



**Australian Government**

**Department of Agriculture  
and Water Resources**



**NORTHERN  
TERRITORY  
GOVERNMENT**

# Freshwater pest identification guide



# Freshwater pest threats to the Northern Territory

Many ornamental aquarium fish are non-native species, i.e. fish that are not found naturally in the Northern Territory (NT). They can become pests if they are released into freshwater lakes, billabongs, creeks and rivers.

## What problems can non-native fish cause?

If released into our waterways, non-native fish can:

- compete with native fish for food and space
- dominate waterways by reproducing in large numbers, hybridising with native species and surviving in adverse and disturbed habitats
- alter and disturb natural habitats
- feed on native fish, insects and plants
- introduce diseases and parasites.

*This project is supported by funding from the Australian Government's Agricultural Competitiveness White Paper, the government's plan for stronger farmers and a stronger economy.*

# Don't dump your fish!



## Help protect our waterways

Releasing ornamental fish and plants into local waterways can seriously damage our delicate aquatic environment.

Keep an eye out for unusual fish and aquatic plants. Report any sightings to the **Fishwatch Hotline 1800 891 136** or through the free **NT Fishing Mate app**.



[www.nt.gov.au](http://www.nt.gov.au)

## You can help:

- Don't release aquarium fish and aquatic plants into local waterways. Either dispose of fish humanely or check whether a local pet shop will take them.
- Install screened overflows or spillways to ponds to prevent fish escaping during wet season rains or keep water levels low.
- Use attractive and colourful native fish and plants in home aquaria and ponds. Native fish such as blue-eyes, rainbowfish, glassfish and gudgeons are also effective at controlling mosquito larvae populations.
- Keep an eye out for unusual fish and aquatic plants.



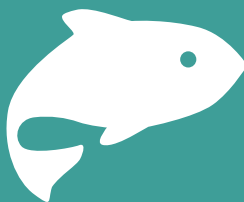
**Don't  
dump  
your fish!**

## If you think you've spotted a pest:

take a photo



catch a sample  
if possible



report to the  
Fishwatch Hotline



Call the Fishwatch hotline on 1800 891 136 or report through the free NT Fishing Mate app.

## Climbing perch

*Anabas testudineus*

**DECLARED NOXIOUS FISH** - possession is illegal and significant fines apply

### Key features

- Typically grow to 230mm, oblong in shape.
- Pale brown/orange to dark green/brown with darker blotches on their body.
- Possess extendable gill covers which allow them to 'walk' or drag themselves onto dry land.
- Females mature within the first year (150mm) and lay 50-100 eggs (float on surface of water) per cycle, several cycles during breeding season.
- Parents guard the eggs until they hatch.

### Impacts

- Predatory species which can deplete smaller native species populations.
- Gill covers are also anti-predation mechanism whereby if other animals consume them they get stuck in the throat causing the animal to regurgitate.
- They can also inflate their bodies to block the airways of predators that have consumed them.



Photo: Department Agriculture and Fisheries, Queensland

## Did you know?

Climbing perch possess an air breathing organ that allows them to survive in locations with low oxygen or even survive on land for several days or weeks (under moist conditions).

## Gambusia/Mosquito fish

*Gambusia holbrooki*

**DECLARED NOXIOUS FISH** - possession is illegal and significant fines apply

Originally introduced to Australia for biocontrol of mosquito larvae, however they weren't any more effective than local native species.

### Key features

- Females up to 80mm and males up to 35mm.
- Grey/brown in colour, females have black spot on abdomen, males have extended anal fin to aid in reproduction.
- Small dark spots on fins.
- Can be easily mistaken for guppies.
- Females mature around four-six weeks of age and produce 20-100 live young per cycle, with several cycles throughout the breeding season, two-nine months depending on water temperature

### Impacts

- Predatory species which can deplete smaller native species populations.
- Are aggressive and will nip the fins of other fish species causing stress and can lead to bacterial and fungal infections and death.
- Eat native fish and larvae that will reduce native fish populations and densities.



Photo top: MAGNT collection.  
Gambusia pair - male top,  
female bottom.

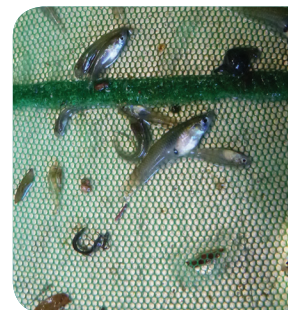


Photo right: NT Government.  
Gambusia eradicated from local  
waterway.

## Did you know?

**Gambusia can tolerate lower oxygen levels than native fish surviving in locations where native fish cannot - ability to gulp air from the surface when oxygen levels are low.**





## Guppy

*Poecilia reticulata*

Common ornamental fish species in Australia.

### Key features

- Females up to 60mm and males up to 30mm.
- Females grey with black spot on abdomen.
- Males are colourful with many variations seen in colour and pattern, also have extended anal fin to aid in reproduction.
- Females mate with multiple males which allows them to produce more offspring in shorter gestation times.
- Females mature around 12 weeks of age and produce 30-60 live young each cycle, reproduction continues throughout the year.



### Impacts

- Can exhibit fin nipping behaviour towards other fish species which causes stress and can lead to bacterial and fungal infections and death.
- Can compete with natives for food.
- Prolific breeders that can rapidly outnumber native fish and dominate habitats.

## Did you know?

After insemination, female guppies can store sperm which continues to fertilise eggs for up to 8 months.

Photo top: Dave Wilson. Guppy pair: male top, female bottom

Photo bottom: NT Government

## Oscar

### *Astronotus ocellatus*

This cichlid is native to the Amazon basin with worldwide commercial value as an ornamental fish, including Australia.

#### Key features

- Typically grow to 330mm.
- Usually olive green/grey/black or white with yellow/orange markings, red eyes.
- Base of caudal fin (tail) has a dark spot with a red border.
- Females mature between 10-20 months of age, laying up to 2000 eggs (in batches of 100) each cycle, reproduction frequency depends on suitable environmental conditions.
- Breeding pairs defend their spawning sites, nest and young quite fiercely.

#### Impacts

- Significant impact on native fish through direct predation and competition for breeding areas.
- Compete with natives for same food sources.



## Did you know?

Oscar lifespan is 10-13 years in the wild and up to 20 years in captivity.



## Platy

*Xiphophorus maculatus*

Common ornamental fish species in Australia.

### Key features

- Females up to 60mm, males up to 40mm.
- Captive varieties predominately orange with black markings.
- Wild form olive brown with blue-green markings.
- Small triangular head.
- Males have extended anal fin to aid in reproduction.
- Females mature around 12-16 weeks of age and produce 20-100 live young per cycle, reproduction occurs every four-six weeks.

### Impacts

- Can compete with natives for food.
- Prolific breeders that can rapidly outnumber native fish and dominate habitats.



## Did you know?

Platies can endure extreme temperatures of 10-40°C.

Photo top: NT Government - female platy

Photo bottom: Charles Darwin University



## Siamese fighting fish

*Betta splendens*

Common ornamental fish species in Australia.

### Key features

- Can grow to 65mm, males can get bigger than females.
- Captive bred form come in a variety of colours and fin shapes.
- Wild form are a dull brown/grey colour without the trademark long tail - if stressed, will exhibit two horizontal black bars or the vertical bars in females ready for mating.
- Male creates “bubble nest” in preparation for mating and uses his mouth to retrieve sinking eggs and place them inside the nest.
- Females mature around four-six months of age and can lay up to 200 eggs (10-40 at a time), reproduction occurs several times during breeding season.

### Impacts

- Can survive in habitats not suitable for native species (labyrinth organ that allows it to breathe oxygen from the air as well as from their gills) so numbers can increase quickly.
- Carnivorous and territorial so could deplete native fish species in smaller waterbodies.

Photo top: NT Government - Betta pair (wild form) male top, female bottom.

Photo right: NT Government



## Did you know?

Although Siamese fighting fish are separated in captivity due to interspecies aggressiveness, in the wild males and females can exhibit schooling behaviour at certain times.



Photo: NT Government - Swordtail pair,  
male top, female bottom

## Swordtail

*Xiphophorus hellerii*

Common ornamental fish species in Australia.

### Key features

- Males up to 80mm and females up to 120mm.
- Males characterised by swordlike tail.
- Wild form olive green in colour with a red or brown lateral line.
- Captive bred form have many colour variations including black, red, orange and green and many patterns in between.
- Prolific breeder giving birth every four weeks to live young.
- Females mature around 12 weeks of age and produce 20-100 live young per cycle, reproduction occurs every four-six weeks.

### Impacts

- Can compete with natives for food.
- Prolific breeders that can rapidly outnumber native fish and dominate habitats.
- Can occur in habitats/locations where other natives cannot.

## Did you know?

Swordtails can tolerate salinities up to 16ppt (50% seawater).

## Tilapia (Mozambique mouthbrooder)

*Oreochromis mossambicus*

**DECLARED NOXIOUS FISH** - possession is illegal and significant fines apply

### Key features

- Males 300-440mm, females 250-330mm.
- Wild form dull olive or almost black to silver/grey, fins can have red border.
- Continuous dorsal fin originates near the head and ends with an extended point.
- Males excavate a nest into which the female can lay her eggs, which he then fertilises.
- Exhibit high level of parental care which aids in higher survival rates.
- Females mature within first year and can lay from 2000-4000 eggs per cycle, reproduction occurs throughout the year with seasonal peaks.

### Impacts

- Aggressive behaviour can outcompete and dominate native fish resulting in species loss/decline.
- Disturb plant beds and habitat when building nests.
- Unlike many native freshwater fish are able to retreat downstream into highly saline water during drought and move back upstream when conditions improve.



Photos Graham Cumming. From top to bottom - Male 280mm. Juvenile male - 100mm. Juvenile male 45mm. Female 230mm

## Did you know?

**These tilapia are termed mouthbrooder's as the females stores the fertilised eggs in her mouth until they hatch.**

## Tilapia (Spotted tilapia/Black mangrove cichlid)

*Tilapia mariae*

**DECLARED NOXIOUS FISH** - possession is illegal and significant fines apply

### Key features

- Maximum length 330mm, males generally longer than females but both can reach the same size.
- Dark olive green to light yellow, underside pale milky colour with blunt round head and red eyes.
- Five-nine dark bars on their sides (more evident in younger fish).
- Continuous dorsal fin originates near the head and ends with an extended point.
- Females prepare nest by clearing an area on submerged hard substrate, eg rocks, logs or plants in order to lay eggs which will be fertilised by the male.
- Females mature around one-three years of age and produce 3600-6500 eggs per cycle, reproduction occurs throughout the year with seasonal peaks.

### Impacts

- Territorial behaviour can outcompete and dominate native fish resulting in species loss/decline.
- Disturb plant beds and habitat when building nests.
- Readily adapts to available food sources.
- downstream into highly saline water during drought and move back upstream when conditions improve.

Photo: NT Government



## Did you know?

**Spotted tilapia exhibit bi-parental care where the female guards the eggs as well as removing dead or diseased eggs whilst the male guards her and the nest.**



# Similar looking native fish

(Pictures not to scale)

Photos left: NT Government

Photos middle and right: Dave Wilson



**Sooty grunter**

*Hephaestus fuliginosus*



**Spotted scat**

*Scatophagus argus*



**Coal grunter**

*Hephaestus carbo*



**Barred grunter**

*Amniataba percoides*



**Butler's grunter**

*Syncomistes butleri*



**Mangrove jack**

*Lutjanus argentimaculatus*

# Have you found a freshwater pest?

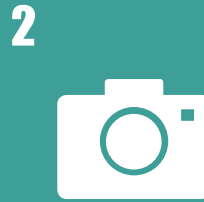
Contact NT Fisheries:

FishWatch hotline on 1800 891 136

NT Fishing Mate app

Aquatic Biosecurity email: [aquaticbiosecurity@nt.gov.au](mailto:aquaticbiosecurity@nt.gov.au)

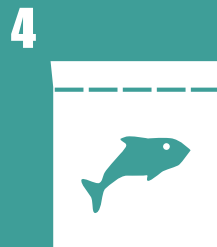
Put on your protective PPE (i.e. durable gloves to avoid injuries from fish fin spines).



Photographs of fish including scale (location, nearby habitat, outlet/inlet drains pipes etc.) should be taken before sampling occurs.



Collect 5-10 fish ranging in size. Note: sometimes this is not possible so fewer fish samples are fine (even if it is one).



Place fish in a dry, labelled (time, date, location name, collector name, GPS coordinates) ziplock bag. Place this bag inside another ziplock bag, seal to make watertight.

Place the bagged fish in a well-sealed/insulated esky, completely cover with ice (top and bottom) and put the esky in a fridge. Maintain the temperature at 0-2°C.

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200