Vector Control Report 2020

They're Here…

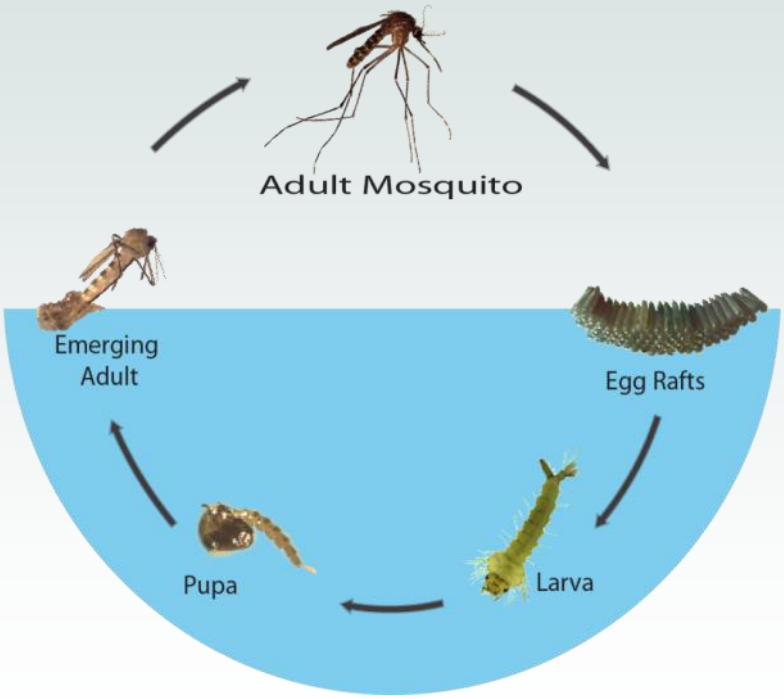
Don't let them invade your home, eliminate breeding places!

Pg. 6

Resource Management Agency
Environmental Health Division
800 S. Victoria Ave, Ventura, CA 93009-1730
TEL: 805/654-2813 • FAX: 805/654-2480
www.vcrma.org/divisions/environmental-health

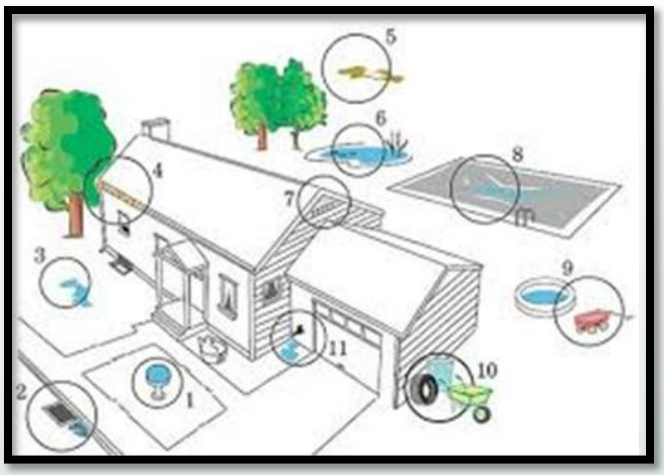
Mosquito Life Cycle

Mosquitoes require water in which to pass their early life stages (eggs, larvae 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 larvae 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 conditions caused 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.

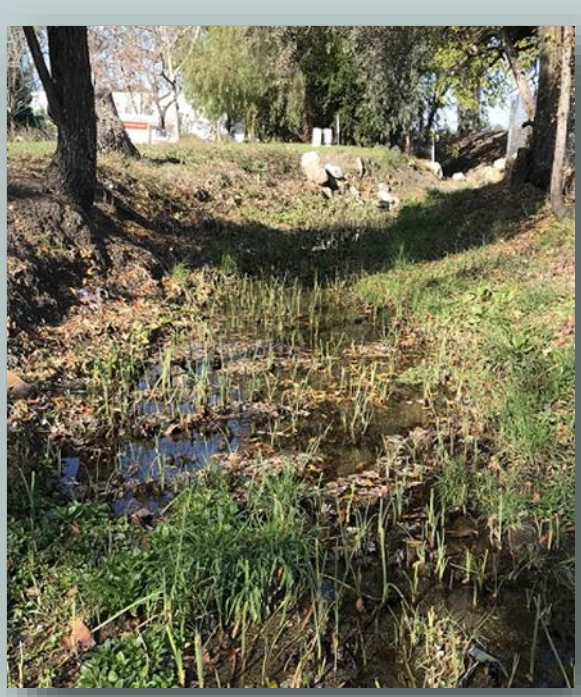
2020 REPORT OF VECTOR CONTROL ACTIVITIES

The Ventura County Environmental Health Division (Division) provides the following summary of Vector Control activities conducted during the calendar year 2020.

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).

Source Inspection



Sources vary from intermittent and recurring water accumulation…

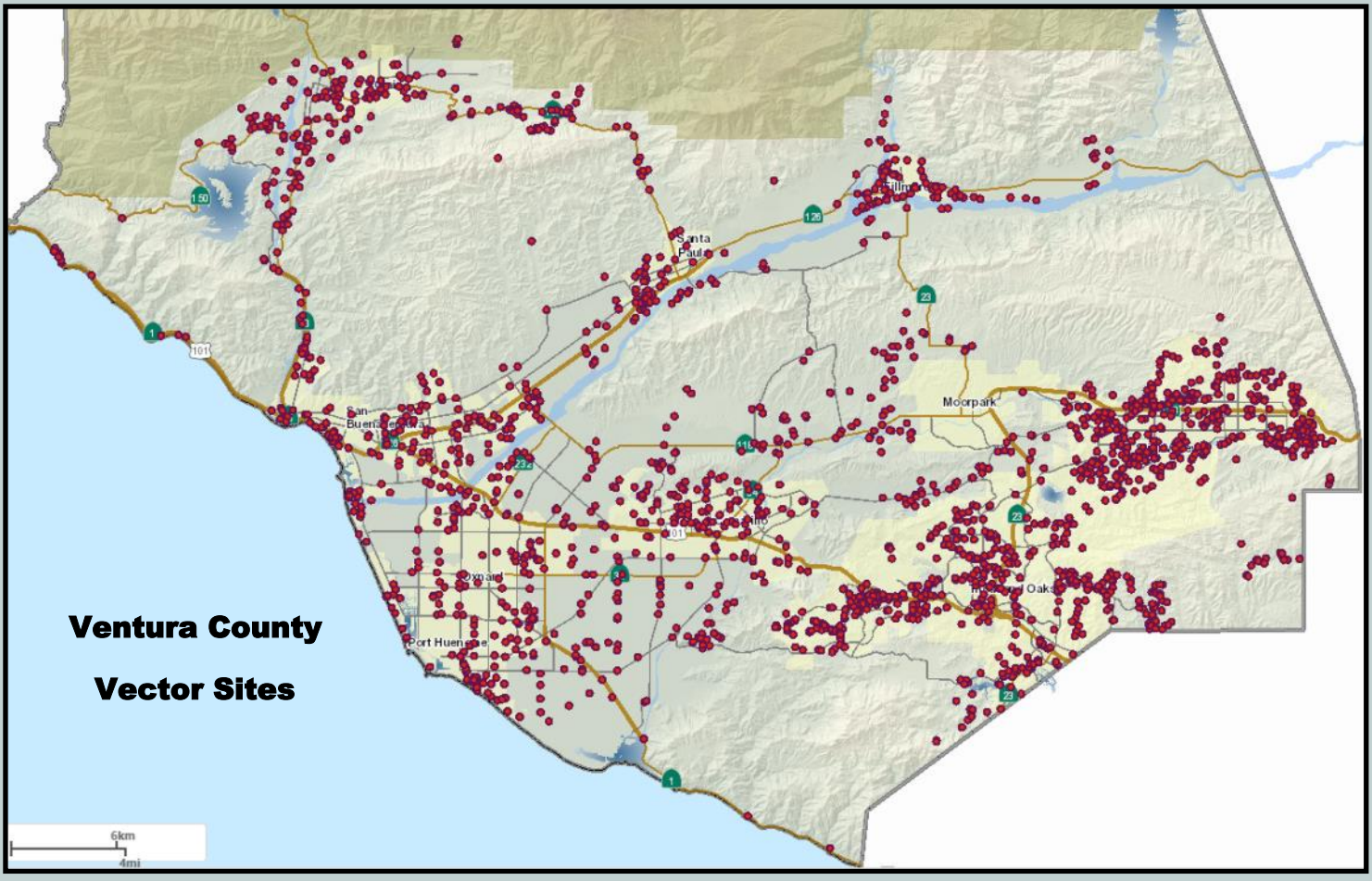
...to manmade sources, such as unmaintained swimming pools, buckets and old tires...

...to very large areas with well-developed biological systems, such as riverbeds and wetlands areas.

Summary of 2020 mosquito source inspections and treatments by jurisdiction

City	# of inventoried sources	# of mosquito source inspections	# of mosquito source treatments
Camarillo	**286**	**1,524**	**504**
Fillmore	**80**	**548**	**206**
Ojai	**223**	**814**	**360**
Oxnard	**263**	**1,710**	**796**
Port Hueneme	**23**	**270**	**172**
San Buenaventura	**305**	**1,340**	**825**
Santa Paula	**100**	**331**	**97**
Simi Valley	**685**	**4,639**	**2,199**
Thousand Oaks	**655**	**3,062**	**1,453**
Unincorporated	**845**	**643**	**324**
TOTAL:	***2,771**	**14,881**	**6,936**

*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.



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 using pesticide that targets adult mosquitoes in the event of a public health emergency, however our program adheres to the principles of Integrated Pest Management to achieve mosquito control with the most effective and least negatively impactful means.
- The Division primarily depends on control strategies such as:
    - physical alteration, prevention, or removal of the breeding source
    - introducing mosquito fish (*Gambusia affinis*) into isolated artificial water bodies such as decorative ponds
    - larvicides containing naturally occurring bacteria like *Bacillus thuringiensis israelensis*
- The Division makes mosquito fish available to the public for use in confined non-natural waters at no charge. Just call the Mosquito Fish Hotline at 805/662-6582.

PUBLIC COMPLAINT RESPONSES

Division staff performed 1,353 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	# of Invasive Aedes complaint responses or requests for services
Camarillo	110	1	5
Fillmore	14	1	2
Ojai	34	0	11
Oxnard	41	1	7
Port Hueneme	2	0	0
San Buenaventura	135	2	15
Santa Paula	6	0	1
Simi Valley	711	7	413
Thousand Oaks	246	7	64
Unincorporated	54	7	9
TOTAL:	**1,353**	**26**	**527**

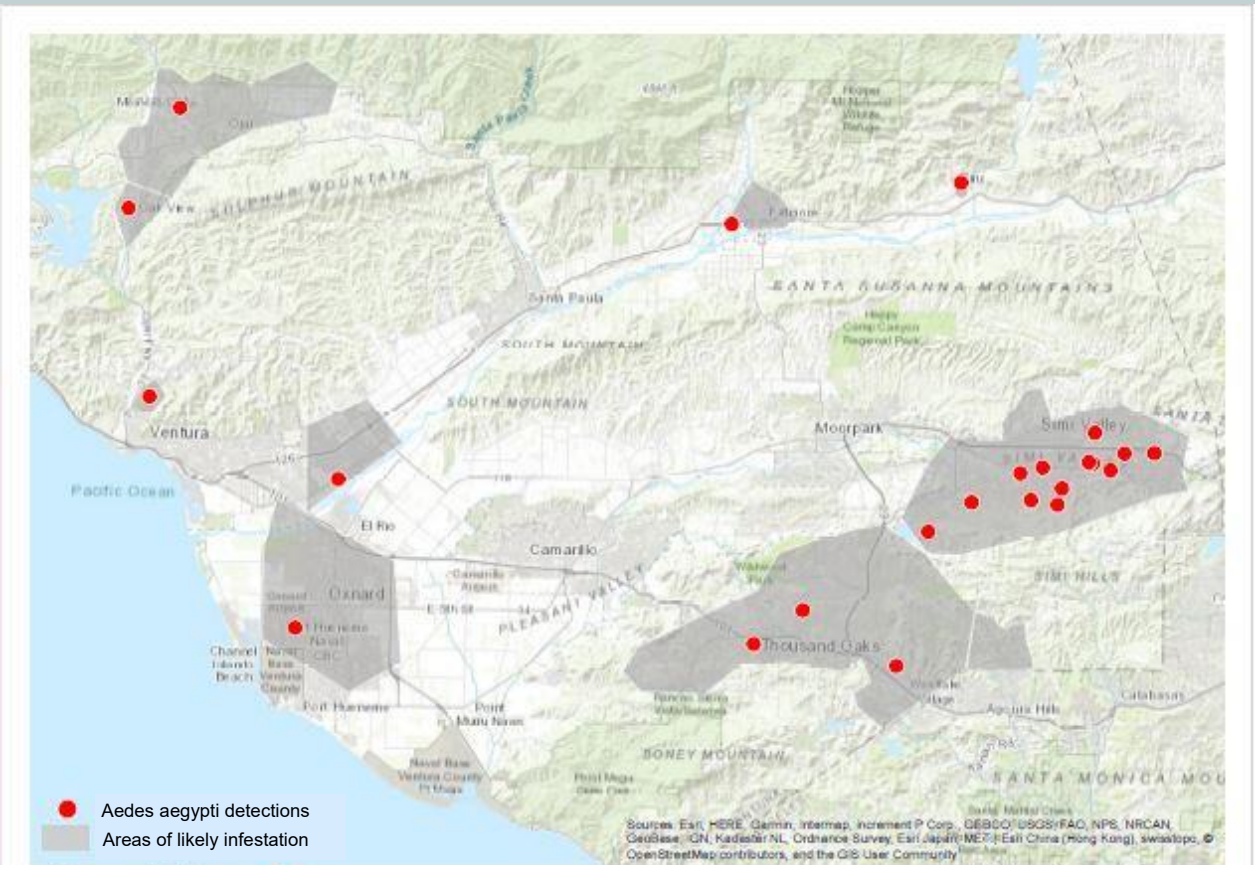
INVASIVE MOSQUITO SPECIES

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

Two invasive (non-native) mosquito species have been found in several areas of California. The *Aedes aegypti* and *Aedes albopictus* mosquitoes are different from most of our native species in that they bite during the day as well as the night, are highly adapted to developing and feeding in and around homes, and they have the potential to transmit several viruses, including dengue, chikungunya, Zika, and yellow fever. None of these viruses are currently known to be transmitted within California however these mosquitoes could pick them up from infected travelers returning from other parts of the world, including Mexico, Central and South America, the Caribbean, and Asia, and local transmission could occur.

These are small, black mosquitoes with stripes on their back and on their legs. They lay their eggs in any small artificial or natural container that holds water, making control difficult and dependent on residents eliminating or altering all water holding objects such as tires, yard drains, and plants like bromeliads.

The invasive *Aedes aegypti* mosquito was detected in Ventura County for the first time in September 2020. Vector Control program Staff reached out to members of the public with information on how to eliminate breeding sites in and around residences and asked them to report small, black and white, day biting mosquitoes, in an effort to measure and slow the infestation. By the end of 2020, *Aedes aegypti* had been confirmed in many areas of the county (see map on next page).



County of Ventura
Resource Management Agency
GIS Services

County of Ventura
Environmental Health Division

Invasive Aedes in Ventura County, 2020

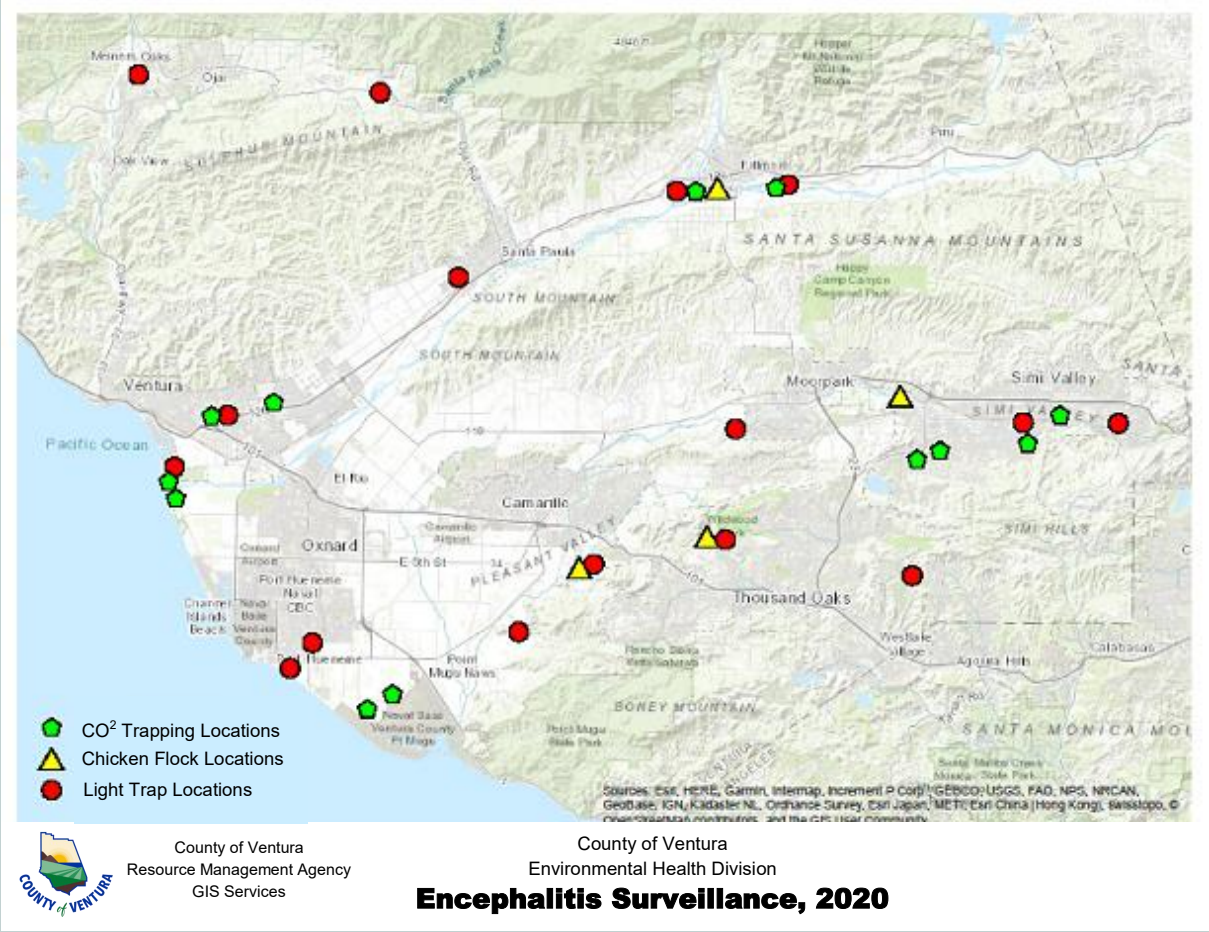
Help protect yourself and your neighbors by eliminating standing water in and around you home or business:

- 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 1/16th inch wire mesh.
- Keep rain gutters free of debris.
- Fill saucers under plants with sand or remove them.
- Cover yard drains with highly permeable landscape cloth under the inlet grates and check the outlets for blockage weekly.

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

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 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 chickens, and dead bird surveillance for WNV.




CO2 Trap


Light Trap

Mosquito Monitoring and Testing

During 2020, 16 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 13 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. None of the samples of mosquitoes collected in Ventura County during 2020 tested positive. Within the State in 2020, 2,628 of 40,083 mosquito pools tested were positive for WNV. 510 of 39,793 mosquito pools tested were positive for SLE. There were no positive mosquito pools for WEE, CHIK, DENV, or ZIKA.

Sentinel Flock Monitoring and Testing

In 2020, four sentinel chicken flocks were deployed for serological monitoring of SLE, WEE and WNV. These flocks were located in the areas of Thousand Oaks, Camarillo, Simi Valley, and Fillmore.

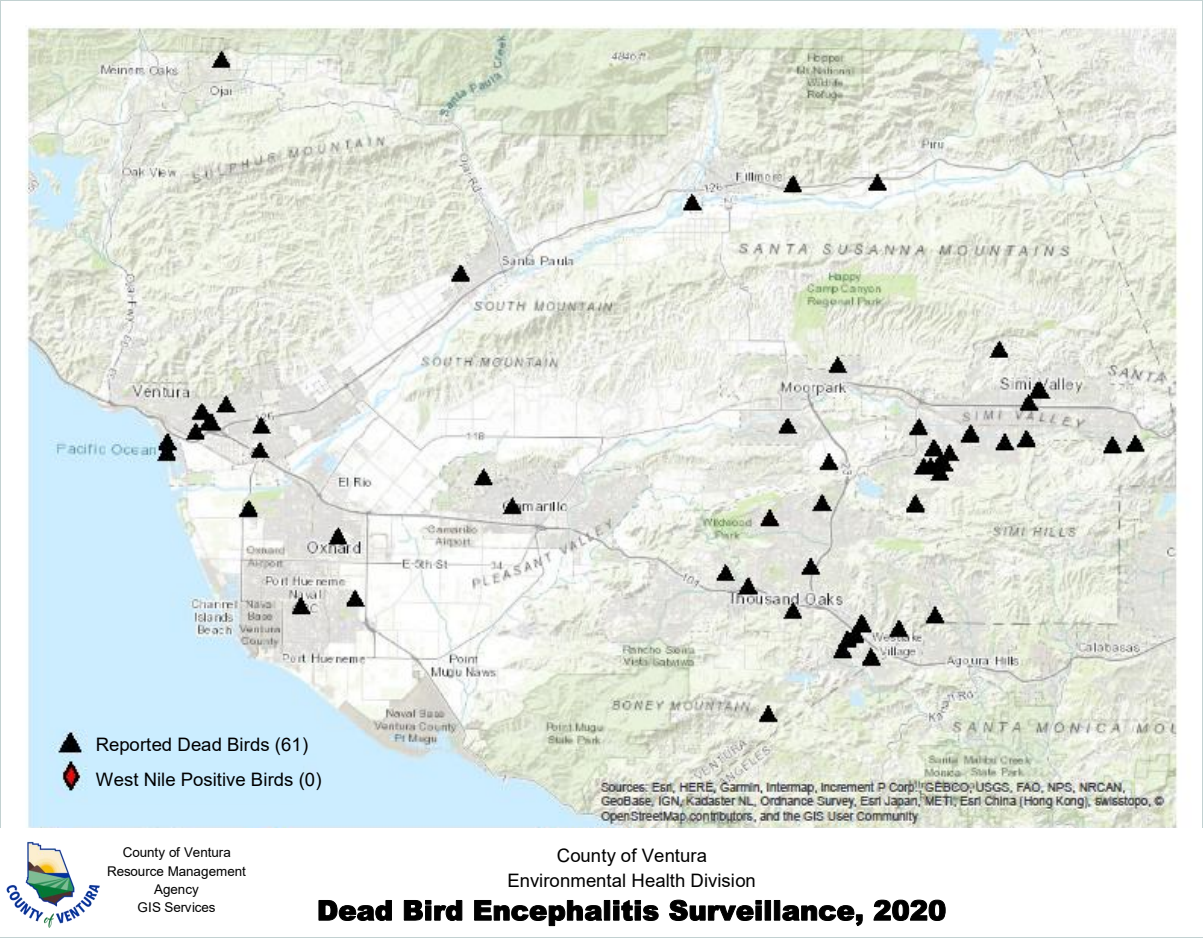
Flocks consisting of 10 chickens each were placed at these locations in March and regularly tested every other week through mid-November. A total of 464 serological (blood) samples were submitted to CDPH for SLE, WEE, and WNV testing.

One chicken blood sample collected within Ventura County tested positive for West Nile virus during the 2020 season. Throughout the State, 144 of 6,333 chicken blood sera samples tested positive for WNV, and 0 tested positive for SLE.

Wild Bird Collection and Testing

In Ventura County during 2020, a total of 61 dead birds were reported to the WNV dead bird hot line; 18 were collected and submitted for testing; 0 tested positive for WNV.

Throughout the state, a total of 5,855 dead birds were reported to CDPH; 1,693 were tested, and 343 were positive for WNV.



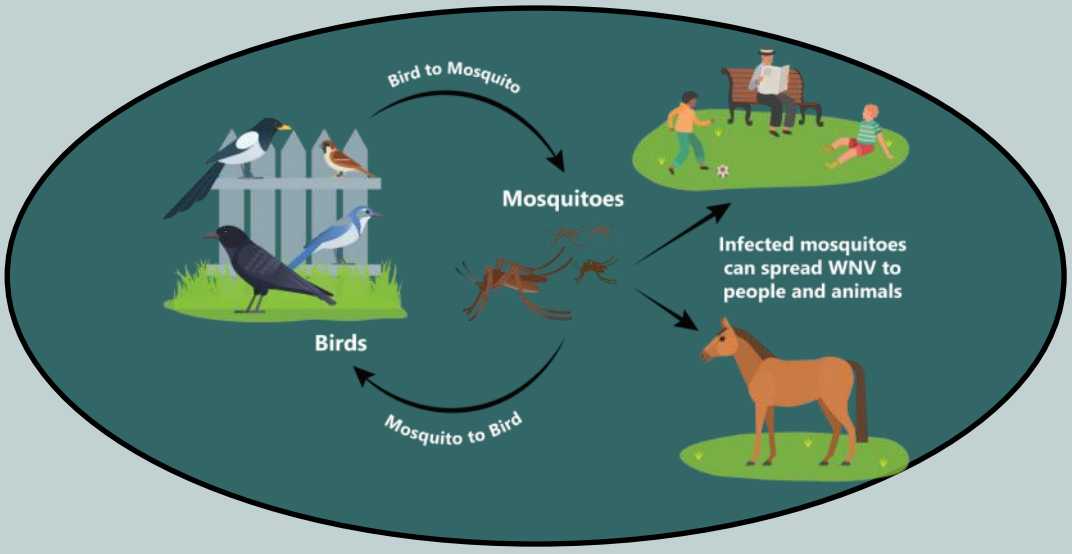
County of Ventura
Resource Management Agency
GIS Services

County of Ventura
Environmental Health Division

Dead Bird Encephalitis Surveillance, 2020

Help Monitor for West Nile Virus

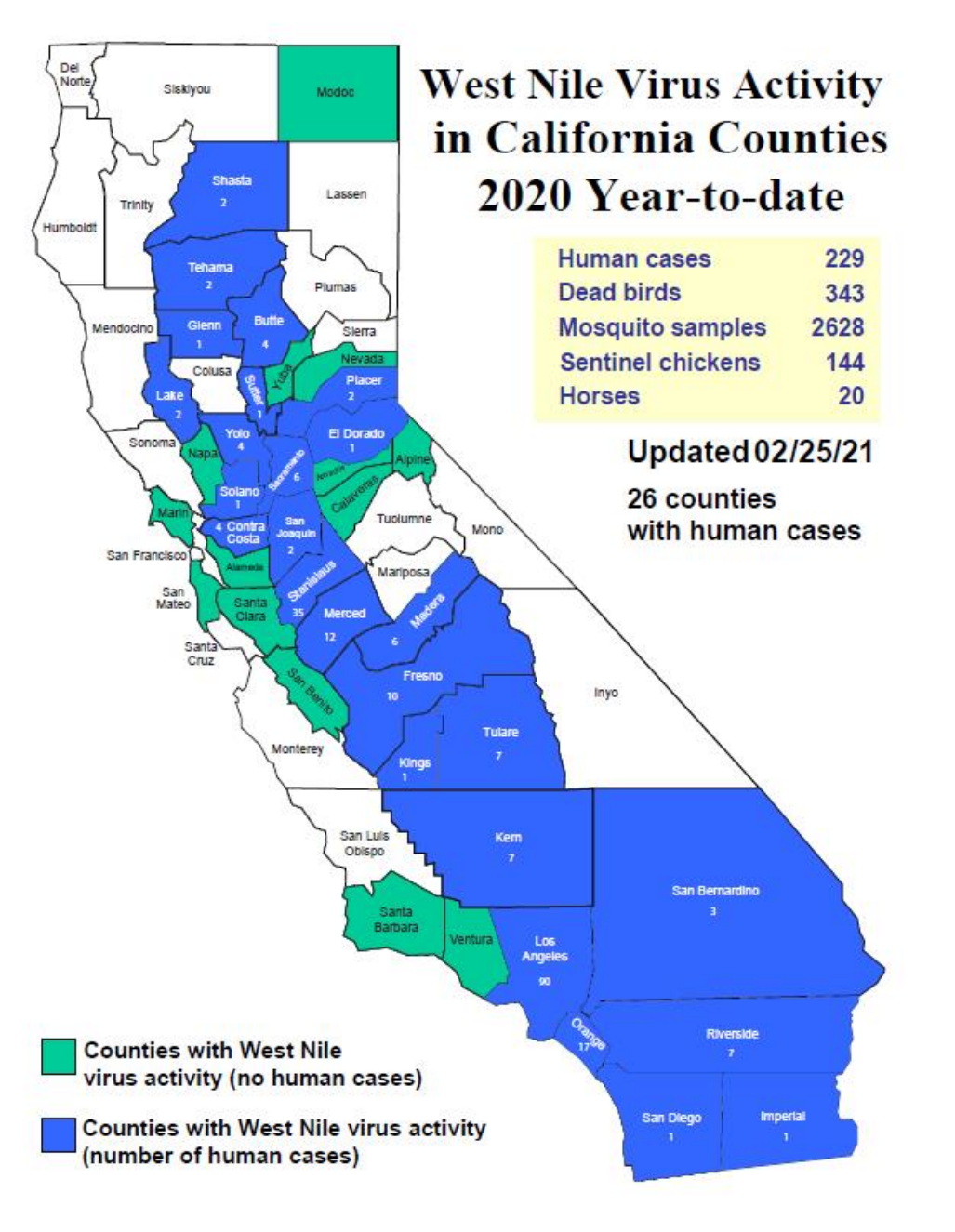
Report recently deceased birds to **877-WNV-BIRD** or submit a report online at **westnile.ca.gov** .



INCIDENCE OF WEST NILE VIRUS AND ENCEPHALITIS

In 2020, there were no confirmed human cases of WNV in Ventura County. Statewide, there were 229 human cases reported during the year, resulting in 11 fatalities. In the State, there were 20 WNV equine cases. There were no WNV equine cases reported in Ventura County.

During 2020, there were 5 human cases of SLE statewide.



PLAGUE SURVEILLANCE

Plague is a highly infections disease, caused by the bacteria *Yersinia pestis,* 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.

Some of the rodent species found in California that are sampled to evaluate plague activity.

Top row, from left to right:

- **Yellow-pine chipmunk (*Tamias amoenus)***
- **California ground squirrels (*Otospermophilus beecheyi)***
- **Douglas squirrel (*Tamiasciurus douglasii)***

Bottom row, from left to right:

- **Golden-mantled ground squirrel (*Callospermophilus lateralis)***
- **Dusky-footed woodrat (*Neotoma fuscipes)***
- **Belding's ground squirrel (*Urocitellus beldingi)***

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. 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.

HANTAVIRUS

Hantavirus Pulmonary Syndrome (HPS) is a rare but often fatal illness caused by Sin Nombre virus which is carried by wild mice. Most cases occur when airborne particles of dried rodent urine, droppings or saliva contaminated with the virus are inhaled. 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 2020 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 2020 there were no human cases of Hantavirus infection reported within Ventura County. As of February 2021, there were two confirmed cases of Hantavirus reported statewide in 2020.

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.

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 25 confirmed, 16 probable, and 3 suspect cases of Lyme disease in California in 2020.

Collecting ticks from a trail margin with a tick flag.

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 2020, Ventura County EHD, along with CDPH, performed 3 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. No *Ixodes pacificus* ticks collected in Ventura County tested positive for the causative agent of Lyme Disease in 2020.

Here are some things you can do to avoid ticks!

- Avoid trail margins, brush, and grassy areas when in tick country.
- Wear light-colored clothing so ticks can easily be seen.
- Tuck pants into boots or socks, and shirt into pants.
- Apply insect repellent on pants, socks, and shoes. Use a repellent registered for use against ticks.
- Check yourself, your children, and pets 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, they can also be accessed at the Division website: https://vcrma.org/vector-control-program

- 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

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**.

IMPORTANT PHONE NUMBERS

Mosquito Complaint Hotline: 805/658-4310

Mosquito Fish Request Hotline: 805/662-6582

You can also submit a complaint online at:

https://eco.vcrma.org/

Report a Dead Bird for WNV Testing: 877/WNV-BIRD (968-2473) or https://westnile.ca.gov/

VECTOR CONTROL PROGRAM STAFF

Cary Svoboda
Vector Program
Staff Specialist

Steve Solomon
Vector Control
Technician III

Ed Alamillo
Vector Control
Technician III

Eli Hernandez
Vector Control
Technician III

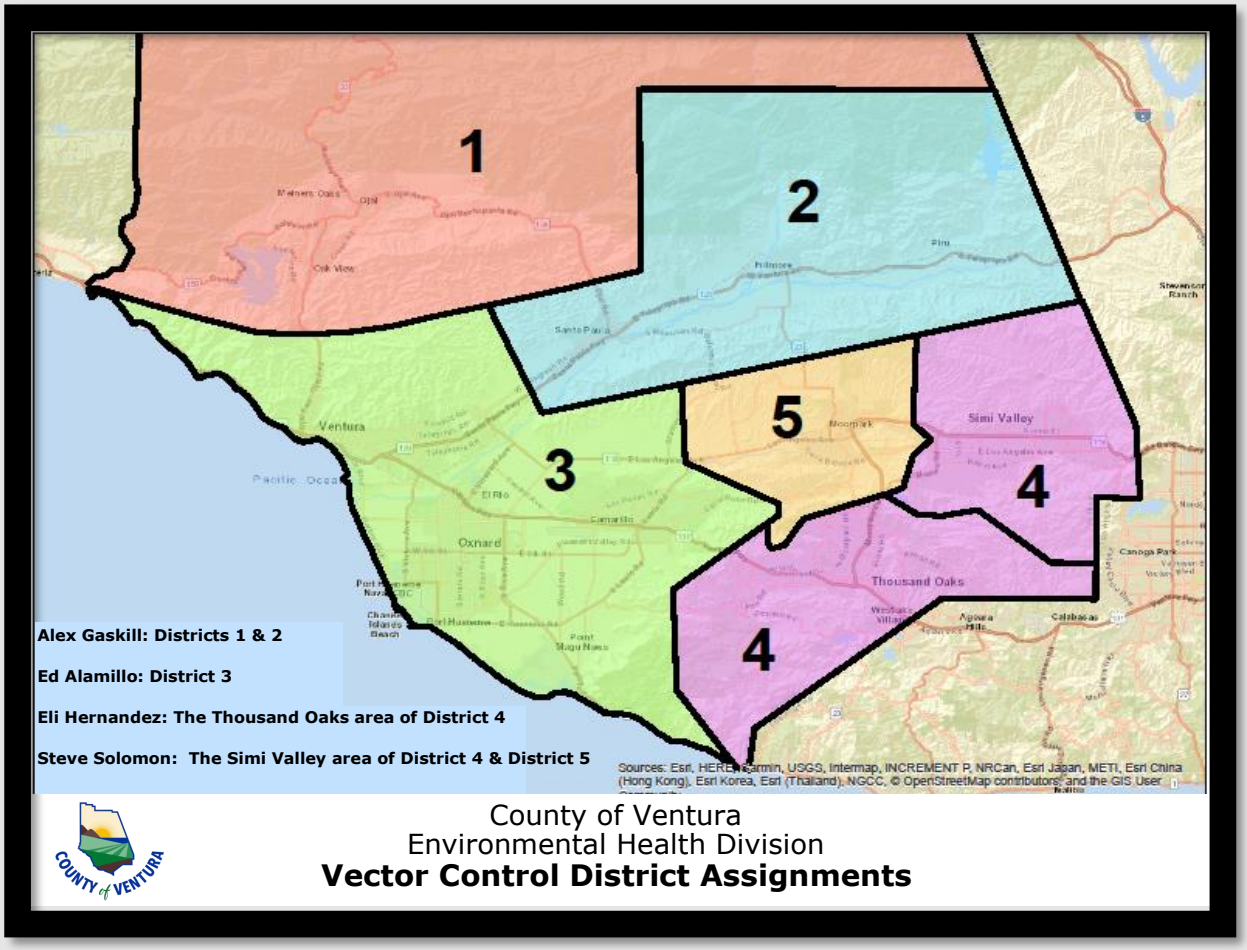
Alex Gaskill
Vector Control
Technician II

INSPECT

CONTROL

MONITOR

STAFF	AREA	CONTACT
Alex Gaskill	Ojai, Santa Paula, Piru, Fillmore	Alex.Gaskill@ventura.org (805)654-3985
Ed Alamillo	Malibu, Port Hueneme, Oxnard, Ventura, Camarillo	Ed.Alamillo@ventura.org (805)654-2819
Steve Solomon	Moorpark, Simi Valley, Bell Canyon	Steven-Daniel.Solomon@ventura.org (805)654-3585
Eli Hernandez	Newbury Park, Oak Park, Thousand Oaks, Westlake Village	Eli.Hernandez@ventura.org (805)654-2873



Program Lead:
Cary Svoboda
(805) 677-8716
Email: cary.svoboda@ventura.org

Supervisor:
Ron Ventura
(805) 654-2816
Email: ron.ventura@ventura.org

Environmental Health Division

800 S. Victoria Ave, Ventura, CA 93009-1730
TEL: 805/654-2813 • FAX: 805/654-2480
Internet Web Site Address: www.vcrma.org/divisions/environmental-health