Tilapia

Oreochromis mossambicus and *Tilapia mariae*

Tilapia were first introduced into Australia in the 1970s as ornamental fish, but are now regarded as one of the greatest threats to Australia's native biodiversity. New incursions can occur when live or dead fish are released into any of Queensland's waterways or private dams.

Legal requirements

Tilapia are a category 3, 5, 6 and 7 restricted invasive fish under the *Biosecurity Act 2014* (the Act). They must not be kept, fed, given away, sold, or released into the environment. If caught, tilapia must be humanely destroyed immediately and disposed of as soon as practicable by burying a suitable distance from the waterway where it was caught or placing it in a rubbish bin.

The Act requires everyone to take all reasonable and practical measures to minimise the biosecurity risks associated with tilapia under their control. This is called a general biosecurity obligation (GBO). This fact sheet gives examples of how you can meet your GBO.

There have been isolated reports of people keeping and/or moving tilapia around the State – this is an offence and the fish must be destroyed.

Queensland Government

Description

Two species are established in Queensland – the Mozambique tilapia (*Oreochromis mossambicus*) and the spotted tilapia (*Tilapia mariae*).

Mozambique tilapia *(Oreochromis mossambicus)*

Mozambique tilapia can grow up to 40 cm long and can live up to 13 years. They are usually dark grey or almost black but can be silver with 2–5 dark blotches/spots on the side. Breeding males can have red tips on their fins.

The fish (especially males) have a long snout and pronounced lips/jaws. Their dorsal fin and anal fin are almost symmetrical.

Spotted tilapia (*Tilapia mariae)*

Spotted tilapia can grow up to 30 cm. Their colour ranges from dark olive-green to light yellow and they have eight or nine dark bars or blotches on the sides (more evident in younger fish).

Adults can have red margins on their fins and red blushing on their bodies.

Both species are deep-bodied with a thin profile and have long pointed fins. Juveniles have a small black spot at the rear of the base of the dorsal fin and may have vertical banding on the body. Their single, continuous dorsal fin originates near the head and ends with an extended point.

Life cycle

Mozambique tilapia are able to reach sexual maturity at small sizes in poor conditions or when they are overcrowded. This is known as 'stunting' and results in large populations of mature fish with small body sizes.

Mozambique tilapia are mouth brooders – females protect eggs and larvae from predators by holding them in their mouths. Males build large circular breeding nests in soft silt or muddy substrate. Spotted tilapia lay their eggs on hard substrate.

Habitat and distribution

Tilapia can be found in a variety of habitats including reservoirs, lakes, ponds, rivers, creeks, drains, swamps and even tidal creeks and estuaries. They usually live in mud-bottomed, well-vegetated areas and are often seen in loose aggregation or small schools. They mainly inhabit slow-flowing rivers and streams and still-water habitats, including drains. The males build clusters of circular nests or pits in sandy or muddy substrate.

Mozambique tilapia are hardy fish and can survive temperatures between 8 and 42°C, although they require temperatures of about 16°C to remain active and feed. They can also withstand high salinities and low dissolved oxygen.

Spotted tilapia are less tolerant of cooler temperatures and therefore has a lower latitudinal range.

Female Mozambique tilapia

Spotted tilapia

Male Mozambique tilapia

Juvenile spotted tilapia

Mozambique tilapia have now established in most east coast Queensland catchments, and may be present in drains, waterways and dams from Cairns through to the Gold Coast area.

Tilapia are currently present in 26 of 67 catchments within Queensland. Spotted tilapia have established populations around Cairns, with recent incursions reported in the Mitchell River catchment.

Impacts

Tilapia have successfully invaded and dominated many aquatic habitats due to their highly efficient reproductive strategy, simple food requirements and their ability to live in a variety of conditions.

They have the potential to rapidly outnumber native fish and dominate aquatic communities and can survive a range of environmental conditions which native fish find difficult to cope with.

Unlike many native freshwater fishes, tilapia are able to retreat downstream into highly saline waters during drought and move back upstream when conditions improve.

Tilapia can affect native species when competing for habitat and food, behaving aggressively and disturbing plant beds when building nests. This may subsequently impact on fishing activities in the region.

Control

Managing tilapia

The GBO requires a person to take reasonable and practical measures to minimise the biosecurity risks posed by tilapia. This fact sheet provides information and some options for controlling tilapia.

There is currently no single, effective broad-scale tilapia control method. Most (if not all) control methods only remove a part of the population with each attempt and tilapia have a very high reproductive rate, so they will quickly repopulate the area or new tilapia will soon move in to replace those removed.

Fishing using legal recreational fishing methods is the only option available to the public. Intensive fishing with sustained effort over time may have the potential to reduce tilapia numbers in small enclosed waterbodies, but it is very unlikely that fishing alone is an effective long-term control measure.

Poisons have been used to eradicate invasive fish in ponds and small dams, but are not practical for rivers and streams as these poisons also kill native fish.

Biosecurity Queensland advocates the ethical euthanasia protocols recommended by the 2001 ANZCCART publication: Euthanasia of animals used for scientific purposes which states:

- the most appropriate method may involve stunning the fish via a sharp blow to the back of the head just above the eyes. When applied correctly, this causes brain destruction—the fish's gill covers should stop moving and its eyes should remain still.

After destroying the fish, you need to dispose of it as soon as practicable by burying it a suitable distance from the waterway where it was caught or placing it in a rubbish bin.

Banned as bait

You cannot use tilapia or any other invasive fish as bait. These fish must not be returned to the water dead or alive.

How to stop the spread

Recreational fishers

- Don't return invasive fish to the water. If you catch a invasive fish, kill it humanely and dispose of it appropriately.
- Don't transfer invasive fish between waterways—don't use invasive fish as bait.
- Obtain a permit to stock fish. Buy fingerlings from a registered hatchery to minimise the chance of contamination with undesirable species.
- Prevent unwanted hitchhikers—check, clean and dry your boats and gear between waterways to prevent spread of weed with tilapia eggs or juveniles attached.

Ornamental fish enthusiasts and backyard pond owners

- Don't dump fish—give unwanted aquarium fish to friends or a pet shop instead of letting them go in the wild.
- Don't keep prohibited or restricted fish.
- Prevent accidental escapes—screen outdoor ponds to prevent overflow during heavy rains.
- If possible, keep native fish instead of exotics—contact your local aquarium for information on local native fish species.

Fish farmers

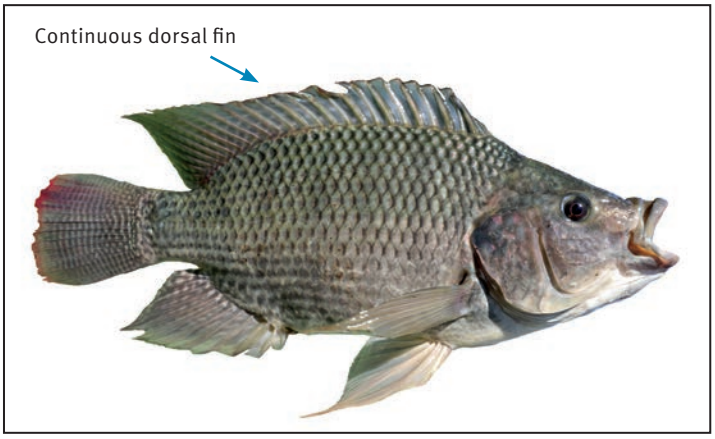
- Prevent accidental escapes—comply with aquaculture permit conditions designed to prevent the escape of fish (e.g. screened water outlets).
- Don't experiment with exotics—keep to the prescribed species list.

Invasive fish verses native fish

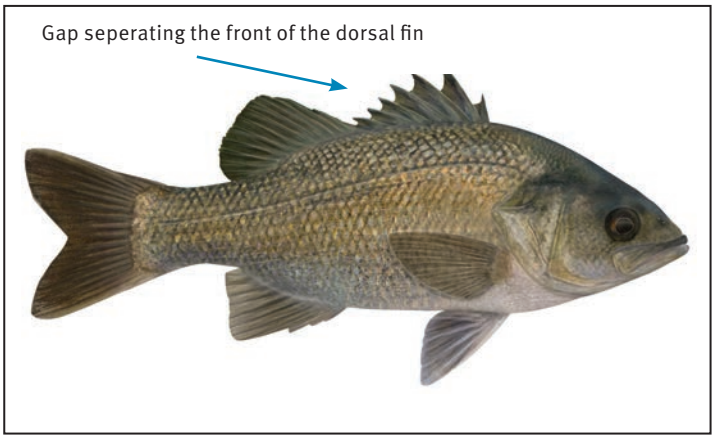
An easy way to distinguish a invasive fish from a native freshwater fish is by looking at the dorsal fin. Invasive fish usually have a continuous dorsal fin, while native freshwater fish usually have a dent or gap separating the front of the dorsal fin from the rear.

More information

For more information contact your local government or visit biosecurity.qld.gov.au.

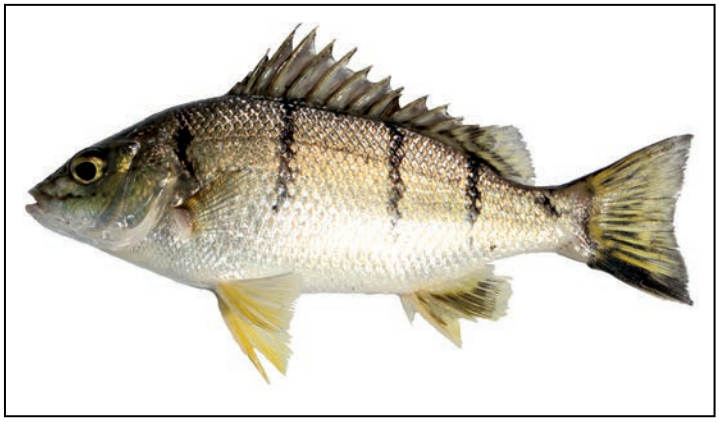


Noxious fish



Native fish

Juvenile Mozambique tilapia



Banded grunter, a native fish often confused with juvenile tilapia

Comparsion between juvenile spotted tilapia (top) and banded grunter

Eggs in mouth of a female

Mozambique tilapia nests

Electro fishing monitoring for spotted tilapia

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