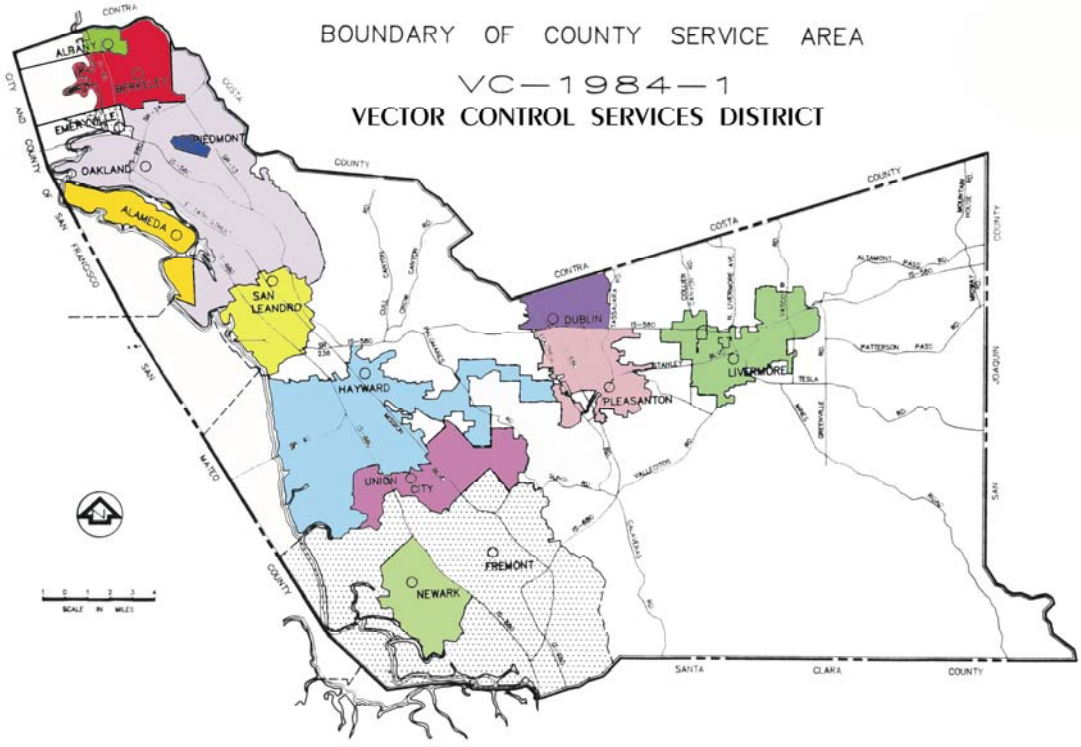
Alameda County
Vector Control Services District

Our Mission:
Prevention of Vector Borne Disease in Alameda County

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

Annual Report 2007



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 State 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.

- Collect rodent fleas and determine plague, 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 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 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 2008-09, 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 proposed 2007-08 assessments.

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. Environmental Health Department was experiencing fiscal shortfalls, and had to reduce vector control services in Alameda County. In response, the Board of Supervisors created the County Service Area after the passage of Measure A, which received over 70% voter's approval for the formation of the CSA. The CSA is now serving 12 of the 14 cities in Alameda County, and the unincorporated county areas. Currently, the CSA does not include the cities of Emeryville and Fremont, which opted to seek alternative sources for providing vector programs. The City of Berkeley already had an existing vector control program when the CSA was formed, which is currently funded by a formal contract between the City of Berkeley and the CSA. Dublin was initially not part of the CSA but was annexed by the Board of Supervisors in 1992, at the request of the Dublin City Council, which voted to join the District.

In 2007 the property owners within the CSA Boundaries approved a ballot measure under proposition 218, adding a secondary benefit assessment of $4.08 per single-family dwelling. Details of this measure are discussed in the Benefit Assessment section on pages 22-24.

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
2007 ANNUAL SUMMARY

Introduction

The County Service Area (CSA) VC 1984-1 is 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 fees have remained the same while costs, and responsibilities have drastically increased. For the past five years, the District has operated at a deficit and experienced staff shortages.

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 through the ballot process. The result was an overwhelming support (69%) 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 in the District boundary areas in May. The ballot measure received 67.7% voter support and the Board of Supervisors approved the new BA of $4.08 (CSA Vector Control B) in July. With the new funding, the District was able to fill two senior Vector Control Officer positions, initiated the hiring process of Vector Control Officer Trainees, and are able to purchase and replace office, laboratory and field equipment.

At the time of the balloting, the Alameda County Local Agency Formation Commission (LAFCO) recommended a proposal to offer the District services to Emeryville and Fremont. In 2008, the District will survey property owners in both cities to determine the feasibility of annexation to the District, and thus provide vector control services to all residents in the County.

VECTOR CONTROL SERVICES in 2007 - Detail

Urban Rodent Surveillance

The urban rodent surveillance program focuses on monitoring and controlling rats (Norway and roof rats) and mice on 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 2007, the District received 1,267 requests for service from the public on domestic rodents, representing 21.8% of all requests. Additionally, staff performed 8,042 field services related to domestic rodents including; smoke and dye tests of 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 2007, staff found 27 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; 20 commensal rodents (Norway and roof rats), and six tree squirrels from urban and peridomestic areas were trapped and examined for ectoparasites (fleas and mites) (Table 1).

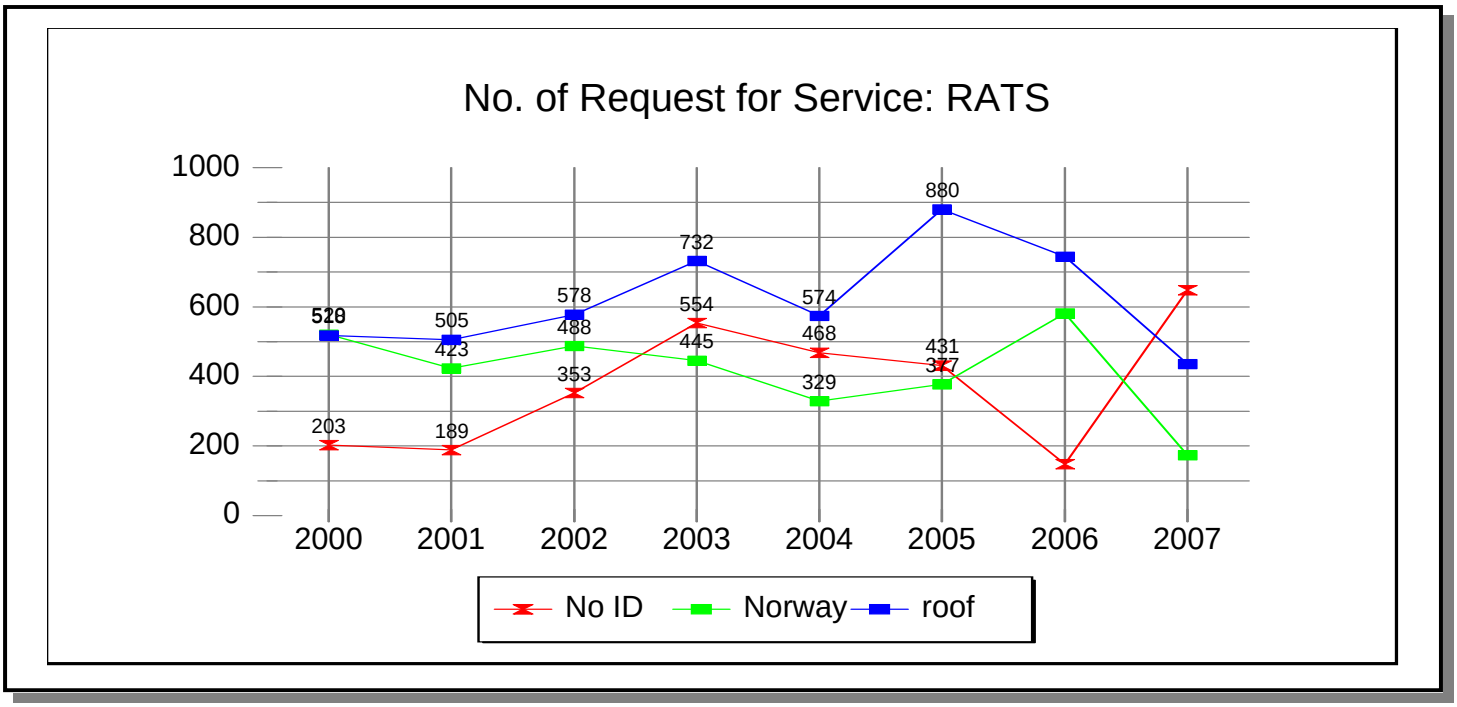
2007	N	# w/ fleas	# of fleas	Flea species	Flea Index
R. megalotis Harvest Mouse	2	0	0		
Neotoma fuscipes Wood Rat	3	2	5	*Orchopeas sexdentatus*	0.6
Peromyscus maniculatus Deer Mouse	9	0	0		0
Sciurus niger Eastern Fox Squirrel	6	4	14	*Orchopeas sexdentatus*	0.42
Rattus norvegicus Norway Rat	1	1	1	*Ctenocephalides felis*	0.09
Rattus rattus Roof Rat	9	0	0	4x *Ixodes pacificus* (tick)* 3 larva, 1 nymph	
Canis latrans Coyote	1	14	100	*Pulex sp.*	

TABLE 1: Fleas collected from sylvatic rodents and commensal rodents
*Rodent trapped from non-urban areas

Due to aging, structural deterioration, and infrequent maintenance of sanitary sewers, Oakland has had a long history of *Norway rats* invading homes and neighbor-hoods. Our staff investigated 176 Norway rat service requests in 2007. Furthermore, the staff responded to an additional 1,091 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 8,415 sewer inspections and 2,088 treatments were made in Alameda, Albany, Livermore, Piedmont, Oakland, and San Leandro. We also continued our effort to evaluate neighborhoods with rat activity in the sewers based on clusters of complaints, 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 444 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 on structural modifications to prevent rodent entry to their home. 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 ecologist has been working on a field guide comparing anatomical measurements and visual morphological traits to separate the two species apart. In 2008, the District will continue partnering with U.C. Berkeley Museum of Vertebrate Zoology; continue our effort to obtain more specimens and learn more about this invasive species' biology and disease carrying potential, e.g., Bartonella.

Ljungan Virus

In other rodent research projects, the District is continuing to trap Norway and roof rats, and are submitting their organs (heart, brain, and pancreas) to Dr. Bo Niklasson at the University of Uppsala in Sweden to test for a novel *Picorna* virus (Ljungan virus) as a possible causal agent for insulin-dependent-diabetes mellitus, myocarditis, and *Guillain-Barre* syndrome in humans. In 2006, 7 of 13 commensal rodents tested from Alameda County had high virus titers. Dr. Niklasson and Dr. Klitz at U. C. Berkeley have applied for a grant to study the disease implications in humans, and the District has agreed to collaborate by submitting Norway and roof-rat organ tissues. Human disease implications of these finding may be significant.

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), ehrlichiosis, 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-borne disease 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 2007, we conducted plague surveillance at the Del Valle Regional Park in Livermore. High ground squirrel populations were observed and their foraging activity places them in close contact with campers and their pets. We set (live capture) tomahawk traps on two occasions, but had poor capture results. A total of four squirrels were trapped but were later released. In retrospect, we conducted our surveillance late in the season when the squirrels have already stored their winter food supply. They were active during the day only to exercise and warm their bodies. The District plans to maintain an on going plague surveillance of ground squirrels and their ectoparasites at Del Valle and other County parks in 2008. In 2007, 12 sylvatic rodents (deermice, wood rats) collected from rural locations were tested for the plague pathogen. All tested negative. Additionally, three carnivore blood samples tested negative for plague infection.

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 principal 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 are infected with SNV. The District conducts Hantavirus surveys, in collaboration with the California Department of Public Health (CDPH), in an effort to minimize the transmission of HPS disease.

In the fall of 2007, District Staff surveyed four parks in the East Bay Regional Park District: Wild Cat Canyon, Tilden, Anthony Chabot, and Del Valle. We visited 15 sites and determined that 8 of the 15 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 in Tilden and Anthony Chabot parks, respectively. Five deer mice were trapped at Tilden and they tested negative for SNV. In 2008, we plan to expand HPS surveillance to other locations within the East Bay Regional Park District, to assess the rodent population, ecology and their disease carrying potential.

Tularemia is caused by the bacterium *Francisella tularensis* that is vectored by arthropods and rabbits. Symptoms of human tularemia may include fever, chills, malaise, and fatigue. 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 Alameda County, since an American dog tick, *Dermacentor variabilis*, transmitted a confirmed human case in 2004, the District has been submitting blood samples from various animals for testing. Thus far, no samples submitted in 2007 have tested positive for tularemia.

Rabies Surveillance

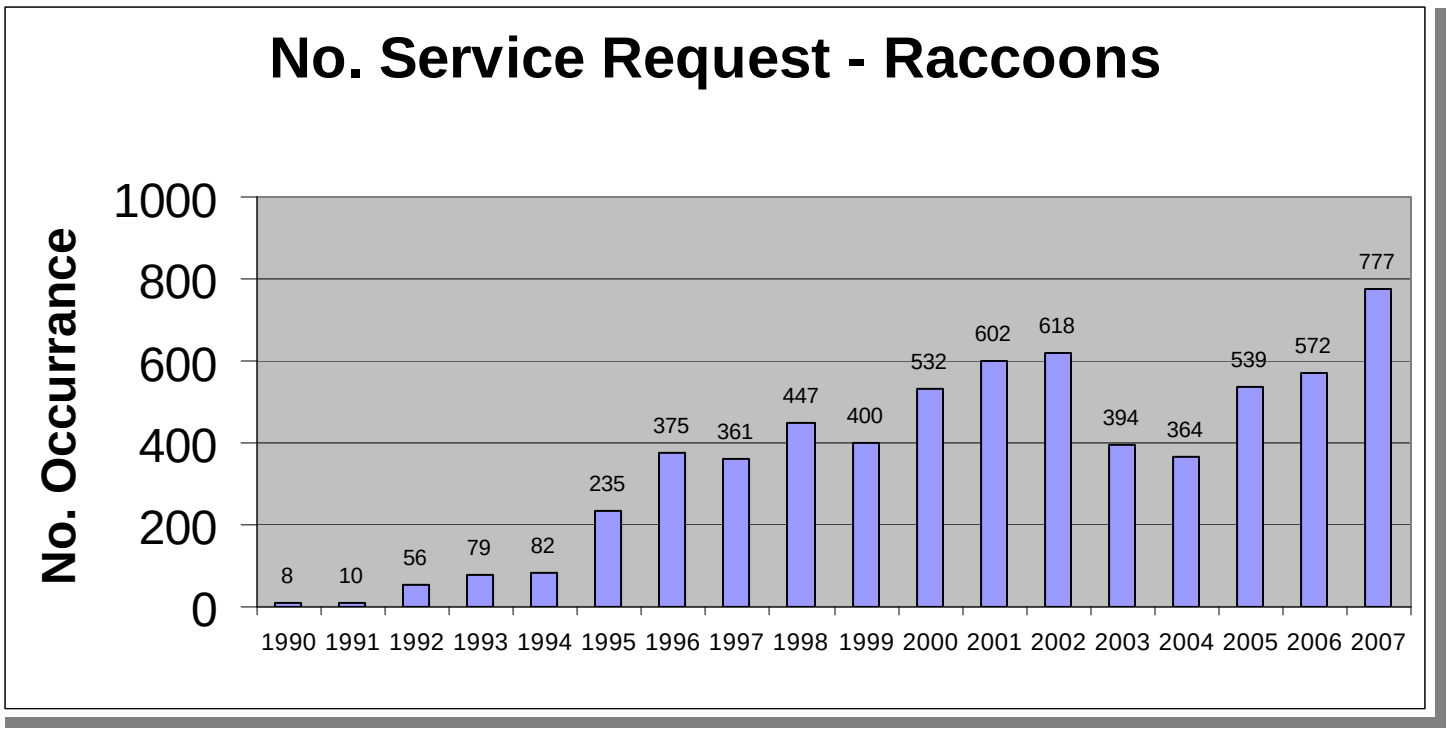
The authority for the Rabies Program is the responsibility of the County Health Officer at the Department of Public Health, which provides laboratory support for the program, and performs human case investigations. The District and 13 local animal control agencies administrate the rabies surveillance programs 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, 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. In 2007, 129 animals including dogs, cats, raccoons, skunks and bats were submitted to the ACPHL for rabies testing. Four bats collected from Alameda, Berkeley, Hayward, and Pleasanton tested positive for the rabies virus.

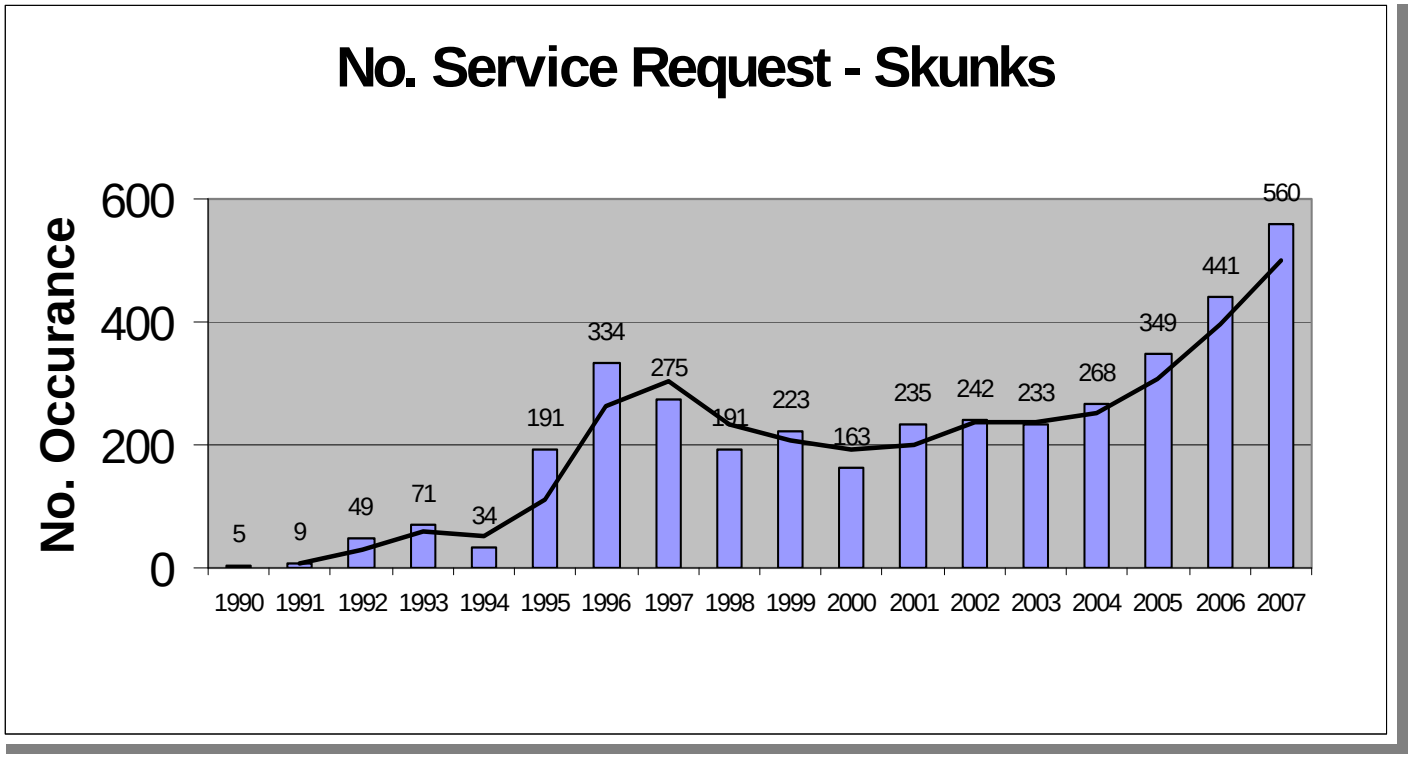
Wildlife Management

The District responded to 1,959 service requests concerning wildlife, and provided almost 3,221 hours of field support within or near residential areas. This represents a 36% increase in the num-

Type of Animal	Number tested	Number positive
Bat	35	4
Cat (domestic + feral)	38	0
Dog	22	0
Fox	3	0
Gopher	1	0
Opossum	2	0
Raccoon	2	0
Skunk	23	0
Squirrel	2	0
Roof Rat	1	0
Totals	**129**	**4**

ber of service requests compared to 2006, which emphasized that the current USDA Wildlife Services Specialist (WSS) played a greater role in urban wildlife problems than in previous years. The increased number of hours spent on each request, reflected enhanced efforts on complaint follow ups; working with homeowners to make sure structural improvements were made to minimize infestation reoccurrence. A majority of these activities involved service calls on raccoons, skunks, squirrels, or opossums, and advising homeowners on animal exclusion method, as well as making their property unattractive to wildlife. When circumstances dictate direct action, Vector Control Officers assist property owners by coordinating with the USDA WSS to set traps, as well as pick up, and removal of 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 2007, the USDA WSS documented a 35.4% increase in raccoon problems reported to the District. In late spring and summer, most calls were for raccoons in attics. Most of the raccoons were removed by using Raccoon 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 activity increased by 27% from the previous year. Most of the skunk activity was in the eastern part of the county. Thirty-three skunks were removed from premises, mostly in Livermore. Significant skunk activity was seen during the breeding season in Oakland and Union City. Most of these problems were solved with harassment techniques and exclusion. Since rabid skunks have been detected in the County, any skunk in close contact with humans was removed euthanized, and tested. USDA WSS removed two mountain lions found killing sheep, under permits issued by Department of Fishing and Game (DGF). Four coyotes preying on sheep were also removed. Wild turkeys digging in yards and causing property damage still pose an occasional problem in parts of the county, and all complaints were referred to DFG.

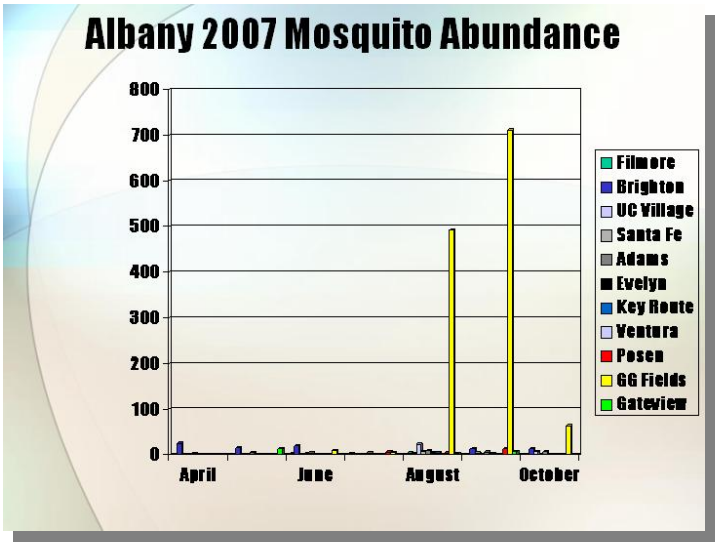
Allowing wildlife access to our pets' food is a leading cause wildlife population growth, and results in an increase of conflicts between people, our pets and wildlife.

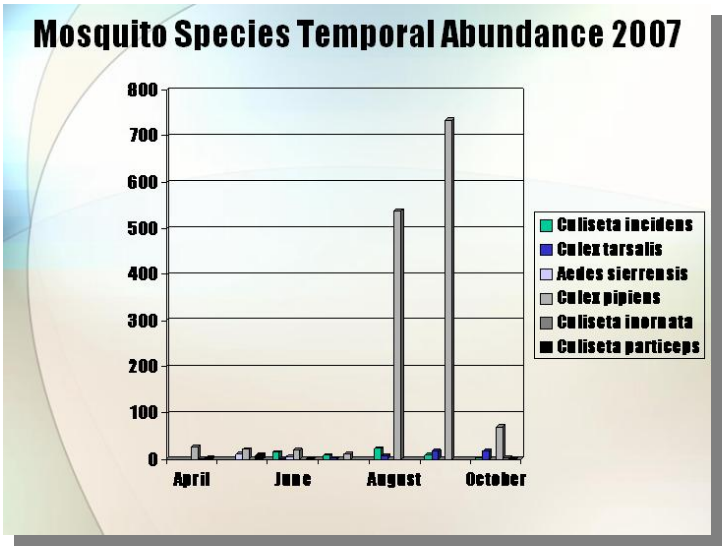
Mosquito Surveillance

In 2007, the most prevalent West Nile virus (WNV) activities were found in Kern, Los Angeles, and Sacramento counties. Unusual high temperatures and abandoned swimming pools contributed to the high mosquito populations and increased viral transmissions.

In Alameda County, the District only conducts mosquito surveillance and control in the City of Albany, while the Alameda County Mosquito Abatement District (ACMAD) is responsible for the remainder of the County. Carbon dioxide baited traps (EVS traps) were set overnight (every two weeks) from April through October to selectively trap female mosquitoes seeking a bloodmeal and to test for virus exposure. A total of 154 trap nights were performed, and 1,554 female mosquitoes were captured in 2007. This was the highest number of mosquitoes we ever captured and it was attributed to unexpected underground breeding sources at Golden Gate Fields (GGF) while renovation was undertaken. In early August, a gradual increase in the number of mosquitoes captured at a trap site in GGF was noted. During the subsequent weeks, the mosquito count rose to more than 600 mosquitoes caught in a single night. Our District technicians collaborated with the Golden Gate Field staff and the Alameda County Mosquito Abatement District to locate the mosquito breeding sources (underground catch and pumping basins). Since there was no horse racing, the water became stagnant because the basins were not routinely flushed. The technicians treated the catch basins with larvicidal oil and *Altosid*® briquettes. Twenty-one mosquito pools were submitted for WNV testing to the Center for Vector-borne Disease (CVEC), University of California, Davis; all tested negative. In 2007, positive WNV activity in other areas of the county was identified by the ACMAD in 19 dead birds, 1 mosquito pool, and 1 tree squirrel.

In Albany, we have identified four species: *Culex tarsalis*, *Culex pipiens*, *Culex erythrothorax,* and *Culex stigmatosoma* as competent vectors of WNV. In 2008, we will monitor the situation at GGF and eliminate breeding sources for these mosquitoes.





Venomous Arthropods

Venomous arthropods include insects, mites, ticks, and spiders that can sting, bite, secrete venoms, and cause allergic reactions in humans and our 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 yellow jacket nests within the county parks. In 2007, the District responded to 342 venomous wasp and 391 honeybee complaints. These numbers were almost identical to 2006. We did not see a decrease in honeybee activity as was reported in other counties in the State. An additional 14 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 referred to structural pest control operators for abatement.

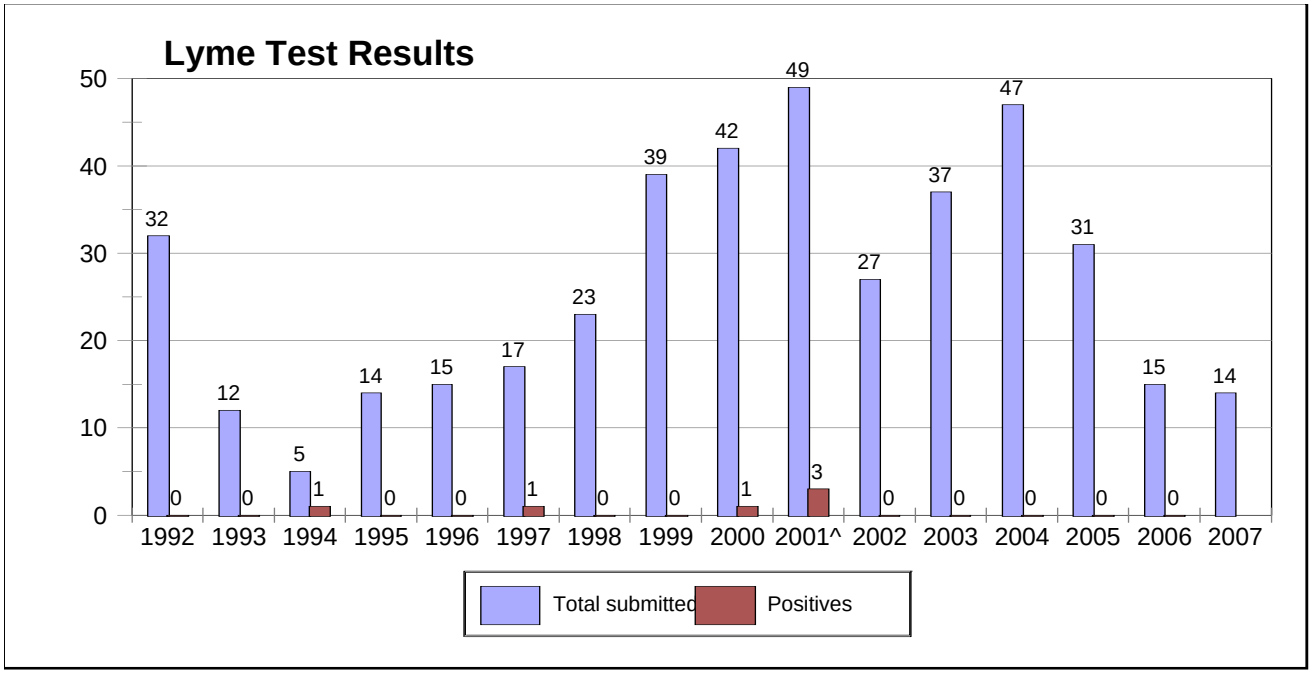
Miscellaneous Arthropods

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 four hundred and forty nine service requests for arthropod identifications. Frequently, the District receives service requests on unusual arthropods and insects other than mosquitoes. For example, we received specimens of an unknown insect that resembled an ant that was biting a resident. With the help of the USDA entomologists in Florida, we determined that it was a wingless parasitic wasp—an uncommon species in urban areas. Bed bugs continue to be a nuisance pest problem in Alameda County. The District responded to 21 bed bug infestation cases. One hundred and fourteen service requests including fleas (53), mites (29), lice (15), and ticks (17), were also investigated. In 13 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.

Over the past several years, we have noticed 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

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. Fourteen adult 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 peri-domestic areas in Oakland, 36 *Ixodes pacificus* nymphs were collected and tested. Two of the 34 nymphs (5.8%) tested positive for the pathogen, *Borrelia burgdorferi*. Additionally, in a CDPH tick disease study, one of ten ticks collected from Tilden Park in Berkeley tested positive. 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 2008. Finally, we will also submit ticks to Ibis Bioscience who is developing a broad-range surveillance assay for tick-borne pathogens.



Swimmer's Itch

For the fourth 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 at contact, 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 2007, 14 cases from Crown Beach in Alameda were reported to the Department of Environmental Health from early June to late July. The District staff collected a batch of *Haminoea* bubble snails (approximately 200 snails) and shipped them to University of New Mexico for

extracting cercariae. The snails tested positive. Because this is an uncommon marine form of swimmer's itch, avian reservoir host (s) may be involved with the snails in the transmission cycle. Hence, we hypothesized that gulls and other shore birds may be the reservoir hosts. Thus far, none of the birds tested from the nearby area have yielded positive results. In 2008, we plan to continue to test snails and gulls, and may expand our investigation to migratory birds to identify the reservoir host (s).

City of Berkeley

The City of Berkeley is within the ACVCSD, but entered into a contractual agreement with the Environmental Health Division within the City Health Department, for vector control responsibilities in 1984. Up to 2006, Berkeley has never had the resources or expertise to provide full vector services to its residents, and as a result, the District has continued to provide the services primarily with venomous wasps, rodent surveillance, and rodent ectoparasites.

In 2007, the Berkeley Vector Program made concerted efforts to increase the staffing and provide a comprehensive vector service to Berkeley residents. The City responded to and investigated a total of 970 service requests and complaints in the following categories--rodents (392), sewer inspections and baiting (210), wildlife (58), arthropod (164), solid waste (57), and survey (69). Over 93% of the requests were completed, and the remaining were pending for further enforcement action.

Inventoried Sources

The District maintains an inventory of stables and kennels, and inspects them regularly 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. Last summer, during the month long garbage strike, the District responded to a 57% increase in complaints about garbage piles on sidewalks and followed up to assure nuisance abatement and compliance with applicable laws and regulations. The District responded to 525 service requests concerning nuisances, primarily garbage (246), resulting in 1,479 field services including investigations, progress assessments, correspondence, and compliance inspections.

Public Information and Education Activities

New brochures were created about Arthropod Repellents, Ant Control, West Nile virus: Fight the Bite, Rabies in Alameda County, Cockroach Control, and up-dated Pigeon Control, and Head Lice brochures, intended for public distribution and posting on our web page. Furthermore, our summer newsletter and Annual Report were added to our web page, and mailed to community leaders. A PowerPoint (PDF conversion) overview of vector control was placed on our web page. Along with all the updating, web page reorganization was performed to make it user-friendly and easier to locate information. We are continually seeking to translate our brochures into other languages, for example, Chinese, Spanish, and Vietnamese to better inform and educate the diverse ethnic communities in the County. Timely West Nile Virus updates and mosquito control reports were sent to the City of Albany.

Community Events

In 2007, our staff participated in 16 health fairs, and 17 presentations were given in community and school events throughout the County. We made several press releases on West Nile Virus (using repellents against mosquitoes, positive mosquito pools, and reporting dead birds), positive rabid bat test results, (Alameda, Berkeley, Hayward, and Pleasanton) and Vector Control Awareness Week. During the garbage strike, we were involved in television, radio, and newspaper interviews on the potential rodent and fly problems created by the accumulated garbage piles in affected neighborhoods. These outreach efforts were positively received by local media and the communities.

Festival of India Outreach Event July 11, 2007 Fremont, CA

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. At these events, staff gives hands-on demonstrations and answer questions from the inquiring public. 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 are steering 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. Our web page receives an average of 850 hits per day, and 25,730 per month.

Our Countywide "Head Lice Prevention Month" mailing to 173 elementary schools was once again performed, as well as "Mussel Quarantine" posting along the Alameda County shoreline—to prevent paralytic shellfish poisoning (PSP).

Invited Guest Speaker Series

Responding to the staff request to get information on current research, new products and equipment, the District initiated an *Invited Guest Speaker Series* where researchers and industry representatives come to the District and give presentations on a specific topic of interest. The following speakers participated in this program:

- Denise Bonilla, CA Dept. of Public Health: Vector-Borne Diseases in CA
- Dr. Lynn Kimsey, UC Davis: Introduction to Delusory Parasitosis
- Dr. Robert Timm, UC Cooperative Extension: Rodent Management in Urban Environments
- Dr. Bill Reisen, UC Davis: West Nile Virus Summary—2007

The presentations were well received and we plan to invite more speakers in 2008.

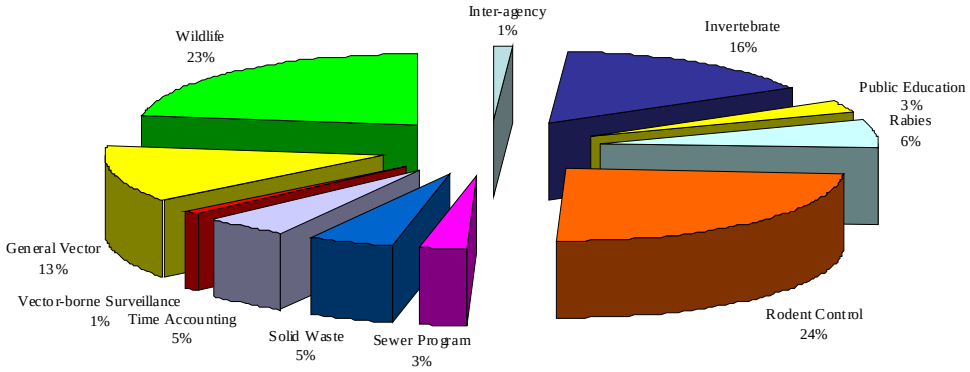
Pesticide Use Summary 2007

Pesticide Use

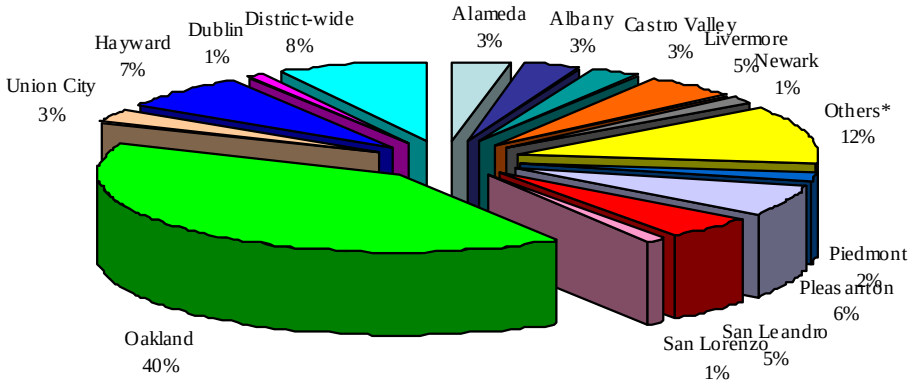
The District participates in a countywide *Integrated Pest Management* policy set by the Board of Supervisors. The majority of pesticides applications were used to suppress Norway rats in the sewers, or to destroy yellow jacket nests. Mosquito larvicides totaled less than a quarter pound of active ingredient. The (*) for BTI liquid and Methoprene liquid refer to a field formulation called Duplex, which is a mixture of the two biorational insecticides—a bacterium and an insect growth regulator. The total pesticide usage is listed below and is reviewed by the Alameda County Agricultural Commissioner, the Department of Pesticide Regulation, and the California Department of Public Health.

Pesticide	Manufacturer	Formulation	Target Pest	Amount Used	Applications
Delta Dust	AgrEvo	Dust	Yellow jacket/ Wasp nests	2.56 lbs	22
Contrac Super Blox	Bell Labs	8 oz or I lb blocks	Domestic rodents	995 lbs.	120
Ditrac Tracking Powder	Bell Labs	Dust	Domestic rodents	2.16 lbs	22
Quintox Meal	Bell Labs	Meal	Domestic rodents		
Contrac Pellets	Bell Labs	Pellets	Domestic rodents	1.31 lbs	4
Contrac Blox	Bell Labs	1 ounce	Domestic rodents	2 lbs	1
M-Pede	Mycogen	Liquid	Bees	0.02 lbs	2
Maxforce	Clorox	Large Bait Stations	Cockroaches	0.13 lbs	1
Wasp Freeze PT515	Whitmire	Aerosol Spray	Wasps	5.92 gal	42
PT565	Whitmire	Aerosol Spray	Wasps	0.16 gal	7
Drione Dust	Aventis	Dust	Yellow jackets	19.47 lbs	119
Rozel	Lipha Tech	Tracking Powder	Domestic rodents		
Poison Free	Victor	Aerosol	Yellow jackets	0.76 lbs	17
BTI Briquette	Summit	10.0%	Mosquitoes		
BTI Liquid*	Valent	VectoBac 12-AS	Mosquitoes		
Methoprene*	Wellmark	ALL SR-20	Mosquitoes		
Altosid XR.	Wellmark	XR Briquette	Mosquitoes	0.8 lbs.	5
Altosid XR-G	Wellmark	XR-G granules	Mosquitoes		
City of Berkeley					
Talon Weather-blok	Syngenta	8 oz wax-based blocks	Domestic rodents	550.5 lbs	1,515
Drione	Bayer	Dust	Yellow jackets	0.84 lbs	21

Alameda County Vector Control Services District Services by Program, 2007

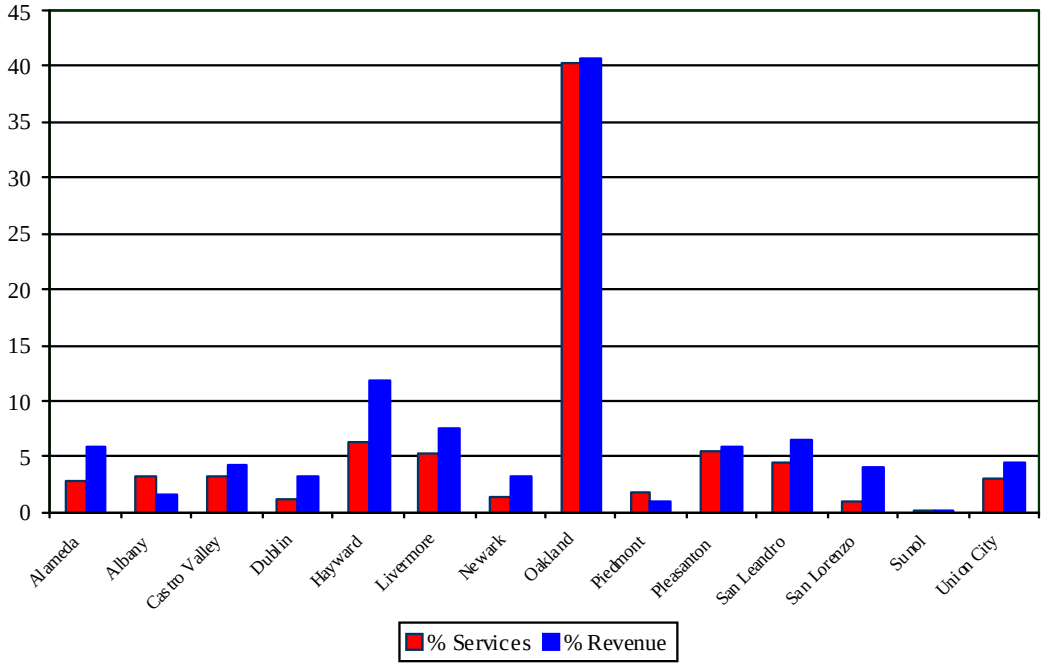


Alameda County Vector Control Services District Total Services Provided to Cities, 2007

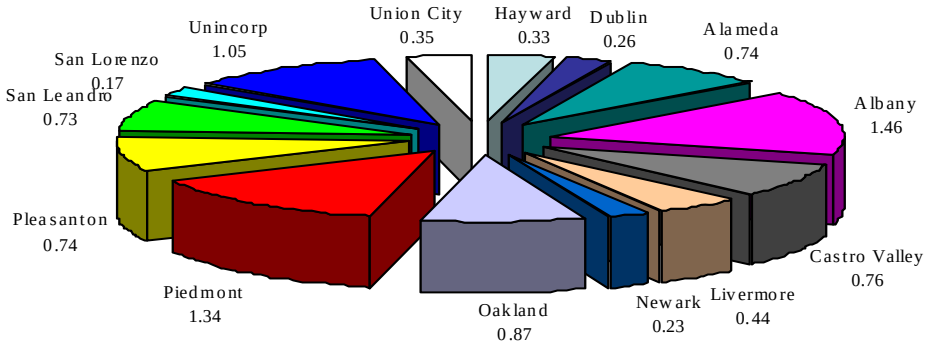


* Ashland, Berkeley, Emeryville, Fremont, Sunol, and Unincorporated

Alameda County Vector Control Services District
Percentage of Service Hours and Benefit Assessment Per City
2007



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



BENEFIT ASSESSMENT

The Board of Supervisors annually reviews 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 Vector Control Services District Office, and at the Clerk of the Board Office at 1221 Oak Street, Oakland, 5th floor.

From 1984 to 2007, the CSA Vector Control Benefit Assessments were based on land/property use as classified by the Assessor's Office. A basic assessment rate was established as a single benefit unit (BU), which was applied to the schedule for assessments according to land/property use. However, the assessment rate of the post Proposition 218 (approved by voters in 1997) was based on the number of people who potentially live on or work at the different property type. As such, the new CSA Vector Control B Benefit Assessment rate of single BU applies to the land/property use was different from the old one; and two BU rates of different property type were assessed as follows:

LAND/PROPERTY USE CATEGORIES

Property Use Categories	CSA Vector Control Benefit Units/per property type (Pre 218, 1984 to Present)	CSA Vector Control Benefit Units/per property type (Post 218, 2007- 2008)
Single Family Residence/ Condominium	1 BU	1 BU/0.61 BU
Vacant Land Parcel	1 BU	0.25 BU
Multiple Residential Small (2-4 units)	2 BU's	0.46 BU's
Commercial, Industrial	2 BU's	0.5 BU's
Large Rural Property	2 BU's	0.08 BU's (per 10 acres)
Multiple Residential (5units +)	5 BU's	0.32 BU's
Large Commercial (Hotels, Mobile Home Parks)	5 BU's	0.5 BU's (per ¼ acre increments)

CSA VECTOR CONTROL SERVICES
BENEFIT ASSESSMENTS
FY 2007-2008

Use/Size	CSA Vector Control Benefit Assessment (BA) (Pre 218)	Oakland (Residence only) + Supplement Assessment ($1.28)	CSA Vector Control Benefit Assessment (BA) (Post 218)
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**

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