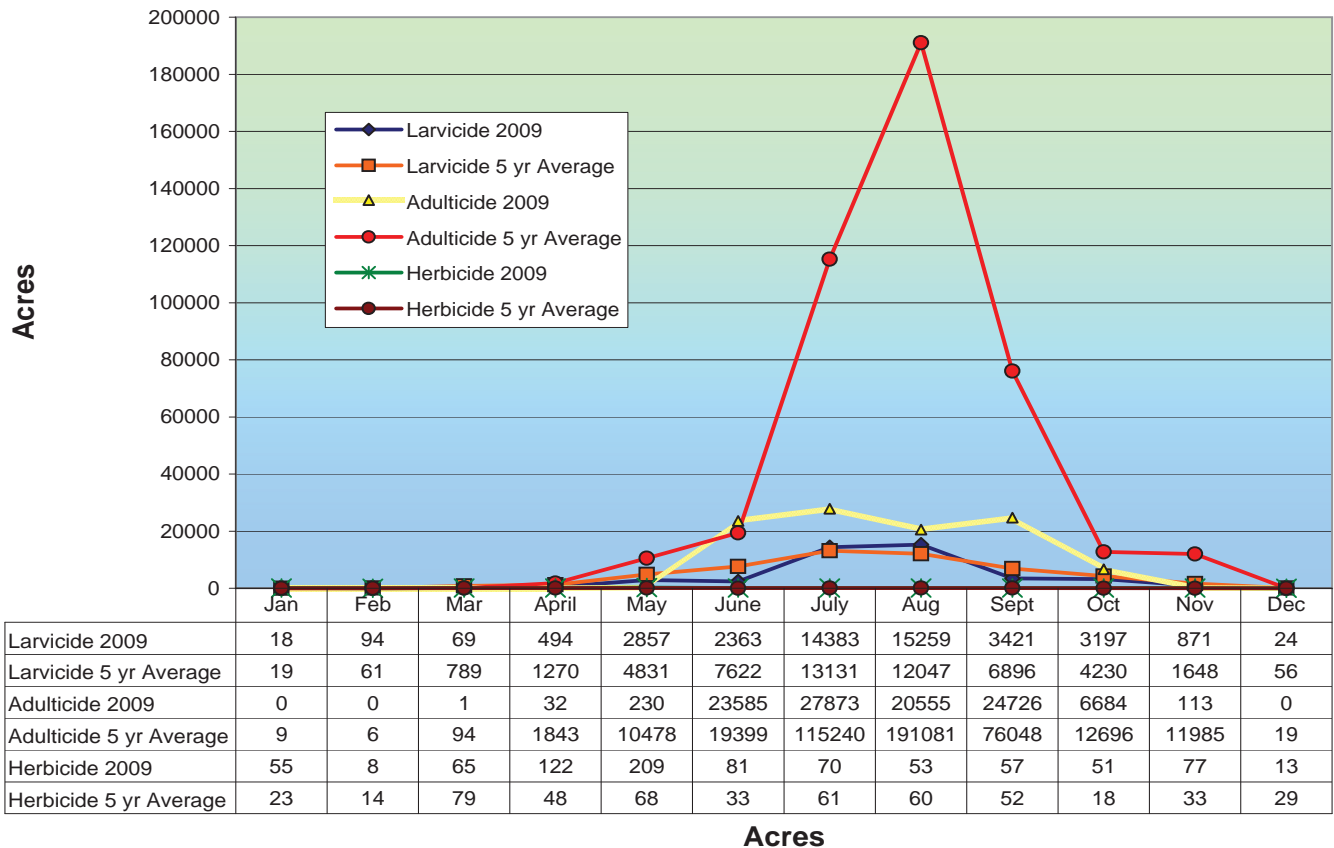
The District is signatory to a National Pollution Discharge Elimination System (NPDES) permit for applications of larvicides to surface waters. The permit is granted by the State Water Resources Control Board, which reviews the District’s mosquito control activities in local waterways.

Larvicides may be applied to water in which larvae or pupae are developing. Pastures, septic tanks, irrigation ditches, animal waste ponds, creeks, sloughs, catch basins, and roadside ditches are examples of areas the District’s technicians regularly inspect and treat to reduce mosquito populations.

Adulticides may be applied as space sprays, mists, or fogs to kill adult mosquitoes and as a residual insecticide on surfaces likely to be contacted by adult mosquitoes.

Herbicides are used to reduce mosquito habitat and provide better access for larvicide treatment, and biological control.

Larvicide, Adulticide & Herbicide



Legal Abatement

The District relies on local, state and federal statutes to regulate excessive mosquito breeding on private and public lands. Using provisions of the California Health and Safety Code, the District can legally require property owners to reduce or eliminate mosquito breeding when it becomes a public nuisance.

Abatement of mosquitoes generally follows a three step process, whereby the owner of mosquito-producing land is: 1) contacted and asked to take steps to prevent the occurrence of mosquito development and provided an “Information Sheet”, 2) if corrections do not take place, a “Notice to Comply” is issued, and 3) if the condition persists, and the problem is not corrected, the District can initiate legal abatement proceedings per §2060 of the California Health and Safety Code.

Year	Information Sheet	Notice To Comply	Citation
2008	80	15	0
2009	48	9	0

The District provided mosquito prevention Best Management Practices (BMPs) handouts for the reduction of mosquitoes to residents, agricultural, commercial, and industrial property owners. The following handouts are available from the District: 1) Storm Water Management and Mosquito Prevention, 2) Technical Guide to Management Practices for Mosquito Control of Managed Wetlands, 3) Best Management Practices for the Reduction of Mosquitoes in Rice Fields, 4) Managing Mosquitoes on the Farm, 5) Waste Pond Vegetation Management for Agricultural and Industrial Waste Pond Owners/Operators, 6) Tire Storage and Mosquito Prevention, 7) Are You Raising Mosquitoes in Your Backyard? Mosquito Prevention Handout for Homeowners.

Best Management Practices Provided to Property Owners for 2009

169 Wastepond Vegetation Management for Agriculture and Industrial Waste Pond Owners

182 Tire Storage and Mosquito Prevention

45 Managing Mosquitoes on the Farm

17 Best Management Practices for the Reduction on Mosquitoes in Rice Fields

2 Storm Water Management and Mosquito Prevention

* Are You Raising Mosquito In Your Backyard?

* Many are provided during routine inspections, visitors to the District’s Office, and during presentations and District events.

Ticks & Tick Borne Disease

The most common ticks found in San Joaquin County are: the American dog tick, *Demacentor variabilis*; the Pacific Coast tick, *Demacentor occidentalis*; and the Brown dog tick, *Rhipicephalus sanguineus*. The Pacific Coast tick is one of the most widely distributed ticks in California. Occasionally, the Western black legged tick, *Ixodes pacificus* is also found in the County. When collected, Western black legged ticks are tested for Lyme disease. In 2009, 1 male and 3 female *Ixodes pacificus* were tested for Lyme Disease. All samples tested negative for Lyme Disease (*Borrelia burgdorferi*)

The District conducts surveillance for ticks in parks and river areas of the County that are known habitat.

Surveillance for adult ticks is typically performed during the months of November through April when ticks are most abundant. *Ixodes pacificus* is the primary species targeted during surveillance due to its ability to carry Lyme disease. During the year, surveillance was conducted mainly along waterways and riparian areas. Ticks are also submitted by local veterinary hospitals and the general public for identification and testing.

Lyme disease is a serious illness that if left untreated, can have severe long term complications. Initial symptoms of Lyme may include a spreading rash which may be accompanied by fever, aches and fatigue. Possible future complications of the heart and/or nervous system may occur, as well as severe arthritis.

Tick Surveillance Data

Tick Surveillance Site / Species	<i>Ixodes pacificus</i>		<i>Demacentor variabilis</i>		<i>Demacentor occidentalis</i>		<i>Rhipicephalus sanguineus</i>		Total	
	female	male	female	male	female	male	female	male	female	male
Calvary Bible Church	0	0	0	0	0	0	0	0	0	0
Camanche Parking Lot	0	0	0	0	2	4	0	0	2	4
Camanche Spillway	0	0	0	0	18	13	0	0	18	13
Carnegie Park: Kiddie Track	0	0	0	0	0	0	0	0	0	0
Carnegie Park: Lunch Area	1	3	0	0	16	10	0	0	17	13
Carnegie Park: Pottery Loop	0	0	0	0	12	6	0	0	12	6
Carnegie West Hills	0	0	0	0	0	0	0	0	0	0
Caswell Park	0	0	37	52	0	0	0	0	37	52
Honda Trails	0	0	0	0	0	0	0	0	0	0
Lathrop Habitat Area	0	0	0	0	0	0	0	0	0	0
Lodi Bowman	0	0	0	0	57	57	0	0	57	57
Mason's Beach	0	0	0	0	0	0	0	0	0	0
Oak Grove Park	0	0	0	0	0	0	0	0	0	0
Shelton Rd.	0	0	0	0	0	0	0	0	0	0
Stouffer Park	0	0	0	0	0	2	0	0	0	2
Turner Rd. Mobile Home Park	0	0	0	0	2	3	0	0	2	3
White Slough Wildlife Area	0	0	0	0	0	0	0	0	0	0

The public and local veterinarians are encouraged to submit ticks for identification and testing. For 2009, 36 specimens were received of which 5 females and 1 male were identified as *Ixodes pacificus*; none tested positive for Lyme.

Appendix

Request for Service

The general public is encouraged to contact the District to request service. These requests generally are either to report a mosquito-related problem, request mosquitofish, inquire about information on ticks, or insect/vector identification. There is no charge for these services. San Joaquin County residents can call the District at (209) 982-4675 or 1-800-300-4675 or request service at the District’s web site www.sjmosquito.org. The District usually is able to respond within 24 to 48 hours.

	Mosquitoes		Ticks & Others		Fish	
	2009	2008	2009	2008	2009	2008
January	5	82	1	0	9	19
February	16	146	0	0	20	34
March	41	313	1	0	40	65
April	169	438	4	0	67	79
May	80	300	2	0	46	80
June	135	403	3	1	127	382
July	131	391	1	1	120	64
August	93	285	2	2	23	43
September	127	292	0	3	13	33
October	26	122	0	0	12	23
November	13	75	1	0	7	10
December	2	42	1	0	5	3
Total	838	2889	16	7	489	835

Financial

Statement of Activities			
For the year ended June 30, 2009			
	Expenses	Program revenues; Operating grants and contributions	Net (expenses) revenues and changes in net assets
Governmental activities			
Operations	\$6,244,760	\$ -	\$(6,244,760)
Net Program (expenses) revenues			(6,244,760)
General revenues			
Property taxes			4,155,280
Special taxes			2,562,243
Investment income			260,740
Reimbursements/rebates			73,121
Property tax relief			75,678
Rental income-site lease			118,153
Other revenues			140
Total general revenues			7,245,355
Change in net assets			1,000,595
Net assets, beginning of year			11,014,486
Net assets, end of year			\$12,015,081

San Joaquin County Mosquito & Vector Control District

District Staff

Position

Years of service as of
December 31, 2009

Anderson, Tiffany	Mosquito Control Technician I	6
Andres, Scott	Mosquito Control Technician II	25
Azevedo, Steve	Mosquito Control Technician I	14
Bearden, Stacy	Entomologist	9
Bennett, Morgan	Mosquito Control Technician I	5
Capuccini, Richard	Mosquito Control Technician I	26
Corrales, Michael Jr.	Mosquito Control Technician I	1
Devencenzi, Aaron	Public Information Officer	15
DiGiulio, Emily	Mosquito Control Technician I	1
Duke, Steve	Mosquito Control Technician I	3
Durham, Robert	Mosquito Control Technician III	23
Edwards, Greg	Mosquito Control Technician I	3
Esau, Janine	Mosquito Control Technician I	4
Fraser, Larry	Mosquito Control Technician II	31
Heine, Brian	Mosquito Control Technician III	26
Hiers, Chris	Mosquito Control Technician I	2
Hopkins, Deanna	Laboratory Technician I	10
Hopkins, Norm	Mosquito Control Technician I	5
Huang, Shaoming	Entomologist	1
Iverson, Mary	Laboratory Technician I	12
Keith, Dennis	Mosquito Control Technician I	25
Leipelt, Steve	Mosquito Control Technician I	26
Lucchesi, Ed	Assistant Manager	24
Mancuso, Ernest	Fish Hatchery Assistant	2
Meidinger, Don	Mosquito Control Technician II	35
Moniz, John	Mechanic I	1
Morgan, Michelle	Secretary	1
Mortenson, Fred	Mosquito Control Technician I	27
Nicholas, Emily	Book Keeper / Administrative Assistant	10
Nienhuis, Keith	Mosquito Technician III	22
Nolin, Larry	Mosquito Control Technician I	25
Pfeifer, Roy	Mosquito Control Technician I	11
Sarale, Joseph	Mosquito Control Technician I	2
Sheffield, Jim	Mechanic II	39
Smith, David	Assistant Entomologist	4
Stroh, John	Manager	34
Vana, David	Mechanic II	14
Vignolo, John	Fish Facility Manager	20



7759 S. Airport Way
Stockton, CA 95206

209.982.4675 or
1.800.300.4675

www.sjmosquito.org