

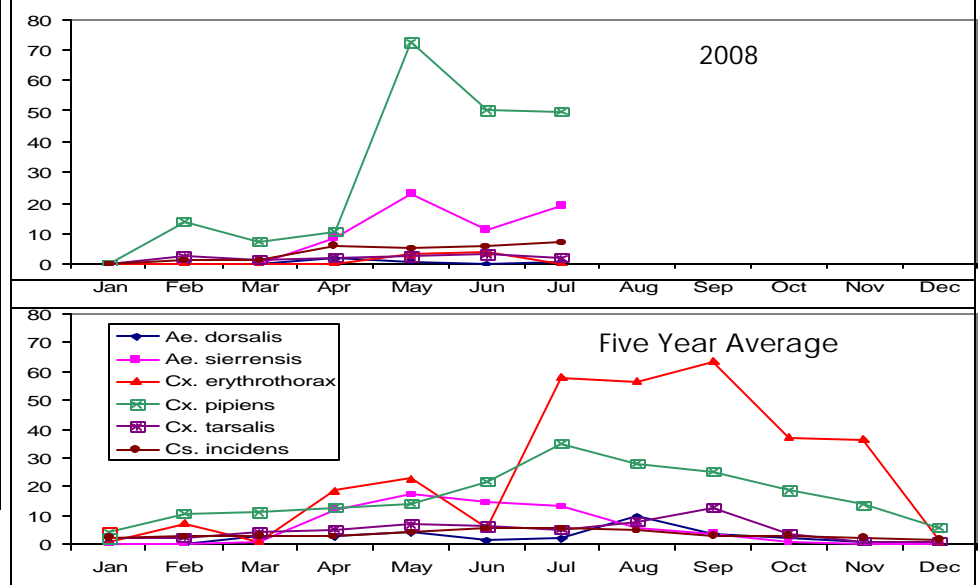


Entomology Report

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Adult Mosquito Populations in CO2 Traps



Mosquito Control Operations

Treatment of underground sources remained the focus of mosquito control operations in June, with over 40,000 catch basins treated. Helicopter treatment for *Culex erythrothorax* (tule mosquitoes) in cattail marshes began on July 2. Applications were made to Searsville Lake, Mills Field, and Sharp Park. Bair Island was inspected several times in June. Time-release pellets have been applied by hand to low areas on Bair Island. They contain a hormone specific to mosquito larvae and will prevent the emergence of adult summer salt marsh mosquitoes. A small pocket of mosquito production was detected on June 27th and treated by hand. Other sources treated for mosquitoes this month included:

- 1,216 Backyard fishponds and fountains
- 1,153 Containers
- 158 Ditches and drain lines
- 79 Creeks
- 42,817 Catch basins
- 140 Utility vaults
- 168 Marshes and impounds (10 acres)
- 84 Neglected swimming pools
- Water under 15 buildings

District staff responded to a list of service requests regarding rats submitted by the City of San Mateo. The District oversees a contract for sewer line baiting between the city (**continue on pg.2**)



Mosquito Control Operations (continued)

and Dewey Pest Control for control of Norway rats. Home inspections in most of these cases revealed activity by roof rats, which are not controlled by baiting in sewers. District staff will follow-up on reports of rat activity near Laurie Meadows Park, which may involve Norway rats. The District will be evaluating rat activity in Stulsaft Park in Redwood City next month.

Service Requests: District staff responded to 233 service requests in June. These included:

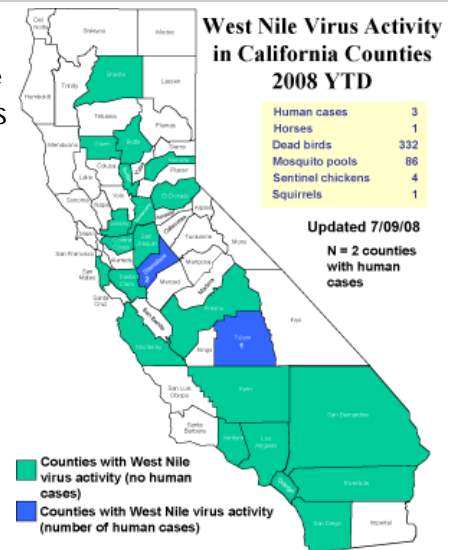
- 61 mosquito requests
- 38 reports of standing water
- 39 requests for fish
- 93 requests regarding stinging insects which included:
 - 78 ground nesting yellow jackets
 - 10 paper wasps
 - 5 European honey bees (which were **not** treated due to the importance of bees)
- 2 requests for home inspections regarding rats

West Nile Virus Update

In 2008, 213 dead birds have been reported in San Mateo County. Of these, 48 were suitable for testing and one tested positive for WNV. Three dead squirrels have been reported, of which one was tested and found negative for WNV.

Thus far, three people have been infected with West Nile virus in California from Stanislaus (2) and Tulare (1) counties. Additionally, one horse, 332 dead birds, 86 mosquito pools, four sentinel chicken flocks, and one squirrel tested positive for WNV in California.

In the Bay Area, positive dead birds have been detected from the following counties: Contra Costa (3), San Mateo (1), Santa Clara (6), and Solano (3). WNV was also detected from mosquito pools in Contra Costa (2), Santa Clara (1), and Solano (1) counties. No humans, horses, squirrels, or sentinel chickens have tested positive for WNV in the Bay Area in 2008.



Heartworm Study

This summer, the entomology laboratory has been conducting a study to assess the current state of dog heartworm in the county. Heartworm disease in dogs is caused by a parasitic filarial worm that is carried by certain species of mosquitoes. In California, the western treehole mosquito, *Aedes sierrensis*, is considered the most likely heartworm vector. While dogs may initially show no clinical signs when infected by heartworm, if left untreated the disease can eventually cause a variety of symptoms ranging from coughing and exhaustion up to seizures or congestive heart failure. Some regions of California, including sections of the Bay Area, have had a history of endemic heartworm since the 1970s, and were described in a thesis published by Chuck Hansen (former District Manager) in the early 1980s. This study aims to update the status of dog heartworm in our area.



Faye trap. Mosquitoes are attracted to the CO₂ bait sublimating out of the thermos and visually to the white and black pattern of the trap.



Tularemia Investigations

In response to a tularemia outbreak in primates housed in a facility in Portola Valley, the entomology staff have been investigating the role of possible vectors responsible for the disease transmission. Tularemia, also known as rabbit fever, is a potentially serious and highly infectious disease caused by a bacterium found in wild mammals, mainly rodents and rabbits. It can be transmitted to humans by a variety of means. Potential ways people can become infected include: ticks, biting flies, exposure to infected animal carcasses, eating or drinking contaminated food or water, or breathing in bacteria suspended in air. Symptoms of tularemia include: sudden fever, chills, headache, diarrhea, muscle aches, joint pain, dry cough, and weakness. This disease is treatable with antibiotics.

District staff have been examining the wildlife in the area to determine the cause of the outbreak. Burrowing ground squirrels are abundant near the facility and serve as a reservoir of infection. One group of vectors under investigation are horse flies in the family Tabanidae. These are large flies with a vicious and painful bite. They mainly feed on the blood of cattle and horses but will also attack humans and presumably other primates.

Two types of traps, a box trap and a malaise trap, were set out in the field to assess fly populations. Ground squirrels were trapped and blood samples were obtained to test for tularemia.



Colorful eyes and biting mouth parts of a Tabanid fly.



In front, box trap: Baited with dry ice, flies are attracted to the shape, color and design (meant to simulate a cow). They fly under the trap and are collected in the bags on top. In back, malaise trap: a tent like structure made of netting. Flies are funneled into a collecting jar at the top.



Ground squirrels are anesthetized and a blood sample is taken. The squirrels are then released back into their burrows.

Heartworm Study (continued)

In March, the District surveyed county veterinarians on the prevalence of dog heartworm cases seen in their practice. Using information from this survey, along with results of mosquito trapping in past years and service requests regarding treehole mosquitoes, sentinel trapping sites were established to capture potential heartworm vectors. This trapping has been conducted on a weekly basis since April, and is expected to continue through the end of the *Ae. sierrensis* season, (sometime in August). The final phase for this experiment will be to test the captured mosquitoes for the presence of the heartworm itself, *Dirofilaria immitis*, by checking for evidence of filarial DNA within the mosquito.

In this way, we hope to establish both the seasonal and geographical distribution of the probable heartworm vector mosquito, as well as to evaluate the disease prevalence in the wild mosquito population.



Holes in trees are filled with water from winter rains. Treehole mosquitoes develop in these cavities and emerge as adults in the spring.



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The San Mateo County Mosquito and Vector Control is an independent, Special District funded by a property tax voted in by individual cities. Our mission is to safeguard the health and comfort of our citizens through a planned program to reduce mosquitoes and other vectors in an environmentally responsible manner.

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"A VECTOR is any animal that can transmit disease to animals or people."

Cerambycidae: Longhorn Wood - Boring Beetle



Order: Coleoptera, Family: Cerambycidae

This month, a resident brought in a longhorn wood boring beetle (Family: Cerambycidae) for identification. She was startled by its large intimidating size and assumed it was an exotic species from a tropical forest. These beetles are common in North America and are one of the largest beetles found in California! Adult beetles lay their eggs in recently killed or freshly cut pine or fir logs. The larvae then bore into the wood where they develop into pupae. The adults range in size from 40 to 65 cm. They are not considered a structural pests and will not bore into treated wood.

Angela Rory and Lauren Couture Depart for Graduate Studies



Angela Rory

Assistant Vector Ecologists Angela Rory and Lauren Couture will be leaving the District in mid-July. Angela Rory has worked for the District for eight years. She began her tenure as a summer hire, driving catch basin trucks, then was brought on as a permanent mosquito control technician. In 2002, Angela was promoted to Assistant Vector Ecologist. Some of her accomplishments include running the tick surveillance program and initiating laboratory testing for West Nile Virus. Angela established and maintained the laboratory's mosquito colony, gave countless presentations, and performed a number of critical research projects. We wish her well in her future attending the London School of Hygiene & Tropical Medicine.

Lauren Couture has worked for the District for two years. In this time, she was essential in redesigning the District website and public education materials. Additionally, she helped develop laboratory databases and made significant advancements in the way the District utilizes mapping technology. Lauren will attend Brandeis to pursue a degree in neuroscience. The District recognizes both Angela and Lauren for their contributions and wishes them well in their future careers!



Lauren Couture