Feral fishes

In Western Australia feral fishes are found mainly in waterways in the vicinity of major urban areas. These introduced freshwater fishes include Goldfish (*Carassius auratus*); Koi Carp (*Cyprinus carpio*); Rainbow Trout (*Oncorhynchus mykiss*); Brown Trout (*Salmo trutta*); Eastern Mosquitofish (*Gambusia holbrooki*), One-spot Livebearer (*Phalloceros caudimaculatus*); Guppy (*Poecilia reticulata*); Swordtail (*Xiphophorus helleri*); Redfin Perch (*Perca fluviatilis*); Mozambique Mouthbrooder (*Oreochromis mossambicus*); and Eastern Australian Silver Perch (*Bidyanus bidyanus*).

Feral fishes are a threat to unique native freshwater fishes because they can tolerate degraded habitats, are highly adaptable and reproduce readily. Feral fishes are: predators of native freshwater fishes; compete with native fishes for food decrease water quality; and introduce parasitic diseases, such as anchor worm. They are a significant threat to native freshwater fishes in the south-west of Western Australia, where 82% of fishes are unique local species and 55% of species are endangered.

How are feral fishes introduced?

Feral fishes have been introduced to Western Australia in a several ways. Some fishes, like Brown Trout, Rainbow Trout and Redfin Perch, were deliberately stocked in rivers for food and recreational fishing.[1] The Eastern Mosquitofish was introduced by health authorities for biological control.[1] Ornamental fishes, like Goldfish, Koi Carp and Swordtails have either escaped into waterways or were deliberately released.[1] Fishes, such as the Eastern Australian Silver Perch, are also escaping from aquaculture farms.[1]

Goldfish

Goldfish (*Carassius auratus*), one of the more popular species of ornamental fish, are now relatively widespread throughout the world. Feral Goldfish prey on the eggs, larvae and adults of native freshwater fishes and compete for food and space. Goldfish escape predation from a young age as they grow much bigger than nearly all native freshwater fishes. Goldfish stir up sediment and deplete aquatic vegetation when they feed on the bottom of waterways, which reduces habitat and spawning sites for native fishes. Goldfish introduce parasites and other serious diseases to native fishes. They stimulate cyanobacteria growth in nutrient enriched environments, which causes algal blooms. It is likely that Goldfish will become more established in the future due to deliberate release into waterways.

Koi Carp

Koi Carp (*Cyprinus carpio*), an ornamental fish, has been found in a few river systems in the south-west of Western Australia, including one 8kg feral Koi Carp in Margaret River and a population in a small artificial lake in Perth's metropolitan region.[1] There is anecdotal evidence of small numbers of Koi Carp in the Canning and Blackwood Rivers.[1] Given the popularity of Koi Carp, they are also likely to become more established in the future due to deliberate release into waterways.

Rainbow Trout and Brown Trout

Rainbow Trout (*Oncorhynchus mykiss*) and Brown Trout (*Salmo trutta*) are stocked for recreational fishing in many streams in the south-west of Western Australia. These fishes have been found in rivers that have not been stocked regularly, which indicates that the trout population can be self-sustaining. While there has been no research into the level of predation by trout on native freshwater fishes, researchers recommend that trout should not be stocked in areas of high conservation value.[1]

Eastern Mosquitofish

The Eastern Mosquitofish (*Gambusia holbrooki*) was introduced into Western Australia to control mosquitos in the 1930's and is now extremely abundant in the south-west and southern Pilbara region.[1] The species can survive in a range of habitats, including very saline water, which has allowed Eastern Mosquitofish to dominate rivers in cleared catchments that have become saline, such as the Blackwood River catchment.[1] The Eastern Mosquitofish has not been found in most of the Kimberley and Pilbara regions yet as it has not been released into these regions.

The Eastern Mosquitofish is very aggressive and causes severe fin damage and death of native fishes. Where lakes and rivers lack cover, there are few native fishes if the mosquitofish is present, compared to habitats that have cover.[1]

One-spot Livebearer

The One-spot Livebearer (*Phalloceros caudimaculatus*) is an ornamental fish that is not as popular as the Swordtail or Guppy due to its drab colour.[6] The One-spot Livebearer thrives in highly modified habitats, such as silty streams with little riparian vegetation, low water flow or open drains.[6] It is omnivorous, matures when very small and breeds throughout the year. It was originally found in South Perth and in an open drain running into ornamental lakes on the Swan River. The species is now widely dispersed in the Swan/Canning River System, occurring in the Belmont and Bayswater main drains, the Bayswater artificial wetlands, Lesmurdie Brook and Bull Creek, where it has displaced the Eastern Mosquitofish.[6] When the drains flood, the One-spot Livebearer can spread to adjacent waterways or be flushed downstream into the Swan/Canning Rivers.[6] The species can also be spread by deliberate release into waterways. Further expansion of the species range is highly likely because it is aided by flooding.[6]

Guppy

The Guppy (*Poecilia reticulata*), is an ornamental fish that loses its ornamental tail in the wild so it looks more like a Swordtail rather than a native fish. The guppy has only been found in one site in the Pilbara.

Swordtail

The Swordtail (*Xiphophorus helleri*) is a very popular ornamental fish and has been promoted for aquaculture in Western Australia. The Swordtail flourishes in habitats that have been modified by humans and is often found near urban areas where the likelihood of being deliberately released into waterways is increased. The species is invasive because of the ability to tolerate a wide variety of environmental conditions, high fertility and fast growth rates. The male Swordtail is territorial and spends much of its time aggressively fighting with other males and other species. Swordtails out-compete native fishes for food and habitat and predate on their eggs and juveniles. These negative impacts increase particularly when the species occurs in high numbers, or when it lives in habitats that have other introduced feral species, such as the Eastern Mosquitofish. Endemic fishes with restricted localised distributions are particularly at risk when swordtails and other introduced fishes are present.

In Western Australia, the Swordtail has only been found in the Irwin River near Dongara. However, the large population centres in the south-west of Western Australia are areas where the Swordtail is most likely to be released, and areas where human modified aquatic habitats occur that are successfully inhabited by other feral fishes. As the Swordtail can eat a wide range of food, produce live young in large numbers in a short time, is not constrained by environmental conditions and can co-exist with the Eastern Mosquitofish, it is considered a pest by researchers.[4]

Redfin perch

Redfin Perch (*Perca fluviatilis*) were introduced by anglers into Albany in Western Australia for recreational fishing in the 1890s. These invasive fish have spread rapidly into dams and waterways in the south-west of Western Australia. Redfin Perch are mature at a young age, grow rapidly, can tolerate a wide range of environmental conditions and have no predators. These fish consume marron, gilgies, frogs, insects and native fishes. Researchers consider that Redfin Perch are responsible for the extinction of the mud minnow from Big Brook Dam in Pemberton and population decline of marron.[5] Redfin Perch are illegally translocated by anglers, which is considered to be the greatest threat, after habitat degradation, to endemic fishes and crustaceans in the south-west of Western Australia.[5]

Mozambique Mouthbrooder

The Mozambique Mouthbrooder (*Oreochromis mossambicus*), or Tilapia, is an ornamental fish that has been found in the Chapman and Gascoyne Rivers, adjacent to Geraldton and Carnarvon in Western Australia. These fish were probably introduced by deliberate release and spread to other waterways during floods. The Mozambique Mouthbrooder is very adaptable, eats a wide variety of food, and can tolerate extreme environmental conditions, such as salty water.[2] This gives the Mozambique Mouthbrooder a competitive advantage over native fishes. Researchers have found that where there are high densities of Mozambique Mouthbrooder, there are fewer native fishes.[3]

The climate in the region where they are currently found is semi-arid and during extended dry periods some rivers become small isolated pools, which increases competition for food and space between the Mozambique Mouthbrooder and native fishes. The male Mozambique Mouthbrooder is aggressive and territorial, particularly during breeding. If large areas of the river are occupied by Mozambique Mouthbrooder nests, then this restricts the movement of native fishes. There is a high probability of further range expansions of this fish in Western Australia due to natural dispersal and human-mediated translocation. The Mozambique Mouthbrooder also has a similar diet to that of native freshwater fishes in the region with restricted distributions. As the range of the Mozambique Mouthbrooder is expanding, it is likely that a greater number of native fishes will be impacted by this invasive feral fish.

Eastern Australian Silver Perch

The Eastern Australian Silver Perch (*Bidyanus bidyanus*) was introduced in Western Australia for aquaculture and has been found in the Swan River near Perth.[1] It is likely that the species was an escapee from an aquaculture farm.[1] Expansion of the aquaculture industry in Western Australia may lead to further occurrences of this species in the wild.[1]

What to do if you have an unwanted fish or find a feral fish

The Department of Fisheries Western Australia advises that if you no longer want your fish, give them to an aquarium, a fish organisation, such as the Koi Society of WA, or a person willing to take the fish. If you can't rehome your fish, or if they are sick or diseased, dispose of them humanely. Don't put the fish down the toilet, into a drain or waterway. The RSPCA website has advice on how to humanely euthanase fish.

If you find a feral fish, report it to WA PestWatch on the Department of Fisheries Western Australia website: http://www.fish.wa.gov.au/Pages/Home.aspx or Murdoch University's Fish Health Unit: http://www.freshwaterfishgroup.com/feral-fishes.php.

Video - Don't Dump that Fish

References

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Goldfish Control in the Vasse River

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Department of Fisheries WA Introduced Pests Guide

About Healthy Wildlife

The 'Healthy Wildlife Healthy Lives' – A One Health project aims to educate the public about people's interaction with wildlife in urban areas, particularly how people and domestic animals spread diseases to wildlife, such as birds, quenda (bandicoots), native fish, bobtails and kangaroos. The project informs people about how to avoid harm to wildlife, create positive interactions and protect and conserve the environment. The aim is to keep wildlife healthy for a healthier world.

The project is a partnership between Eastern Metropolitan Regional Council and Murdoch University, supported by Lotterywest.

VISIT: www.healthywildlife.com.au

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