

## ADMINISTRATION OF THE DISTRICT

The Orange County Mosquito and Vector Control District is a special district serving all of Orange County. The governing power is vested in a Board of Trustees. The city council for each city and the Board of Supervisors for the County-at-Large each appoint one representative to serve without pay for a two or four year term of office.

The Board of Trustees meets regularly on the third Thursday of each month at 3:00 P.M. at the District Office. All meetings are open to the public. At each January meeting the Board elects a President, Vice-President and Secretary. The Board employs a District Manager to carry out the policies established by the Board.



Visit our Website: [www.ocvcd.org](http://www.ocvcd.org)  
Follow us on Facebook & Twitter

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Fax: 714.971.3940

Phone: 714.971.2421 • 949.654.2421

# Are You Raising Mosquitoes In Your Backyard?

## Standing Water Checklist

- |   |  |
|---|--|
| <input type="checkbox"/> Ornamental Pond          | <input type="checkbox"/> Rain Gutters      |
| <input type="checkbox"/> Flower Pot Saucer        | <input type="checkbox"/> Wheelbarrow       |
| <input type="checkbox"/> Unfiltered Swimming Pool | <input type="checkbox"/> Boats/Boat Covers |
| <input type="checkbox"/> Plastic Wading Pool      | <input checked="" type="checkbox"/> Tarps  |
| <input type="checkbox"/> Animal Watering Trough   | <input type="checkbox"/> Other Containers  |

Comments:

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Inspector \_\_\_\_\_ Extension \_\_\_\_\_

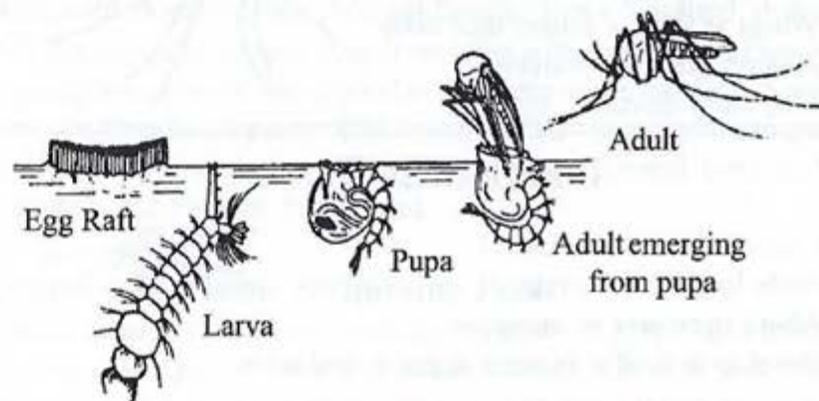
Orange County Mosquito and Vector Control District  
714.971.2421 • 949.654.2421

*A vector is any insect or other arthropod, rodent or other animal of public health significance capable of causing human discomfort, injury, or capable of harboring or transmitting the causative agents of human disease.*

## FACTS ABOUT MOSQUITOES

- All mosquitoes must have water in which to complete their life cycle.
- Only seven days are required to complete their life cycle (egg to adult) during warm weather. (Anything that will hold water for a week can produce mosquitoes.)
- Mosquitoes do not develop in grass or shrubbery, although flying adults frequently rest in these areas during daylight hours.
- Only the female mosquito bites to obtain a blood meal. The male mosquito feeds only on nectar and other plant juices.
- The female mosquito may live as long as three weeks during the summer or many months over the winter in order to lay her eggs in the following spring.
- There are over 20 species of mosquitoes in Orange County.
- About one half of the mosquitoes produced in Orange County are produced in residential backyards.

## THE MOSQUITO LIFE CYCLE



**EGGS:** The most common mosquitoes lay egg rafts that float on the water. Each raft contains from 100 to 400 eggs. Within a few days the eggs hatch into larvae.

**LARVA:** The larva or "wiggler" comes to the surface to breathe through a tube called a siphon. It sheds its skin or molts four times during the next several days. It grows rapidly between each molt. On the fourth molt it changes into a pupa.

**PUPA:** The pupa or "tumbler" cannot eat. It breathes through two tubes on its back. The adult mosquito grows inside the pupa and in two days or so, when it is fully developed, it splits the pupal skin and emerges to complete the life cycle or metamorphosis of the mosquito.

**ADULT:** The newly emerged adult rests on the surface of the water until it is strong enough to fly away and feed.

## INSECTS THAT RESEMBLE MOSQUITOES

### MOSQUITO

- Bites using its proboscis
- Wings as long or longer than body
- Always breeds in water
- May carry disease



### CHIRONOMID MIDGE

- Cannot bite (no proboscis)
- Body longer than wings
- About same size as mosquito
- Develop in mud at bottom of ponds and lakes



Chironomid midges are not a threat to public health. They can be a public nuisance because they develop in great numbers. They gather in swarms at dawn and dusk. When resting, midges can cover screen doors, windows and walls. They look much like a mosquito and develop in the same water where mosquitoes develop.

The District does not control midges

### CRANE FLY

- Cannot bite (proboscis, if present, unable to penetrate skin)
- Develop in moist soil or water
- Fly very poorly
- Usually larger than a mosquito



### FUNGUS GNAT

- Cannot bite (no proboscis)
- Have "spiney" legs
- Develop in fungus or moist decaying vegetation
- About same size as mosquito



## WHERE TO LOOK AND WHAT TO DO

### Ornamental Ponds

Stock with mosquito fish. Add goldfish for looks if desired; they do little for mosquito control. Avoid spraying with garden insect sprays. Remove leaves and thin out pond lilies. Keep water level up. Screen inlet of recirculation pump. Chlorine kills fish—transfer fish to glass bowl when cleaning pond. If pond is no longer desired, break holes in bottom and fill with dirt or sand.

### Concrete or Plastic Swimming Pools

Operate filter and skimmer everyday to remove egg rafts and larvae. Provide drainage for filter and pump sumps. Chlorine will NOT kill mosquito larvae. If pool cover is used, keep it tightly sealed. Remove rainwater from the top of the pool cover. Stock unused or "out-of-order" pools with mosquito fish.

### Boats and Boat Covers

Prevent accumulation of bilge water. Store small boats upside down or cover to keep out the rain and water from sprinklers.

### Animal Water Troughs

Stock large troughs with mosquito fish.  
Clean small troughs every week.

### Other Kinds of Containers

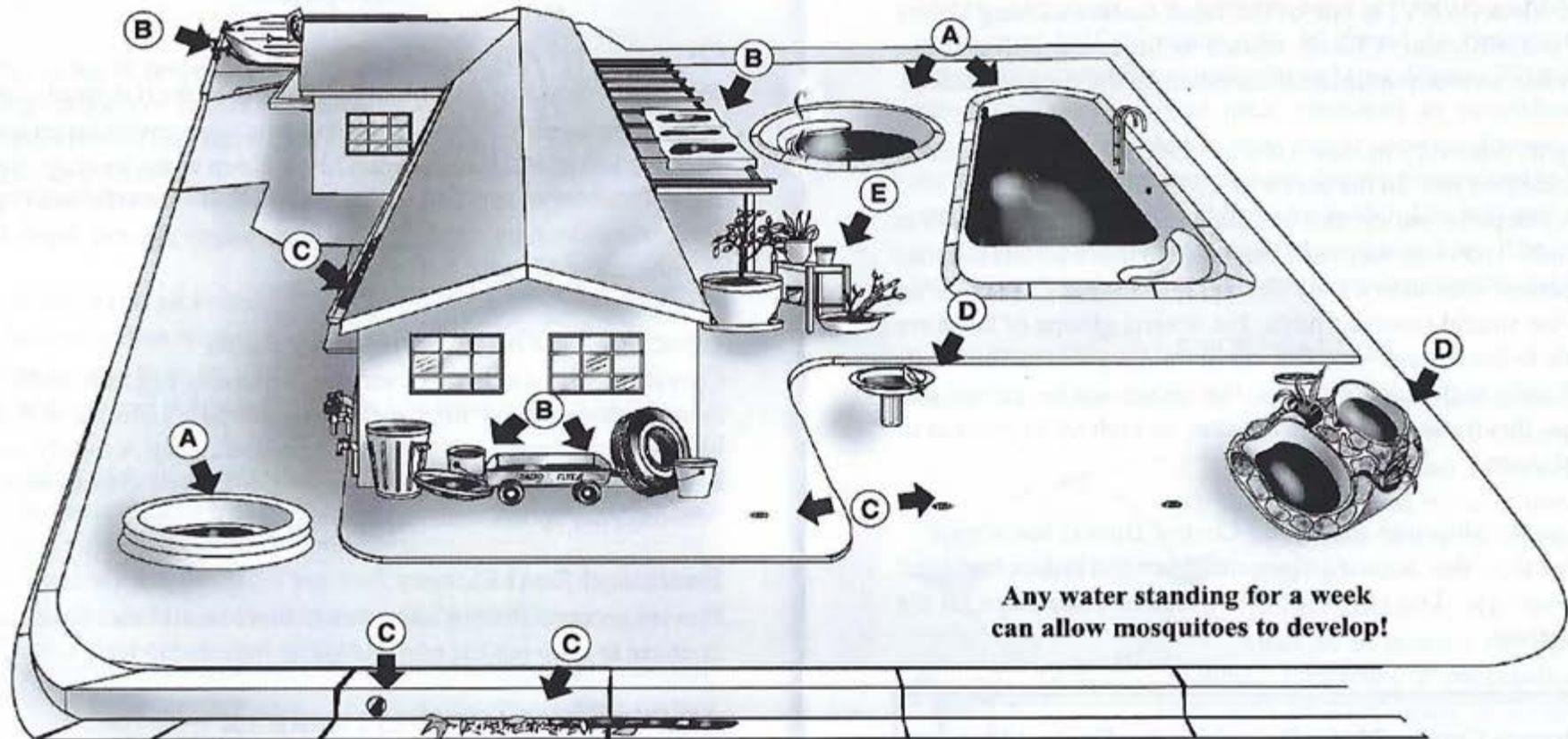
Remove and dispose of all unused containers that will collect rain or water from sprinklers.

Cans	Old Tires	Lawn and patio drains
Jars	Buckets	Irrigation valve boxes
Barrels	Tubs, etc.	Tarps covering outdoor equipment

Home gardeners rooting plant cuttings in vases, buckets, etc. should change water every week.

Usable containers should be stored upside down.

# Common Backyard Mosquito Breeding Sources



- (A)** Out of service (often green and dirty) swimming pools, plastic kiddie pools, and spas can breed thousands of mosquitoes.
- (B)** The list of items that can hold water is endless. Shown here are an open boat, trash can and lid, buckets, old tires, a wagon, a wheelbarrow and a tarp. Remember, it only takes a week of standing water to produce mosquitoes.
- (C)** Lawn and patio drains can often hold enough water to produce mosquitoes - do not allow water to accumulate here. House rain gutters and curb gutters often get clogged with leaves and grass clippings. This decaying vegetation will feed developing mosquito larvae. Keep them clear.
- (D)** Neglected or noncirculating ponds, or ponds containing fish that do not eat mosquito larvae (gold fish, koi), are ideal for mosquito production. The District will provide you with free mosquito fish. Give us a call or stop by. Change the water in bird baths weekly.
- (E)** The overflow saucer under flower pots can hold enough water to support mosquitoes. Buckets holding plant cuttings can produce mosquitoes if not changed weekly.

## West Nile Virus

West Nile Virus (WNV) is one of the latest disease causing agents to arrive in California. Closely related to St. Louis Encephalitis, WNV can be a serious public health threat under the right conditions.

Following its discovery in New York in 1999, WNV moved west at an unprecedented rate. In the summer of 2003 WNV arrived in California's Imperial Valley, and was discovered in Orange County in the early fall. The virus may have been able to move so fast because it is compatible with such a wide variety of hosts and vectors. Wild birds are the natural reservoir hosts, but several groups of birds are susceptible to the disease – crows, ravens and jays as well as birds of prey all suffer high mortality rates. Horses are another animal that suffer from the disease, with fatality rates as high as 35 percent of diagnosed cases.

Orange County Mosquito and Vector Control District has always encouraged the public to avoid mosquito bites and reduce backyard breeding sources. The arrival of WNV makes these steps all the more important.

**Call Orange County Mosquito and Vector Control District:  
(714.971.2421 or 949.654.2421)**

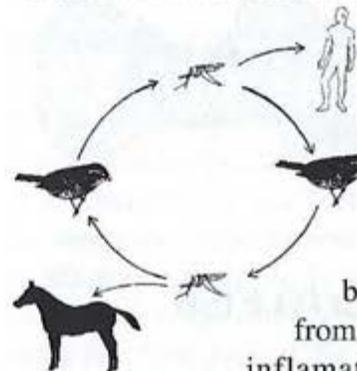
1. If you are bothered by mosquitoes, a Certified Vector Control Technician will investigate and lend assistance.
2. If you need help to prevent or control mosquito breeding in your backyard, a technician will inspect your yard and assist you.
3. If you have or are aware of an ornamental pond, unused swimming pool, or an animal drinking trough, mosquito fish will be furnished without charge.

## MOSQUITO-BORNE DISEASE

There are over 50 known species of mosquitoes in California, half of which can be found in Orange County. Several can carry disease under the right conditions. When a female mosquito takes a blood meal (required as nourishment for her developing eggs), she may ingest certain disease causing organisms. These organisms may then be transmitted to humans and other animals the next time she feeds. The best way to avoid mosquito-borne disease is to avoid mosquito bites. The two most important diseases affecting humans are encephalitis and malaria.

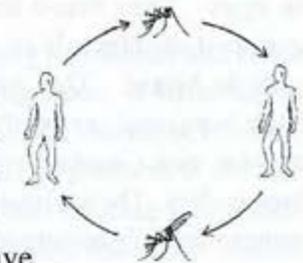
### ENCEPHALITIS

There are three forms of viral encephalitis transmitted by mosquitoes in Orange County: West Nile, St. Louis and Western Equine. All are carried by wild birds, most of which show no symptoms. Infected birds are then bitten by local mosquitoes that can pass the virus on to humans through future bites. Symptoms of encephalitis range from mild flu-like illness to severe brain inflammation that can cause death. West Nile Virus and Western Equine Encephalitis can affect horses and other animals as well as humans.



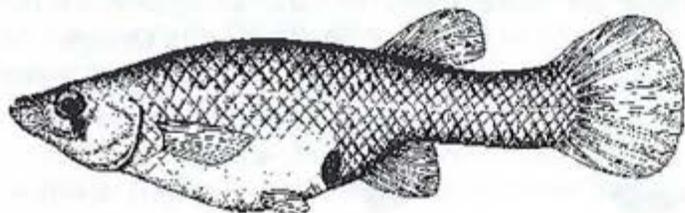
### MALARIA

Malaria is much less likely to occur in Orange County due to the necessity for human reservoirs of the disease. *Anopheles* mosquitoes, the vectors of malaria, are found in some areas of California, and there have been isolated instances where human reservoirs from other countries temporarily provided a source of malaria infection to local residents.



## FISH PREVENT MOSQUITOES

*Gambusia affinis*, commonly known as "mosquito fish," are indispensable to our mosquito control program. They eat mosquito larvae as fast as they hatch from the eggs. **Mosquito fish are provided without charge** for stocking ornamental ponds, unused or "out-of-order" swimming pools, and animal water troughs. They feed themselves and care is limited to protecting them from garden sprays and from chlorine or other chemicals used to clean the pond. The District also stocks thousands of these fish each year in artificial lakes, reservoirs, waste water disposal lagoons, and drainage channels to eliminate the need for frequent spraying with a mosquito insecticide. The District is careful not to place mosquito fish where they could enter a natural system.



*Gambusia affinis*

### FACTS ON MOSQUITO FISH

Mosquito fish do not lay eggs, but rather give birth to well developed and very active young. These fish, therefore, require no special environment, as most other fishes do, for depositing and hatching the eggs. They breed throughout the summer and new broods are produced at intervals of about six weeks, with 50 to 100 young in a single brood. The young are approximately 1/4 inch in length when born, and are ready to begin the work of destroying mosquito larvae at once. *Gambusia* grow rapidly, reaching a maximum size of about three inches. The earliest broods of the season, born in April and May, become sexually mature and produce young when six to eight weeks old.

## WHAT WE DO TO CONTROL MOSQUITOES

### OBJECTIVES

Our primary objective is to protect the people of Orange County from the dangers of vector-borne disease. A major component of our program is to educate the public about the shared responsibility of vector control. The District works hard to abate existing mosquito breeding sources and prevent new ones. The common goal is to permit full use and enjoyment of our backyards and the many recreational facilities within the County. We also want to permit mosquito-free agricultural and industrial working conditions.

### PROPERTY OWNER'S RESPONSIBILITY

The owner of any property on which a breeding source is located is responsible for the abatement of the nuisance and for the prevention of its recurrence. The District will inform the property owners of the mosquito breeding source and assist them in working out a satisfactory correction. In extreme cases, where the owner does not accept their responsibility to the public, the nuisance may be abated and a lien filed against the property as provided by the California Health and Safety Code.

### THE DISTRICT'S RESPONSIBILITY

The District controls mosquitoes in the County's wetlands and other chronic breeding sources created by standing water in street catch basins, subdivision drains, roadside ditches, flood channels, ravines, and similar places on public rights-of-way. The protocol is routine larviciding operations throughout the year and treating for adults only when necessary. We work with city, county, state, and federal agencies toward permanent correction of these sources whenever it is advisable.