



# Western Mosquitofish

ALBERTA REGULATION:  
FISHERIES ACT

Last Updated: February 2018

*Gambusia Affinis* (Baird & Girard, 1853)

syn. *Gambusia gracilis*, *G. humilis*, *G. patruelis*, *Haplochilus melanops*, *Heterandria various*, *Zygonectes various*



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## Overview:

The Western mosquitofish is a ray-finned, live-bearing freshwater fish; it belongs to the same family that includes the well-known live-bearing aquarium fish guppy, molly, platy, and swordtail.<sup>4</sup> *G. affinis* is native to North and Central America, from the Mississippi River basin south to the Gulf of Mexico.<sup>2</sup> The Western mosquitofish has been introduced widely around the world, throughout the 1900s, for the purpose of mosquito control and malaria prevention.<sup>3</sup> Their role in mosquito control is now disputed that they are no more effective at controlling unwanted organisms than native species<sup>1</sup> and they may be more harmful than helpful as documented impacts these fish have on native aquatic communities are destructive.<sup>5</sup>

Western mosquitofish tolerate a wide

range of environmental conditions and have a high reproductive capacity. Gestation is short and females may bear five or more clutches in a season.<sup>5</sup> However, *G. affinis* populations are regulated by food availability and competition with other species.<sup>5</sup>

Western mosquitofish feed primarily on zooplankton<sup>3</sup> as well as native aquatic invertebrates, such as odonate larvae (damselflies & dragonflies), rotifers, and crustaceans.<sup>5</sup> This fish has been associated with declines in amphibian populations due to predation on eggs and tadpoles.<sup>5</sup> Additionally, similar sized native fish species have declined due to predation or competition where *G. affinis* have been introduced. In turn, Western mosquitofish are consumed by aquatic birds, larger fish, larger aquatic invertebrates, and other species.<sup>5</sup>

*G. affinis* can be confused with the closely related Eastern mosquitofish, *G. holbrooki*, which was once considered a subspecies.<sup>1</sup> To date, the only known population of Western mosquitofish in Alberta is in the Cave and Basin pools near Banff Hot Springs.

As of January 1, 2016, the possession, sale, or transport of this species in Alberta is illegal under the Fisheries Act.

## Habitat:

Western mosquitofish prefer standing to slow-flowing waters, which are well vegetated and occupy the shallower edges.<sup>2</sup> They occur in water temperatures from 0 to 45°C, salinities of 0 to 41 ppt, pH levels of 4.5 to 9, dissolved oxygen from 1 to 11 mg/L, and turbidity.<sup>5</sup> They are tolerant of pollutants and have been observed to



# Western Mosquitofish *(continued)*

survive overwinter under ice in some locations, although cold temperatures do limit distribution. Mainly found at lower elevations.<sup>5</sup>

## Identification:

The Western mosquitofish is small (commonly 3.9 cm total length)<sup>2</sup>, robust, greyish-green to brown body with silvery-white undersides and small rows of black spots, primarily on the dorsal and caudal fins. The body is short, the head is flat<sup>3</sup> and the mouth is terminal and points upwards for feeding at the surface of the water.<sup>1</sup> The dorsal fin is small, rounded and originates behind the anal fin. The dorsal fin has 7-9 soft rays, anal soft rays 9-10. There are no spines. There are 8 horizontal scale rows between the back and abdomen.<sup>2</sup>

In males the first few rays of the anal fin are elongated<sup>1</sup> - the anal fin of males is modified into a copulatory organ.<sup>2</sup> Mature females are larger than males.<sup>1</sup> The maximum reported length is 7.0 cm.<sup>2</sup>

Western mosquitofish are distinguished by a net-like pattern on the body and a small dark bar or 'teardrop' below the eye.

## Ecology:

Female mosquitofish are fertilized internally by males. Female gestation lasts 22 to 25 days where they will carry an average of 30 (ranges from 5 to 104)<sup>5</sup> alevins (fry with a yolk sac).<sup>2</sup> Males can mate anytime during the breeding season and females can store viable sperm and may adjust when fertilization occurs. Clutch size

increases with food availability as well as with female body length or weight.<sup>5</sup>

All males, and most females, live less than 12 months, but some females have lived 2 to 3 years.<sup>5</sup>

## Economic Impacts:

Western mosquitofish compete directly with similar-sized native fish for food and also prey on the eggs and larvae of native fishes.<sup>3</sup> Western mosquitofish are highly aggressive, often attacking, shredding fins and sometimes killing other fish.<sup>3</sup> The decline of native sportfish populations could have impacts on recreation and tourism.

## Environmental Impacts:

Western mosquitofish can negatively impact populations of similar-sized fish through predation and competition for food resources. Western mosquitofish prey on the eggs and juveniles of native fishes. Mosquitofish can also negatively affect trophic relationships of aquatic communities by the consumption of zooplankton and invertebrates.<sup>3</sup>

## Sociological Impacts:

The transformation of native aquatic communities results in the intrinsic loss of natural capital and enjoyment of natural areas.

## Prevention:

Learn how to identify Western mosquitofish and how to prevent spread. This fish is currently promoted by pest control companies and is widely available on the internet.

Do not purchase or grow Western mosquitofish. Never empty your aquarium into natural water bodies.

## Control:

Currently, there are no widely established control options for the Western mosquitofish other than preventing introduction. Drawdown and drying of water bodies where possible will kill Western mosquitofish. If caught, Western mosquitofish should be killed and not released. Report any sightings.



# Western Mosquitofish *(continued)*



Male



Female

## REFERENCES:

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