

CONTROLLING MOSQUITOES WITH FISH

Gambusia affinis, or “mosquitofish,” are indispensable to our mosquito control program. Using mosquitofish is one of the most effective ways of controlling mosquito larvae without the use of insecticides or chemicals. An adult mosquitofish can consume several hundred larvae a day.

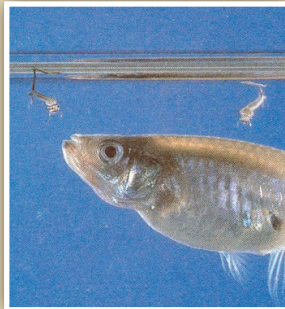
Mosquitofish do not lay eggs, but rather give birth to well developed and very active young. They do not require a special environment as most other fish do for depositing and hatching the eggs.

CARE

Mosquitofish are easily cared for and generally do not require special food. When the District places mosquitofish in newly constructed or recently cleaned water features where natural food is absent, fish flakes or oatmeal may be used to feed the fish for a short time. After bacteria and algae have had time to build up, the fish will no longer need to be supplied with supplemental food.

PLACEMENT

In an effort to minimize unwanted environmental impacts, District personnel refrain from placing mosquitofish in sources known or thought to be habitats for endangered or threatened species.



Mosquitofish are appropriate for use in ornamental ponds and water troughs, wine barrels, neglected swimming pools and any other permanent feature that can support fish.

AVAILABILITY

Contra Costa County residents may request mosquitofish service. District personnel place mosquitofish in appropriate residential and commercial water features.

THE MOSQUITO LIFE CYCLE

Mosquitoes have four distinct developmental stages: egg, larva, pupa and adult. Mosquitoes require water to complete their life cycle. Prevent mosquitoes from breeding by eliminating or managing standing water.

EGGS

Most mosquitoes lay their eggs on or near water. Some species lay individual eggs. A mosquito egg raft contains approximately 100 to 400 eggs and the entire egg raft is the size of a single grain of rice. The eggs hatch into larvae within a few days or months, depending on the species.



Photo courtesy of Susan Ellis, bugwood.org

LARVA

The larva or “wiggler” comes to the surface to breathe through a tube called a siphon and feeds on bacteria in the water. In a matter of days, the larva will molt (shed its skin) four times. On the fourth molt it will change into a pupa.

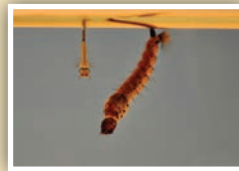
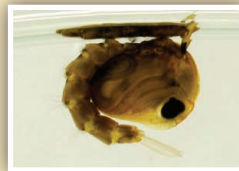


Photo courtesy of Ary Farajollahi, bugwood.org

PUPA

The pupa or “tumbler” cannot eat. It breathes through two tubes on its back. The adult mosquito grows inside the pupal casing and within a few days, when it is fully developed, it will split the casing and emerge 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.



Photo courtesy of Joseph Berger, bugwood.org

ABOUT CONTRA COSTA MOSQUITO & VECTOR CONTROL DISTRICT

Protecting Public Health Since 1927

Early in the 1900s, Northern California suffered through epidemics of encephalitis and malaria, and severe outbreaks of saltwater mosquitoes. At times, parts of Contra Costa County were considered uninhabitable resulting in the closure of waterfront areas and schools during peak mosquito seasons. Recreational areas were abandoned and Realtors had trouble selling homes. The general economy suffered. As a result, residents established the Contra Costa Mosquito Abatement District which began service in 1927.

Today, the Contra Costa Mosquito and Vector Control District continues to protect public health with environmentally sound techniques, reliable and efficient services, as well as programs to combat emerging diseases, all while preserving and/or enhancing the environment.

Contra Costa Mosquito & Vector Control District Services for Contra Costa County Residents

MOSQUITOES

Inspection and control including placement of **MOSQUITOFISH** in residential water features

YELLOWJACKETS

Ground-nesting only

BEEES

Inspection and education

TICKS

Tick identification

RATS AND MICE

Inspection and advice

SKUNKS

Inspection and assistance

PUBLIC EDUCATION

Literature and presentations

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ARE YOU RAISING MOSQUITOES?





USE THIS HOME & GARDEN CHECKLIST TO HELP MAKE YOUR ACTIVITIES AROUND YOUR HOME SAFER & MORE ENJOYABLE

- **Trash bins:** Keep lids shut tight and remove any water that may have accumulated inside.
- **Boats:** Remove water from boats and boat covers weekly.
- **Fountains and bird baths:** Clean or hose out weekly and scrub.
- **Rain gutters:** Keep clear of leaves and other debris.
- **Potted plant saucers:** Don't over-water. Flush out saucers with a hose or drill holes in the bottom to allow better drainage. Scrub out saucers.
- **Tires:** Drill holes in tire swings. Recycle used tires or store in a covered area.
- **Water bowls for pets:** Rinse and scrub and fill with fresh water 1 to 2 times a week.
- **Water troughs:** Request mosquitofish for stocking in troughs.
- **Leaky hoses:** Replace damaged hoses and fix leaky faucets and pipes.
- **Low areas:** Do not over water lawns or gardens.
- **Ponds:** Request mosquitofish for stocking in ponds. Keep ponds clear and free of excess vegetation.
- **Neglected swimming pools and spas:** Maintain even when not in use. Remove standing water on top of covers. **If you know of a neglected pool or spa please contact the District.**
- **Containers:** Dump out any water, scrub sides of the container with a brush, then store upside down so they cannot be refilled.
- **Rain barrels:** Cover tightly with a fine mesh screen.
- **Chain link fence:** Cover hollow chain link fence posts with metal or plastic caps.
- **Drains:** Make sure that drains are flowing freely.
- **Lighting:** Check garden lights and eliminate water from tops of fixtures and from inside floodlights.
- **Sculptures:** Check for water that may collect in lawn ornaments. Drain or flush out weekly.
- **Screens:** Install and maintain tight-fitting window and door screens.
- **Rot hole in trees:** Be aware that water can collect in rot holes, crotches and dead tree stumps. Check with an arborist for best way to manage water or fill cavities.
- **Water under home:** Use a sump pump to remove water.
- **Septic tanks:** Screen vent pipes with a fine mesh screen. Cover exposed tanks or manhole lids with plastic or a similar material and secure in place. Place several inches, or more, of dirt or sand over the top of the area.
- **Wheelbarrows:** Remove water that collects inside or store upside down.

COMMON RESIDENTIAL MOSQUITO SOURCES

Residential yards are often the #1 source of mosquitoes in a community. Anything that can hold just tablespoons of water for more than five days can be a source of mosquitoes, such as toys, uneven ground areas in lawns and gardens, flower pot saucers, neglected swimming pools and spas, bird baths, clogged rain gutters, and more. Maintain, manage or eliminate all types of standing water on a regular basis.

MOSQUITO PROGRAMS & SERVICES

Our county's diverse ecological regions create a range of mosquito sources. The District regularly surveys more than 10,000 acres of marshland along the waterfront, acres of irrigated farmland in the eastern county, and numerous ponds, creeks, and residential sources countywide. Upon request for service, the District will inspect a property for mosquito problems and provide advice on controlling their populations. There are 23 different kinds of mosquitoes that inhabit a variety of water sources in the county. It's important that the homeowner or caller provide our employees with a mosquito sample that can be identified to determine its possible source. Simply swat a mosquito and save it or tape it to a piece of paper for the District employee.

FACTS ABOUT MOSQUITOES

1. All mosquitoes must have water in which to complete their life cycle.
2. It takes only five to seven days for mosquitoes 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; she needs the protein from the blood meal for her eggs. The male mosquito feeds only on plant juices.
5. The female mosquito may live as long as four weeks during the summer or many months over the winter in order to lay her eggs the following spring.
6. Mosquitoes have a flight range of a few hundred yards to more than 20 miles, depending on the species.

