

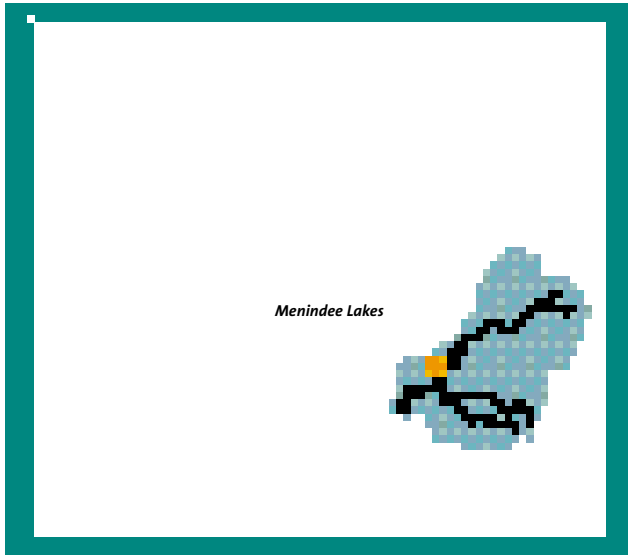
Fish of the Menindee Lakes



Cooperative Research Centre for Freshwater Ecology

The Menindee Lakes in far-western NSW are a social, economic and environmental asset to the local community and to Australia as a whole. They represent an important breeding ground for native birds and fish and are one of the largest water storages in the Murray-Darling Basin.

Well known by anglers for good fishing, the Menindee Lakes support diverse and abundant fish communities.



While the most widely recognised fish in the lakes are the Golden Perch, Murray Cod and Carp, the lakes also maintain healthy populations of other native species. These species are valuable from both a diversity point of view and as food for the larger fish and the many fish-eating birds that live and breed around the lakes.

We need to understand the ecology of the fish if we are to protect the biodiversity and other values of the Menindee Lakes. Improving our understanding of the fish in the region will help managers maintain the populations of native species while, hopefully, reducing the populations of introduced pests such as Carp and Gambusia.

Golden Perch (*Macquaria ambigua*)

Golden Perch are found throughout the Murray Darling Basin except at higher altitudes, and are an important angling species. Upstream migration by adult fish is linked to spawning and is triggered by high flows from September to December. The return downstream occurs in low flows in June and July.

Golden Perch mainly occur in warm, turbid, slow-flowing streams and rivers and flood plain lakes. Their colour can vary from bronze through yellow to white depending on the colour of the water. They are still abundant in lower parts of the Murray Darling catchment, with a healthy population recorded at Menindee. Golden perch have been aged up to 26 years.



Murray Cod (*Maccullochella peelii peelii*)

Murray Cod are Australia's largest freshwater fish, reaching lengths of 1.8m and weights of over 110 kg. However, fish of this size are now rare. Colour varies from cream to olive green with mottled colouration on the top and sides. The belly is white to cream coloured.

Found throughout the Murray Darling Basin except in higher tributaries, Murray Cod are highly sought after by anglers. Though they can be found in various habitats from clear rocky streams to turbid rivers and lakes, adult fish tend to occupy deeper water with high levels of cover such as rocks, snags, overhanging banks and vegetation.

Murray Cod may undergo upstream migration linked to spawning activity in late spring/early summer to coincide with elevated water levels.

Since the 1950s, numbers of this once very abundant fish have dropped because of overfishing, altered flow patterns (affecting recruitment), de-snagging, siltation and introduced competitors like Redfin perch.



Learn to identify rare native fish so you can release them

Catch and release • Catch and appropriately dispose

Spangled Perch (*Leiopotherapon unicolor*)

Spangled Perch are a small to medium sized fish usually up to 15cm, and rarely up to 25cm and 0.5kg. Their colour varies from steely brown to steely blue with darker back and whiter belly, and characteristic rusty brown spots on the side surfaces.

They are regarded as Australia's most widely distributed native freshwater fish and can be found throughout all warmer freshwater systems of Australia (mainly the higher reaches of the Murray Darling system).

Spangled perch are extremely hardy, and are generally most numerous in warm turbid streams and lakes, though they will spawn in dams and even bore drains. They do not appear to undertake annual migration, however they are often the first species to colonise newly flooded habitat. Due to its small size, spangled perch are not popular among anglers.



Silver Perch (*Bidyanus bidyanus*)

Silver perch are a moderate to large schooling fish with thin smallish scales. Adults range from black to olive greenish or gold on the back, with grey to greenish or gold to silvery sides and a white belly. They commonly reach 30-40cm long (up to 1.5kg) but have been recorded at 8kg. They occur throughout most of the Murray Darling system except the cooler upland streams.

Silver perch are a migratory species with a preference for fast flowing water. Upstream migration is usually triggered by increased flow. Populations in most areas have declined to the point where the Australian Society of Fish Biology has listed them as vulnerable, and so they must now be returned to the river if caught. They have considerable potential for aquaculture and fish farming.



Photo courtesy of Murray-Darling Basin Commission

Carp Gudgeon (*Hypseleotris spp.*)

There are several species of carp gudgeon found throughout the Murray Darling Basin and it can be difficult to clearly distinguish between them. Carp gudgeons vary in size considerably within a habitat, but are considered a tiny species rarely reaching 6cm. Their shape also varies considerably from slender to deeper bodied with a hump on the head. The colour is usually pearly to yellowish grey, but can vary with size, sex, locality and season to blue or dark grey, with fin colours also varying widely (especially in breeding seasons).

Carp gudgeon normally live in slow flowing, often turbid water, and are usually associated with vegetation. All three species are widespread and abundant in the Murray Darling Basin, with ranges of each possibly including catchments east of the Great Divide.



hem • Observe fishing regulations • of carp

Murray Hardyhead (*Craterocephalus fluviatilis*) and Line-eyed Hardyhead (*Craterocephalus sturcasmuscarum fulvus*)

Only recently divided into two separate species, the hardyheads are small (up to 8 cm), slender silver to dark gold fish with large silver eyes. As with the Carp Gudgeons, identification has in the past been confusing making a record of each species distribution difficult.

The Murray Hardyhead, while once abundant in the lower waters of NSW, is now thought to be restricted to a few lakes in Victoria near the Murray River, with the Australian Society for Fish Biology listing it as potentially threatened.

The Line-eyed or Fly-specked Hardyhead, while previously present throughout the Murray Darling Basin, now occurs mainly in the northern tributaries of the Darling River including the Menindee Lakes area and is classed as rare. Both species tend to school in slow flowing shallow water over sand or gravel, or amongst weeds at the edges of such waters.



Crimson-spotted Rainbowfish (*Melanotaenia fluviatilis*)

A small species of fish (males up to 9cm); slender when young but increasing in depth with age. Adult fish typically develop a blunt snout and broad forehead region. Males tend to exhibit brighter colours than the more slender females, particularly during breeding seasons. The body is silver to silvery green, with reddish fins, often with black margins.

Crimson-spotted Rainbowfish are relatively common throughout the whole Murray Darling Basin in rivers, creeks, lakes and billabongs, however numbers tend to fluctuate on a local scale. The species tend to congregate in schools near the surface or around submerged aquatic plants in slow flowing water.



Bony Bream (*Nematalosa erebi*)

Bony Bream, also known as bony herring, are a deep-bodied compressed fish, bright silver in colour with a greenish back. They grow up to 47cm long and 2kg in weight but are usually between 12–15cm long. Due to its compressed shape it contains little flesh, so is not a target fish for anglers though it is a particularly abundant species and can be caught in large numbers in gill and seine nets.

Bony bream are widespread and abundant throughout the Murray Darling Basin in flowing and standing waters, particularly turbid ones. It is a hardy fish able to tolerate a wide range of temperatures and salinities, though it is particularly susceptible to handling. Bony bream are often recorded in large fish kills during periods of cold weather when their weakened immune system makes them vulnerable to a species-specific fungal infection.



Photo courtesy of Murray-Darling Basin Commission

Flat-headed Gudgeon (*Philypnodon grandiceps*)

A small fish up to 12cm long with a broad flat head and large mouth. The colour varies from yellowish brown through to grey or black with faint blotches along the body and fins. Breeding males become particularly dark in colour.

Flat-headed Gudgeon are abundant throughout the Murray Darling Basin, particularly in the lower reaches where it occupies slow flowing rivers and streams, lakes and billabongs. They also occur in eastern coastal drainages. The Flat-headed Gudgeon are a bottom-dwelling fish usually associated with weeds or mud.



Australian Smelt (*Retropinna semoni*)

One of the most wide spread and abundant fish in South Eastern Australia, Smelt are a small, schooling fish with large eyes and a rounded snout. They are silvery in colour, with darker olive back and silvery white belly. A yellow or purple sheen may occur along the sides of the fish. Australian Smelt can grow up to 10cm long, but rarely exceed 7.5cm.

They occur in coastal drainages from southern Queensland around to south-eastern South Australia, throughout Victoria and through the Murray Darling system. Australian smelt are abundant throughout their whole range where they occupy still and gently flowing waters. Due to their abundance they are an important food source for larger fish and water birds.



Photo courtesy of Department of Natural Resources and Environment, Victoria.

Carp (*Cyprinus carpio*)

Since their accidental release near Mildura in 1964, Carp have spread throughout the Murray Darling system. Carp, an introduced species, are a large fish reported up to 1.2m long and 60 kg in weight, though 4-5 kg is common in the Murray Darling system. Their colour is usually olive green on the back, paling to silvery yellow on the belly. A partially scaled variant known as Mirror Carp is commonly recorded throughout its range.

Carp are extremely tolerant of adverse water conditions, though they prefer areas where aquatic vegetation is abundant in still or slow flowing water. They collect food by suction, filtering prey or plants through fine gill rakers. This way of feeding contributes to the destruction of aquatic vegetation through dislodgment, and contributes to an increase in turbidity and resuspension of nutrients. Though prized by anglers in some countries and considered a delicacy in others, the flesh quality of carp in Australia is poor making them unpopular among fishermen.



Goldfish (*Carassius auratus*)

This introduced species shares similar ecology, diet and habitat preference to their relative Carp. They are smaller than Carp, usually 10-20cm long, though they have a deeper body and are less elongate. Their colour ranges from olive bronze to deep gold, with silvery white belly. Hybrids between Goldfish and Carp are commonly recorded.



Photo courtesy of Department of Natural Resources and Environment, Victoria.

Eastern Gambusia (*Gambusia holbrooki*)

Eastern gambusia, or mosquito fish, were originally brought to Australia as an aquarium fish, and were initially released into the wild for mosquito control. They are now widespread and abundant throughout Australia, both inland and in coastal drainages.

Gambusia are a tiny fish with a flattened upper surface, a deep belly and rounded tail. They are generally greenish-olive to brown in colour, with a bluish sheen. Females reach up to 6cm in length, whilst males only grow up to 3.5cm. Eastern Gambusia prefer warm, still or slow flowing waters around the margins and the edges of aquatic vegetation. It is considered a competitive threat to small native fish that occupy the same habitats due to its abundance and high reproductive rate.



Other Species

Other species of fish that are known to exist or have in the past been recorded in the Menindee Lakes system include Freshwater Catfish (*Tandanus tandanus*), Hyrtl's Tandan Catfish (*Neosilurus hyrtlui*), Southern Purple-spotted Gudgeon (*Mogurnda adspersa*), Redfin Perch (*Perca fluviatilis*), Olive Perchlet (*Ambassis agassizii*) and Eels (*Anguilla australis*). Information about the ecology of these species, and the species summarised in the above text can be found in the *Menindee Lakes Ecologically Sustainable Development Aquatic Fauna Literature Review*, July 2000 (Sinclair Knight Merz), and in *Freshwater Fishes of South-Eastern Australia* (McDowall 1980).



Southern Purple-spotted Gudgeon



Freshwater Catfish

To order this brochure, please contact the Cooperative Research Centre for Freshwater Ecology on: 03 5023 6224; email: helen@mdfrc.mildura.net.au, or 02 6201 5168; pa@lake.canberra.edu.au

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