

Mosquito fish (*Gambusia affinis* & *G. holbrooki*)



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Photo credit: [Chris Appleby](#), *Gambusia holbrooki* (female), The United States Geological Survey

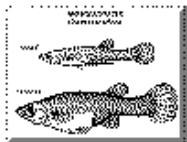
Credit: This web page was first developed by **Jeffery B. Webb**.

Introduction

DESCRIPTION

Mosquito fish commonly refers to either the Western or Eastern species of *Gambusia*. The two species are so similar that they until recently were considered the same species. This guppy-like fish is usually between one and two inches in length, silver to gray in color and resembles the common minnow. It is very adaptable, tolerant of a wide range of water qualities and its expansion is only limited by severe climates.

The fish have a large appetite, and a single female (which normally is larger than a male) can devour several hundred mosquito larvae per day. *Gambusia* can reproduce rapidly and are unlike other fish in that they do not lay eggs; they bear live young. Each female can produce three to four broods in her lifetime, and each brood can vary from 40 to 100 young. Birth usually occurs during the warm spring and summer months. When the young are born, they are active and immediately swim for the nearest cover. Though they are only about 3/8-inch long, they will soon feed.



Credit: & Source: The Shasta Mosquito and Vector Control District



Credit: & Source: *Gambusia* Control Homepage

The upper fish is the female, note the gonopodium (a modified anal fin) on the male.
- Scalebar represents 1 cm.

(Source from: 1. The United States Geological Survey; http://nas.er.usgs.gov/fishes/accounts/poecili/ga_holbr.html; 2. Mosquito fish: The Shasta Mosquito and Vector Control District, <http://www.snowcrest.net/mosquito/fish.htm>; 3. *Gambusia* Control Homepage, <http://www.gambusia.net/>)

IMPACTS

Mosquito fish have negative ecological impacts anywhere they are introduced. This a particularly predaceous species, easily out competing native species of minnow for available forage or harassing those competitors until death. They have been especially devastating in the American Southwest interacting with a wide range of threatened or endangered fish species; most recognized is the Gila topminnow. The decline of up to twenty species has been linked to the introduction of Mosquito fish outside of its native range. Recent studies suggest California's declining amphibian populations can be linked to Mosquito fish introductions as well.

On the other hand, there is a positive aspect of mosquito fishes. **Mosquito fish** are important to the mosquito control program. They eat mosquito larvae as fast as they hatch from the eggs laid by mosquitoes on the surface of the water. In California they are furnished alive and without charge for stocking ornamental ponds, unused or "out-of-order" swimming pools and animal watering 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. The Shasta Mosquito and Vector Control District also stocks thousands of these fish each year in artificial lakes, reservoirs, waste water disposal lagoons, natural creeks and drainage channels to eliminate the need for frequent spraying with mosquito pesticides.

Source from: 1. James D. Williams, U.S. Geological Survey Biological Resource Division Henry R. Rupp, Adverse Assessments of *Gambusia affinis*, <http://www.nanfa.org/>; 2. Mosquito fish: The Shasta Mosquito and Vector Control District, <http://www.snowcrest.net/mosquito/fish.htm>; 3. *Gambusia* Control Homepage, <http://www.gambusia.net/>)

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Geographic Information

ORIGIN

Mosquito fish was originally distributed from southern Indiana and Illinois south to Florida and northwards along the Atlantic coast to New Jersey in the United States and in Mexico south to the Rio Cazones, Veracruz. Because of a misconception about predation on mosquito larva they have been introduced into all temperate areas of the United States and around the world.

Source from: Christopher Lever (1996), *Naturalized Fishes of the World*, pp.156-57.

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DISTRIBUTION

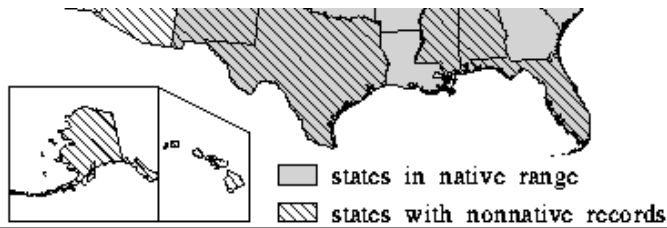
▣ [Link to USGS Mosquito Fish U.S. Distribution Maps](#) ✕ [Link](#)

http://nas.er.usgs.gov/fishes/accounts/poecilii/ga_holbr.html

Gambusia affinis and *G. holbrooki*



Mosquito fish
1940s - 1995 ✕ [Link](#)



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Control Methods

Control

Control of the **Mosquito fish** will be very difficult. Introductions for the control of mosquito larvae began in the early 1900's. Since then the fish has attained a near mythical reputation as a mosquito control agent. This myth arose from predaceous behavior and has not been scientifically proven. Even today as tropical diseases like West Nile virus spread into temperate climate zones, Mosquito fish are endorsed both by government agencies and commercial growers as a controlling agent.

One of the biggest problems in controlling the indiscriminate use of Mosquito fish is the contradicting information regarding the problem. Many government agencies still advocate the use, while others try to dispel the myth. A classic example is the United States Government; the Army endorses Mosquito fish use in tropical areas as a control for malaria, yet the Geological Survey is citing this species as the cause of declining populations of some Southwestern minnows. Even States with declining native minnow populations promote the use of Mosquito fish, to the extent that commercial growers struggle to keep up with demand.

Exotic species can be accidentally spread by boaters who travel from infested to uninfested waters. Some species (e.g., **Round Goby**, **Zebra Mussel**, **Ruffe**, **Eurasian Watermilfoil**) can be picked-up and transported on boating equipment including boats, trailers, motors, tackle, downriggers, anchors, axles, rollers, and centerboards. Boaters can help prevent this from happening. To avoid spreading exotic species, follow these easy steps before transporting your boat to another waterway.

BEFORE leaving the boat launch



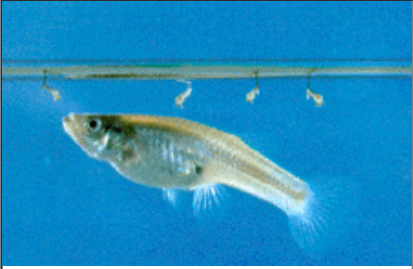
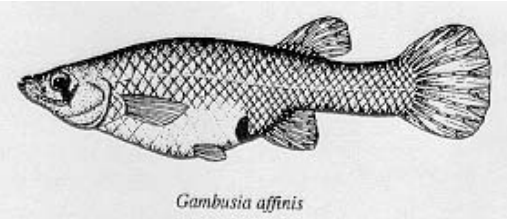
- ▶ **INSPECT** your boat, trailer and equipment and remove any plants and animals.
- ▶ **DRAIN**, on land, all water from the motor, livewell, bilge, and transom well. Some exotics may not be visible to the naked eye.
- ▶ **EMPTY** your bait bucket on land. Never release live bait into a waterway, or transfer aquatic animals between waterways.

AFTER leaving the boat launch

- ▶ **WASH** your boat, tackle, trailer, and other equipment to kill any exotic species not visible at the boat launch. This can be done with 104°F tap water, or a high-pressure sprayer. or
- ▶ **DRY** your equipment for at least five days-some exotics can survive for long periods of time out of water.
- ▶ **LEARN** what these organisms look like, and know which waterways are infested.
- ▶ **REPORT** any new infestations to any Sea Grant or your Department of Natural Resources.

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Useful Picture Collections

	Credit: Chris Appleby Org: The United States Geological Survey (USGS) (<i>Gambusia holbrooki</i> : Male)		Credit: Chris Appleby Org: The United States Geological Survey (USGS) (<i>Gambusia holbrooki</i> : Female)
	Credit: & Org: County of San Diego, Department of Environmental Health	 <i>Gambusia affinis</i>	Credit: & Org: County of San Diego, Department of Environmental Health

Related Sites

[Mosquito Fish: The United States Geological Survey](http://nas.er.usgs.gov/fishes/accounts/poeciliiga_holbr.html)

http://nas.er.usgs.gov/fishes/accounts/poeciliiga_holbr.html

Scientific analysis and assessment of *Gambusia* introductions. The page also includes description, introduction, detailed identification with pictures, impact, management, and references.

[Mosquito Fish ,*Gambusia affinis*](http://www.fattigfish.com/mosfish.htm)

<http://www.fattigfish.com/mosfish.htm>

Detailed information about and picture of the mosquito fish.

[Mosquito fish: The Shasta Mosquito and Vector Control District](http://www.snowcrest.net/mosquito/fish.htm)

<http://www.snowcrest.net/mosquito/fish.htm> or <http://www.msmosquito.com/>

This site explains some benefits of mosquito fish to control mosquitos. It also includes a brief description of the fish.

[Gambusia Control Homepage](http://www.gambusia.net/)

<http://www.gambusia.net/>

Overview of the ongoing investigation of the effect of *Gambusia* on native aquatic fauna, and exploration of potential means of control.

[Mosquito fish: County of San Diego, Department of Environmental Health](http://www.co.san-diego.ca.us/cnty/cntydepts/landuse/env_health/chd/v/mosfish.html)

http://www.co.san-diego.ca.us/cnty/cntydepts/landuse/env_health/chd/v/mosfish.html

Description and benefit of the fish, with two pictures.

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Educational Resources

[Adverse Assessment of *Gambusia affinis* \(by Henry R. Rupp\): North American Native Fishes Association \(NANFA\)](http://www.nanfa.org/articles/ACmosquito.htm)

✕ [Link](http://www.nanfa.org/articles/ACmosquito.htm) <http://www.nanfa.org/articles/ACmosquito.htm>

 [Help Prevent the Spread of Aquatic Plants and Animals \(II -IN-SG-98-1 Free\)](#) · Illinois-Indiana

Help Prevent the Spread of Aquatic Plants and Animals (IIS-00-001, 1/00), Inshore Islands Sea Grant

✘ [Link](http://www.iiseagrant.org/publication/br.htm) <http://www.iiseagrant.org/publication/br.htm>

Fact sheet describes how exotic aquatic species are spread by boaters. Provides easy steps boaters can take to prevent spread of exotics when transporting watercraft. 4p.

References

✘ [References related to Mosquitofish \(provided by Gambusia Control Homepage\)](#)

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