

Mosquito Abatement & West Nile Virus (WNV) Update

4/24/2012
Council Meeting

Alameda County Mosquito Abatement District (ACMAD) Presentation to Hayward City Council April 24, 2012 by John Rusmisl, District Manager.

Thank you Mr. Mayor and members of the City Council for allowing me to provide you with a brief update on mosquito activity in the City of Hayward and thank you for appointing Council Member Barbara Halliday to our Board of Trustees – she has been very active on the Board since being appointed in January 2011 and will be participating in the interview panel to select a new District Manager on Thursday.

This week is Mosquito and Vector Control/West Nile Virus Awareness week in California. The week is chosen by our State association the Mosquito and Vector Control Association of California (April 22-28) in order to increase public awareness of the threat of West Nile Virus and other mosquito-borne diseases.

This year California has experienced a relatively dry winter with a fair amount of late rains that have added to the potential for higher numbers of mosquitoes in the area this spring. Residents can help prevent mosquito production in their neighborhood by simply checking their yards for any containers that hold rain water and dumping or draining them. We also have mosquitofish that we can bring to them for fish ponds and other ornamental water features.

Alameda County had only 1 WNV positive squirrel from Piedmont last season. There was no activity reported in the Tri-Valley area this year for the first time since 2003.

Residents and staff can report dead birds and squirrels to the WNV hot line at 1-877-WNV-Bird (1-877-968-2473 or via the website at <http://westnile.ca.gov/>.

There has been very little West Nile Virus activity reported in Hayward, in 2005 and 2007 a crow and starling tested positive, in 2008 a squirrel was found with the virus and in 2010 a Hayward resident was diagnosed with the virus but it is believed to have been acquired from Stanislaus County. West Nile Virus appears to require higher temperatures than we have along the bay and so approximately 85% of WNV activity in Alameda County is in the tri-valley area.

The City of Hayward has a number of mosquito sources that require regular inspections, the two major water ways of San Lorenzo and Sulphur Creeks require frequent inspections and occasional treatments in the later summer and fall. The salt marshes along the bay at Eden Landing and Hayward Shoreline can produce salt marsh mosquitoes in areas that have not yet been restored to full tidal action. Other sources include backyard fishponds and swimming pools, flood control canals and catch basins.

The cooling housing market and foreclosures due to sub prime mortgage lending has resulted in large numbers of vacant homes in Alameda County and the rest of the State. We are finding many more swimming pools at vacant homes that are producing mosquitoes. We contract for aerial surveillance flights that aid in discovering these abandoned swimming pools, primarily in the warmer areas of the County.

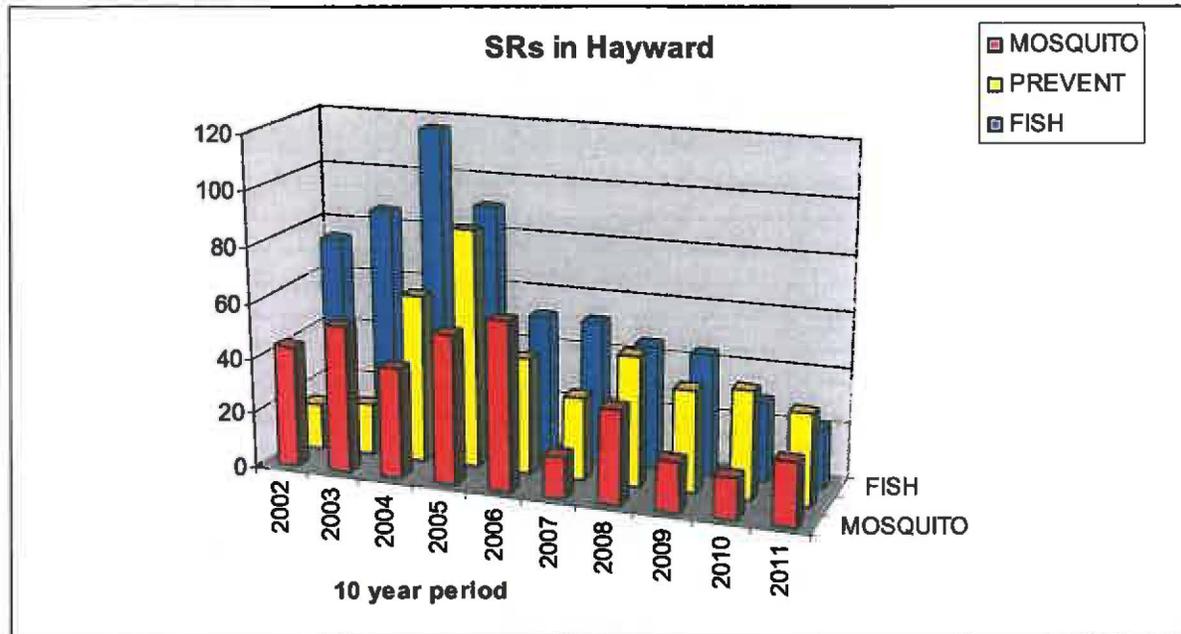
We have provided you with our recently completed biennial report which covers work done in 2010 and 2011 and also provides information on our finances, Trustees and employees.

Alameda County Mosquito Abatement District (510) 783-7744 www.mosquitoes.org

To report dead birds or squirrels call 1 877 WNV-BIRD or 1 (877) 968-2473

The California West Nile Virus Website is Westnile.ca.gov

Mosquito Control Matters video <http://westnile.ca.gov/news.php?id=112>

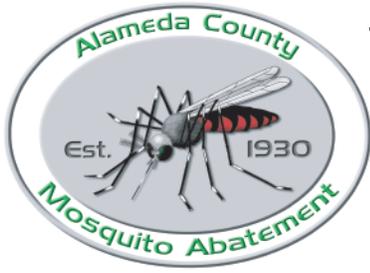


prob type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	10 yr Ave	5 yr ave
MOSQUITO	44	53	40	54	61	15	34	18	15	23	36	21
PREVENT	17	19	61	86	42	30	47	37	39	33	41	37
FISH	74	86	117	90	52	52	45	44	29	21	61	38

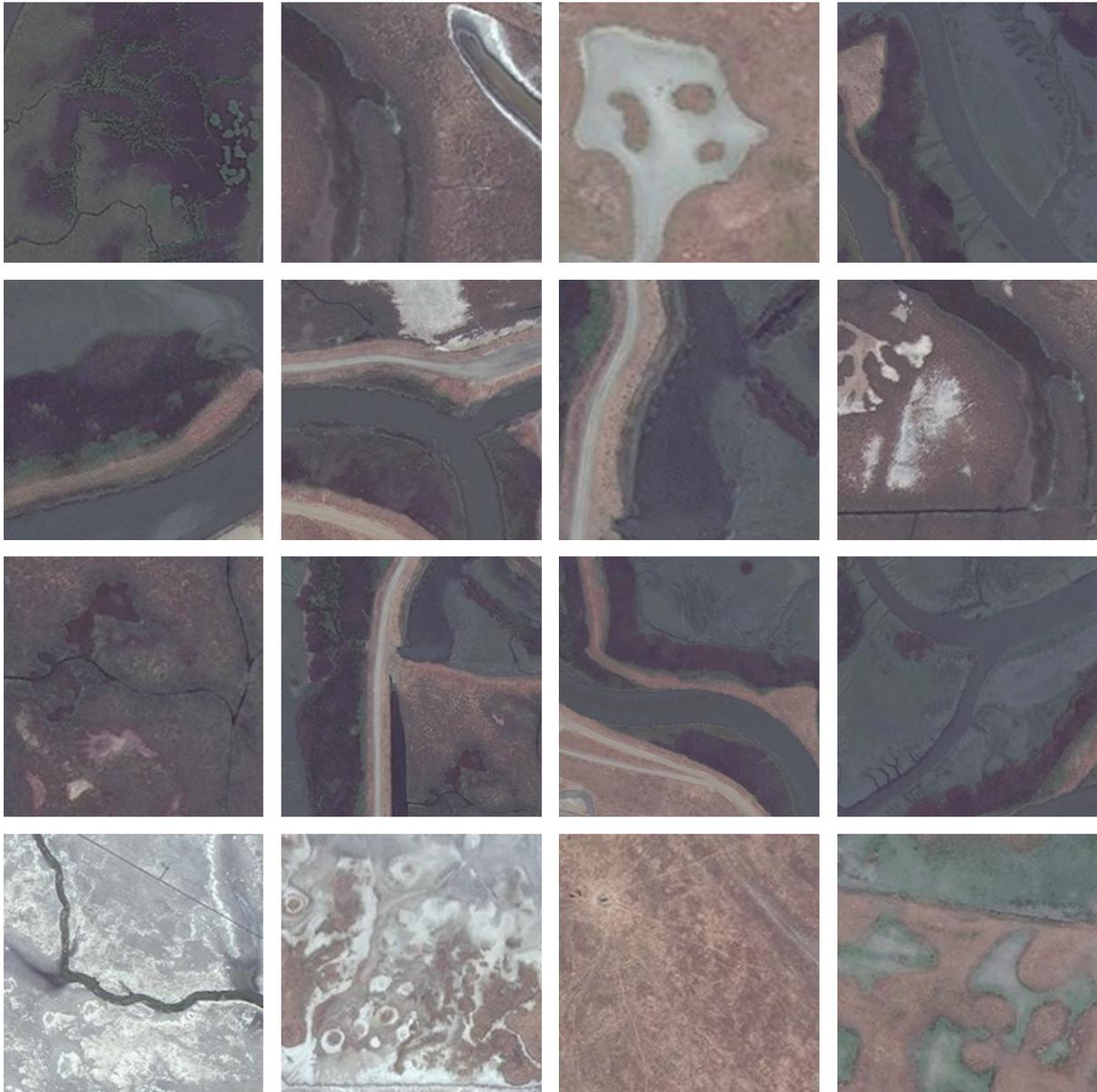
Species and habitats that cause mosquito complaints in Hayward

habitat	Ae dorsalis	Ae sierrensis	Ae squamiger	Cs incidens	Cs inornata	Cx pipiens	Cx tarsalis	Total
Canal				2		1		3
Catchbasin				6		56	1	63
Containers		1		14	1	3	3	22
Creek				18			6	24
Ditch				2			2	4
Gutter							1	1
Leak				1		1		2
Marsh fresh					1			1
Marsh reclaim			15		1			16
Marsh tidal	2				1		1	4
Natural pond								
Fish Pond		1		11		1	3	16
Rainwater				2		1	2	5
Seepage				1		3	2	6
Swimming				11	1	2	3	17
Tires				1				1
Treehole		3						3
Under building						13		13
Vault						1		1
Total	2	5	15	69	5	82	24	

Total positive mosquito complaints 2002-2011



The 79th and 80th Report for the Alameda County Mosquito Abatement District



Aerial photographs of Don Edwards Refuge © 2008 Digital Globe

Fiscal Years 2009-2010 and 2010-2011



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Search: Alameda County Mosquito Abatement District



Follow us on Twitter!
Search: Alameda Mosquito



Dedicated to the Memory of

Paul Garcia
District Mechanic 1946-1979
Board Member 1985-2010
Died December 19, 2010

&

Vinay Davis
Administrative Assistant 1986-2002
Died July 14, 2010



Alameda County Mosquito Abatement District

BOARD OF TRUSTEES

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William M. Spinola

John Rusmisl
District Manager

acmad@mosquitoes.org

February 23, 2012

The Board of Trustees of the
Alameda County Mosquito Abatement District

Dear Trustees:

The employees of the Alameda County Mosquito Abatement District (ACMAD) present to you the District's Biennial Report covering fiscal years 2009/10 and 2010/11 as well as the operational data for 2010 and 2011. Operational data from past years is included for comparison.

The economic downturn that started in 2007 still results in hundreds of vacant homes due to foreclosures. Many of these homes have mosquito sources such as unmaintained swimming pools and fish ponds that are reported by neighbors or spotted by aerial surveillance. See the Entomologist Report for a thorough review of WNV and mosquito activity in Alameda County.

The District funding continues to be more than adequate to meet our current and future needs thanks to the property owner approved benefit assessment that was noted in the previous biennial report. Summaries of our audited financial reports are included in this report for the last two complete fiscal years.

As of November 2011, the District has a new National Pollutant Discharge Elimination System (NPDES) permit for pesticide use. ACMAD belongs to a monitoring coalition that the Mosquito Control Association of California (MVCAC) has developed which will greatly reduce the monitoring costs associated with the permit. The Coastal Region of the MVCAC is cooperating on the development of updated CEQA documentation as part of the NPDES and other environmental regulatory changes to our program.

This will be my last Biennial Report introduction as I plan to retire in September 2012. In the 30 plus years that I have been with the District we have had a number of very positive items to report, from the approval of special tax and benefit assessments by our local residents to the improved facilities from which we operate in Hayward. The thing that I am most proud of is the fact that there has not been one human case of West Nile Virus (WNV) that was acquired in Alameda County even though all of the surrounding counties have had numerous cases and even a few fatalities.

Respectfully submitted,



John R. Rusmisl
District Manager

PHOTO CREDITS

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Aedes albopictus

http://civr.ucr.edu/asian_tiger_mosquito.html

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Impaired waterways map

<http://www.cacoastkeeper.org/programs/mapping-initiative/ca-polluted-water-maps>

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Contra Costa Goldfields

© 2011 Aaron Arthur

http://calphotos.berkeley.edu/cgi/img_query?seq_num=377696&one=T

California Tiger Salamander

<http://www.animalspot.net/california-tiger-salamander.html>

Salt Marsh Harvest Mouse

<http://www.water.ca.gov/suisun/photos/images/SMHMrelease.jpg>

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Alameda County Mosquito Abatement District

Mission and Vision Statement

***ACMAD is a public agency serving the people of Alameda County,
With responsibilities for:***

- *controlling mosquitoes to enhance public health and comfort;*
- *acting as an information resource on mosquito biology, control and prevention; insect identification; and associated disease transmission; and*
- *operating in a safe, ecologically-sound and publicly accessible manner.*

In an era of constant change and increasing complexities, we the employees of ACMAD are dedicated to fulfilling these responsibilities by:

- *being a proactively adaptive learning organization;*
- *working together in an atmosphere of collaboration, trust, and mutual respect;*
- *developing technical and organizational skills to increase both personal as well as District effectiveness; and*
- *cooperating with other stake holders to develop appropriate long-term mosquito control strategies.*

We are committed to constantly monitoring and continually improving our performance through a process of shared decision-making.

GOVERNING BOARD

The Alameda County Board of Supervisors and each of the elected councils of the 13 cities within the District appoint one trustee to represent its constituency on the governing board of the Alameda County Mosquito Abatement District. The Board of Trustees consists of individuals dedicated to community service and willing to accrue the knowledge required to effectively govern a mosquito abatement district. The current board members possess a variety of skills and expertise in business, government, civil engineering, electrical engineering, general contracting, automotive mechanics, agriculture, genetics, medicine, medical entomology, environmental health, scientific research, physics, public health and sanitary engineering.

The diversity of knowledge possessed by the trustees provides a broad, conceptual framework within which the Board decision-making occurs. In these ever-changing times, the knowledge base provided by the trustees is an invaluable resource.

The trustees serve two-year terms without compensation, but they do receive allowances for expenses incurred in attending business meetings of the Board. The regular Board meetings are held on the second Wednesday of each month at the District, 23187 Connecticut Street, Hayward at 5:00 p.m. and the meetings are open to the public.

Trustees for the years 2010-2011

Trustee	Representing	Years of Service
Dennis Bray	County-at-large	8
Marisel Brown	Oakland	4
Edgar I. Centeno	Pleasanton	10
James N. Doggett	Livermore	34
T. David Edwards	Alameda	24
Paul T. Garcia	Hayward	25
Jim Golden	Emeryville	16
Barbara Halliday	Hayward	1
John D. Hughes	Fremont	27
James Kohnen	Dublin	8
Denny A. McLeod	Piedmont	12
James Prola	San Leandro	4
Ronald E. Quinn	Union City	10
William Spinola	Newark	29
Jan O. Washburn	Berkeley	18

DISTRICT PERSONNEL

Name of Employee	Position	Years of Service
Dereje Alemayehu	Vector Biologist (Zone 2)	12
John Busam	Vector Biologist (Zones 9 & 10)	9
Lyle Cain	Vector Biologist (Zones 5 & 7)	11
Cornelius Campbell	Mosquito Control Technician (Zone 8)	8
Erika Castillo	Environmental Specialist	9
Joseph Huston	Vector Biologist (Zones 3 & 4)	20
Michelle Izumizaki	Mosquito Control Technician (Zone 1)	3
Bruce Kirkpatrick	Entomologist	13
Clarence Lam	Administrative/Financial Manager	9
Gregory Leipzig	Vector Biologist (Zone 6)	5
Sharon Mead	Systems Specialist	25
John Rusmisl	Manager	32
Patrick Turney	Field Operations Supervisor	31
Gregory Wood	Mechanical Specialist	12

Seasonal Employees

2010

Nick Appice
 Miguel Cardenas
 Joseph Gay
 Sandy Olkowski

2011

Nick Appice
 Miguel Cardenas
 Joseph Gay



Representation Activities

The District is one of 63 agencies that conduct mosquito control in California and belong to the Mosquito and Vector Control Association of California (MVCAC). The District participates in the activities of the MVCAC, the Society of Vector Ecologists (SOVE) and the American Mosquito Control Association (AMCA) to promote coordination of our common activities and to increase our knowledge of mosquito control. The following is a list of District trustees and employees who have participated in regional, statewide or national activities:

Bruce A. Kirkpatrick Ph.D.

Member of the MVCAC Coastal Region Continuing Education Committee, member of the Coastal Region Vector Biologist's Committee, member of the AMCA, SOVE, and ESA (Entomological Society of America).

Erika Castillo

Attends South Bay Salt Pond Restoration Project (SBSPRP) meetings, represents the District at the Hayward Area Shoreline Planning Agency (HASPA) Technical Advisory Committee meetings, participates in monthly Public Educators conference calls coordinated by the California Department of Public Health

James Kohnen Ed.D.

California Special Districts Association (CSDA) Region 3 Representative

Jan O. Washburn Ph.D.

Member of the ESA, 2009-2011 MVCAC Proceedings editor

John R. Rusmisl

Member of the AMCA, 2010 Past President of the MVCAC and Chair of the Legislative Committee, member of the Alameda County Chapter of the CSDA, member of the SBSPRP Stakeholder Forum

Michelle Izumizaki M.P.H.

Member of the ESA, member of the American Public Health Society, continuing education presentation for MVCAC members, coordinates the District's holiday food drive bins for Alameda County Community Food Bank (101 pounds donated in 2011)

Sharon S. Mead

Member Bay Area Automated Mapping Association (BAAMA)

OPERATIONAL DATA 2007 - 2011

	2007	2008	2009	2010	2011
Physical control operations					
Maintenance of ditches (lineal feet)	12056	10231	8082	9229	8515
Mosquitofish operations					
Total number of sites stocked with <i>Gambusia</i>	1053	1211	1023	864	787
Total number of fish planted	22662	26527	20685	19,122	17,118
Chemical control operations					
Scourge adulticide (resmethrin) (ounces)	0	101	0	11	0
Pyrenone 25-5 adulticide (oz)					7
Skeeter Abate granules (pounds)					44
Surface Agents					
Golden Bear 1111 larvicidal oil (gallons)	1158	1462	1190	1898	111
BVA2 larvicidal oil (gallons)				47	1255
Agnique MMF monomolecular film (oz)	0.5	0.5	35	20	0.6
Biorational larvicides					
Bacteria based					
<i>Bacillus thuringiensis israelensis</i>					
Vectobac 12AS liquid concentrate (pints)	458	767	558	976	801
Vectobac G granular (pounds)	3726	3421	3964	5500	4496
<i>Bacillus sphaericus</i>					
Vectolex CG (pounds)	2440	3057	2796	2994	3375
Vectolex WSP (pounds)	225	88	105	81	57
Vectolex WDG (pounds)	5	139	248	251	194
FourStar 180 day Briquets (pounds)				51	188
<i>Bacillus thuringiensis israelensis</i> and <i>Bacillus sphaericus</i>					
Vectomax CG (pounds)			2	271	181
<i>Spinosad</i>					
Natular XRT (pounds)				16	531
Natular G30 (pounds)				0	75
Insect growth regulator (methoprene)					
Altosid Liquid Larvicide 20% (ounces)	442	728	600	825	683
Altosid Briquets (each)	7985	5691	5141	3424	1684
Altosid XR Briquets (each)	5874	2702	3974	3381	611
Altosid Pellets (ounces)	2582	2884	4208	3803	3150
Altosid WSP (ounces)	28	32	10	22	0
Altosid XR-G (ounces)		4	1544	432	0
Total hours of District effort					
Physical control	314	267	337	490	336
Mosquitofish plants	575	695	555	454	438
Biorational control	1511	1460	2127	2282	1888
Chemical control	708	372	438	418	276
Monitoring and surveillance	7424	6958	7610	9976	7579
Public Relations	1342	1240	1651	1574	1371
Equipment and facilities maintenance	1699	1744	1972	1849	2058
Administration, training and safety	11421	10776	12121	12482	13206

OPERATIONS REPORT

Figure 1 shows the percent of acres treated with the various types of pesticides used by the District. Pesticides may be broadly divided into four categories: growth regulators (methoprene-based products that interfere with a mosquito’s normal growth and development), bacterially-based products (materials that impact a mosquito’s basic physiological functions), surface agents (oil distillates and surfactants that disrupt the water’s surface tension and act as both a larvicide and pupacide), and chemical agents (pyrethroid-based agents that primarily target adult mosquitoes). Importantly, larvicides were used for over 99% of the total area treated by our District. Most of these materials target specific aspects of the mosquito’s biology, so non-target effects are negligible.

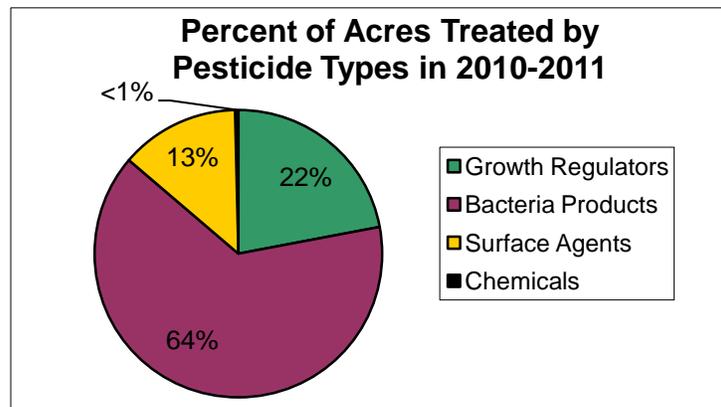


Figure 1

Figure 2 shows the timing of larviciding treatments. Most larvicides are applied in the mid winter through the spring months. This corresponds with the winter rain season, the flooding of the marshy areas along the edge of the Bay, the development of the winter salt marsh mosquito, *Aedes squamiger*, and the increase in activity of the encephalitis mosquito, *Culx tarsalis*. Both the quantity and timing of winter rains will determine the busiest months for our District.

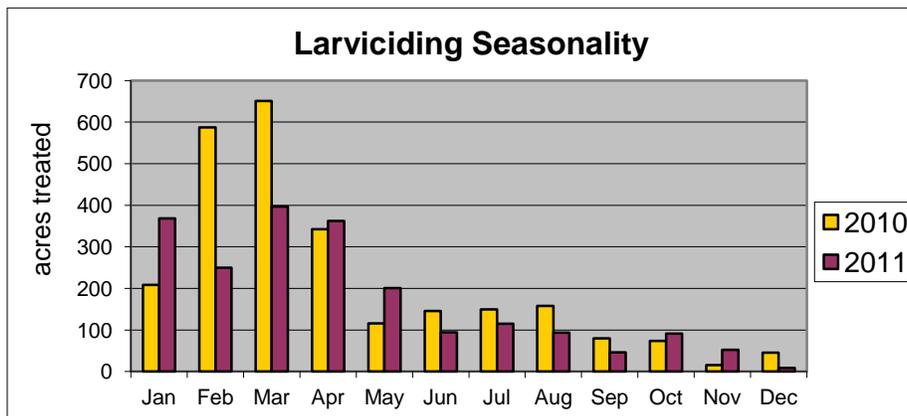


Figure 2

The District categorizes its request for service into five main groups: fish requests, prevent mosquitoes, mosquitoes biting, other, and miscellaneous ID. Of these, “mosquitoes biting” is the most serious, and requires the greatest scrutiny by the responding technician. Figure 3 shows the percentage of each type of service request the District received in 2010 and 2011. Calls for fish continue to be an important part of the District’s services, accounting for 50% of all requests. Many of these fish calls are important because of the high potential for fish ponds to breed mosquitoes. The second highest type of service request, “prevent mosquitoes,” typically involves a request by a member of the public for a District technician to inspect standing water or a possible neglected swimming pool.

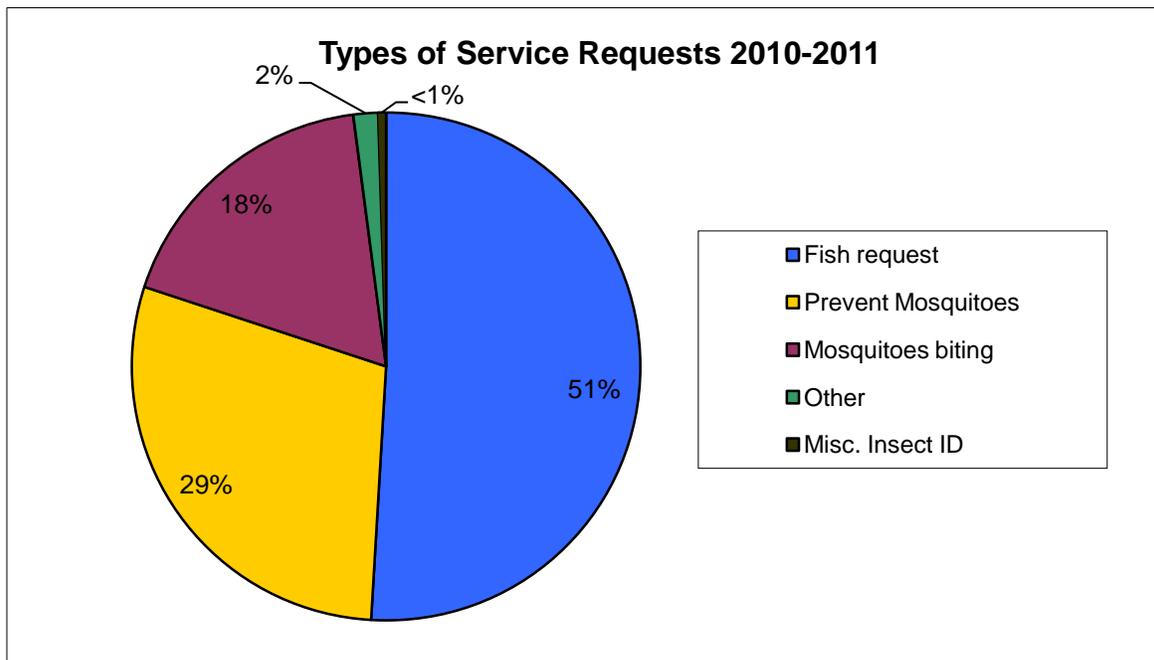


Figure 3

Figure 4 shows the breakdown in service request by city for 2010 and 2011. The largest city in the County, Oakland, was responsible for over one fifth of the District’s total service requests. Because of its size, Oakland is covered by three technicians. Fremont, the second largest city in the county, had the second largest number of requests for service, and Berkeley and Livermore were tied for third. Emeryville, Sunol, and San Lorenzo each had the fewest requests for service. A city’s total requests for service will be a function of its size, population, demographics, proximity to natural areas, and infrastructure.

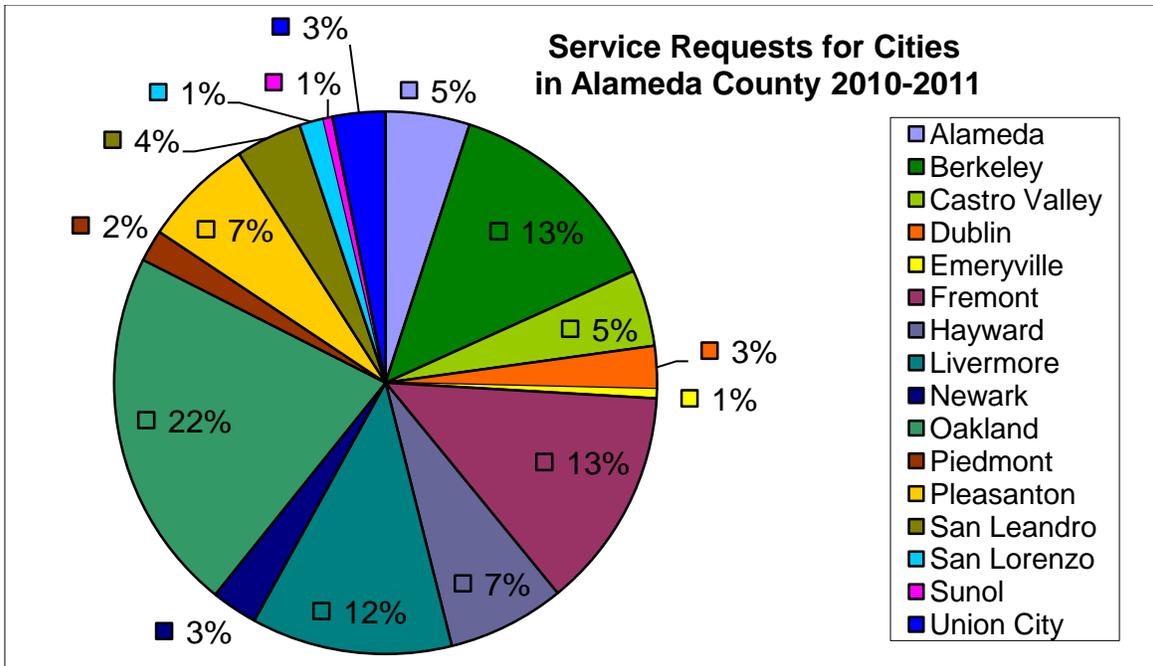


Figure 4

Figure 5 shows the number and type of service requests per city. The busiest cities – Oakland, Fremont, Berkeley, and Livermore are responsible for the greatest number of fish requests. Livermore and Pleasanton, still reeling from the foreclosure crisis, have the highest percentage of “prevent” calls (i.e., neglected swimming pools). The cities that received the highest percentage of biting complaints included Berkeley, Fremont, Newark, Oakland, and Union City.

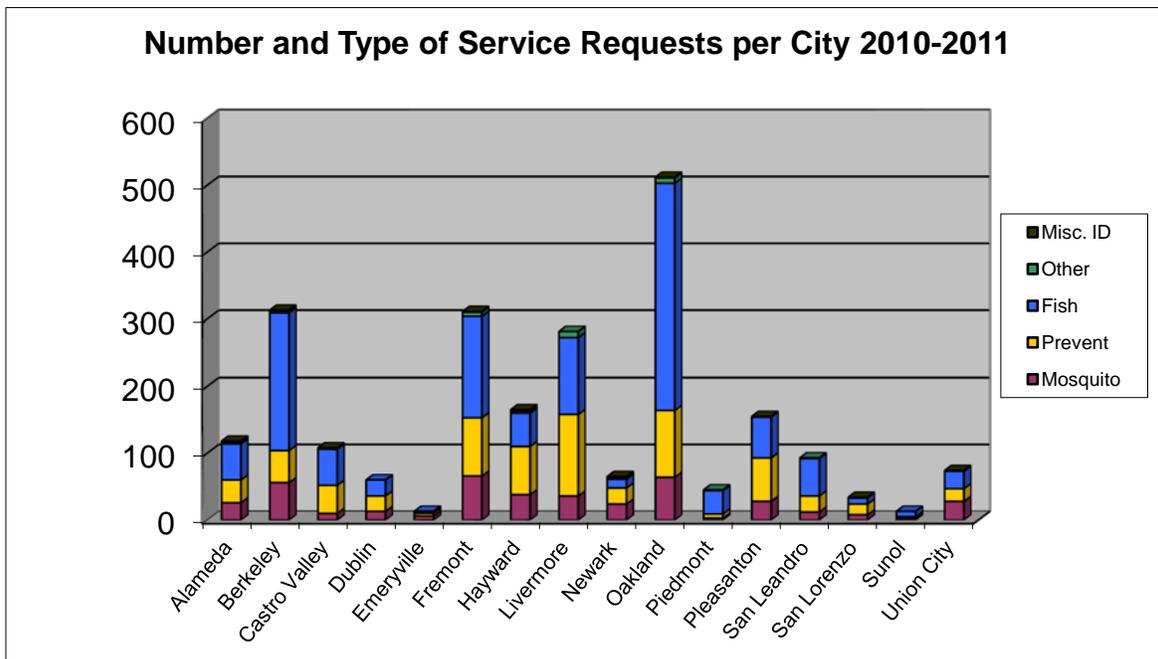


Figure 5

ENTOMOLOGIST'S REPORT

2010 & 2011 Mosquito Seasons

The trap summaries for the 2010 and 2011 mosquito seasons are shown below. This data reflects the total number of all mosquito species collected from all trap locations. Currently, the District utilizes sixteen New Jersey light traps set at permanent locations throughout the County. New Jersey light traps collect mosquitoes nightly and results are reported to a State database weekly. The District has approximately 125 carbon dioxide-baited (CO₂) trap locations. These traps are placed for a single night, and every location is trapped at two week intervals.



New Jersey Light Trap in Pleasanton

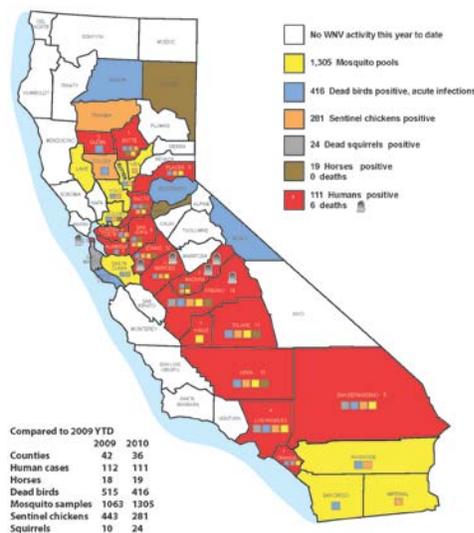
For 2010, the New Jersey light trap totals were 12.8% above the five year average, and the carbon dioxide-baited traps were 13.5% below the five year average. In contrast, the 2011 season produced CO₂ trap and New Jersey light trap totals well above the five year averages. In fact, totals for both the New Jersey light traps and carbon dioxide-baited traps in 2011 were the highest since the District expanded its surveillance program in 2003. New Jersey light trap totals were 55% greater than the five year average and CO₂ trap totals were 131% greater than the five year average. Two factors help explain this large increase. First, the winter of 2010-2011 produced much higher rainfall totals than average, resulting in extensive flooding of marsh areas, and increased production of *Culex tarsalis*. Second, a construction project at Coyote Hills Regional Park kept waters from normally draining into Alameda Creek; the high water levels there resulted in above average production of *Culex erythrothorax* throughout the summer months.

	<u>New Jersey light trap</u>	<u>CO₂ Traps</u>
<u>2010 Mosquito Totals</u>	14,337	23,083
5 yr average (2005-2009)	12,709	26,709
<u>2011 Mosquito Totals</u>	19,486	52,437
5 yr average (2006-2010)	12,568	22,708

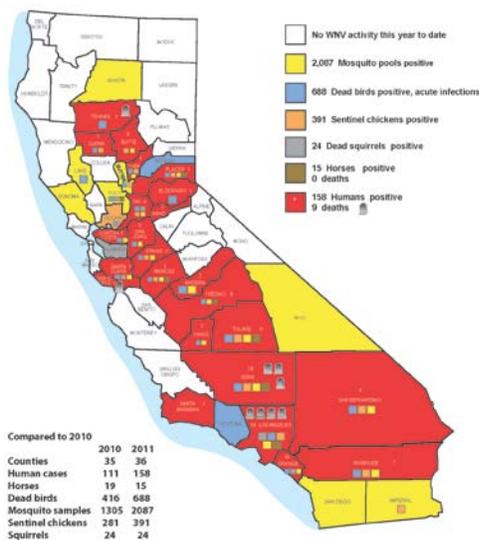
West Nile Virus Activity

In 2010, the California Department of Health Services separated all West Nile Virus positive birds into two groups: those that are chronically infected and those that are recently infected (acute infections). Birds that test with chronic infections are assumed to have little use for surveillance and control efforts, because the timing and geographical origin of transmission are unknown. This new distinction allows Districts to now use their limited resources to focus surveillance and control efforts on areas where West Nile Virus transmission may have actually occurred.

West Nile Virus Cases in California - 2010



West Nile Virus Cases in California - 2011



The number of West Nile Virus cases in Alameda County peaked in 2005, with a combined total of over 60 positive birds, squirrels, horses, and mosquito pools. Since then, the number of positive cases has steadily declined. A similar pattern is also seen on the national level. Initially, during the “invasion” phase, West Nile Virus cases were very high; now, they have leveled off to a “maintenance” phase. For the last few years California has led the nation in total cases, yet Alameda County has experienced limited activity. During the 2010 season, the District’s West Nile Virus activity consisted of six chronically infected birds, and only one acutely infected bird. During the 2011 season, no infected birds were collected, and one positive squirrel was collected late in the season in the city of Piedmont. It should be noted that the lowest number of West Nile Virus cases occurred during the same year in which record numbers of mosquitoes were trapped. Does this signify the end of West Nile Virus in Alameda County? Why was West Nile Virus activity so low, given that mosquito abundance was so high? One important factor worth mentioning is temperature. Both the 2010 and 2011 summers were cooler than average, with long stretches of extensive fog coverage and no significant heat waves. It has long been recognized that West Nile Virus requires warm temperatures, particularly warm night temperatures, to effectively spread through bird and mosquito populations. Consider then, the possible long term

consequences of global warming on West Nile Virus activity in Alameda County - does the threat of West Nile Virus increase? According to an analysis by Bay Area meteorologist Jan Null, the threat of West Nile Virus should actually decrease. Analyzing forty years of climate data, Null discovered that coastal areas like San Francisco and San Jose have cooled slightly, while inland regions such as Fresno have warmed slightly. This observation actually supports global warming theories – hotter inland temperatures draw in the sea breezes, cooling coastal areas. If cooler, foggier summers become the norm for Alameda County, the threat of West Nile Virus may lose its impact.

***Aedes albopictus* Returns to California**

California's mild climate, diverse ecosystems, and well-developed commerce/transportation infrastructure make it susceptible to invasion by nonnative species. *Aedes albopictus*, the Asian tiger mosquito, has been introduced into California on several occasions, and each time its establishment has been prevented.

This species is of great concern to public health agencies because it is an efficient vector of dengue and other arboviruses. On September 2, 2011, a technician from the San Gabriel Mosquito and Vector Control District responded to a biting complaint in a mobile home park in the city of El Monte. An aggressive control effort, including adulticiding, house-to-house inspections, and widespread trapping, revealed the extent of the invasion.



Aedes albopictus, the Asian tiger mosquito

Aedes albopictus was detected over approximately 18 square miles, including a portion of Los Angeles County. This is the largest infestation of this species to ever occur in California. As of this writing, the last confirmed presence of *Aedes albopictus* in this area was the discovery of a single egg in an ovitrap in January, 2012. Time will tell if the intensive vector control response will have eliminated this unwanted visitor to the West coast.

PUBLIC OUTREACH

Over the last two years the District has educated the public on both the danger of mosquito-borne diseases and also the importance of mosquito control in general. As a part of this effort, public outreach was expanded through social media and paid advertisement campaigns. Advertisements were placed in PennySaver publications distributed throughout the county and 6 Bay Area Rapid Transit (BART) stations. The ads focused on draining standing water, reporting neglected swimming pools, and personal preventive measures to avoid mosquito bites. The posters were displayed in Oakland, San Leandro, and Berkeley BART stations during August and September of 2011.



Poster Ad at the MacArthur BART station

PennySaver ads ran for 8 weeks, one per week, starting August 3, 2011. Distribution of the PennySaver ads covered the cities of Fremont, Hayward, Newark, Sunol, Dublin, Pleasanton, Livermore, San Leandro, San Lorenzo, and Union City. A Facebook page and Twitter account were also created to spread the message about mosquito control through social media. To “Like” us on Facebook, search for “Alameda County Mosquito Abatement District” and to follow us on Twitter, search for “Alameda Mosquito.” The District also continued its traditional public outreach program by participating in numerous fairs, shows, and presentations.

Protect yourself and those you love from mosquitoes this summer!

- **DRAIN** standing water
- **DRESS** in long sleeves & pants
- Limit outdoor activity at **DAWN & DUSK**
- Screen **DOORS & windows**
- Apply **DEET**

Contact us for **FREE** mosquitofish or to report a mosquito problem
23187 Connecticut St. Hayward, CA
www.mosquitoes.org
510-783-7744

Sample of the District PennySaver Ad

The District has had a number of requests for presentations the last two years. In 2010 and 2011, WNV presentations were given at the Bone Room in Berkeley and to the Emeryville City Council. General mosquito biology presentations were given to students at Tennyson High School, Sequoia Elementary School, Bret Harte Middle School, Roosevelt Elementary School, Beacon Day School, and the Fremont 4H chapter. The District also continued its participation in the Coordinces Creek Walk fieldtrip for Malcolm X and John Muir Schools in Berkeley.

The annual Alameda County Fair provided the District with a good opportunity to educate the public about the health significance of WNV and the need to eliminate backyard mosquito breeding sources. In 2010, grapes were the highlighted commodity for the agriculture building. The District’s display showcased a pair of large mosquitoes “whining” and dining among oversized bunches of paper mache grapes. The District’s 2011 display theme was “Farm, Fresh, Fun.” The display focused on a “crop” of

growing mosquitoes. Each row focused on a different species of mosquito and provided information such as their habitat, feeding habits, and distinct physical characteristics. Last year a new display with an interactive quiz tested fair attendees' knowledge of mosquitoes. The quiz was setup on a touch screen monitor and asked a variety of questions about mosquitoes and the diseases they carry.

Over the last two years, the District continued organizing mosquitofish give-aways with Alden Lane Nursery and Livermore Feed and Farm. The give-aways allowed residents in the Livermore area to pick up fish for their horse troughs and ponds. In addition to saving district personnel travel time, it allowed us to reach a section of the County's population that might not otherwise be aware of our services.



Interactive mosquito knowledge quiz at the 2011 County Fair display

As in the past, California and Alameda County maps continued to be updated regularly showing the appearance of WNV. Although there was limited WNV activity in Alameda County, the District issued press releases about District surveillance activities and seasonally appropriate ways to prevent mosquito production.

Shows and fairs the District participated in:

2010

- Alameda County Spring Home & Garden Show
- Dublin St. Patrick's Day Festival
- Return of the Swallows Festival
- Oakland Earth Expo
- Chabot College Earth Day Festival
- Hayward Cinco de Mayo Festival
- Palomares Elementary School Science Expo & Watershed Festival
- Alameda County Fair
- Newark Days Festival
- Alameda County Fall Home & Garden Show
- Hayward Zucchini Festival

2011

- Alameda County Spring Home & Garden Show
- The Tropics Senior Health & Resource Fair
- Oakland Earth Expo
- Berkeley Bay Festival
- Healthy Parks, Healthy People Festival
- San Leandro Creek Watershed Festival
- Return of the Swallows Festival
- South Hayward Community Festival
- Palomares Elementary School Science Expo & Watershed Festival
- Alameda County Fair
- Newark Days Festival
- Hayward Cinco de Mayo Festival
- Alameda County Fall Home & Garden Show
- Hayward Zucchini Festival

REGULATORY UPDATE

NPDES Permit

In the last biennial report, the Sixth Circuit Court of Appeals had just granted the EPA a 24 month stay to give them and State Water Boards time to develop National Pollutant Discharge Elimination System (NPDES) permits for use of pesticides in and around waters of the U.S. After an additional 6 month stay, the State Water Resources Board issued NPDES permits to mosquito and vector control districts that had submitted Notices of Intent and Pesticide Application Plans (and gone through a public review period). Alameda County Mosquito Abatement District (ACMAD) has had an NPDES Permit since November 1, 2011. One of the big changes in the new permit is the monitoring requirement. ACMAD is a member of the Mosquito and Vector Control Association of California's (MVCAC) monitoring coalition, a group of over sixty districts that have hired a consulting firm (URS) to oversee the monitoring of adulticide use throughout the State. In addition, the permit requires that all Districts visually monitor at least 10 percent of their larvicide treatments made to waters of the U.S.



Map showing 303(d) impaired waterways in red.

For the most part, the NPDES permit does not prevent any mosquito control activity that has not already been done in the past. One important exception, however, are those sources listed as “impaired waterways” under section 303(d). These are waterways in which an over abundance of pesticide residues are detected. The pesticides found in the waterways may be in the same class as those used for mosquito control. The most likely example of this would be the use of mosquito adulticides that are organophosphates or pyrethroids. For ACMAD we typically do not use adulticides except for emergency

situations. For example, adulticides may be applied if adult mosquitoes are discovered near the source from which they have just emerged. Control with an adulticide keeps mosquitoes in check before they move into residential areas and become a nuisance. In a more serious scenario, the District might need to treat an area with ULV fogging to

reduce the threat of a disease like West Nile Virus. If this had to occur within the vicinity of an impacted waterway, we would not be able to do that treatment unless a public health emergency had been declared.

The cost of complying with the NPDES permit is not trivial. The permit itself is relatively inexpensive (\$272 for 2011/2012) but the cost of monitoring is not. ACMAD contributed \$12,000 towards the MVCAC monitoring coalition this year and the added staff time to complete additional inspections and record keeping will cost approximately \$1,000 per month.

Those interested in finding out more about the NPDES permit for Vector control can visit the State Water Board website at

http://www.waterboards.ca.gov/water_issues/programs/npdes/aquatic.shtml .

CEQA (California Environmental Quality Act)

The District last completed a Mitigated Negative Declaration for its mosquito control program in 1999. While the pesticides we use have not changed significantly during the ensuing years, regulatory constraints have caused changes in some aspects of the program. To address these changes the District, in conjunction with other mosquito and vector control districts in the Coastal Region of the MVCAC, have contracted with a consultant (Cardno Entrix) to work towards doing a complete Environmental Impact Report (EIR) for our mosquito control program. The EIR should be completed in early 2013. Our current mosquito control program can be found at

http://www.mosquitoes.org/control_program.htm .

United States Fish and Wildlife Service Mosquito Management Plan

Mosquito management plans for USFWS Refuges have been under development for at least the last decade. Recently, the Service has started to implement these plans in California, first in the San Pablo Bay/Suisun refuge and now in the Don Edwards Refuge in San Francisco Bay.

The Mosquito Management Plan for the Don Edwards San Francisco Bay National Wildlife Refuge is being developed concurrent with the Don Edwards San Francisco Bay National Wildlife Refuge Comprehensive Conservation Plan. The USFWS is required to use an Integrated Pest Management (IPM) approach for pest management activities on refuge lands. Best management practices (BMPs) for mosquito control developed by the Coastal Region Mosquito and Vector Control Districts follow IPM practices. They can be used to lower the production of mosquitoes and reduce the need for chemical treatment, without significantly disrupting the ecological character, habitat function, or wildlife use of managed wetlands. Mitigating impacts to endangered

species such as the California Clapper Rail, Salt Marsh Harvest Mouse, California Tiger Salamander, and Contra Costa Goldfields will be the main focus of the management plan.

The location of the Don Edwards Refuge in a very urban area adds some complexity to the management of the mosquito population. Most refuges are in rural areas and have little to no mosquito control activities on them due to their remoteness. The definition of what constitutes a public health problem versus a nuisance issue is a topic that needs to be fully worked out with refuge managers. Decades ago, residents of Alameda County lobbied politicians to form a mosquito abatement district because of the aggressive mosquitoes that emerge from salt marshes like those found on refuge land. If the USFWS does not allow the treatment of the salt marsh mosquitoes *Aedes dorsalis* and *Aedes squamiger* on the refuge because they consider them to be a pest and not a public health problem, they will surely be inundated with calls from homeowners, schools and businesses that are negatively impacted by these aggressive day-biting mosquitoes. We are hopeful that the mosquito management plan will be flexible enough to allow for control of these mosquitoes on the refuge due to the public's proven desire to have these mosquitoes contained.



Source: fws.gov/desfbay

John Blanchard / The Chronicle

Map Outlining the Boundaries of the Refuge



© 2011 Aaron Arthur

Contra Costa Goldfields



California Tiger Salamander



Salt Marsh Harvest Mouse

FIELD SUPERVISOR PATRICK TURNEY RETIRES

An employee of the District since August 7, 1980, Patrick Turney officially retired on December 31, 2011. Patrick started at the District as a field technician and after 10 years worked primarily as a computer specialist. A few years later he was promoted to the Entomological Specialist and he was in charge of mosquito trapping and supervising field staff. His last 10 years at the District were spent as the Field Operations Supervisor.

Prior to joining the District, Patrick was a graduate student in marine biology at the California State University, Hayward. A professor told him about a job opening at the



District Manager John Rusmisl awarding Patrick Turney a plaque for his years of service.

District. At the time, state funding for encephalitis control provided the District with extra money for hiring additional staff. In the early 1990's, as a part of the encephalitis control program, Patrick started the District's sentinel chicken flock monitoring program.

Looking back over his tenure with the District, Patrick considered his greatest accomplishment the work he did as a computer programmer in the 80's and early 90's. "The District was one of the leaders in the field, one of the more innovative Districts adapting to new technology." Several

papers were published about the work done at the District in the field of computer programming. During this time the District switched from keeping paper records of treatment and inspection activities to recording them electronically.

As a District employee who held many different positions, Patrick felt that the most challenging aspect of his job was managing individual personalities and coordinating them to work together. On the other hand, the most rewarding times at the District came from working with different personalities, getting to know different people, and seeing the changes in personnel as the staff became younger and more diversified. The scientific aspects of the job, working in the lab, and experiencing nature also were very rewarding. In the future, Patrick plans on spending his retirement working on "honey-do" lists for his "new boss" at home, skiing, and travelling.

The employees of ACMAD wish him the best of luck and thank him for his years of dedicated service.



Retiring Field Operations Supervisor Patrick Turney

HARVEY I. SCUDDER LIBRARY DEDICATION



Florence Scudder unveiling the sign dedicating the library



Barbara Scudder and her mother Florence

Vector Control Association of California (MVCAC). In 2001 the MVCAC dedicated its annual conference to Dr. Scudder in recognition of his service to mosquito and vector control in California and the nation.



District Manager John Rusmiser and Florence Scudder

On March 18, 2010 the library at Alameda County Mosquito Abatement District was dedicated to Harvey I. Scudder, Ph.D. Dr. Scudder was a board member of the District from 1982-2003, representing the city of Dublin. He passed away on December 19, 2006. Major portions of the District's library are now comprised of donations from the Scudder family and include textbooks, manuscripts, journals, scientific papers, and newspaper clippings from Dr. Scudder's personal collection.

In his career as a medical entomologist, Dr. Scudder made numerous contributions to the field of Entomology. One of the most notable was his invention of the "Scudder fly grill" a device used to estimate distributions of nuisance fly populations. During his career, Dr. Scudder worked for the United States Public Health Service (USPHS) where he served in the Bureau of Vector Control, the Communicable Disease Center in Savannah, Georgia, the National Institute of Health, and the Department of Health, Education, and Welfare. After 25 years of service in the USPHS, Dr. Scudder became a professor at California State University, Hayward (CSUH) where he taught general and medical entomology, microbiology, and epidemiology. He was also instrumental in setting up the nursing program at the CSUH. As a board member for the District, Dr. Scudder was very active with the Mosquito and



Board members viewing a scrapbook with Dr. Scudder's biographical interview and photos

FINANCIAL REPORT

FOR FISCAL YEARS ENDING
JUNE 30, 2010 AND JUNE 30, 2011

	2011	2010
Revenues :		
Property taxes	\$1,556,812	\$1,594,293
Government Aid	\$24,154	\$7,813
Special Assessments	\$1,860,144	\$1,859,358
Interest	\$14,618	\$44,770
Miscellaneous	\$8,210	\$5,200
Total Revenues	\$3,463,938	\$3,511,434
Expenditures :		
Salaries and fringe benefits	\$3,374,696	\$1,811,566
Materials, supplies and services	\$464,007	\$500,549
Debt Services	\$108,724	\$220,253
Capital outlay	\$62,918	\$10,275
Total Expenditures	\$4,010,345	\$2,542,643
Net change in fund balances	(\$546,407)	\$968,791
Fund balances, beginning of period	\$3,375,807	\$2,407,016
Fund balances, end of period	\$2,829,400	\$3,375,807

**Alameda County Mosquito Abatement District
 Combined Balance Sheet For The Years
 Ending June 30, 2010 and June 30, 2011**

Assets	June 30, 2011	June 30, 2010
Current and Investments	\$2,834,192.00	\$3,370,438.00
Accounts Receivable	\$ 127,071.00	\$ 127,071.00
Capital Assets (Net)	<u>\$2,890,813.00</u>	<u>\$2,965,483.00</u>
Total Assets	<u>\$5,852,076.00</u> =====	<u>\$6,462,992.00</u> =====
 Liabilities		
Account Payable	\$ 25,403.00	\$ 11,778.00
Interest Payable	\$ -	\$ 2,310.00
Compensated Absences	\$ 106,460.00	\$ 107,614.00
Non-current Liabilities		
Due within one year	\$ -	\$ 108,725.00
Due in more than one year	\$ -	\$ 209,874.00
Total Liabilities	<u>\$ 131,863.00</u> =====	<u>\$ 440,301.00</u> =====
 Net Assets		
Invested in Capital Assets	\$2,890,813.00	\$2,856,758.00
Unrestricted	<u>\$2,829,400.00</u>	<u>\$3,165,933.00</u>
Total Net Assets	<u>\$5,720,213.00</u> =====	<u>\$6,022,691.00</u> =====