

# Vector Control Report 2019

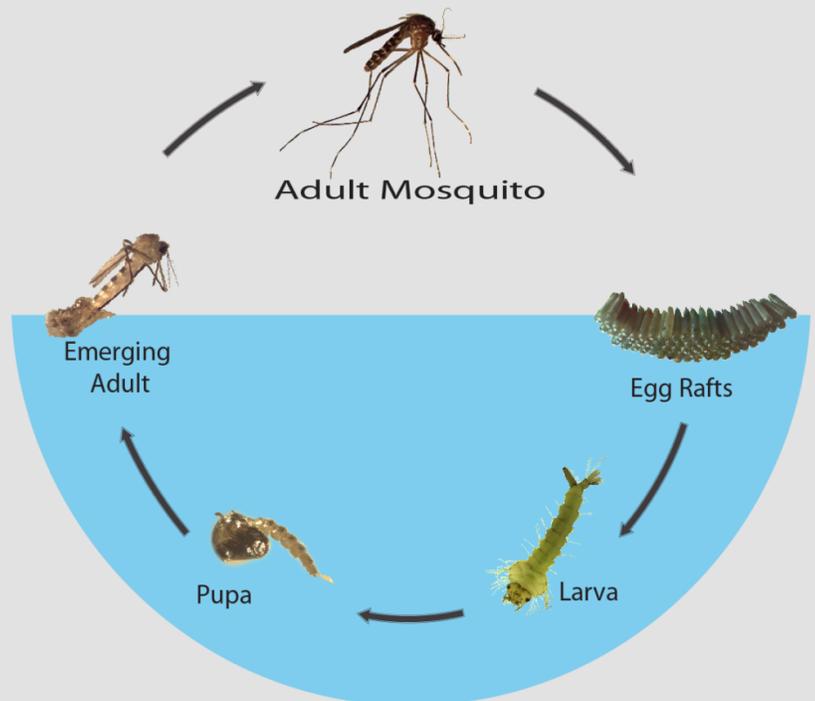


**Ventura County Environmental Health Division**

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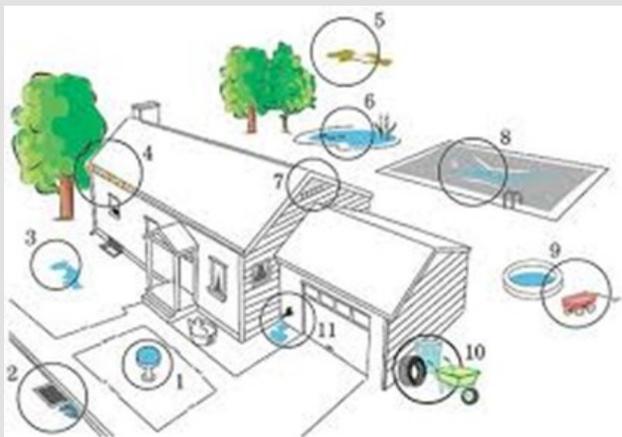
# Mosquito Life Cycle

Mosquitoes require water in which to pass their early life stages (eggs, larva and pupal stages): this usually takes from 7 to 10 days. Most mosquitoes lay their eggs in standing water, where they hatch in a day or two. This may be along creek margins, in containers, gutters, tires, or ponds. Any location where water stands for over two weeks may become suitable for mosquito breeding. Other types of mosquitoes lay their eggs in dirt along creek edges or dry ponds where they remain until covered by water, then hatching occurs. The mosquito eggs hatch into the larval stage (also called wigglers) where the larva wiggle through the water feeding on minute particles. This stage lasts for about one week. The larva changes into the pupal stage called tumblers. This stage is where the larva changes into the adult mosquito. When the adult mosquito is ready to emerge, the skin of the pupa splits open and the adult mosquito climbs out. Adult mosquitoes typically emerge during the summer months and usually live for approximately two weeks. Mosquitoes that emerge in late summer may survive through the winter months if conditions and habitats are ideal. They frequently rest in grasses, shrubbery, or other foliage, and in shaded, secluded, or protected areas, including: doghouses, chicken coops, under eaves, etc. Adult mosquitoes generally feed on flower nectar. However, female mosquitoes also bite humans and animals to obtain a blood meal needed to develop their eggs. Many species of mosquitoes can transmit diseases such as West Nile Virus, St. Louis Encephalitis and Malaria when they bite.



## Where can I find mosquito larvae?

Larva may be found any place around your home where water collects, such as old tires, wading pools, clogged gutters, wheelbarrows, etc.



## Here are some places to check:

1. Birdbaths
2. Street gutters and drains
3. Low-lying depressions in lawn areas
4. Roof gutter and eave troughs
5. Compost piles
6. Ornamental ponds and pools
7. Missing or damaged screens for windows and attic vents
8. Pool covers
9. Toys, wading pools, and other objects around the yard that can hold water
10. Wheelbarrows or tires that are left outside
11. Leaky faucets

## You may be raising mosquitoes!

Homeowners can help reduce mosquito transmitted diseases and nuisance condition cause by mosquito breeding around their homes by eliminating standing water. Start with a thorough inspection of your property to determine sources of standing water.

**If mosquitoes are still bothering you:** If mosquitoes continue to bother you and you have eliminated mosquito breeding sources around your house, the mosquitoes are most likely coming from a source off your property. This problem should be reported to the **Mosquito Complaint Hotline:805/658-4310.**

# mosquito control:

Mosquito control activities generally consist of Division staff inspecting potential mosquito sources and applying control measures when mosquito eggs, larvae, and/or pupae are observed. We maintain a dynamic inventory of known mosquito sources (breeding sites).



## Sources



Sources can vary from Intermittent and recurring water accumulation to man-made sources, such as unmaintained swimming pools, buckets and old tires.



Sources could also be from very large areas with well-developed biological systems such as riverbeds and wetlands.

	# of inventoried sources	# of mosquito source inspections	# of mosquito source treatments
Camarillo	282	1,511	526
Fillmore	78	453	95
Ojai	211	835	151
Oxnard	259	1,144	571
Port Hueneme	23	192	121
San Buenaventura	306	1,202	748
Santa Paula	100	432	38
Simi Valley	685	5,121	2,168
Thousand Oaks	651	2,757	1,480
Unincorporated	840	859	428
<b>TOTAL:</b>	<b>*2,693</b>	<b>14,506</b>	<b>6,326</b>

\*This number is less than the sum of all above sources, because some unincorporated sources that are located in proximity to a city are counted along with sources in the incorporated area.



# DID YOU KNOW?

- Female mosquitoes lay up to 300 eggs at a time, generally in clusters called rafts, on the surface of water, or in areas that frequently flood. Most species can lay eggs multiple times during their lifespan.
- Mosquito eggs can hatch in as little as a teaspoon of water.
- Only female mosquitoes bite. Male mosquitoes feed on nectar or honeydew of plants, but females need protein from a blood meal before they can produce eggs.
- Mosquitoes are attracted to the carbon dioxide and lactic acid found in our breath and sweat and sense the heat and humidity that surrounds our bodies.

**Mosquito control is largely achieved by using biological controls and affecting physical changes in the environment to control mosquitoes in the larval stage.**

- The Division maintains the capability of applying adulticide “insecticide” via spraying, should a public health emergency arise wherein adult mosquito control becomes necessary, however, we continue to achieve excellent mosquito control through the use of less potentially environmentally degrading means.
- The Division emphasizes the use of environment-friendly controls, such as:
  - \* Naturally occurring bacteria based larvicides
  - \* Introduction of mosquito-eating fish (*Gambusia affinis*, or “Mosquito Fish”) into confined non-natural waters, such as unmaintained pools and decorative ponds.



## PUBLIC COMPLAINT RESPONSES

Division staff performed 744 complaint responses and requests for service within cities and the unincorporated area concerning mosquitoes, rodents, and other vectors/nuisance pests.

City	# of vector-related complaint responses or requests for	# of West Nile Virus surveillance requests
Camarillo	43	2
Fillmore	17	0
Ojai	87	0
Oxnard	28	0
Port Hueneme	7	0
San Buenaventura	94	3
Santa Paula	25	0
Simi Valley	262	6
Thousand Oaks	166	5
Unincorporated	15	1
<b>TOTAL:</b>	<b>744</b>	<b>17</b>



The Division makes mosquito fish available to the public for use in confined non-natural waters at no charge...just contact us at: 805/662-6582.



Many harmless insects common in Ventura County closely resemble mosquitoes; can you pick the mosquito from the look-a-likes below?



**A**



**B**



**C**

**Answer:**

**C.** Choice "A" is the harmless Fungus Gnat. Choice "B" is the equally harmless Crane Fly.



Contact Us

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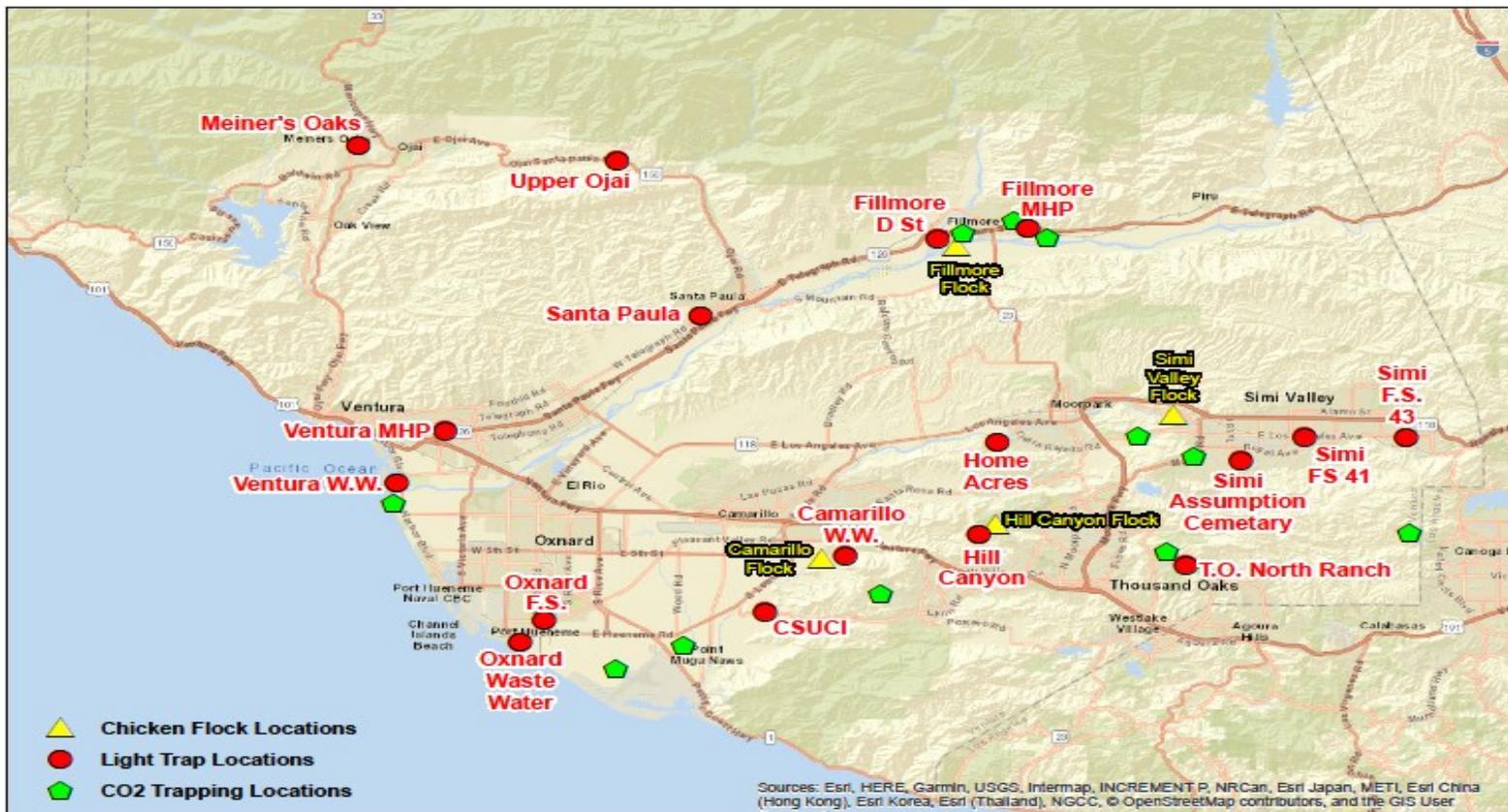
You can file a mosquito complaint on the Mosquito Complaint Hotline at 805/658-4310, or online at: <https://eco.vcrma.org/>



Is something buzzing around your house, but you aren't sure if it's mosquito? Give us a call, we know what is "hatching," and if they are mosquitoes, we can initiate monitoring and/or control measures.

## ENCEPHALITIS AND WEST NILE VIRUS SURVEILLANCE

St. Louis Encephalitis virus (SLE), Western Equine Encephalitis virus (WEE), and West Nile Virus (WNV) are mosquito-borne viruses which can be transmitted to humans. These viruses can cause a mild to very serious illness in humans. The purpose of the encephalitis and WNV surveillance program is to prevent transmission of encephalitis and WNV viruses by mosquitoes to humans. Mosquito species commonly found in Ventura County can transmit SLE, WEE, and WNV. The surveillance program has many facets, which include mosquito population and species monitoring, virus testing of adult mosquitoes, serological analysis of sentinel birds, and dead wild bird surveillance for WNV.



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Environmental Health Division  
Encephalitis Surveillance, 2019

During 2019, seventeen mosquito light traps were located in representative areas of the County to monitor mosquito population densities. One or more traps are located in each city, and adult mosquito specimens are collected once per week throughout the year.

Trap results are used to evaluate the effectiveness of mosquito control measures and the potential for disease transmission. Additionally, 6 encephalitis virus surveillance traps, used to collect live adult mosquitoes, were deployed throughout the County. These traps were placed on seventeen different occasions. Mosquitoes from these traps were collected and submitted to the California Department of Public Health, Vector-Borne Disease Section (CDPH) for SLE, WEE, and WNV testing. One of the samples of mosquitoes collected in Ventura County during 2019 tested positive for WNV. Within the State in 2019, 3,288 of 42,610 mosquito pools tested were positive for WNV. 356 of 38,699 mosquito pools tested were positive for SLE. There were no positive mosquito pools for WEE, CHIK, DENV, or ZIKA.



Light Trap

## Sentinel Flock Monitoring and Testing

In 2019, four sentinel chicken flocks were deployed for serological monitoring of SLE, WEE and WNV. These flocks were located in Thousand Oaks, Camarillo, Simi Valley, and Fillmore.



Flocks consisting of 10 chickens per flock were placed at these locations in April and tested every other week through mid-November. A total of 578 serological (blood) samples were submitted to CDPH for SLE, WEE, and WNV testing.

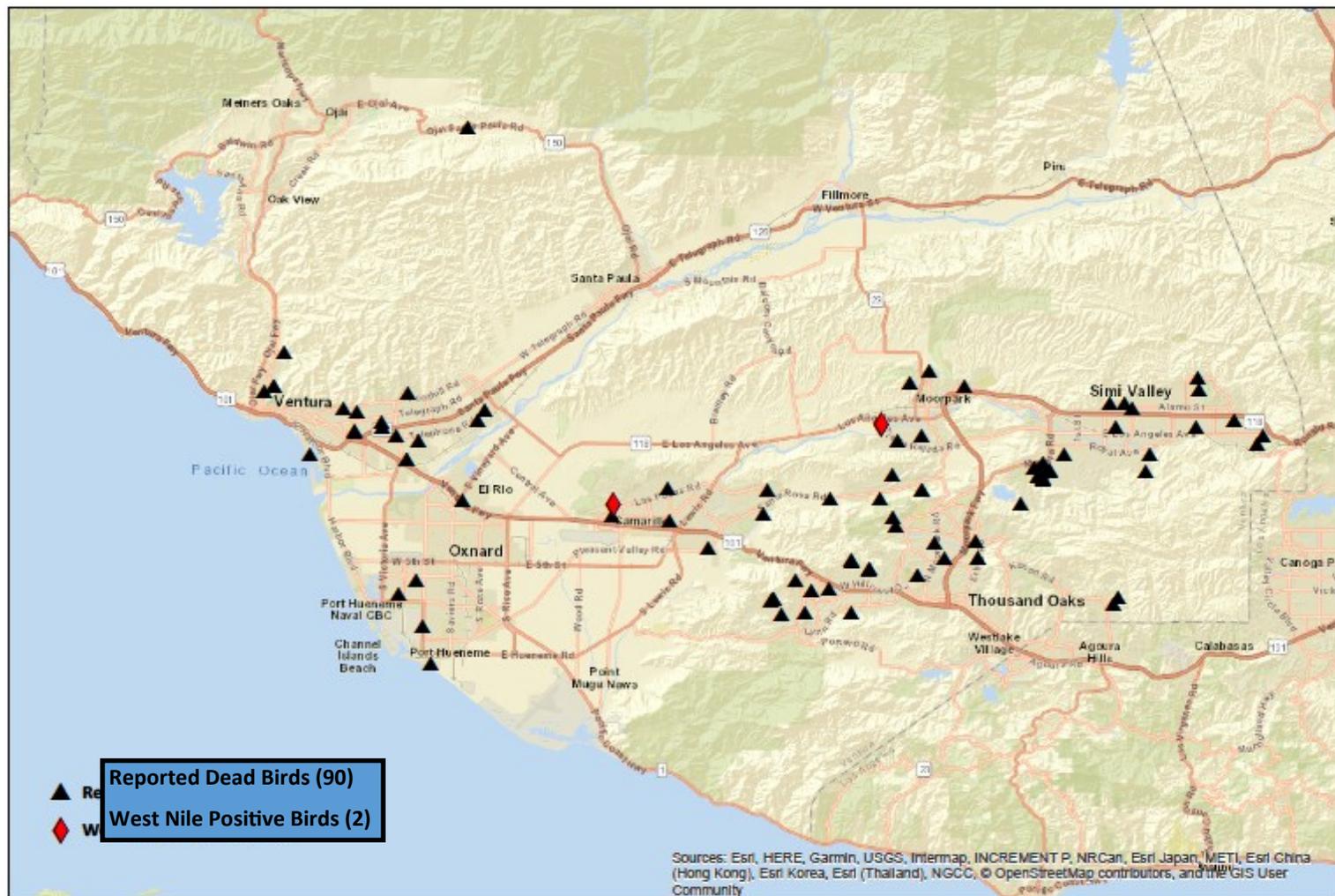
Three chicken blood samples collected within Ventura County tested positive for West Nile virus during the 2019 season. Throughout the State, 139 of 9,135 chicken blood sera samples tested positive for WNV, and 3 tested positive for SLE.



*Collecting a blood sample on a strip of filter paper after pricking the comb with a lancet.*

In Ventura County during 2019, a total of 92 dead birds were reported to the WNV dead bird hot line; 16 were collected and submitted for testing; 2 tested positive for WNV.

Throughout the state, a total of 5,564 dead birds were reported to CDPH; 1,799 were tested, and 225 were positive for WNV.



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# DID YOU KNOW?

WNV arrived in the U.S. in 1999. Scientists first identified it in a victim in the “West Nile” district of Uganda in 1937. Subsequently, there were outbreaks of the virus reported in Israel, South Africa, and Europe. An outbreak occurred in New York in 1999.

## INCIDENCE OF WEST NILE VIRUS AND ENCEPHALITIS

In 2019, there were two confirmed human cases of WNV in Ventura County. Statewide, there were 205 human cases reported during the year, resulting in six fatalities. In the State, there were fifteen WNV equine cases. There was one WNV equine case reported in Ventura County.

During 2019, there were six human cases of SLE statewide.

## INVASIVE MOSQUITO SPECIES

### IMPORTANT PUBLIC SERVICE REQUEST TO ALL COUNTY RESIDENTS AND MUNICIPALITIES – WE NEED YOUR ASSISTANCE

Two invasive (non-native) mosquito species have spread to several California cities and there is the potential for them to become established in Ventura County. Since 2014, the Vector Control Program has deployed specially designed traps at various locations to monitor for the presence of *Aedes aegypti* (the yellow fever mosquito) and *Aedes albopictus* (the Asian tiger mosquito). To date, neither species has been detected in Ventura County.

Unlike most native mosquito species, *Aedes aegypti* and *Aedes albopictus* commonly bite during the day. Both species are small black mosquitoes with white stripes on their back and on their legs.

*Aedes aegypti* and *Aedes albopictus* have the potential to transmit several viruses, including dengue, chikungunya, Zika, and yellow fever. Thousands of people are infected with these viruses in other parts of the world, including Mexico, Central and South America, the Caribbean, and Asia. If a traveler is infected and returns to or visits our area and *Aedes aegypti* or *Aedes albopictus* are present in Ventura County, there is potential for these diseases to be spread here.



# IMPORTANT !

***Aedes aegypti* and *Aedes albopictus* breeding sources are associated with the urban environment:**

- They can be found inside and outside houses and buildings.
- They can lay eggs in any small artificial or natural container or surface that holds as little as a teaspoon of water.
- Common items such as potted plant saucers, rain barrels, bird baths, tires, and equipment can be used as development sites by the larvae of these mosquitoes.
- Eggs are laid on dry surfaces and hatch later when water contacts them. Eggs can dry out and survive long periods of time.

**Help protect yourself and your neighbors by eliminating standing water in and around your home or business:**

- Once a week, empty and scrub, turn over, cover, or throw out items that hold water inside and outside your home.
- Tightly cover water storage containers (buckets, cisterns, rain barrels) so that mosquitoes cannot get inside to lay eggs.
- For containers without lids, use wire mesh with holes smaller than an adult mosquito.
- Keep rain gutters free of debris.  
Fill saucers under plants with sand.

If you are being bitten by small black mosquitoes with white stripes in or around your home, especially during daylight hours, please call the Vector Control Program's **Mosquito Complaint Hotline** at **(805) 658-4310**. To request free mosquito fish to control mosquito breeding in ponds, fountains, and water gardens call (805) 662-6582. For more information on *Aedes aegypti* and *Aedes albopictus* mosquitoes, visit: <https://vcrma.org/invasive-aedes-mosquitoes>

## PLAGUE SURVEILLANCE

Plague is a highly infectious disease, caused by bacteria, which primarily affects rodents. Humans and their pets (dogs, and especially cats) can get plague if they visit or live in areas where wild rodents are naturally infected. The purpose of the plague surveillance program is to protect the public through early detection and subsequent suppression of plague in the wild rodent population. Although the hazard to the public is generally low, the potential for disease transmission increases significantly when large outbreaks (epizootics) occur among susceptible rodent populations.



Plague positive animals have consistently been found within the north half of Ventura County. Passive plague surveillance, which involves inspection of an area to determine rodent population density, rodent health, and risk to the public, was performed in several areas of Ventura County. These areas included trails within the Los Padres National Forest and trails in the Santa Monica Mountains. At the time of inspection, these areas were not considered to have a high enough risk of plague to warrant active surveillance. Active plague surveillance was performed with the CDPH public health biologists. Surveillance was performed at two USFS campgrounds within the Las Padres National Forest. Testing results from the active Ventura County surveillances were all negative for plague.



***During active plague surveillance, wild rodents, such as squirrels and wood rats, are trapped, anesthetized, and combed to remove fleas. The fleas are tested for the plague bacteria. The wild rodents are released back into the environment.***

Hantavirus infection is a serious, life-threatening illness believed to be caused by inhaling airborne particles of dried rodent urine, droppings or saliva contaminated with the virus. In 1997, the Division conducted a survey of the deer mouse population for the presence of Hantavirus in Ventura County. Results indicated an infection rate of 10% to 15%. This rate is consistent with the most recent Hantavirus infection rate found throughout California and reported by CDPH.



The CDPH Hantavirus Program performed two Hantavirus surveys in Ventura County in 2019 to determine if there was a potential for disease transmission. These surveys were performed at the same times and in the same areas as this year’s plague surveys. No deer mice were caught from the area at the time of surveillance. In 2019 there were no human cases of Hantavirus infection reported within Ventura County. As of February 2020, there were three cases of Hantavirus reported statewide in 2019.

## LYME DISEASE

Lyme disease (LD) is an infectious disease transmitted by the bite of a specific species of tick. It is caused by a spirochete (a spiral shaped bacterium) that may persist in the human body for several years if not treated with antibiotics. The Western Black Legged Tick, *Ixodes pacificus*, is the primary vector of LD in California. This tick is found throughout Ventura County especially in the more humid areas of the coastal canyons, inland creeks, and heavily irrigated grass areas.



**Collecting ticks from a trail margin with a tick flag.**

According to the Centers for Disease Control and Prevention, since 1991, the incidence of LD cases has almost doubled in the United States. Just over 9,000 cases were reported in 1991, compared with nearly 26,203 cases in 2016. The majority of these cases were from northern states. The number of cases in Ventura County and California has remained relatively constant. The rising number of cases elsewhere is likely a result of both increased awareness and exposure. At the time this report was posted, CDPH was reporting 78 confirmed and 29 probable cases of Lyme disease in California in 2019.

Division staff provides information on LD, other tick-borne disease transmission, personal protection against ticks, and methods of tick control. The County also provides warning signs about ticks and LD to operators of parks and campgrounds. In 2019, Ventura County EHD, along with CDPH, performed 2 tick collection surveys (“flaggings”) to determine tick population and species density. This helps to evaluate the potential for Lyme disease transmission in those areas surveyed.



## DID YOU KNOW?

### Here are some things you can do to avoid ticks!

- Tuck pants into boot or socks, and shirt into pants.
- Wear light-colored clothing so ticks can easily be seen.
- Apply insect repellent on pants, socks, and shoes. Use a repellent registered for use against ticks.
- Avoid trail margins, brush, and grassy areas when in tick country.
- Check yourself and your children frequently.
- Mow grass along buildings and footpaths.
- Remove brush in areas of high human activity.

## PUBLIC INFORMATION

The Division also provides the following fact sheets concerning vector control topics. These are downloadable and made available for reproduction.

[West Nile Virus](#)

[Rodents and Hantavirus Brochure](#) (English version)

[Rodents and Hantavirus Brochure](#) (Spanish version)

[Lyme Disease in California](#) (English version)

[Lyme Disease in California](#) (Spanish version)

[Facts About Plague](#)

Prevent and Control Rats webpage:

<https://vcrma.org/prevent-and-control-rats>

Additional vector control information is available at the Division website:

<https://vcrma.org/vector-control-program>

**The Division also provides consultative services upon request for the Cities of Ventura County, on topics such as nuisance insects, rodents, and bedbug infestations. City representatives may contact us at 805/654-2816.**

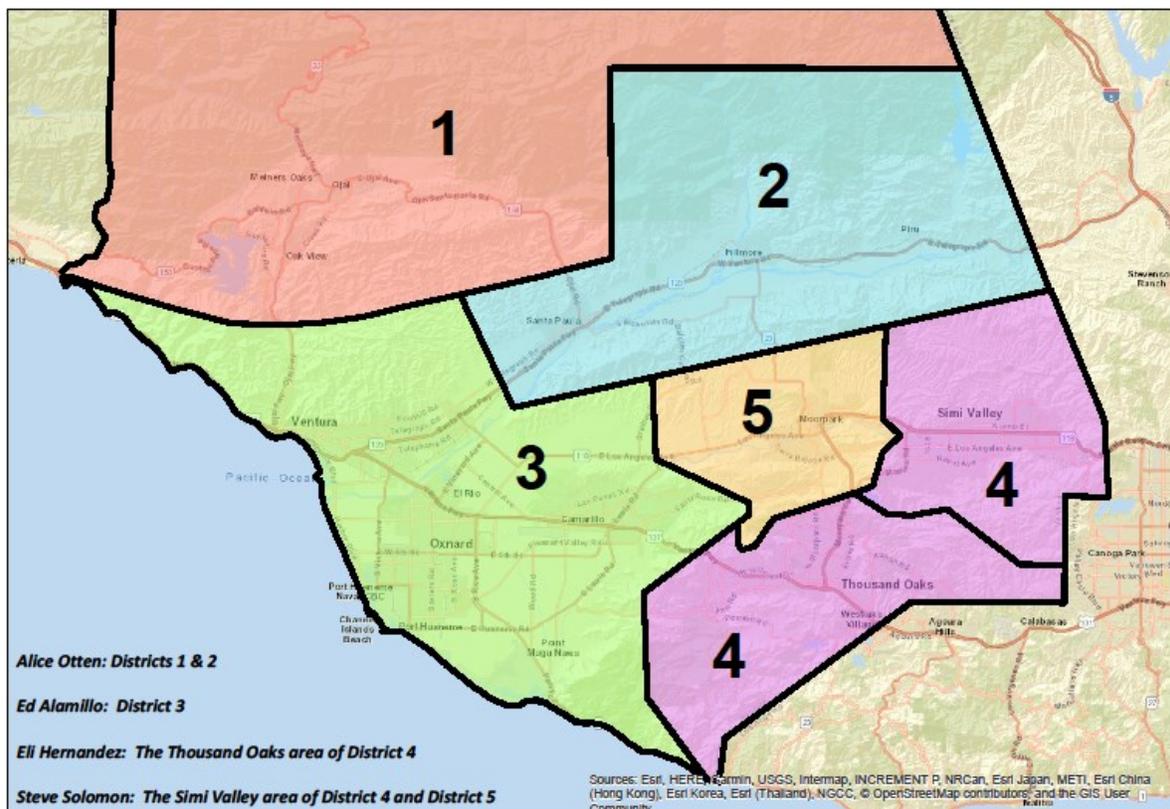


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***From Left to Right:***

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- Ed Alamillo
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**Environmental Health Division**  
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