

1800's. Malaria's continued presence in the early part of the 20th century was a strong impetus for the formation of existing mosquito control districts.

### Transmission Cycle

The disease cycle of malaria transmission in the United States involves certain mosquitoes and humans. The mosquito becomes infected while feeding on another human that is infected with the malarial parasite. Once infected, the mosquito can transmit the parasite to other humans.

### Symptoms

Symptoms of infection appear 9 to 30 days after the bite from an infected mosquito. The first symptoms of malaria are flu-like with headache, back pain, nausea, and general ill feeling. The fever is irregular for the first 2 to 4 days but soon becomes "intermittent" with marked swings from morning to evening up to 105°F or higher. After the primary attack, malaria symptoms are characterized by recurring sudden attacks called paroxysms. Paroxysms have three distinct stages of cold, hot, and then sweating that begin in the afternoon and last 8 to 12 hours.

### Protection From Mosquito Bites

The greatest risk of mosquito bites occurs during the first few hours after sunset. Some ways you can reduce the risk of mosquito bites to yourself and your children are:

- Reduce outdoor activity during the first hours after sunset.
- Wear long sleeved clothing and long pants.

- Apply insect repellent as needed according to the product label.
- Ensure that there are no holes in door and window screens that could allow mosquitoes to enter your home.

### Reducing Risk Around Your Home

Mosquito larvae develop in standing and polluted waters. Around your home, it is important to monitor potential developing sites such as:

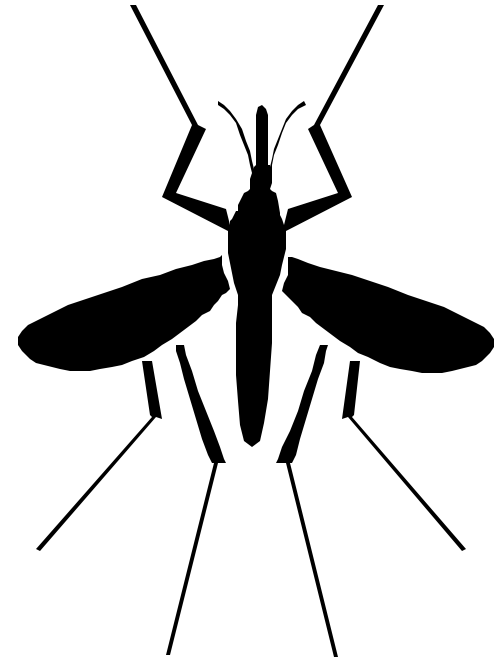
- Un-maintained pools and spas
- Ponds, bird baths, and rain barrels
- Watering troughs and rain gutters
- Septic tanks, catch basins or drains



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# MOSQUITO-BORNE DISEASES IN CALIFORNIA

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## Encephalitis

This is a viral disease commonly spread by the bite of a mosquito. Generally, people infected with the disease have few or no symptoms, but the virus can cause serious and potentially fatal inflammation of the brain (encephalitis). Several medically important encephalitides infecting humans and horses are found in California. The following information provides brief descriptions of them.

### Symptoms

Signs and symptoms of these diseases are similar but vary in severity and rate of progress. Most infections are asymptomatic; mild cases often occur as febrile headache or aseptic meningitis. Severe infections are usually marked by acute onset of headache, high fever, meningeal signs, stupor, disorientation, coma, tremors, occasional convulsions (especially in infants) and spastic paralysis.

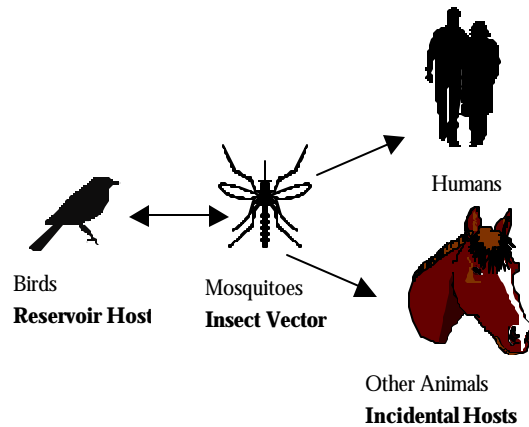
### Case Occurrences

In California, encephalitis cases are most likely to occur during the months of May through November. In southern California they can occur almost any month but are more likely during the warmer months. Statewide, approximately 80% of cases have occurred during July and August.

### Transmission Cycle

The disease cycle of virus transmission in nature involves mosquitoes, birds, and other animals such as rabbits. Humans and horses can be severely affected by the virus but are incidental or "dead end" hosts because not enough viruses develop in their blood to infect other mosquitoes.

### Transmission Cycle of Encephalitis



### Medical Treatment

There are no vaccines available to protect humans from mosquito-borne encephalitis, although they are available for horses. There are no antibiotics to cure the disease. Supportive therapy is used to preserve life until the body's natural defenses can take over.

### Western Equine Encephalitis (WEE)

This virus was first isolated in California in 1930 from the brain of a horse with encephalitis. It remains an important cause of encephalitis in horses and humans in North America, mainly in western parts of the United States and Canada.

### Saint Louis Encephalitis (SLE)

This is the most common mosquito-transmitted human pathogen in the U.S. Periodic outbreaks have been recorded in the Midwest and Southeast. Since 1964, an average of 128 human cases of St. Louis encephalitis are reported annually.

## West Nile Virus (WNV)

West Nile Virus was discovered in New York City in 1999. Since the U.S. outbreak, WNV had spread to 44 states by the end of 2002 and is expected to spread to the rest of the contiguous states, resulting in thousands of human cases. Additionally, this virus is deadly to wild birds—especially crows, jays and ravens. Also, horses and other animals are severely affected. Dead bird reporting has been the key surveillance tool used to monitor the distribution and occurrence of the disease.

## Malaria

### General Information

Malaria is caused by protozoan parasites that attack and destroy red blood cells. The parasites are transmitted by the bite of a mosquito which itself became infected by biting an infected person.

Presently, malaria transmission occurs mainly in the subtropical and tropical regions of the world. Every year, thousands of cases of malaria are imported into the United States as a result of infections that were acquired in other countries. Every California county has reported imported malaria cases.

Occasionally, malaria occurs within the United States transmitted by local mosquitoes. The source of parasites in those instances is from an infected person arriving from another country. An outbreak occurred in San Diego County as recently as 1986. Without prompt action by health officials and mosquito control agencies, malaria could again become established in California.

Malaria was epidemic in California during the