

Freshwater pest fish in New South Wales

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Aquatic Biosecurity and Risk
Management, Port Stephens Fisheries
Institute, Taylors Beach NSW

Freshwater ecosystems are very vulnerable to invasion by pests, including introduced animals and weeds. Since European settlement many exotic fish have been accidentally or deliberately introduced into NSW waterways, and some have become widespread pests. The potential impacts of pest fish include competition with native species for food and habitat, predation and introduction of disease.

Figure 1 Oriental Weatherloach (*Misgurnus anguillicaudatus*) are listed as Class 1 noxious in NSW. Photo: Gunther Schmida



Aquarium (ornamental) fish

While several freshwater pest fish species have long term established populations in NSW, there has been a recent increase in the number of ornamental fish species reported as established in the wild. Keeping aquarium or 'ornamental' fish as pets in aquaria or garden ponds is a popular pastime in NSW, and many hundreds of fish species, both native and exotic, are sold by aquarium suppliers.

Ornamental pest fish introductions are believed to occur through both accidental and intentional release. Some may have been released by owners that no longer want the fish but were unaware of the options available for appropriate

disposal or [humane destruction](#) of fish and the environmental consequences of release.

Figure 2 Ornamental Koi Carp (*Cyprinus carpio*) are listed as Class 3 noxious in NSW. Photo: Melissa Walker



NSW Department of Primary Industries (DPI) encourages aquarium fish owners to give unwanted fish to a friend or pet shop. If a suitable home cannot be found there are humane methods for destruction of unwanted fish (visit the website and search for '[humane destruction of fish](#)' for acceptable euthanasia practices).

Remember *Pets not Pests!* – give your unwanted fish to a friend or aquarium store!

It is illegal to release any fish into NSW public waters without a permit. Visit the website and search '[fish stocking](#)' for information on fish stocking and other related projects in NSW.

Noxious fish

There are 3 classes of noxious fish in NSW. Different rules apply for the possession or sale of species in each of these classes and penalties of up to \$11,000 can apply. Class 1 noxious listing prohibits sale and possession, Class 2 prohibits sale but allows possession in fully-contained aquaria, and Class 3 allows sale and possession. Visit the website and search for '[noxious fish](#)' to see the current list and rules.

What freshwater pest fish are found in NSW?

Established freshwater pest fish in NSW include Carp, Redfin Perch, Eastern Gambusia, Oriental Weatherloach, Banded Grunter and Goldfish. Of these the most widespread pest fish in NSW waterways are Carp, Redfin Perch and Eastern Gambusia.

Carp

Carp are large freshwater Cyprinids (minnows) native to Asia and Eastern Europe. They have wide environmental tolerances that allow them to thrive in a broad range of freshwater systems, ranging from pristine to severely degraded. Carp are now widespread throughout most of NSW and, in many areas, they dominate local fish biomass at the expense of native species.

Carp have a pair of barbels (whiskers) at the corners of their mouth, small eyes, thick lips, a forked tail and a single dorsal (top) fin with strongly serrated spines. Carp scales are large and thick.

Carp are listed as a Class 3 noxious fish in NSW. This listing recognises that wild Carp are a commercial fisheries species and Koi Carp are a popular ornamental fish in NSW.

Figure 3 Carp (*Cyprinus carpio*) are listed as Class 3 noxious in NSW. Photo: Gunther Schmida



The NSW Carp Control Plan including up-to-date information about the biology and impacts of carp outlines current and recommended actions to stop further spread, control the size of populations, and increase the understanding and involvement of the community.

The Carp Control Plan outlines the limited control options currently available for Carp and concludes that any one option on its own is unlikely to be effective. It is not feasible to attempt a comprehensive eradication program for Carp in NSW; instead several collaborative projects are underway to improve management of Carp. By combining a range of techniques in the one

location and by targeting high priority areas such as Carp breeding 'hotspots', the effectiveness of control efforts can be maximised.

NSW DPI advises key stakeholders about the problems associated with escapee fish like Carp and promotes actions they can take to ensure these risks are minimised, for example, by using secure fish pond design.

Redfin Perch

Redfin Perch (Redfin) are medium sized freshwater fish native to northern Europe. Redfin were first introduced to Australia in the 1860s for angling purposes and are now considered a widespread pest across much of NSW.

In December 2010 Redfin were listed as Class 1 noxious fish identifying them as a serious pest in NSW. They are predators of other fish and invertebrates allowing them to alter native and recreational fisheries through predation and competition. Redfin can also impact native fish populations by introducing Epizootic Haematopoietic Necrosis Virus (EHNV, a disease that can result in the mortality of large numbers of fish). A number of native species, including Silver Perch, Macquarie Perch, Murray River Rainbowfish, Freshwater Catfish, Mountain Galaxias and Murray cod are potentially susceptible to this disease.

Redfin prefer still or slow-flowing waters such as lakes, dams, billabongs, swamps and slower moving streams and rivers. They congregate in areas that offer good shelter such as snags (submerged dead wood and trees), vegetation or rocks, but they can sometimes be found in open water.

Figure 4 Redfin Perch (*Perca fluviatilis*) are listed as Class 1 noxious in NSW. Photo: NSW DPI



Redfin have a deep body and slightly forked tail, two distinctly separate dorsal fins, a pattern of five or more broad black vertical bands across the back, and bright reddish-orange pelvic and anal fins and tail.

Species of potential concern to NSW

Tilapia

Tilapia are one of the world's most problematic introduced fish species, and this is recognised by Tilapia being included in the 'Worlds Worst Invasive Alien Species' list. Tilapia is the common name given for fish from *Oreochromis* spp., *Sarotherodon* spp., *Serranochromis* spp. and *Tilapia* spp., all from the Cichlidae family. These varieties of Tilapia were previously traded in the aquarium industry but are now listed as Class 1 noxious. Tilapia are illegal to possess, buy or sell in NSW and heavy penalties of up to \$11,000 apply. They are hardy fish with highly efficient breeding strategies (e.g. mouthbrooding, parental care), simple food requirements and flexible habitat preferences.

While there are no existing populations of Tilapia in NSW, three species of Tilapia, Mozambique Mouthbrooder (*Oreochromis mossambicus*), Black Mangrove Cichlid (*Tilapia mariae*) and Redbelly Tilapia (*Tilapia zillii*) have established successful breeding populations in Queensland, Victoria and Western Australia. These species pose a significant threat to NSW native fish species if they become established in NSW.

Figure 5 Mozambique Mouthbrooder (*Oreochromis mossambicus*) are listed as Class 1 noxious in NSW. Photo: Gunther Schmida



Pest fish and recreational fishing

Recreational anglers are often the first to notice new populations of non-native or potential pest fish species in NSW waterways. NSW DPI encourages anglers to report suspect new pest fish populations as this can provide valuable information on new incursions.

Pest fish, including Carp and Redfin, can be popular with anglers. However it is recommended that pest fish be humanely dispatched, utilised, and not returned to the water.

Figure 6 Anglers can provide valuable information by reporting sightings of pest fish. Photo: Glen Towler



It is illegal to use live fish as bait in NSW freshwater systems and any fish or any part of a fish not native to the waters of NSW (other than dead Carp).

Aquatic habitat rehabilitation

Protection and restoration of aquatic habitats can help to tip the balance in favour of native fish and away from introduced pests such as Carp.

Fisheries NSW is involved in several aquatic habitat rehabilitation projects funded by local, state or federal bodies including councils, Local Land Services, and the Murray-Darling Basin Authority.

Current projects include actions such as replanting riparian (riverbank) areas, returning woody debris ('snags') to rivers as fish habitat, and building fish ladders to allow fish to pass in-stream barriers, such as weirs.

Angling clubs, community groups, local councils, Landcare and Rivercare groups and individuals interested in rehabilitating fish habitats throughout NSW can apply for grants. Some grants are made available from the Recreational Fishing Trust using funds generated by recreational fishing licence fees.

Figure 7 Speckled Mosquitofish (*Phalloceros caudimaculatus*) are listed as Class 2 noxious in NSW. Photo: J Rowley



Figure 8 Mangrove seedlings establishing on an eroding bank when protected by rock fillets. Photo: Kylie Russell



For more information on aquatic habitat rehabilitation visit the website and search for 'rehabilitating [habitat](#)'.

Help prevent the spread of freshwater pests

- Pets not pests! Give your unwanted aquarium fish to friends or a pet store.
- If you catch a pest fish [dispatch it humanely](#) and utilise or dispose of it appropriately.
- Keep a lookout for suspected pest fish in your local waterways and [report suspected new locations](#) (see reporting details).
- Translocation of fish between waterways can impact native fish populations and it's illegal!
- It is illegal to use live fish as bait in freshwater or to [release fish](#) for any reason, including for cultural purposes – this can spread disease and result in a species becoming a pest.
- Obtain a permit to stock fish and buy fingerlings from a registered hatchery to minimise the chances of purchasing juvenile fish contaminated with undesirable species.
- [Prevent unwanted hitchhikers](#) – check, clean and dry boats and gear between waterways, and [Make 'Clean' part of your routine](#)
- Design fishponds so that plants, snails, fish or eggs can not escape during heavy rains, and screen all overflow areas.
- It is illegal to buy fish, plants or 'live rock' from overseas on the internet; instead purchase them from a reputable local dealer.

Recommended reading

These NSW DPI publications can be found at www.industry.nsw.gov.au

1. [NSW Control Plan for the Noxious Fish Carp \(*Cyprinus carpio*\)](#)
2. [Fish in farm dams NSW DPI Primefact No 89](#)
3. [7 Key Tips for a Fish Friendly Farm](#)

More information

NSW DPI

Aquatic Biosecurity & Risk Management

Locked Bag 1, Nelson Bay NSW 2315

Phone: 02 4982 1232

Email: aquatic.pests@dpi.nsw.gov.au

<http://www.dpi.nsw.gov.au/biosecurity/aquatic>

To report the sighting of aquatic pests

Phone the 24hr hotline on 02 4916 3877

or

Email aquatic.pests@dpi.nsw.gov.au

Figure 9 Pets not pests! Give your unwanted aquarium fish to friends or a pet store. Photo: Melissa Walker



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