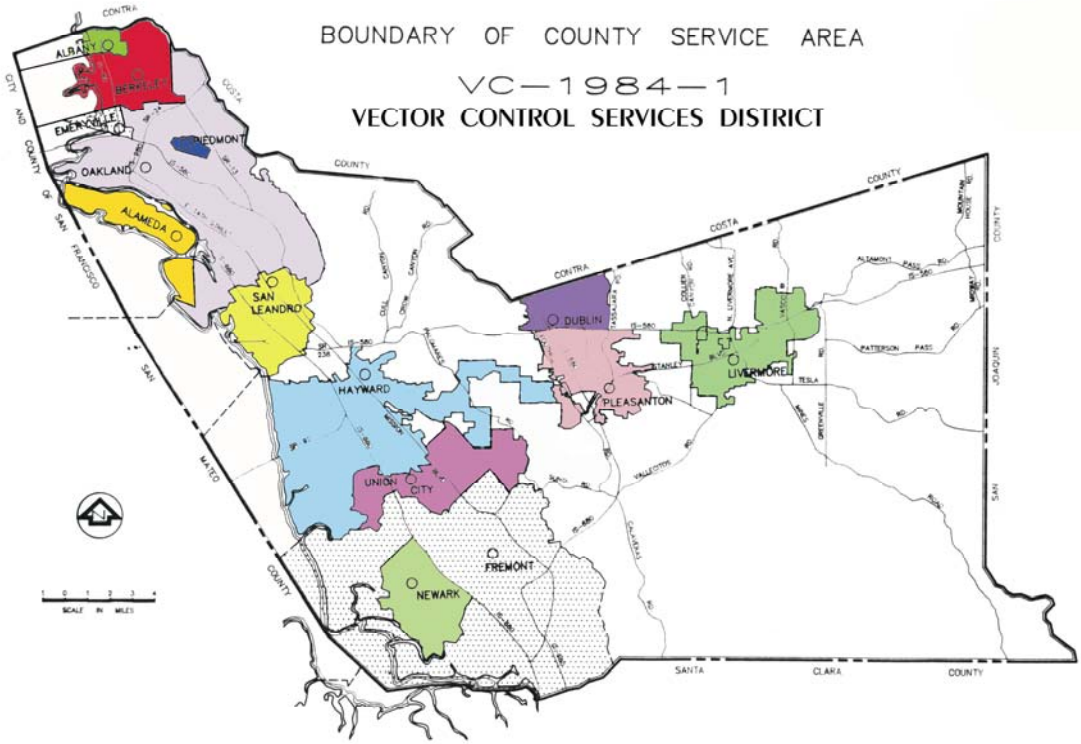
Alameda County
Vector Control Services District

Our Mission:
Prevention of Vector Borne Disease in Alameda County

ALAMEDA COUNTY
VECTOR CONTROL SERVICES DISTRICT
COUNTY SERVICE AREA VC 1984-1

Annual Report 2008



All Areas Within the Alameda County
Boundaries are Served by ACVCSD,
Except the Cities of Fremont and Emeryville

MISSION

The mission of the Vector Control Services District is to prevent the spread of vector-borne diseases, injury, and discomfort to the residents of the District by controlling insects, rodents, and other vectors and eliminating causal environmental conditions through education, legal enforcement, and integrated pest management practices.

DISTRICT SERVICES

Request for Service Investigations

- Conduct investigations pertaining to service requests for disease vectors, assess the extent of the problem, and take the appropriate action.
- Investigate reported public health and vermin problems related to rodents, cockroaches, flies, fleas, lice, yellow jackets, as well as, ticks, mites, and spiders, and render the appropriate service.
- Provide insect, tick and spider identifications and recommend least–toxic control tactics.
- Conduct surveys of rodents, insects and arthropods of public health importance, and maintain a reference collection.
- Survey and control cockroaches in public sewers, utility boxes, and storm drains.
- Conduct yellow jacket and bee swarm control in public areas or by contract with other agencies.

Wildlife Management, Domestic Animals, and Rabies Control

- Oversees the administration of rabies quarantine measures resulting from animal bites.
- Conduct investigations of nuisance wildlife problems relating to bats, skunks, opossums, raccoons, dogs, cats, rabbits, pigeons, chickens, and fowls.
- Trap biting or nuisance animals when preventative alternatives are not possible or unlikely to be effective.
- Work in coordination with local animal control agencies, and submit annual statistics reports to the California Department of Public Health.

Rodent Control

- Provide recommendations for rodent proofing and suppression in homes, neighborhoods, open areas, and businesses.
- Conduct rodent suppression during disease outbreaks or emergencies.
- Conduct surveys of rat populations to assess species abundance, distribution, and disease carrying potentials.
- Conduct District-wide inspection and baiting of sanitary sewers and waterfronts for rats.
- Inspect and test sewer laterals and mains to detect breaks, which may provide entry portals for rodents to move into adjacent neighborhoods.

Solid Waste Problems

- Investigate complaints regarding solid waste handling and disposal problems involving refuse, human or animal waste, and odors at residential properties and businesses.

Vectors, and Vector-Borne Disease Surveillance and Control

- Investigate reports of animal or human illness such as Lyme disease, psittacosis, plague, hantavirus, scabies, head lice, reptilian salmonellosis, ehrlichiosis, and rabies to determine cause, incidence, and recommend preventative, and remediation measures.
- Assist the public with tick identification, and submissions to the public health laboratory for Lyme disease testing.
- Conduct surveys by collecting rodent blood samples and parasites (fleas, ticks) and determine plague, Lyme disease or other vector-borne disease transmission potentials.

Public Education and Information

- Provide vector control presentations to interested groups, and participate in public events.
- Disseminate educational information on vectors and vector borne diseases to individuals and groups.
- Staff public display booths at health fairs, special events, and the County Fair.
- Post annual shellfish harvesting quarantine notices at the Alameda County bay shoreline.
- Maintain an informative, and contemporaneous web site.
- Timely and informational media releases on vector control and disease issues.

Legal Enforcement

- Enforce state laws, regulations, and local ordinances when necessary to protect the public from vectors and related problems.

INTRODUCTION

This Annual Report for County Service Area (CSA) VC 1984-1 for Vector Control is presented to the Alameda County Board of Supervisors (BOS) in compliance with Section 25210.77a of the Government Code; County Service Area Law, and California Health and Safety Code Section 2855-2868, 116175-116183, and Section 2000-2007. The report, which includes the recommended benefit assessment for the fiscal year 2009-2010, is submitted for review and public hearing.

This report gives a history on how and why the County Service Area (CSA) known as the Alameda County Vector Control Services District was formed, explains how the assessments are calculated, and includes assessment tables since the CSA was formed in 1984, as well as the new secondary assessment that was approved in 2007.

This report is available for public review at the Vector Control Services District, 1131 Harbor Bay Parkway, Suite 166, Alameda, CA 94502, and it is also posted on our website at (http://www.acvcsd.org).

BACKGROUND & HISTORY

The County Service Area (CSA) 1984-1 for Vector Control was established in June 1984 to serve the public needs by providing a comprehensive vector control program. The Environmental Health Department was experiencing fiscal shortfalls, and had to reduce vector control services in Alameda County. In response, the BOS created the County Service Area after the passage of Measure A, which received over 70% voter's approval for the formation of the CSA.

Initially, cities of Emeryville, Dublin and Fremont opted to seek alternative sources for providing vector control services and did not join the CSA. Dublin City Council voted to join the District and the City was annexed by the BOS in 1992. In May of 1995, the Alameda County Department of Public Health contracted with a private consultant to prepare a Strategic Marketing Plan. The recommendation for the CSA was to work with the Cities of Emeryville and Fremont toward incorporation into the District. Emeryville contracted for services in the late 1980's, but discontinued for financial reasons. Fremont attempted to create its own vector control program, but was not able to provide funding to develop an effective program. In 2006, the Alameda County Local Agency Formation Commission (LAFCO) contracted with a consulting firm to review the County Services Areas for possible consolidation. The recommendation was to have the CSA extended service area county-wide to provide the vector services to both Cities of Emeryville and Fremont.

In January of 2008, the District surveyed a sample of residents in Emeryville and Fremont, with favorable results. In October, a mail-out balloting of annexation was conducted in both cities. Along with the voters approved with over 70% support for Emeryville, and 66% support for Fremont respectively, the BOS also approved the levy of a new assessment of $10 per single family dwelling to have the CSA provide the vector control services that starts from fiscal year 2009-10.

Currently, the CSA does not include the cities of Emeryville and Fremont, the District is now serving 12 of the 14 cities in Alameda County, and the unincorporated county areas.

The City of Berkeley already had an existing vector control program when the CSA was formed in 1984, which is currently funded by a formal service contract between the City of Berkeley and the CSA.

CITY OF OAKLAND

In 1987, the City of Oakland recognized that it had a severe rat problem emanating from the sanitary sewers, which exceeded the District's staff capabilities to control the problem. Subsequently, Oakland voters approved a supplemental assessment, which was first levied in fiscal year 1988-89, and provided for two additional vector control officers to control rodents in the sewers.

CSA ALAMEDA COUNTY VECTOR CONTROL 2008 ANNUAL SUMMARY

Introduction

The County Service Area (CSA) VC 1984-1 is solely funded through benefit assessment (BA) charged to each property parcel. In 1997, the voters approved Proposition 218, which requires that all parcel owners receive a mailed ballot regarding any proposed change in an assessment prior to imposing an increase. Since then, the District has not been able to increase revenues; the CSA has continued to operate on reserves and savings, while costs and responsibilities have drastically increased. For the past five years, the District has reduced expenditures by not replacing staff vacancies and cutting back on purchasing equipment, and supplies.

In 2007, the District contracted with a consulting group to conduct a survey among the property owners to gauge their support for a new benefit assessment. The result was an overwhelming support for a BA of $ 4.08 to boost the existing annual assessment rate to $10 per single-family residence. Assessment ballots were mailed to all property owners within the District boundary areas in May 2007. The ballot measure received 67.7% voter support and the BOS approved the new assessment of $4.08 in July of that same year. Details of this secondary benefit assessment are discussed in the Benefit Assessment section on pages 22-24.

With the new funding, the District was able to fill two senior Vector Control Officer positions, and hired four Vector Control Officer Trainees in 2008, and has the resources to purchase, replace and update office, laboratory and field equipments. The District also contracted with two waste management workers and one microbiologist part time in conducting District initiated programs.

VECTOR CONTROL SERVICES in 2008 - Detail

Urban Rodent Surveillance

The urban rodent surveillance program focuses on monitoring and controlling rats (Norway and roof rats) and house mice in residential, commercial and business properties. Program objectives include giving recommendations on environmental and sanitary methods to exclude and prevent rodent settlement, and when necessary, suppressing rodent populations to reduce property damage, food contamination, and disease transmission. In 2008, the District received 1,147requests for service from the public on domestic rodents, representing 21.5% of all requests. Additionally, staff performed 6,066 field services related to domestic rodents including; smoke and dye tests in sewer lines, field surveys, follow-up evaluations, and enforcement actions.

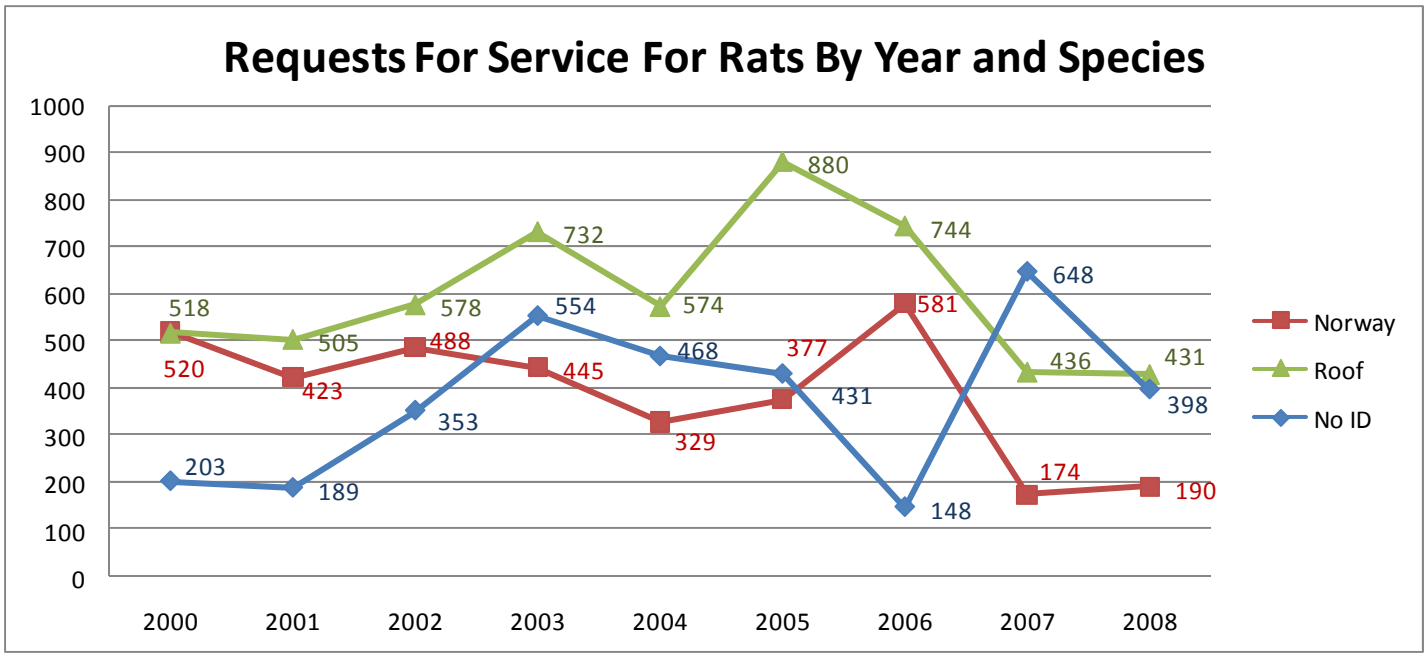
When evidence indicates rats are surfacing near sewer laterals, field staff conducts inspections to locate broken sewer lines, and notify the homeowners, or the Public Works Department to ensure repairs are made. The District has worked with the County Risk Management since 2005, and developed a policy and procedures for sewer smoke testing. In 2008, staff found 58 broken sewer laterals and performed dye tests, or smoke tests to verify the breaks. Our District notified Oakland Public Works supervisors and other municipalities to facilitate repair of broken sewer lines and laterals.

Because some ectoparasitic species found on rodents are capable of vectoring disease organisms such as plague and murine typhus; 32 commensal rodents (Norway and roof rats), one California ground squirrel and one tree squirrel from urban and peridomestic areas were trapped and examined for ectoparasites (fleas and mites) (Table 1).

2008	N	# W/ Fleas	# Of Fleas	Flea Species	Flea Index
Pinon mouse *Peromyscus truei*	5	2	2	*Malaraeus telchinus* *Opisodasys keeni*	.4
Deer mouse *Peromyscus maniculatus*	18	3	6	*Malaraeus telchinus* *Atyploceras longipalpus* *Orchopeas sexdentatus* *(Dermacenter albopictus[1x tick])*	.33
CA ground squirrel *Spermaphilus beecheyi*	1	1	2	*O. montanus*	.5
Fox tree squirrel *Sciurus niger*	1	1	2	*Orchopeas sexdentatus*	.5
Norway rat *Rattus norvegicus*	14	5	45	*Xenopsylla cheopis*	3.2
Roof Rat *Rattus rattus*	18	4	17	*Nosopsylla fasciatus*	.9
Feral pig *Sus scrofa*	6	6	100	*Pulex sp.*	

Table 1 Fleas collected from sylvatic and commensal rodents, and other wildlife

Due to aging, structural deterioration, and infrequent maintenance of sanitary sewers, Oakland has had a long history of Norway rats invading homes and neighborhoods. Our staff investigated 190 Norway rat service requests in 2008. Furthermore, the staff responded to an additional 957 rodent complaints, of which an estimated 50% may have been partially caused by Norway rats. As part of the supplemental assessment in the City of Oakland to enhance sewer rodent surveys, District staff conducts weekly inspections of designated census tract blocks. Underground sewer access structures (manholes) were inspected for signs of rodent activities (live rats or their droppings); anticoagulant bait blocks are suspended in sewers when necessary to control the rodents. A total of 8,682 sewer inspections and 1,802 treatments were made in Albany, Oakland, and San



Leandro. We also continued our effort to evaluate neighborhoods with rat activity in the sewers based on complaint clusters, and take remedial action when possible. Specifically, we targeted neighborhoods where residents were seeing rats roaming on surface streets.

Roof rats are established throughout the suburban and semi-urban areas of Alameda County. Vector control officers responded to 431 service requests for roof rats from homeowners, business, and municipalities. Our field surveys have found low flea numbers on roof rats; however, because this species is highly adaptable and Alameda County has many diverse ecological habitats, a relatively rich flea fauna could potentially be found from rodents inhabiting these areas. The Oriental rat flea, *Xenopsylla cheopis* is of primary concern because it is the vector for urban bubonic plague. The District has set a high priority to help ensure that these rodents do not enter homes, and expose occupants and their pets to the rodent fleas. Staff responding to a rodent service request will conduct extensive survey of the exterior and interior premises looking for conditions conducive to rodents, and advise the homeowner to use exclusion methods to prevent rodent entry into their homes. They will also hand out brochures (or fact sheets), and when necessary, the District will work with the Local Code Enforcement Agencies to initiate enforcement of state, county, and municipal laws, and regulations pertaining to vectors to achieve compliance. If evidence is found suggesting an infestation over a larger area than a single-family residence, neighborhood surveys are conducted.

Asian House Rat

Since the discovery of the Asian house rat, *Rattus tanezumi* in Alameda County in 2000, the District has been setting traps at various locations attempting to capture this animal to study its ecology and distribution. A major problem is trying to differentiate this species from native rodent species such as the roof rat. DNA analysis is an option; however, this procedure is not readily available and the results can take months to obtain. The District's vector biologist has been working on a field guide comparing anatomical measurements and visual morphological traits to separate the two species apart.

Sylvatic Rodent Surveillance

Sylvatic rodents such as deermice, woodrats, squirrels, and meadow voles are commonly found in rural and semi-rural areas of Alameda County. Many of these animals serve as reservoir hosts to zoonotic diseases such as plague, Hantavirus pulmonary syndrome (HPS), anaplasmosis, Lyme disease, and babesiosis. A reservoir host is an animal that can support parasite development, remains infected for an extended time, and serves as a source of vector infection. The reservoir hosts are not affected by the pathogens. Plague is a flea-borne disease caused by infection with the bacterium, *Yersinia pestis.* In 2008, we conducted plague surveillance at Del Valle, Redwood, and Sunol Regional Parks in Livermore, Oakland, and Sunol, respectively. Although ground squirrel population were high and place them in close contact with campers and their pets at Del Valle; nevertheless, we had dismal trapping results with zero captures. At Sunol, three woodrats were captured and tested negative for plague. The District plans to maintain ongoing plague surveillance in the Regional Parks in 2009.

Hantavirus Pulmonary Syndrome (HPS) was first recognized in 1993; it is a respiratory illness associated with breathing air containing rodent urine and feces contaminated with the *Sin Nombre* virus (SNV) particles. Rodents, particularly deer mice were identified as the primary reservoir host. Occasionally, deer mice will enter buildings and potentially expose the occupants to the virus. Past surveillance conducted at various localities, detected 6-18% of the deer mice were infected with SNV. In collaboration with the California Department of Public Health (CDPH), the District conducts HPS surveys in the East Bay Regional Parks to increase public awareness of the disease and to reduce potential exposure to deer mice inhabited structures.

In 2008, District staff surveyed six parks in the East Bay Regional Park District (EBRPD): Garin, Tilden, Anthony Chabot, Redwood, Sunol and Del Valle. We visited 35 sites and determined that 15 of the 35 sites were suitable for HPS survey. Unsuitable sites were eliminated because: 1) lack of rodent activities, 2) open space, and 3) lack of confined structures, e.g., storage sheds or out houses that would expose campers and visitors to deer mice, and their excreta. Sherman traps (live traps) were set at Garin, Redwood, Sunol, and Anthony Chabot, respectively. Eleven deer mice were trapped at Anthony Chabot (4) and Sunol (7) and they tested negative for SNV. We plan to expand HPS surveillance in other parks to assess the rodent population, ecology, and their disease carrying potentials in 2009. Additionally, three non-regional park areas were sampled. Twenty-four deermice (*Peromyscus* spp.) were trapped from Leona Heights, Oakland (12), Kilkare Road, Sunol (7) and Merritt College, Oakland (6). Eighteen of the deermice tested were negative; the other six rodents were not submitted for testing.

Tularemia is caused by the bacterium *Francisella tularensis* that is vectored by arthropods and rabbits. The disease is commonly called "rabbit fever" when hunters become infected while skinning rabbit carcasses; however, fleas, deer flies and tick bites, can also transmit the disease. In 2008, an Alameda County resident became sick in September but the site and route of exposure were not clear since her travel history prior to illness included Brazil, Maine, Alameda County hills, and coastal San Mateo County. A transfusion-associated Babesia case was diagnosed in another County resident; however, the patient had frequent blood transfusion and tracking down the source of infection is problematic. Follow-up surveillance and investigation will be carried out by the State's Public Health Epidemiology and Prevention for Injury Control (EPIC) Branch.

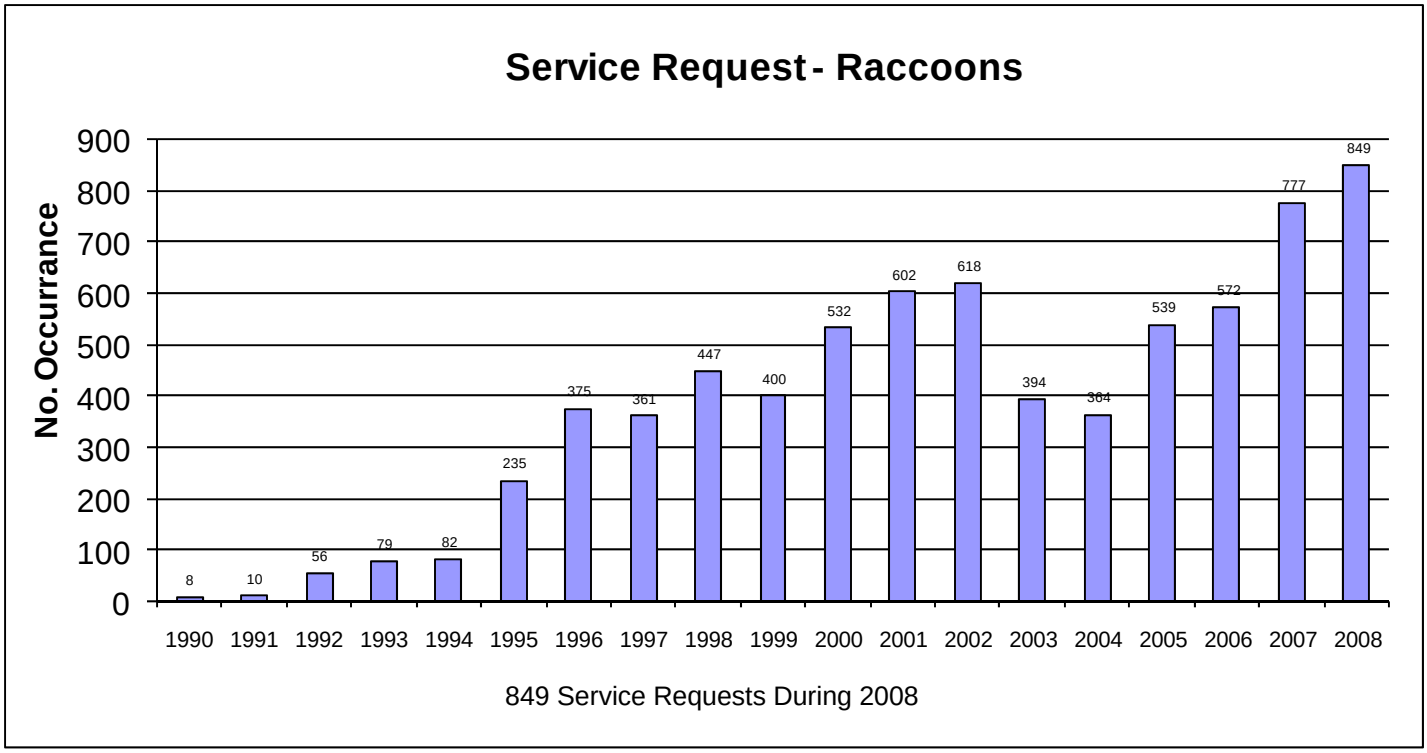
Rabies Surveillance

The authority for the Rabies Program is the responsibility of the County Health Officer at the Department of Public Health, which provides laboratory support for the program, and performs human case investigations. The District manages the statistical data, and works cooperatively with the 13 local animal control agencies to administrate the rabies surveillance program in Alameda County. Moreover, the District responds to service requests and conducts surveillance on skunks, bats, and other wildlife. Suspected animals involved in biting or exposure incidents are euthanized, their heads removed and submitted to the Alameda County Public Health Laboratory (ACPHL) for rabies testing. The District also investigates animal bite incidents and prepares an annual report for the CDPH. Bats and skunks are the primary rabies-infected animals in California. Rabies is almost never found in squirrels, rabbits, rats, or mice. The District submitted 199 animal heads, including dogs, cats, raccoons, skunks and bats to the ACPHL for rabies testing in 2008. Bats (3) collected from Livermore, Oakland and San Lorenzo tested positive for the rabies virus. Of the 199 animals tested, there were 109 cases with human exposure; 48 cases with domestic pet exposure; and 36 cases with no exposure.

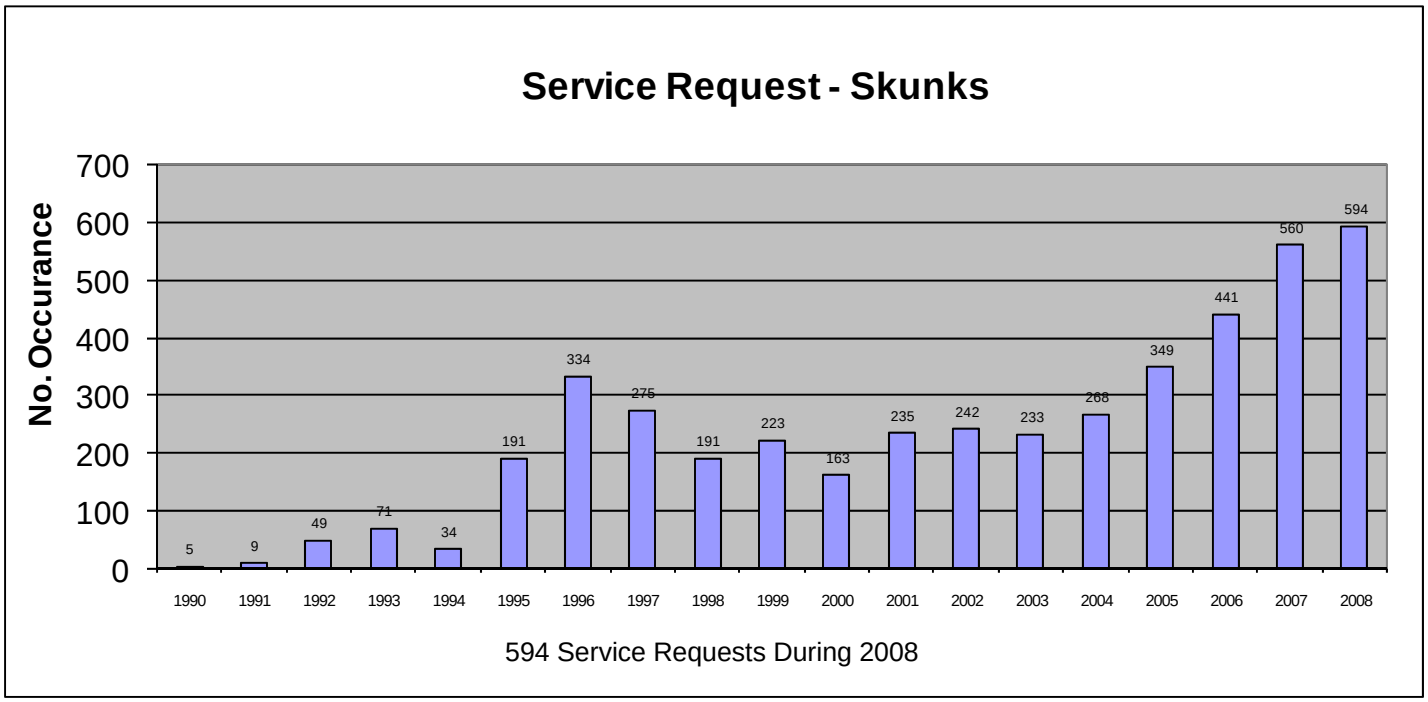
Type of Animal	Number negative	Number positive	Total
Bat	54	3	57
Cat (domestic + feral)	47	0	47
Dog	47	0	47
Rabbits	2	0	2
Rats	1	0	1
Opossum	3	0	3
Raccoon	15	0	15
Skunk	26	0	26
Squirrel	1	0	1
Total Animal Tested			199

Wildlife Management

Wildlife pests are defined as free-living vertebrates that adversely affect the health or well-being of people or conflict in some other way with human activity. Some wildlife may transmit diseases to humans such as rabies and plague. The District responded to 1,640 service requests concerning wildlife, and provided almost 3,031 hours of field support within or near residential areas. The majority of these activities involved service calls on raccoons, skunks, squirrels, or opossums, and advising homeowners to implement exclusion, sanitation, and modification of habitats to eliminate or prevent recurrence of the wildlife problem. When circumstances dictate direct action, Vector control officers assist property owners by coordinating with the USDA Wildlife Services Specialist (WSS) to set traps, pick up, and remove the animal. On occasions, especially with the poor or elderly residents, the staff will seek assistance from local service agencies to make the structural repairs.



In 2008 the USDA WSS documented a 9.2 % increase in raccoon problems in comparison to 2007. In late spring and summer most calls were for juvenile raccoons in attics and walls. Most of the raccoons were removed by using eviction fluid. Damage to lawns and gardens by raccoons were seen in summer and fall. Some of these raccoons had to be trapped but others were dissuaded from yards by harassment techniques or by applying “grub killer” onto the lawns to stop raccoons from digging. Skunk breeding season begins in January and ends in February, a total of 40 skunks were removed from nesting underneath houses in Livermore and Union City. An additional 15 adult skunks were removed in Oakland and San Leandro. In total, skunk activity increased by 8 % from the previous year. When removal is not warranted, the skunk problems



were solved with harassment techniques and exclusion. Since rabid skunks have been detected in the County, any female skunks in close contact with humans were removed and euthanized. Several mountain lion sightings were reported in the Castro Valley and Dublin vicinities. USDA WSS removed one mountain lion that had killed four sheep in Castro Valley. Wild turkeys digging in yards and causing property damage has become a persistent problem in parts of the County. Forty wild turkeys were removed around the Dublin city boundaries.

Feral pigs cause severe damage to landscape searching for insects and fallen fruits. Twelve pigs were removed from several properties in Castro Valley. Finally, gray fox activities increased 85% across the whole County. Female foxes and her pups den under resident's decks and hot tubs. Most of them can be discouraged from settlement using harassment techniques; however, several female foxes had to be trapped and removed because they were aggressively protecting their pups.

Allowing wildlife access to our pets' food is a leading cause wildlife population growth, and results in an increase of conflicts between people, our pets and wildlife.

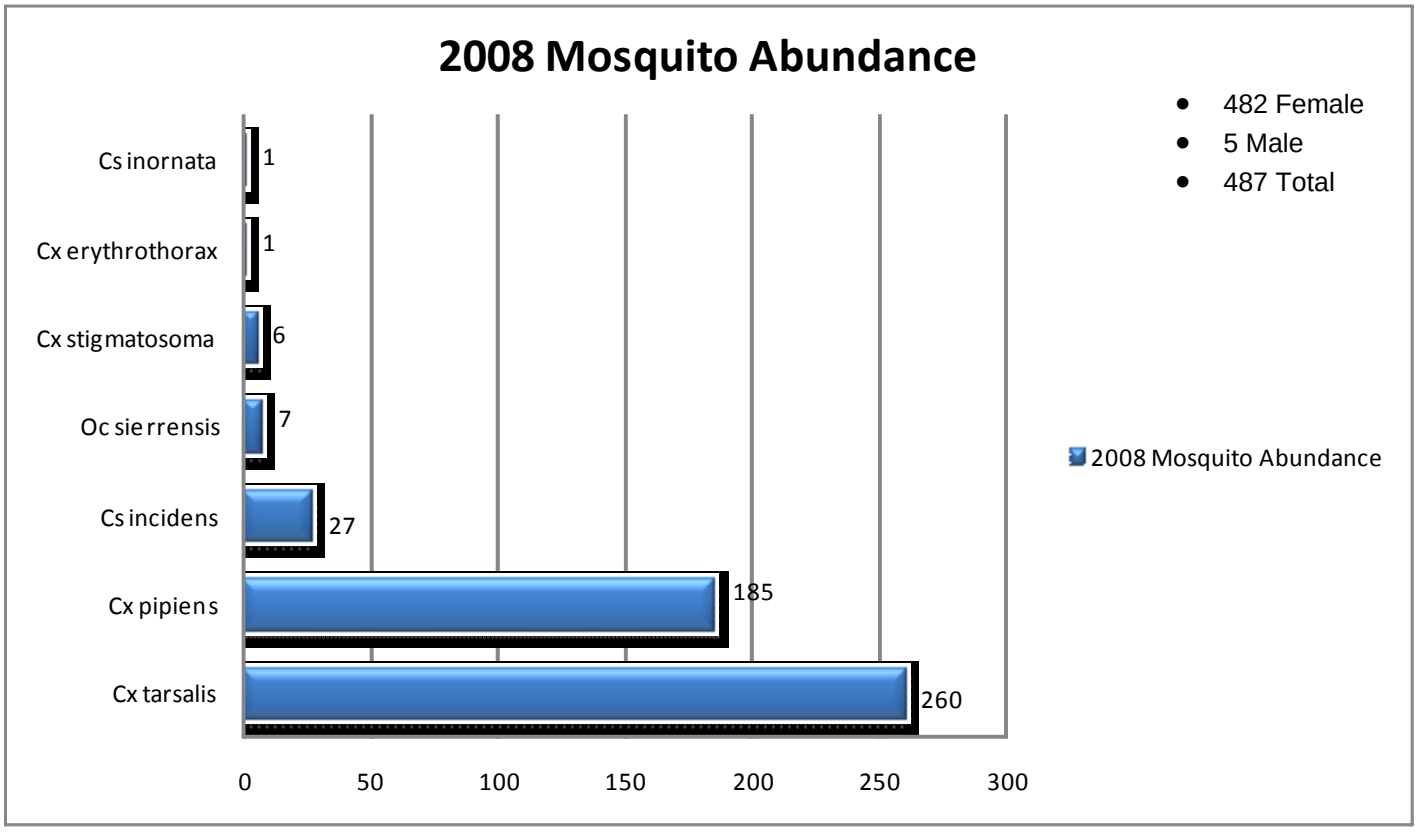
Mosquito Surveillance

In 2008, West Nile virus (WNV) activities were most severe in southern California and Sacramento counties. The mortgage meltdown and house foreclosures resulted in abandoned swimming pools producing high mosquito populations and increased viral transmission.

In Alameda County, the District only conducts mosquito surveillance and control in the City of Albany, while the Alameda Mosquito Abatement District (ACMAD) is responsible for the remainder of the County. Carbon dioxide baited traps (EVS trap) were set overnight (every two weeks) from April through October to selectively trap female mosquitoes seeking a blood-meal and to test for WNV virus. A total of 72 trap nights were performed, and 482 female and five male mosquitoes were captured in 2008. Two mosquito pools were submitted to U.C. Davis for WNV virus isolation and tested negative. In 2008, positive WNV activity in other areas of the county was identified by the ACMAD with 1 human case, 12 dead birds, 1 mosquito pool, and 1 tree squirrel.

In Albany, four mosquito species: *Culex tarsalis*, *C. pipiens*, *C. erythrothorax,* and *C. stigmatosoma* are competent vectors of WNV. In 2008, we monitored the situation at Golden Gate Fields and eliminated breeding sources for these mosquitoes.

Though the two mosquito pools the District submitted for WNV tested negative, nonetheless, the Center for Vector-borne Disease Laboratory at U.C. Davis has identified five “hot spots” in the state where new emerging arboviruses (arthropod-borne viruses) may be first detected and the San Francisco Bay Areas is listed as one of the sentinel spots. Thus, a priority in 2009 will be to enhance our mosquito collection efforts to submit more mosquito pools to the lab for testing.



Venomous Arthropods

Venomous arthropods include insects, mites, ticks, and spiders that can sting, bite, and cause allergic reactions in humans and pets. The District provides identification of spiders, scorpions, bees, and a wide variety of wasps, including yellow jackets. Exclusion and least–toxic control recommendations are given to property owners to avoid being bitten or stung by venomous arthropods. With yellow jackets nests and honey bee swarms, the risk of stinging increases the urgency for timely response. The District will destroy wasp nests when they are located in close proximity to people. In addition, the District has a contract with the East Bay Regional Park District (EBRPD), to control ground nests within the county parks. In 2008, the District responded to 242 venomous wasp and 234 honeybee complaints. These numbers showed a 30% decrease in venomous wasps and a 40% decrease in honeybee complaints from 2007. An additional 9 yellow jacket nests were controlled within the EBRPD. The District is not licensed to make structural repairs to buildings; bee and wasp nest control inside buildings are normally referred to structural pest control operators for abatement.

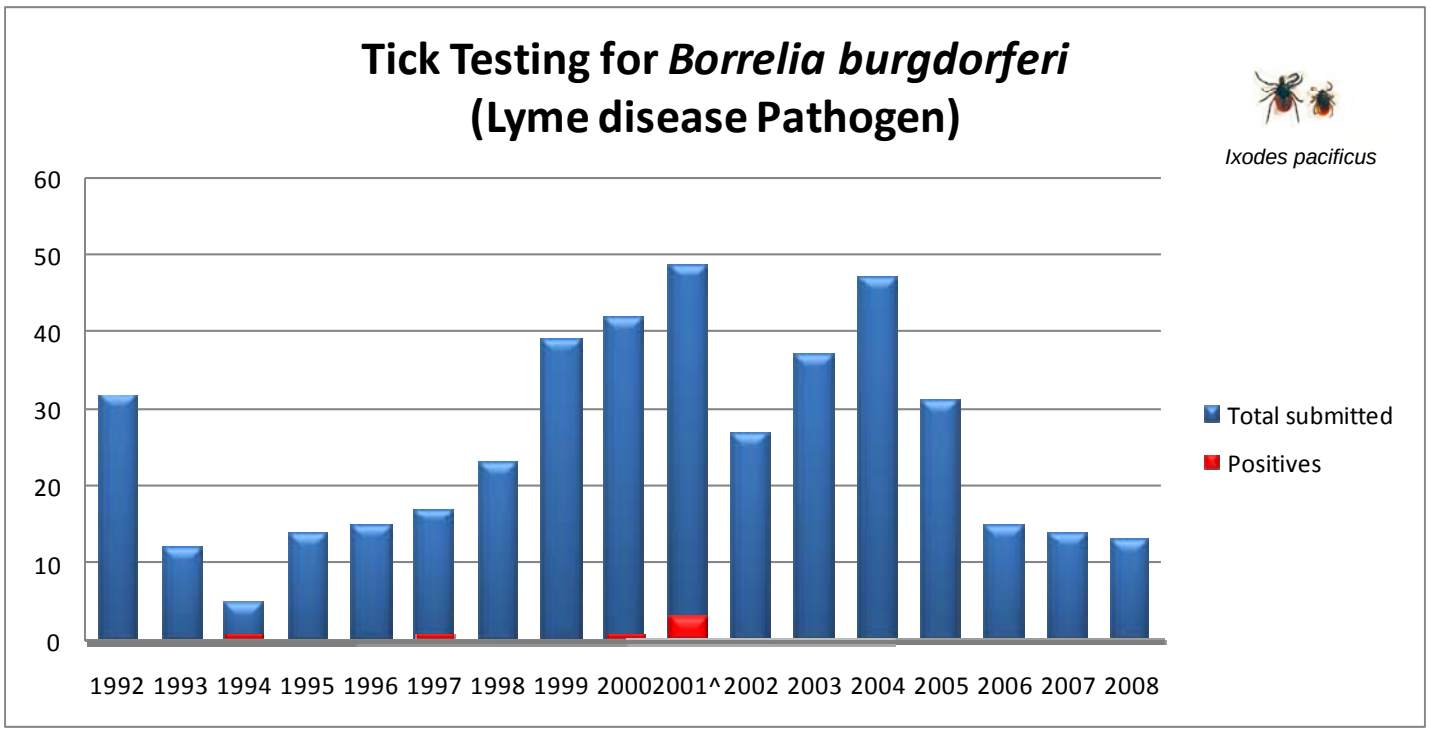
Miscellaneous Arthropods

The District responds to service requests on a variety of vermin pests such as ants, cockroaches, flies, or fleas that infest homes and commercial facilities. We had 409 service requests for arthropod identifications. Bed bugs continue to be a nuisance pest problem in Alameda County. The District responded to 68 bed bug service requests in 2008. Last June, four staff attended a bed bug workshop in South San Francisco where they learned the latest research on this pest and met with industry representatives who were introducing novel monitoring and detection devices and non-pesticidal equipment such as thermal heating to eliminate bed bugs hidden in cracks and crevices. Furthermore, two staff witnessed a demonstration of “isolation treatment” using high intensity heating fans to treat bed bugs in low-income apartments. A total of 93 service requests including fleas (54), mites (27), lice (3), and ticks (9), were also investigated. In 15 of the cases, tropical rat mites were identified as the offending agent. Tropical rat mite infestations may cause severe emotional distress to humans. Our Vector Ecologist provided advice on eliminating the mites, and the rodent hosts.

There has been a steady increase in the number of suspect delusory parasitosis cases presented to the District. Delusory parasitosis occurs when an individual complains of having the sensation that “bugs” are crawling, biting, or burrowing into their skin. Often the individual will bring in specimens containing personal items or skin fragments, which they believe is infested with “bugs” for examination to seek validation that the problem is real. Usually, no insects are found in these samples. However, we cannot imply that the victims do not experience the biting sensation. Some people with skin conditions or allergic reactions to drugs may experience biting sensations by minute arthropods. In these instances, they should be referred to physicians for further evaluations. Delusory parasitosis cases are challenging and the District can only offer assistance when active pest infestations have been identified and evaluated.

Lyme Disease

Lyme disease remains as the highest reported vector-borne disease in the United States. The District conducts an ongoing Lyme disease surveillance program; staff collects and identifies ticks, and recommends testing for tick borne disease when deemed appropriate. The District provides consultations, educational resources, tick identification, and testing facilities for Lyme disease. Thirteen adult western black legged ticks, *Ixodes pacificus* – the primary vector were submitted to the Sonoma County Public Health Laboratory for Lyme disease testing; all tested negative. Through District initiated surveys of six peridomestic areas in Oakland, 25 *I. pacificus* nymphs were collected and tested. One out of the 25 nymphs (4.0%) tested positive for the pathogen, *Borrelia burgdorferi*. Because nymphal ticks have a higher infection rate in California (10-15%), determining nymphal tick infection rates in the County will be the primary goal in 2009. Finally, we submitted 232 ticks to Ibis Bioscience to assay for tick-borne pathogens.

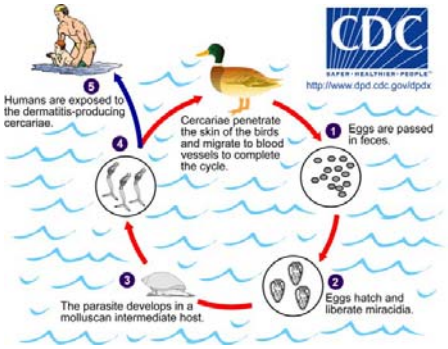


Swimmer's Itch

For the fifth summer in a row, the Robert Crown Memorial State Beach in Alameda was closed and signs posted warning beach users that the water maybe unsafe for swimming. Swimmer's itch, also called cercarial dermatitis, appears as a skin rash caused by an allergic reaction to certain parasites found in specific birds and mammals. When these microscopic parasites are released from infected snails, they can burrow into the nearby swimmer's skin, causing an allergic reaction and rash. Swimmer's itch occurs when several factors converge at the optimal time of the summer. 1) the water temperature reaches the appropriate level for snails to reproduce and grow rapidly, 2) migrating aquatic birds infected with the parasite return from their winter habitats and 3) the frequency of swimmers and bathers reaching peak during this period. In 2008, 31

cases from Crown Beach were reported to the Department of Environmental Health starting from early June to late August. In early August, Dr. Sara Brant from University of New Mexico came to Crown Beach and along with our staff, collected over 1800 snails. She set up experiments to screen the snails for avian schistosomes. At the Visitor's Center site, approximately 60 snails shed schistosome cercariae. The cercariae were inoculated into birds to determine infectivity. One bird was positive. The experiment is ongoing to further characterize the morphology of the adult worms and identifying the bird species responsible for the transmission.

Rash Examples



Swimmers Itch Transmission Cycle

Rash Examples

City of Berkeley

In 1984, the voters of Berkeley supported and approved Measure A and became part of the CSA. Since the City Environmental Health Division, Department of Health and Human Services already had a vector control program, the CSA entered into a service contractual agreement with the Environmental Health Division each fiscal year to fund the vector program. In the years from 1984 to 2006, the City program was not able to provide full vector service, and District staff continued to provide field services to Berkeley to enhance their program. In 2006, the City was able to increase the staffing and has the expertise to assume full responsibility of vector services.

In 2008, the City responded to and investigated a total of 977 service requests and complaints in the following categories--rodents (374), sewer inspections and baiting (67), wildlife (115), arthropod (171), nuisance abatement (109), and survey (41). Over 93% of the requests were completed, and the remaining was pending for further enforcement action.

Inventoried Sources

The District maintains an inventory of stables and kennels, and inspects them to prevent nuisance problems such as odors, insects, or rodents. Upon request by the Alameda County Animal Control, animal hobbyist facilities are inspected during annual permit renewal. Currently, there is no statutory requirement or authority to inspect pet shops, animal grooming salons or livestock holding facilities; however, when there are nuisance complaints, we will perform the inspections.

Nuisance Abatement

Garbage, rubbish, junk cars and animal manure stockpiles can become public nuisances when

left unattended prior to disposal. In addition, these nuisance piles provide harborage and food sources for rodents, flies, and other pests that might result in human disease transmission. The District responded to 524 service requests concerning nuisances, primarily garbage (151), resulting in 814 field services including investigations, progress assessments, correspondence, and compliance inspections.

Public Information and Education Activities

Three brochures were translated into Vietnamese; *District*, *Rat* and *Cockroach*. Once the reviewed and format processes are complete, they will be printed /posted to our web page. Furthermore, our summer newsletter and Annual Report were added to our web page. We added two new "*Mr. Vector*" audio files to our web page—this is a series of "edutainment" audio productions—one on "*What's a Vector*" and one on "*Lyme disease*".
We are planning to translate more brochures into other languages, for example, Chinese, Spanish, Vietnamese and Tagalog to better inform and educate the diverse ethnic communities in our County.

We have improved our outreach/educational materials and equipment; and we have had updated our informational brochures, as well as newly created door-hangers that accommodate staff business cards.

The District has undertaken a "*Lyme Disease Physician Survey*," as part of our Lyme disease outreach effort. The questionnaire was mail to a current 440 "Alameda County Practicing Physician

Alameda County Fair Informational Booth

database." This survey was initially mailed on November 18th and a re-mailing will be instituted early next year. In collaboration with the Public Health Department's Division of Communicable Disease Control and Prevention (DCDCP), we are going to evaluate the results, reassess our outreach program in 2009, and will provide with follow-up educational materials of Tick and Disease Surveillance in Alameda County to the medical community.

Community Events

The big event of 2008 was our booth at the 17-day Alameda County Fair, which was attended by 357,904 fair-goers. Due to the funding shortage in the past, we were not able to participate for years. The labor intensive preparation for this event will pave the way for the subsequent years ahead. Our display and informational materials were enhanced in preparation, and greatly contributed to the success of the event. Having our staff present to answer questions relating to vectors and pests, and the recent benefit assessment ballot was invaluable in putting the human face upon our public funded, services district. Having the resources to put our program in the best light can only enhance our future interaction with the public we serve.

In 2008, our staff participated in 33 informational fairs and presentations at community and school events throughout the County—beyond the highlighted Alameda County Fair. We made several press releases on positive rabid bat test results (Livermore, Oakland and San Lorenzo); 3 interviews about a blighted/rat infested property in Albany, Vector Control Awareness Week and repellents, and two spider related interviews; *Zooropsis spinimena*, and Yellow Sac spiders.

Public Education and Information Disclosure

Our staff uses various methods to disseminate information and to educate target audiences on vectors, disease transmission cycles, emerging diseases, and control strategies. By far, the most effective way in reaching a large audience is through PowerPoint presentations. Other reliable and efficient methods include staffing booths at special events and County fairs. Additionally, our Vector Ecologist, Community Relations Coordinator, and management offer consultations on vector-related questions over the phone. If necessary, the public can bring insects, ticks, and mites to our facility for identification.

We encourage the public to visit our website for current and useful information on vectors, nuisance pests, and diseases. They can download brochures and articles as well as connect and explore links to other sites. In 2008 we have had 368,493 hits on our web page, averaging about 31,000 hits per month, or 1,000 per day. Last year 2007, our web page receives an average of 850 hits per day, and 25,730 per month—so we have had about a 15% increase in web page hits in 2008!

Our Countywide "*Head Lice Prevention Month*" mailing to 176 elementary schools was once again performed, as well as "Mussel Quarantine" posting along the Alameda County shoreline—to prevent paralytic shellfish poisoning (PSP).

Pesticide Use Summary 2008

Pesticide Use

The District participates in a countywide *Integrated Pest Management* policy set by the Board of Supervisors. The majority of pesticides applications were used to suppress Norway rats in the sewers or to destroy yellow jacket nests. Mosquito larvicides totaled less than a quarter pound of active ingredient. The total pesticide usage is listed below and is reviewed by the Alameda County Agricultural Commissioner, and the Department of Pesticide Regulation and the California Department of Public Health.

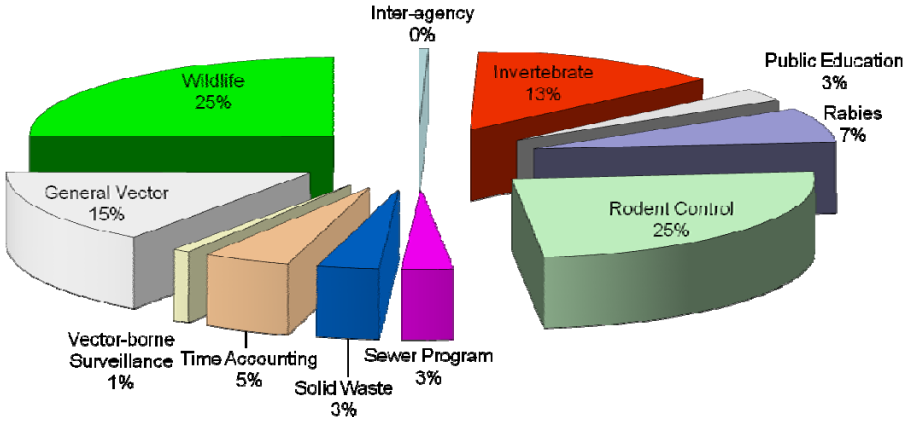
Pesticide Use 2008

Pesticide	Manufacturer	Formulation	Target Pest	Amount Used	Applications
Delta Dust	Bayer Environmental Science	Insecticidal Dust	Yellow Jackets/ Wasps	1.44 lbs.	5
Contrac Super Blox	Bell Labs	8 oz block	Domestic Rodents	827.50 lbs.	151
Drione Dust	Roussel UCLA	Insecticidal Dust	Yellow Jackets	12.01 lbs	86
Ditrac Tracking Powder	Bell Labs	Rodenticidal Dust	Domestic Rodents	2.56 lbs.	29
Contrac Pellets	Bell Labs	Pellets	Domestic Rodents	1.81 lbs.	3
Victor Poison-free Wasp & Hornet Killer	Woodstream	Aerosol Spray	Yellow Jackets/ Wasps	0.59 Gal.	13
Wasp Freeze	Whitmire	Aerosol Spray	Yellow Jackets/ Wasps	3.94 Gal.	42
Altosid XR Briquets	Wellmark Int'l	Briquets	Mosquito Larvae	0.63 lb.	7
Altosid XRG Briquets	Wellmark Int'l	Briquets	Mosquito Larvae	0.88 lb.	2
Maxforce FC Roach Bait Station	Bayer Environmental Science	Plastic Bait Station	Cockroaches	0.32 lb.	7
Siege PBS Gel	Waterbury Companies, Inc.	Gel	Cockroaches	0.47 lb.	9
Chlorophacinone	ALCO AG.	Rodenticidal meal	Ground Squirrels	0.94 lb.	2

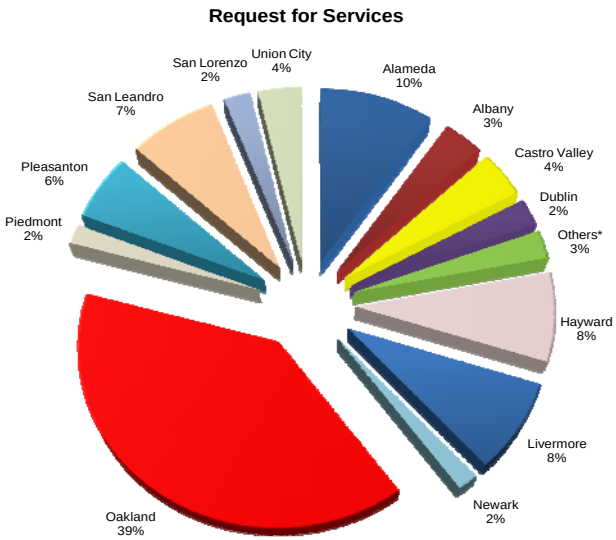
City of Berkeley

Pesticide	Manufacturer	Formulation	Target Pest	Amount Used	Applications
Talon	Syngenta	8 oz. wax block	Norway rats	903.5 lb.	1,807
Drione insecticide	Bayer	Dust	Yellow Jackets	6.88 lb.	21

Alameda County Vector Control Services District Services by Program, 2008

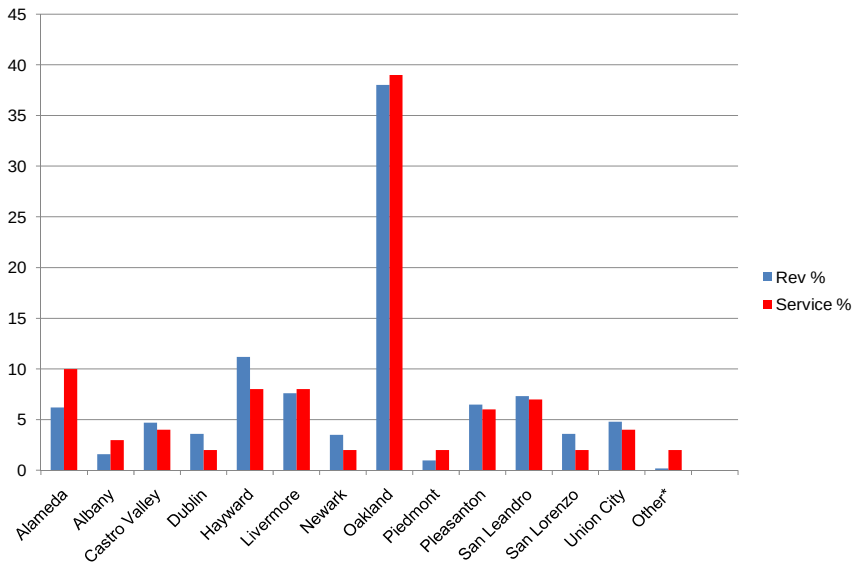


Alameda County Vector Control Services District Total Services Provided to Cities, 2008



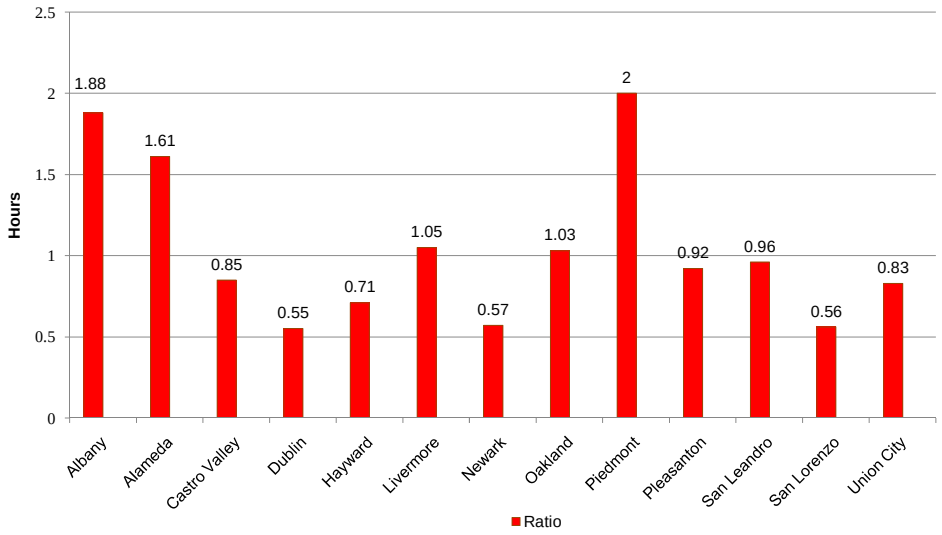
* Ashland, Berkeley, Emeryville, Fremont, Sunol and Unincorporated

Alameda County Vector Control Services District
Percentage of Service Requests and Benefit Assessment Per City
2008



* Ashland, Berkeley, Emeryville, Fremont, Sunol, and Unincorporated

Alameda County Vector Control Services District
Ratio of % Services Hours Provided/ % Revenue Per City



BENEFIT ASSESSMENT

The Board of Supervisors reviews annually the proposed rate of assessment, holds public hearings, and then establishes the assessment for the fiscal year. Assessments are levied and collected at the same time and in the same manner as the general county property taxes. They are subject to the same fines, penalties, and forfeiture as property taxes. The assessment charge levied against each parcel is available for review at the Clerk of the County Board Office at 1221 Oak Street, Oakland, 5th floor.

From 1984 to 2008, the CSA Vector Control Benefit Assessment (Initial Benefit Assessment) was based on land/property use as classified by the Assessor's Office. A basic assessment rate was established as a single family dwelling benefit unit (BU), which was applied to the schedule for assessments according to land/property use.

In 1997, the voters approved Proposition 218, which requires a mail-out ballot procedure to impose any proposed increase change in an assessment. The Post Proposition 218 assessment rate was based on the number of people who potentially live on or work at the different property type. And the BU rates of Secondary Benefit Assessment for the various types of property have changed significantly from the Pre Proposition 218 rates. The new assessment rate in the table below depicts some of the differences between the two rates calculation methods.

LAND/PROPERTY USE CATEGORIES

Property Use Categories	CSA Vector Control Benefit Units/per property type (Initial Benefit Assessment)	CSA Vector Control Benefit Units/per property type (Secondary Benefit Assessment)
Single Family Residence/ Condominium	1BU	1BU/0.61BU
Vacant Land Parcel	1BU	0.25 BU
Multiple Residential Small (2-4 units)	2 BUs	0.46 BUs
Commercial, Industrial	2 BUs	0.5 BUs
Large Rural Property	2 BUs	0.08 BUs (per 10 acres)
Multiple Residential (5units +)	5 BUs	0.32 BUs
Large Commercial (Hotels, Mobile Home Parks)	5 BUs	0.5 BUs (per ¼ acre increments)

CSA VECTOR CONTROL SERVICES
BENEFIT ASSESSMENTS
FY 2008-2009

Use/Size	CSA Vector Control Initial Benefit Assessment	Oakland (Residence only) + Supplement Assessment ($1.28)	CSA Vector Control Secondary Benefit Assessment
Single Family Residence/ Condominiums	$5.92	$7.20	$4.08/2.49
Vacant Land	5.92	7.20	1.02
Multiple Residential Small (2-4 units)	11.84	14.40	1.88[1]
Commercial, Industrial	11.84	14.40	2.04[4]
Large Rural Property (More than 10 Acres)	11.84	14.40	0.34[3]
Multiple Residential (5 units +)	29.60	36.00	1.30[2]
Large Commercial (Hotels, Mobile Home Parks)	29.60	36.00	2.04[4]

Notes:
1. This rate is per unit. There would be a minimum of 2 units for this category.
2. This rate is per unit. There would be a minimum of 5 units for this category.
3. A property would be charged this minimum. It would be $.34 for 10 acres.
4. These estimates are based on per ¼ acre increments.

ASSESSMENT FOR ONE BENEFIT UNIT (BU)
(Single Family Residence - CSA Basic Rate and Oakland)
1984-2008

FISCAL	CSA	OAKLAND	OAKLAND
Year	Basic Rate	Supplemental Rate	Total Rate*
84-85	$3.15	$0.00	$3.15
85-86	2.66	0.00	2.66
86-87	2.66	0.00	2.66
87-88	3.24	0.00	3.24
88-89	3.30	0.70	4.00
89-90	3.58	0.66	3.84
90-91	3.80	0.70	4.50
91-92	3.96	0.70	4.66
92-93	3.96	0.70	4.66
93-94	4.72	1.04	5.76
94-95	4.82	1.06	5.88
95-96	5.82	1.26	7.08
96-97	5.92	1.28	7.20
97-98	5.92	1.28	7.20
98-99	5.92	1.28	7.20
99-00	5.92	1.28	7.20
00-01	5.92	1.28	7.20
01-02	5.92	1.28	7.20
02-03	5.92	1.28	7.20
03-04	5.92	1.28	7.20
04-05	5.92	1.28	7.20
05-06	5.92	1.28	7.20
06-07	5.92	1.28	7.20
07-08	10.00	1.28	11.28

***Includes Oakland Supplemental initiated 1988-89**

Alameda County Vector Control Services District
1131 Harbor Bay Parkway, STE 166
Alameda, CA 94502
Phone: (510) 567-6800 Fax: (510) 337-9137
Web: http://www.acvcsd.org E-Mail: ehvector1@acgov.org

Adapted from the 2008 Annual Report Approved by the Alameda County BOS July 2009