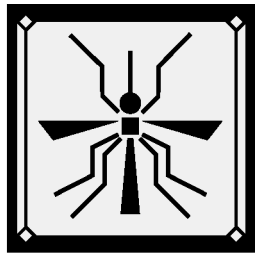


# ARE YOU RAISING MOSQUITOES IN YOUR BACKYARD?



**MVC**  
MOSQUITO AND VECTOR CONTROL  
**ASSOCIATION  
of CALIFORNIA**

## Acknowledgments

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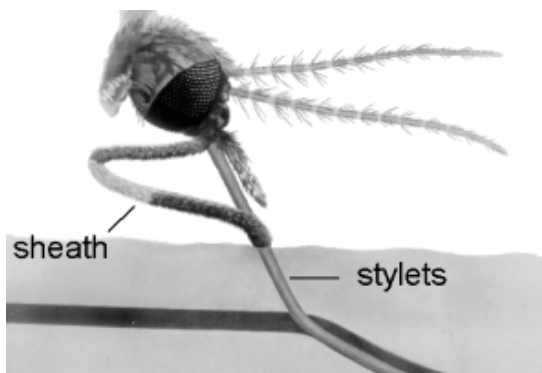
## HERE IS A CHECK LIST

- Ornamental Pond
- Swimming Pool
- Plastic Wading Pool
- Boat
- Animal Watering Trough
- Other Kinds of Containers
- Other Standing Water

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

- 1 - All mosquitoes must have water in which to complete their life cycle.
- 2 - Only seven days are required to complete their life cycle (egg to adult) during warm weather.
- 3 - Mosquitoes do not develop in grass or shrubbery, although flying adults frequently rest in these areas during daylight hours.
- 4 - Only the female mosquito bites to obtain a blood meal. The male mosquito feeds only on plant juices.
- 5 - 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.



## WHAT WE DO TO CONTROL MOSQUITOES

### *OBJECTIVES -*

The objectives of our program are to abate existing mosquito breeding sources and to prevent new ones in order to permit full use and enjoyment of our backyards and our many recreational facilities, to permit mosquito free agricultural and industrial working conditions, and to protect public health and comfort.

### *PROPERTY OWNER'S RESPONSIBILITY -*

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

### *BREEDING SOURCES WE CONTROL -*

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 are controlled by routine larviciding operations throughout the year as necessary. We work with city, county, state, and federal agencies toward permanent correction of these sources.

## FISH PREVENT MOSQUITOES

*Gambusia affinis*, called “mosquito fish,” are indispensable to our mosquito control program. They eat mosquito larvae as fast as they hatch from the eggs. **Mosquito fish are furnished without charge** for stocking ornamental ponds, unused or “out-of-order” swimming pools, and animal water troughs. They require no feeding and care is limited to protecting them from garden sprays and from chlorine or other chemicals used to clean the pond.

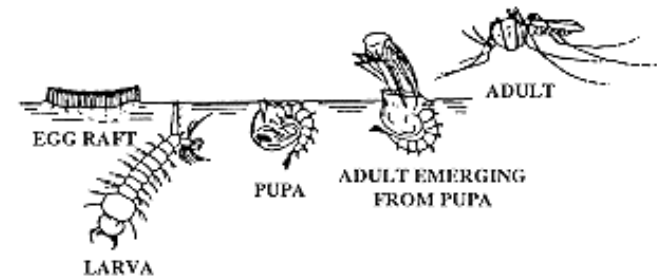


*Gambusia affinis*

### 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. They 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.

## 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



#### Characteristics

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

### CHROMID MIDGE

#### Characteristics

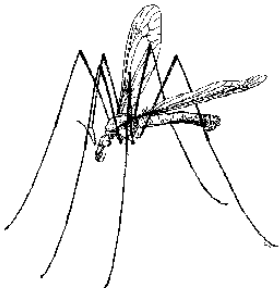
Cannot bite (no proboscis)  
Develop in mud on bottoms of lakes and ponds  
Body longer than wings  
Usually larger than a mosquito



### CRANE FLY

#### Characteristics

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

#### Characteristics

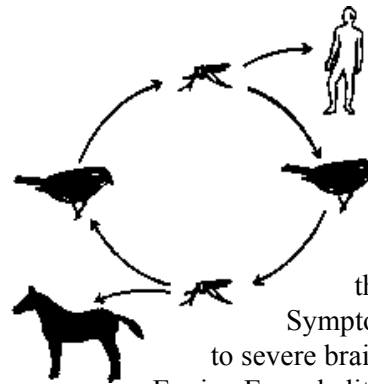
Cannot bite (no proboscis)  
Develop in fungus or moist decaying vegetation  
Have "spiny" legs  
About same size as mosquito



## MOSQUITO-BORNE DISEASES

Several of the 48 known species of mosquitoes in California can carry disease under the right conditions. When a female mosquito takes an animal blood meal, which she uses as nourishment for her developing eggs, she may transmit certain disease causing organisms to humans and other animals. These organisms are taken with blood from infected humans and other animals. The mosquito completes the cycle when she bites the next susceptible host, causing infection. The two most important diseases affecting humans are encephalitis and malaria.

### ENCEPHALITIS



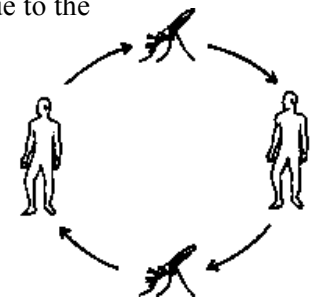
There are two forms of viral encephalitis transmitted by mosquitoes in California, St. Louis and Western Equine. Both are carried into an area by birds that are infected elsewhere. These birds show no symptoms. Infected birds are then fed on by local mosquitoes that can pass the virus on to humans through future bites.

Symptoms of encephalitis range from mild flu-like illness to severe brain involvement that can cause death. Western Equine Encephalitis can affect horses and other equine animals as well as humans.

### MALARIA

Malaria is much less likely to occur in California 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.



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## MIDGES

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**Chironomid Midge**

Chironomid midges cannot bite and are not harmful to public health. They can be a public nuisance because they develop in great numbers. They gather in swarms and when at rest they cover screen doors, windows, and walls. They look much like a mosquito and develop in the same water where mosquitoes develop. On a closer look, however, the midge:

1. Does not have biting mouth parts (proboscis).
2. Has a body (abdomen) that is longer than the wings.

**WE DO EVERYTHING WE CAN  
TO PREVENT THE  
DEVELOPMENT OF ADULT MIDGES**

Control of midge larvae is much more difficult than the control of mosquito larvae because the midge larvae live in the bottom mud and are much less vulnerable to our mosquito insecticides as well as to mosquito fish. Satisfactory control currently depends on continuing studies and research on new insecticide formulations and other possible control methods.

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## WHERE TO LOOK AND WHAT TO DO

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### **ORNAMENTAL PONDS —**

Stock with mosquito fish. Add goldfish for looks if desired. 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 top of pool cover. Stock unused or “out-of-order” pools with mosquito fish.

### **BOATS —**

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  |
| Jars    | Buckets    |
| Barrels | Tubs, etc. |

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

