

# THE GAMBUSIA -

## A biological control gone mad.

### **GAMBUSIA; AN UNDERESTIMATED MENACE.**

Mosquitofish (*Gambusia affinis*) are widely used by public health and mosquito control agencies throughout the world by being introduced into waterways in which the nuisance mosquitoes breed. Their adaptability and hardiness, and their ability to produce large numbers of young in a short time, can make them valuable biological control agents. However, in an effort to minimise unwanted environmental impacts, the authorised personnel introducing these fishes must still refrain from planting mosquitofish in sources that are known or thought to be habitat for endangered or threatened species. Care must be especially taken when planting mosquitofish in waterbodies where they can migrate to habitats used by endangered or threatened species. For most of these countries, it is also against their own fisheries regulations for private citizens to plant mosquitofish in the waters of that locality without a permit. Lately in New Zealand however, these fishes have been the source of worries for environmentalists concerned about their continuing introductions, both illegal and legal, into our country's waterways.

These fish are native to the watershed of the Gulf of Mexico, where it has long been known that they feed readily on the aquatic larvae and pupae stages of mosquitoes. They are remarkably hardy, surviving in waters of very low oxygen saturations, high salinities (including twice that of seawater!), and high temperatures; they can even survive in waters up to 42 oC for short periods. For these reasons, this species may now be the most widespread freshwater fish in the world, having been introduced as a biocontrol to tropical and temperate countries in both hemispheres, and then spreading further both naturally and through even further introductions.

They are a small and stout dull grey, robust fish with a rounded tail and a terminal and upward pointing mouth adapted for feeding at the water's surface. In these features and their small size they resemble the tropical guppies from which family they also belong (the 'live-bearers', or Poeciliidae). Mature females measure 50 - 60 mm, and males to only around 25 - 35 mm long. Females can reach sexual maturity in only six to eight weeks, and they may bear three to four broods of young in a single season. The first may number only a dozen, but later broods include 60 to 100 young. Females store sperm in their reproductive tract for up to two months and give birth to live offspring. Being a live-bearer their young encounter a much greater survivorship of young than do egg-laying fishes which typically suffer from egg predation. Under favourable conditions, *Gambusia* live two to three years. Estimates of their breeding potential have therefore demonstrated an incredible ability for this species to multiply and dominate their new habitats by sheer numbers in which they have been introduced. Their own success in a new environment is almost guaranteed by their rapid maturation, by breeding several times a year and producing broods of around 50 advanced live young. Individual populations have been recorded expanding from 7,000 to 120,000 in five months!