

# North Central Waterwatch

# Fish Field Guide



**NORTH CENTRAL**  
Catchment Management Authority  
*Connecting Rivers, Landscapes, People*

# The North Central CMA Region



## Acknowledgement Of Country

The North Central Catchment Management Authority (CMA) acknowledges Aboriginal Traditional Owners within the North Central CMA region, their rich culture and their spiritual connection to Country. We also recognise and acknowledge the contribution and interests of Aboriginal people and organisations in the management of land and natural resources.

## Acknowledgements

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# Introduction

The North Central CMA region covers an area of around 30,000 km<sup>2</sup>; about 13% of Victoria. It is bordered by the mighty Murray River to the north, which injects life into the land around it, the Great Dividing Range and Wombat State Forest to the south, Mt Camel Range to the east, and the western border of the Avon-Richardson catchment in the west.

The region is packed with an abundance of diverse natural attractions from forested national parks to waterfalls, gorges, slowly meandering waterways and wetlands of international significance. Our backyard is home to a teeming assortment of flora and fauna – some of which are found nowhere else.

The four major river catchments in our region are the Campaspe, Loddon, Avoca and Avon-Richardson – these are the lifeblood of the region and its people. They have helped shape, grow and sustain communities including Bendigo, Bridgewater, Donald, Echuca, Kerang, Kyneton, Creswick, Wycheproof, Maryborough, Woodend, Daylesford, Castlemaine, Heathcote, Maldon, Charlton and Swan Hill.

## About this guide

This guide has been developed by the North Central Waterwatch program for anyone interested in learning more about the fish of our region and as a quick reference, handy size guide for use in the field.

## How to use this guide

This guide includes notes on adult description, breeding, fins, eggs, habitat, diet and conservation status, including threats. A map showing the fish species approximate distribution in the North Central CMA region and a breeding cycle calendar is also provided for each species, along with a photo or two. It contains simple information to assist with identifying a fish.

Please note: Where there is insufficient information available on some fish species N/A will appear.

## Taxonomy

Fish, like all living things, are identified by a unique scientific name. For example, the commonly named Macquarie Perch is a species that belongs to the following taxonomic groups:

Class: Osteichthyes (bony fish)

Order: Perciformes (most marine and freshwater fish)

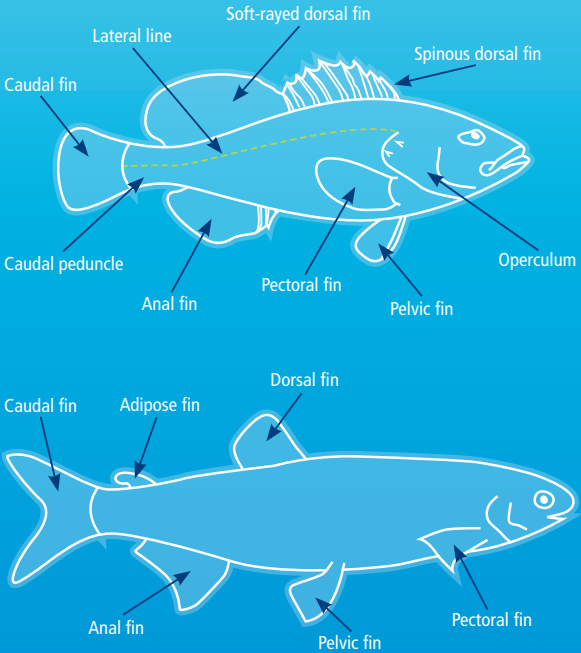
Family: Percichthyidae (fresh water perch, cod, and bass)

Genus: Macquaria

Species: australasica

# External anatomy of typical freshwater fish

A description of the anatomy of each fish is included in this booklet for easy identification when in the field. Using the anatomy diagrams in Figure 1 will help you to identify the positioning of fins and the name of the fish. Special attention should be paid when identifying fish – look for overall shape, including the head and snout, and the relative position of fins.



**Figure 1:** External anatomy of typical freshwater fish

## Tails

The shape of the caudal fin is important in identifying fish species. Symbols are used throughout the guide to assist in identifying each fish.



Truncate



Rounded



Forked

# Conservation status

## Threatened fish species of the North Central CMA region

There are 13 families of fish with 22 species known to occur in the North Central CMA region. Of these there are ten species listed under state or national legislation and/or the International Union of Conservation Network Red List 2012. Further to this many species are listed as restricted, uncommon or declining. Many face threats from introduced species such as Redfin Perch, Brown Trout and Eastern Gambusia. Other threats to native fish in the North Central CMA region are barriers to fish movement, the removal of woody debris, cold water pollution, riparian disturbance and increased salinity levels.

### Listed species occurring in the North Central CMA region:

Common Name	FFG	EPBC	IUCN
Flat-headed Galaxias			VU
Freshwater Catfish	✓		
Un-specked Hardyhead	✓		
Murray Hardyhead	✓	EN	EN
Macquarie Perch	✓	EN	
Trout Cod	✓	EN	EN
Murray Cod	✓	VU	CE
Silver Perch	✓		
Southern Purple Spotted Gudgeon	✓		
Murray Darling Rainbow Fish	✓		

## Key:

**FFG**

FFG = Listed as threatened in accordance with Section 10 of the Victorian *Flora and Fauna Guarantee Act 1988*.

**IUCN**

IUCN = Listed under the *International Union for the Conservation of Nature (IUCN) Red List 2004*.

The following keys are listed under the federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999)

**EN**

EN = Endangered

**CE**

CE = Critically Endangered

**VU**

VU = Vulnerable

**EX**

EX = Extinct in the wild

**TH**

TH = Threatened

## Translocated Native Species

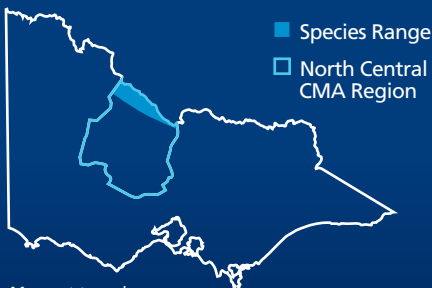
It is important to understand whether a fish is naturally occurring or has been translocated into a site. A symbol is provided throughout this booklet to highlight whether a species has been translocated outside its natural range.



Translocated fish outside its natural range

# Short-headed Lamprey

(*Mordacia mordax*)



Map not to scale

**Family:** Mordaciidae

**Other common names:** None known

**Description:** The Short-headed Lamprey is a slender eel-like fish. The adult size is about 300-440 mm in length (maximum size is about 500 mm). Juveniles are a brown colour, while adults can be a bluey-grey with a silver belly in the marine (ocean) phase, or a dull grey when migrating upstream in freshwater for spawning.

**Fins:** Two dorsal fins are present near the caudal fin.

**Habitat:** Spends most of its adult life in the marine environment, however, younger Short-headed Lamprey migrate upstream into fast flowing freshwater streams which have a muddy, sandy or silt substrate.

**Conservation status & distribution:** Usually restricted to the lower and mid-Murray-Darling Basin. Found in coastal rivers in Victoria, New South Wales, South Australia and Tasmania. Although individuals are known to travel some distance upstream from the Murray Rivers' mouth. The species is likely to be rare in the North Central CMA region. Endangered in South Australia.

**Breeding:** Spawning occurs from spring to summer after migration from the sea into the river. Before spawning they are usually nocturnal and burrow into the substrate during the day. Adults die shortly after spawning.

**Spawning time**

Jan

Feb

Mar

Apr

May





Photo Michael Hammer

**Eggs:** 3,800-13,400 small eggs (0.3 to 0.5 mm in diameter) are deposited into depressions in the substrate in shallow, fast flowing water.

**Diet:** The Juvenile's diet consists of algae, detritus and micro-organisms. After metamorphosis they parasitise other fish by creating a hole in the side of a host fish through which they feed on blood and muscle.

**Threats:** Potential threats include in-stream barriers to movement, especially during the spawning season. This species can however climb wet vertical surfaces.

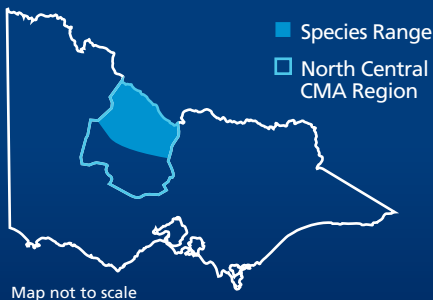
**Interesting facts and features:** The Short-headed Lamprey lacks a jaw. Juveniles instead have two large tricuspid teeth on an oral disc. As adults, they have a well developed oral disc with sharp, radially arranged tooth plates.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Bony Bream

(*Nematalosa erebi*)



**Family:** Clupeidae

**Other common names:** Bony Herring, Hairback Herring, Pyberry

**Description:** The Bony Bream is a small to medium-sized fish with a small head. The body is deep and laterally compressed. It has large eyes and a blunt snout. The back is greenish, sides are bright silver, and the underbelly is silvery-white. Adult size is about 120-200 mm (maximum size is 320 mm).

**Fins:** The dorsal, pelvic, anal and pectoral fins are present. The tail is large and deeply forked.

**Habitat:** Shallow or still flowing streams and rivers in particularly turbid conditions. Also found in saline lakes and desert bores.

**Conservation status & distribution:** Widespread and abundant. The Bony Bream is most commonly found in lowland freshwater rivers in Victoria and New South Wales and is commercially farmed in South Australia.

**Breeding:** Spawning occurs during late spring to summer. Females mature at two years of age.

**Spawning time**

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Eggs:** 33,000 to 880,000 small (0.83 mm in diameter) eggs are produced. The eggs are released into still, shallow waters.

**Diet:** Feed on detritus, microalgae and microcrustaceans.

**Threats:** River regulation, barriers to migration and cold water pollution are thought to have resulted in reduced abundance of the species.

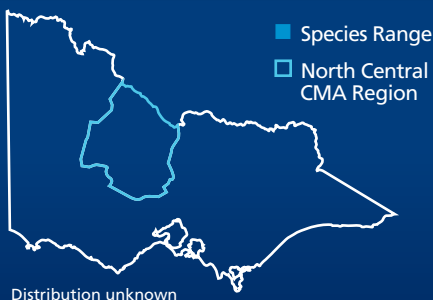
**Interesting facts and features:** The Bony Bream is consumed by other native fish, including Murray Cod and Golden Perch. The Bony Bream is also tolerant of relatively saline conditions.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Common Galaxias

(*Galaxias maculatus*)



**Family:** Galaxiidae

**Other common names:** Common Jollytail

**Description:** The Common Galaxias is a small, slender fish with a bluntly pointed head. The body is olive-grey to amber, with irregular dark blotches on its sides and back. The belly is silvery-white, as are the eyes and gills. The adult size is about 100 mm (maximum size is about 190 mm).

**Fins:** The dorsal, pectoral, pelvic and anal fins are present. The tail is slightly forked.

**Habitat:** Still or gently flowing rivers and streams, lakes and estuaries with fringing vegetation for spawning. The Common Galaxias can tolerate high salinity levels.

**Conservation status & distribution:** Although common in lowland coastal streams from South Australia to southern Queensland and Tasmania, records of the species captured from the Wimmera, Loddon and Campaspe River basins are suggested to be from populations established from illegal translocation (likely as live bait).

**Breeding:** Spawning of coastal populations occurs during autumn high tides after adults migrate downstream into tributaries. Land-locked (inland) populations spawn during late winter to early spring. Maturity is reached after 12 months.

**Spawning time**

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Eggs:** About 13,500 small adhesive eggs (1 mm in diameter) are deposited on terrestrial vegetation above the water line.

**Diet:** A carnivorous species, its diet consists mainly of amphipods, chironomid larvae and micro-crustaceans.

**Threats:** Threats to the Common Galaxias are in-stream barriers, which restrict migration. Reduced flows may limit conditions conducive to spawning.

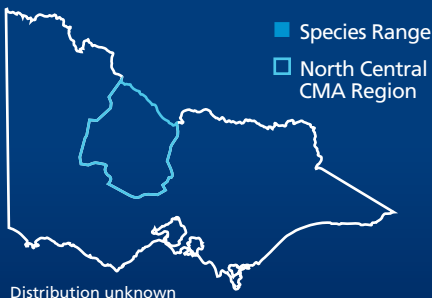
**Interesting facts and features:** It is believed a large proportion of adults die shortly after spawning. Eggs may survive a number of weeks out of the water, providing they are kept moist.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Mountain Galaxias

(*Galaxias olidus*)



**Family:** Galaxiidae

**Other common names:** Ornate Mountain Galaxias

**Description:** The Mountain Galaxias is a small, elongated tubular fish with small eyes. The back is brownish to yellow-green, while the belly is olive to silvery white. Variable patterns of stripes, blotches or no markings at all can be present. The adult can grow up to 80 mm (maximum size is about 140 mm).

**Fins:** The dorsal, pectoral, pelvic and anal fins are present. The tail is weakly forked.

**Habitat:** Found in small creeks to large rivers. Common in slow flowing environments or pools, around rocks and logs. If trout is present they can be restricted to shallow edge habitats and riffles.

**Conservation status & distribution:** Common, widespread and abundant. Widely distributed on both sides of the Great Dividing Range from southern Queensland to Kangaroo Island. Despite their name they are not restricted to mountainous areas, having been found in lowland areas. This species has a small home range of 20 metres.

**Breeding:** Spawning occurs during spring to early summer. It is thought that the species does not migrate for spawning. Individuals mature at the end of their first year.

**Spawning time**

Jan

Feb

Mar

Apr

May



Photo Arthur Mostead



Photo Gunther Schmida

**Eggs:** 50-400 large adhesive eggs (2.5 mm in diameter) are spawned on the downstream side of stones in riffles, upstream of pools. Hatching takes about three weeks.

**Diet:** Feeds mainly on aquatic insects; however, the Mountain Galaxias will eat terrestrial insects that have landed on the water surface.

**Threats:** Alien species such as Brown Trout are a major threat. Their introduction to a site may result in the rapid decline of local populations of the Mountain Galaxias. Infection from an alien parasitic copepod (*Ierna*) has been suggested to have resulted in significant deaths.

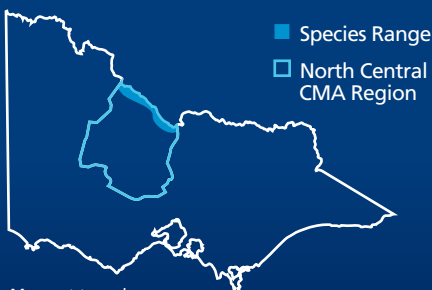
**Interesting facts and features:** There have been records of the species basking on damp rocks in alpine areas.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Flat-headed Galaxias

(*Galaxias rostratus*)



Map not to scale

**Family:** Galaxiidae

**Other common names:** Murray Jollytail, Flathead Galaxias

**Description:** The Flat-headed Galaxias is a small, slender-bodied fish with a flattened head and a pointed snout. The mouth is large with the gape extending to well below the eyes. The back and sides are olive-green, and the belly is silvery. The adult can grow up to 80 mm (maximum size is about 146 mm).

**Fins:** The dorsal, pectoral, pelvic and anal fins are present. The tail is slightly forked.

**Habitat:** Can be found in still or slow flowing water on the margins of lakes, billabongs and streams. The Flat-headed Galaxias usually swims mid-water over rock and sandy substrates. This fish is often found close to, or amongst, aquatic plants.

**Conservation status & distribution:** This species is listed as Vulnerable under the IUCN red list 2012. Historically this species was common to the southern regions of the Murray-Darling Basin, including the Murray, Loddon, Murrumbidgee, Goulburn, Ovens, Mitta Mitta and the Lachlan Rivers. The species is now in decline.

**Breeding:** Spawning occurs from late winter to early spring when temperatures reach 9 to 14°C. It is not known if the species migrates for spawning. Individuals mature within their first year.

## Spawning time

Jan

Feb

Mar

Apr

May





Photo Gunther Schmida

**Eggs:** Depending on the size of the fish, a large female (136 mm) can lay up to 7,000 eggs. The eggs are round, large (1.3 to 1.6 mm in diameter), slightly adhesive and are scattered randomly to the substrate. Hatching occurs within eight to nine days.

**Diet:** Predominately feeds on aquatic insects and micro-crustaceans.

**Threats:** Possible threats include competition with and predation by, introduced species such as the Redfin Perch, Brown Trout and Eastern Gambusia. River regulation, cold water pollution and in-stream barriers are also threats.

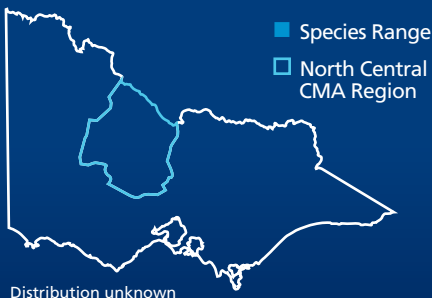
**Interesting facts and features:** It is suggested that individuals school together and move upstream from November to December.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Spotted Galaxias

(*Galaxias truttaceus*)



**Family:** Galaxiidae

**Other common names:** Spotted Mountain Trout, Spotted Minnow, Trout Minnow

**Description:** The Spotted Galaxias is a small fish with a stout body, long head and a large mouth reaching back to below the front of the eyes. The back is brownish to deep olive, becoming brownish-grey on the sides, while the belly is silvery. Large round purplish spots, which have a lighter coloured halo around them, exist on the sides and upper back. The adult can grow to 120-140 mm (maximum size is about 200 mm).

**Fins:** The dorsal, pectoral, pelvic and pelvic fins are present. The tail is slightly forked.

**Habitat:** Commonly found in lowland coastal habitats. Can be found in lakes and still or slow flowing rivers and streams. Habitats favoured by the species include logs, boulders and bank overhangs on the edges of pools.

**Conservation status & distribution:** An introduced population is thought to exist in the upper reaches of the Campaspe and Loddon River. This species in its natural range is found in coastal streams of Victoria, Tasmania and southwest Western Australia. A recent record of a single whitebait of this species was found in the lower Murray River, near Wentworth.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Breeding:** Individuals in coastal populations migrate upstream to tributaries. Breeding occurs from autumn to winter, while land-locked (inland) populations breed in spring.

**Eggs:** 1,000 to 16,000 small eggs (1.0 to 1.3 mm in diameter) are deposited on aquatic vegetation, and take up to four weeks to hatch.

**Diet:** Adults eat aquatic insect larvae and terrestrial insects that land or fall onto the water surface.

**Threats:** Threats include predation and displacement by introduced species such as Brown Trout, habitat loss through deforestation, and in-stream barriers.

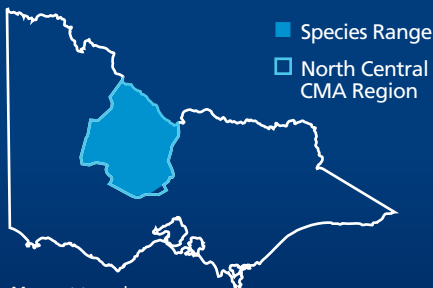
**Interesting facts and features:** None known

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Australian Smelt

(*Retropinna semoni*)



**Family:** Retropinnidae

**Other common names:** Smelt

**Description:** The Australian Smelt is a small, slender, elongated fish. The eyes are large, and the body is silvery to almost transparent, at times with a silvery orange lateral band. Adult size is commonly 40-60 mm (maximum size is about 100 mm).

**Fins:** The dorsal, adipose, pectoral, pelvic and anal fins are present. The tail is moderately forked.

**Habitat:** Most commonly found in the upper region of the water column (pelagic), usually in slow flowing or still waters such as river channels, wetlands and lakes.

**Conservation status & distribution:** Widespread and abundant. It is not generally found in upland headwaters. It is recorded in most lowland streams within the Murray-Darling Basin.

**Breeding:** Spawning occurs during mid winter to late summer, when temperatures exceed 11-15°C. Both sexes mature at the end of their first year, and only live for two years.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Eggs:** Mature females spawn 100 to 1000 eggs, from which discrete batches of small eggs (1 mm in diameter) are produced every three to four days. The eggs are adhesive, and are laid on aquatic vegetation. Hatching occurs in nine to ten days.

**Diet:** They feed primarily on insects, micro-crustaceans and algae.

**Threats:** Fish barriers may pose a threat to movement, this leads to fragmentation of populations.

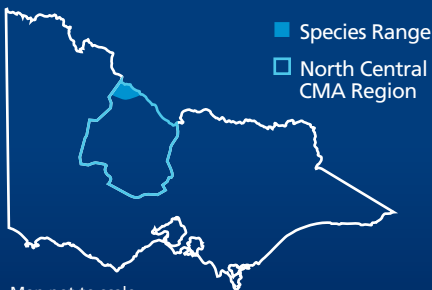
**Interesting facts and features:** The Australian Smelt has a cucumber-like odour when freshly caught.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Freshwater Catfish

(*Tandanus tandanus*)



**Family:** Plotosidae

**Other common names:** Jewfish, Eeltail Catfish

**Description:** The Freshwater Catfish is a medium sized fish. The rear part of its body is flattened (eel like). The head is large with four pairs of barbels that surround the thick fleshy lips of its large mouth. The skin is smooth, scaleless, and predominantly brown with a white belly. Smaller specimens have a mottled pattern on the back. The adult can grow to 500 mm in size (maximum size is about 900 mm).

**Fins:** The pectoral, pelvic and two dorsal fins are present. The second dorsal fin continues through the caudal fin and finishes at the anal fin.

**Habitat:** Prefers low flowing streams and lakes. It is usually found swimming close to sand or gravel substrates with fringing vegetation.

**Conservation status & distribution:** The species is listed under the FFG Act 1988. Historically common in the Murray-Darling Basin, the species has declined significantly since the late 1970s. Home range for the Freshwater Catfish is thought to be approximately five kilometres. It can also be found in coastal rivers from southern New South Wales to northern Queensland.

**Breeding:** Spawning occurs during spring and summer when water temperatures reach 20-24°C. Sexual maturity occurs at three to five years.

**Spawning time**

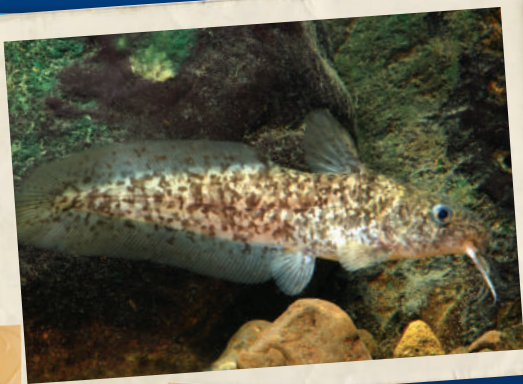
Jan

Feb

Mar

Apr

May



Photos Gunther Schmida

**Eggs:** Eggs are non-adhesive, large (3 mm in diameter), and are laid on pebbles, gravel and coarse material which are arranged into a circular nest on the substrate. Eggs can take up to seven days to hatch. The male remains at the nest to fan, clean and guard the eggs. This species may spawn multiple times during a season.

**Diet:** They are opportunistic carnivores feeding mainly on shrimps, freshwater prawns, yabbies and small fish.

**Threats:** Alien species such as Carp and Redfin Perch, cold water pollution, barriers to movement, changes to natural flows, sedimentation and elevated salinity levels are all suspected to have contributed to the decline of local populations.

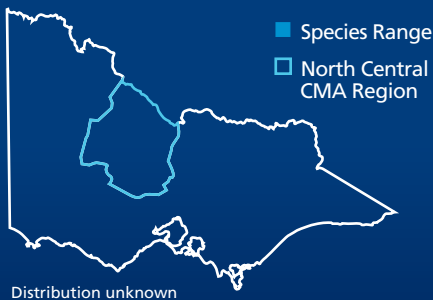
**Interesting facts and features:** The Freshwater Catfish is thought to be sedentary and show very little movement.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Murray Hardyhead

(*Craterocephalus fluviatilis*)



**Family:** Atherinidae

**Other common names:** None known

**Description:** The Murray Hardyhead is a small, laterally compressed fish. It has a small mouth and large silvery eyes. Scales on top of the head are large and irregular shaped. It is silver to golden in colour, at times with a black stripe mid-laterally. It can be distinguished by its darker scale margins on its back. The adult size is about 40-65 mm (maximum size is about 82 mm). This species can be confused with the Un-specked Hardyhead and the juvenile Murray-Darling Rainbowfish. It has historically been confused with the Lake Eyre Hardyhead.

**Fins:** Dorsal, pectoral, pelvic and anal fins are present. The tail is moderately forked.

**Habitat:** Historically found in rivers, ephemeral lakes and billabongs in open, slow flowing or still water associated with dense aquatic vegetation over sandy or silty substrates. More recently this species is predominantly found in saline wetlands, which are suspected to be refuge habitat.

**Spawning time**

Jan

Feb

Mar

Apr

May





Photos Gunther Schmida

**Conservation status & distribution:** The species is listed under the FFG Act 1988, is endangered under the EPBC Act 1999 and is listed as endangered under the IUCN red list 2012. Historically common in lowland areas of the Murray-Darling Basin. Only four remnant populations remain in Victoria, two of which are in the Kerang area. This species only occurs in Australia and less than a total of seven populations remain.

**Breeding:** Spawning generally occurs over an extended breeding season, most commonly from spring to early autumn. Individuals only spawn once in their life-time and die soon after spawning.

**Eggs:** Lays adhesive eggs which are approximately 1.5 mm in diameter on submerged aquatic vegetation.

**Diet:** Primarily eats micro-crustaceans, some aquatic insects and algae.

**Threats:** The reasons for its dramatic decline are unknown, but it is suspected that habitat degradation, river regulation, and the impacts of alien species, in particular Eastern Gambusia, are contributing threats.

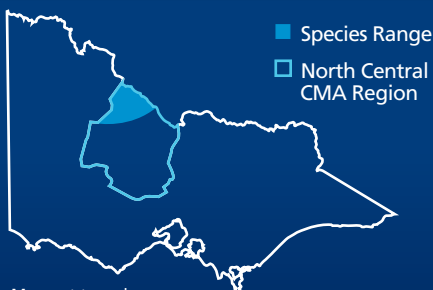
**Interesting facts and features:** The Murray Hardyhead is one of the most salt tolerant fish species found within inland Australia, adults having recently been found in waters which were more than one and a half times more saline than seawater.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Un-specked Hardyhead

(*Craterocephalus stercusmuscarum fulvus*)



Map not to scale

**Family:** Atherinidae

**Other common names:** Fly-specked Hardyhead, Non-specked Hardyhead

**Description:** The Un-specked Hardyhead is a small, slender fish with thick lips and a small mouth. Scales on top of the head are large and irregular in shape. The body colour varies; males when breeding have a bright yellow belly. A dark stripe extends from the mouth, through the eye, to the pectoral fin. The adult size is about 50-60 mm (maximum size is about 78 mm).

**Fins:** Dorsal, pectoral, pelvic and anal fins are present. The tail is moderately forked.

**Habitat:** Usually found in the margins of large slow flowing rivers and in lakes and billabongs. It prefers slow moving or still waters with aquatic vegetation and sandy, gravel or muddy substrates.

**Conservation status & distribution:** The species is listed under the FFG Act 1988. The Un-specked Hardyhead can be found in lowland areas within the Murray-Darling Basin.

**Breeding:** Spawning occurs from late winter to summer, peaking in spring when water temperatures exceed 24°C. This species is capable of multiple spawning.

**Spawning time**

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Eggs:** Usually only 20-107 eggs are dispersed; eggs are transparent with filamentous adhesive strands and are approximately 1.3 to 1.5 mm in diameter. Larvae hatch within four to seven days.

**Diet:** The species eats small insects including mosquito larvae and micro-crustaceans.

**Threats:** Reasons for decline are not known. However, increased salinity, habitat degradation, cold water pollution, in-stream barriers, river regulation and the impacts of alien species such as the Eastern Gambusia and Redfin Perch have all played a significant role in its decline.

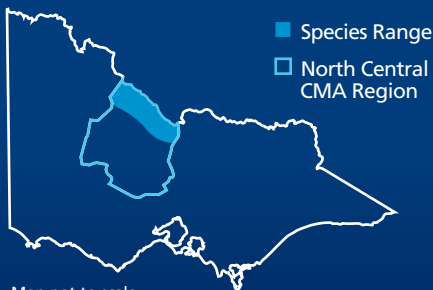
**Interesting facts and features:** The Un-specked Hardyhead is usually found in schools. Little is known of its movements.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Murray-Darling Rainbowfish

(*Melanotaenia fluviatilis*)



**Family:** Melanotaeniidae

**Other common names:** Crimson-spotted Rainbowfish, Murray Rainbowfish

**Description:** The Murray-Darling Rainbowfish is a small, laterally-compressed fish; it has large eyes and a small mouth. Scales are large, and colour varies with sex, age and habitat. Adults are generally silvery with greenish iridescence and a whitish lower head and belly. The adult can grow to 70 mm (maximum size is about 110 mm).

**Fins:** Dorsal, pectoral, pelvic and anal fins present. The tail is slightly forked.

**Habitat:** This family is usually tropical to sub-tropical; the Murray-Darling Rainbowfish is the most southern species of its family. Prefers slow flowing rivers, wetlands and billabongs. Can be found in association with grassy banks or submerged logs and branches where spawning occurs.

**Conservation status & distribution:** The species is listed under the FFG Act 1988 and is becoming increasingly uncommon in Victoria. Usually found in tributaries of the lowland parts of the Murray-Darling Basin in New South Wales, Victoria and South Australia.

**Spawning time**

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Breeding:** Spawning generally occurs during spring to summer when temperatures reach 20°C. Individuals mature at 10-12 months.

**Eggs:** 20-107 eggs (1.3 to 1.8 mm in diameter) are laid in batches of 5-20 eggs, three to four times a day for several days. The eggs sink and stick to aquatic plants through their adhesive thread. Hatching occurs after one week.

**Diet:** Eats aquatic and terrestrial invertebrates and some algae.

**Threats:** Predation of adults by Redfin Perch and larvae by Eastern Gambusia are potential causes. Other threats include cold water pollution and loss of aquatic vegetation.

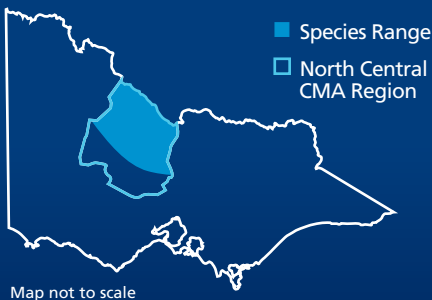
**Interesting facts and features:** Numbers are dramatically reduced during winter droughts when temperatures fall below 10°C.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Golden Perch

(*Macquaria ambigua*)



**Family:** Perchichthyidae

**Other common names:** Yellow Belly, Callop, Murray Perch

**Description:** The Golden Perch is a medium to large fish which is laterally compressed. It has a large mouth, the lower lip of which protrudes in front of the upper one. Its colour is generally olive-green with a yellow belly. The adult can grow to 400 mm (maximum size is about 760 mm).

**Fins:** Pectoral, pelvic, dorsal and anal fins present. Tail is truncate.

**Habitat:** Prefers lowland areas, with slow flowing, turbid warm water, which has deep, slow flowing pools with logs and overhanging vegetation.

**Conservation status & distribution:** Widespread, but declining. Found throughout the Murray-Darling Basin, it can also be found in the Dawson and Fitzroy rivers (Queensland) and in Lake Eyre and the Bulloo River drainage basins.

**Breeding:** Spawning occurs during floods in spring and summer when water temperatures exceed 20°C. Individuals have been found to migrate upstream, at times well over 1,000 km during the breeding season. Males mature at around two years and females at four years.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Arthur Mostead

**Eggs:** A female can lay up to 500,000 eggs, which are water hardened, large (3 to 4 mm in diameter), and semi-buoyant, allowing them to drift downstream. Hatching occurs after one to two days.

**Diet:** The Golden Perch is carnivorous; eating shrimp, yabbies, small fish and benthic aquatic insect larvae.

**Threats:** River regulation has disrupted migration and spawning behaviour, and cold water pollution has led to elimination of some populations. Other threats include barriers to migration and recolonisation posed by weirs and dams.

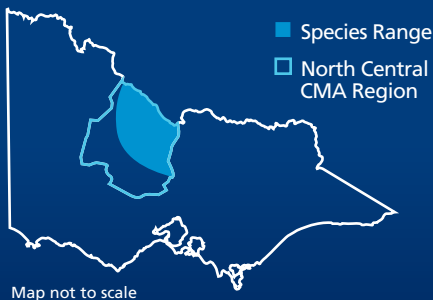
**Interesting facts and features:** Individuals can live for at least 26 years, more commonly up to 12 years.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Macquarie Perch

(*Macquaria australasica*)



**Family:** Perchichthyidae

**Other common names:** Mountain Perch, White Eye, Black Bream

**Description:** The Macquarie Perch is a medium-sized fish. Its body is laterally compressed. The mouth and eyes are large. Adults are black-grey or bluish grey, while juveniles may be distinctly mottled. The adult size is about 350 mm (maximum size is about 465 mm).

**Finns:** Dorsal, pectoral, pelvic and anal fins present. The tail is rounded.

**Habitat:** This species prefers slow flowing deep rocky pools in upper reaches of rivers, and cool clear lakes and reservoirs.

**Conservation status & distribution:** The species is listed under the FFG Act 1988 and is endangered under the EPBC Act 1999. Found in the Murray-Darling Basin in Victoria, New South Wales and the Australian Capital Territory. In Victoria it can be found in the Goulburn, Broken, Ovens and Mitta Mitta catchments. The species has in addition been stocked outside its natural range into the Coliban and the Yarra rivers. It is likely to have historically occurred in the Loddon River basin, with recent fish stocking attempts to re-establish populations within the area.

## Spawning time

Jan

Feb

Mar

Apr

May





Photo Gunther Schmida

**Breeding:** Spawning occurs during late spring to early summer. Fish in lakes migrate into tributaries to spawn. Males reach maturity at two years, females at three years.

**Eggs:** Eggs drift downstream and are lodged amongst sand and cobbles in riffles. Hatching occurs after 11 days when temperatures reach 15-17°C.

**Diet:** Feeds on shrimps and benthic aquatic insects, particularly mayflies, caddisflies and midges.

**Threats:** Numbers have decreased in recent decades due to overfishing. Siltation and viral disease carried by alien species such as Redfin Perch are also thought to have led to a decrease in numbers. Other threats include barriers to migration such as dams and weirs, the removal of riparian vegetation and predation of juveniles by introduced species, such as Brown Trout and Redfin Perch.

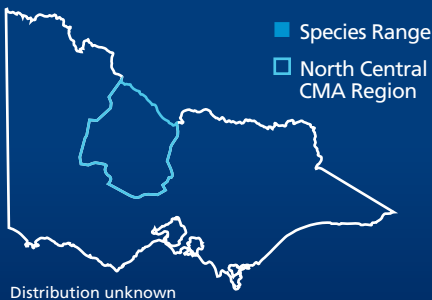
**Interesting facts and features:** The Macquarie Perch is a docile species. Some individuals may reach more than 20 years of age.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Trout Cod

(*Maccullochella macquariensis*)



**Family:** Perchichthyidae

**Other common names:** Blue-nose Cod

**Description:** The Trout Cod is a large fish. It has a large mouth and a protruding upper jaw. The body is bluey-grey with a darker speckled pattern. Most individuals have a dark stripe through the eyes. Adults can grow up to 500 mm (maximum size is about 850 mm).

**Fins:** Dorsal, pectoral, pelvic and anal fins present. The tail is truncate.

**Habitat:** Prefers rapidly flowing streams, with logs and debris over rocky gravel bottoms. Larger fish occur in deeper sections.

**Conservation status & distribution:** This species is listed under the FFG Act 1988, is listed as endangered under the EPBC ACT 1999 and is listed as endangered under the IUCN red list 2012. The Trout Cod can be found in the Murray River between Yarrawonga Weir and Barmah State Forest, and are also known to occur in the Ovens River and Sevens Creek (upper Goulburn River).

**Breeding:** Spawning occurs in late spring. Individuals mature at three to five years of age.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Arthur Mostead

**Eggs:** 1,200-11,000 large eggs (2.5 to 3.6 mm in diameter) are deposited on hard substrates such as logs and rocks. Larvae hatch after five to ten days.

**Diet:** The Trout Cod diet consists mainly of fish, yabbies, mudeyes, aquatic insect larvae and freshwater prawns.

**Threats:** Threats include predation of juveniles by alien fish species such as Redfin Perch and Brown Trout, habitat degradation, the removal of woody habitat, sedimentation and clearing of riparian vegetation. River regulation and cold water pollution also pose a threat.

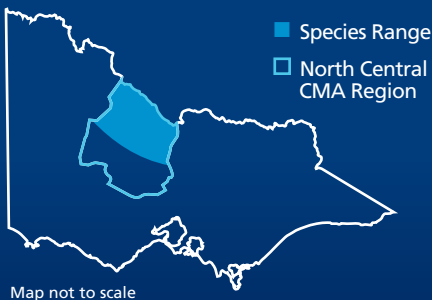
**Interesting facts and features:** If captured, the Trout Cod is to be released. This species is closely related to the Murray Cod and can be confused when identifying the species.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Murray Cod

(*Maccullochella peelii*)



**Family:** Percichthyidae

**Other common names:** Cod, Goodoo

**Description:** The Murray Cod is the largest freshwater fish in Australia. It is easily identified due to its large mouth, creamy-white belly and mottled green pattern on the body and head. Individuals can grow up to 1800 mm in length.

**Fins:** Dorsal, pectoral, pelvic and anal fins present. The tail is convex.

**Habitat:** Found in slow flowing turbid water in rivers and streams at low elevations, or fast moving clear rocky upland streams. Murray Cod prefers deeper water around boulders, logs, undercut banks and overhanging vegetation.

**Conservation status & distribution:** The species is listed under the FFG Act 1988, is vulnerable under the EPBC Act 1999 and is listed as critically endangered under the IUCN red list 2012. Natural populations occur in the low and mid-ranges of the Murray-Darling Basin. Translocated populations also exist in the Nepean River in New South Wales and the Yarra River in Victoria.

**Breeding:** Spawning occurs during spring, after migration of up to 120 km. Maturity is around three to five years of age. After spawning individual fish will often return to the same area they occupied prior to migration.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Arthur Mostead



Photo Gunther Schmida

**Eggs:** Eggs are large (3 to 3.5 mm in diameter), adhesive and are deposited onto hard surfaces such as rocks and logs. The males guard the eggs during incubation. Hatching occurs in 5-13 days.

**Diet:** The Murray Cod is an ambush predator; eating fish, crayfish and frogs.

**Threats:** It is thought that Murray Cod populations started to decline in the 1920s due to overfishing, habitat destruction, river regulation and the removal of woody habitat.

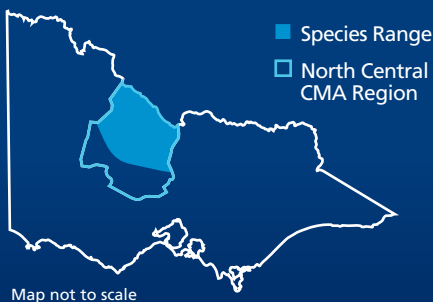
**Interesting facts and features:** The Murray Cod is a long lived species. The oldest Murray Cod recorded was aged at 48 years old.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Silver Perch

(*Bidyanus bidyanus*)



**Family:** Terapontidae

**Other common names:** Silver Bream, Black Bream, Bidyan

**Description:** The Silver Perch is a medium-sized fish. It has a small head and a beak like snout. The colour varies from silvery-grey with dark scale margins, but can appear as olive-greenish or brown overall. Its belly is whitish. The adult can grow to 350 mm (maximum is about 500 mm).

**Habitat:** Found in similar habitats to the Murray Cod and Golden Perch. Silver Perch prefers lowland, turbid and slow-flowing rivers.

**Fins:** Dorsal, pectoral, pelvic and anal fins present. The tail is moderately forked.

**Conservation status & distribution:** This species is listed under the FFG Act 1988 and is listed as vulnerable under the IUCN red list 2012. The species was once common throughout the Murray-Darling Basin, except in the upper reaches. It is still locally abundant in areas of the mid-Murray however its distribution is patchy.

**Breeding:** Spawning occurs during spring after upstream migration. It is believed that spawning activity is increased during floods. Individuals mature at three to five years.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Eggs:** It is believed spawning possibly occurs just after dusk.

**Diet:** An omnivorous species eating mainly aquatic plants, snails, shrimps and aquatic insect larvae.

**Threats:** River regulation has disrupted migration. Competition with and predation by alien species are suspected threats in the decline of Silver Perch.

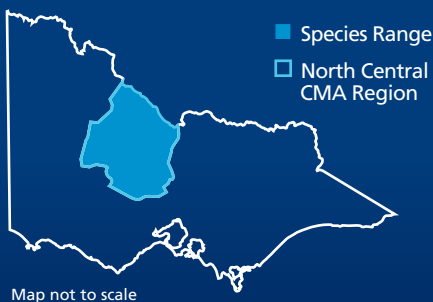
**Interesting facts and features:** A good angling and food fish, it has been utilised as a species in farm dams. The Silver Perch can only be taken from impoundments north of the Great Dividing Range, excluding the Wimmera Basin.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# River Blackfish

(*Gadopsis marmoratus*)



**Family:** Gadopsidae

**Other common names:** Slippery, Slimy, Muddy, Greasy

**Description:** The River Blackfish has a large mouth and is a pale olive-green or brown to almost black, often with a diffuse marbled pattern. The body is covered in very small scales with a mucous coating. The adult can grow to 200-250 mm (maximum size is about 600 mm).

**Fins:** The pelvic, dorsal and anal fins are present. Tail is rounded.

**Habitat:** Prefers clear, gently flowing streams with good in-stream cover such as large woody habitat, aquatic vegetation or boulders. It is found in a diverse range of streams, from upland and lowland small creeks to large rivers.

**Conservation status & distribution:** In the wild the River Blackfish is commonly found in all major tributaries of the Murray and the mid to upper reaches of the Murrumbidgee, Macquarie, Lachlan, Gwydir and Namoi drainages in New South Wales. It is locally common in the Condamine-Balonne and present in the Border rivers drainage in Queensland. In South Australia it has disappeared from the Murray and is now confined to small localised populations in the Eastern Mt Lofty streams. Listed as threatened in South Australia.

## Spawning time

Jan

Feb

Mar

Apr

May





Photo Gunther Schmida

**Breeding:** Spawning occurs during spring and summer when temperatures exceed 16°C. The species matures at four to five years of age.

**Eggs:** The eggs are large (4 mm in diameter), demersal, and adhesive. Eggs are laid inside hollow logs, although rocks and undercut banks may also be used. Hatching occurs after 14 days at temperatures of 15°C.

**Diet:** The River Blackfish is an opportunistic carnivore. It commonly consumes aquatic insect larvae, crustaceans, terrestrial insects that fall or land on the water surface, and occasionally other fish.

**Threats:** Habitat modification such as cold water pollution, desnagging and river regulation are likely to impact River Blackfish.

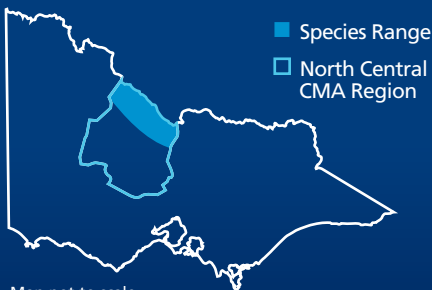
**Interesting facts and features:** The River Blackfish is readily distinguished from the Two-spined Blackfish by the dorsal fin having more than three spines.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Southern Purple-spotted Gudgeon

(*Mogurnda adspersa*)



**Family:** Eleotridae

**Other common names:** None known

**Description:** The Purple-spotted Gudgeon is an attractive fish; it is robust and has a rounded head and a small mouth. The back is usually dark purplish-brown to yellowish-brown, however, can be iridescent with darker blotches of blue towards the tail. The belly is a light brown to creamy colour. Dark blotches with red and white spots are present on the side. The adult can grow to 120 mm (maximum size is about 152 mm).

**Fins:** The dorsal, pelvic, pectoral and anal fins are present. The tail is slightly rounded.

**Habitat:** Rivers, creeks and billabongs, usually found in quiet or slow flowing sections over rocks or among vegetation.

**Conservation status & distribution:** This species is listed under the FFG Act 1988. In the basin it has undergone a significant decline.

**Spawning time**

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Breeding:** Spawning occurs in summer when water temperatures exceed 20°C. Males reach maturity at 45 mm and females at 49 mm. When eggs are released, the male guards and fans the eggs.

**Eggs:** Females deposit several batches of between 280-1,300 adhesive eggs on rocks, logs or solid surfaces. The eggs are elongate and transparent. Hatching occurs after three to nine days.

**Diet:** The diet consists of small fish, aquatic invertebrates, worms and tadpoles.

**Threats:** It is believed that interaction with alien species such as the Redfin Perch and Eastern Gambusia, and river regulation are major causes of the species decline.

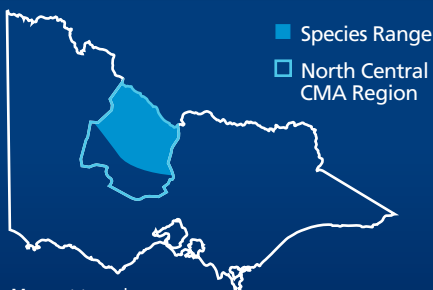
**Interesting facts and features:** None known

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Flathead Gudgeon

(*Philypnodon grandiceps*)



**Family:** Eleotridae

**Other common names:** Big Headed Gudgeon

**Description:** The Flathead Gudgeon is a small fish with a broad, flat head and large mouth. Black, brown, grey or reddish to greenish-brown overall, becoming yellowish on its belly. Irregular faint brown markings on its sides and several dark bands radiating from the eye. The adult can grow to 80 mm (maximum size is about 115 mm).

**Fins:** Anal, pelvic and dorsal fins are present. The tail is slightly convex.

**Habitat:** Prefers lakes, reservoirs and brackish estuaries, over mud and sandy substrates. Often found among aquatic vegetation. Less commonly they can also occur in gently flowing streams.

**Conservation status & distribution:** Widespread and common. Extends inland throughout the Murray-Darling Basin and is also widespread in the Southeast Coast Draining Division between the Burdekin River in Queensland and the Murray River mouth in South Australia.

**Spawning time**

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Breeding:** Spawning occurs in spring and summer when temperatures reach 18-27°C. Hatching occurs after four to six days.

**Eggs:** Females lay a clutch of elongated eggs on hard surfaces such as rocks or pieces of wood. The male guards the eggs and fans them with his pectoral fins.

**Diet:** The diet consists of small fish, molluscs, crustaceans, insects and tadpoles.

**Threats:** No known threats.

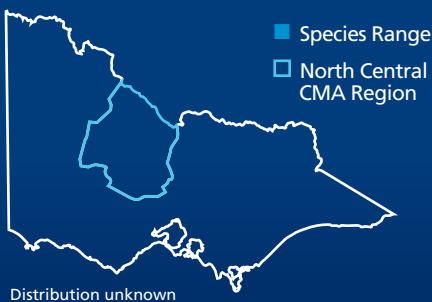
**Interesting facts and features:** The Flathead Gudgeon is readily distinguished from the Dwarf Flat-head Gudgeon by its larger size, the presence of gill openings on the underside of the head that extend forward to, or below the eye, and a larger number of pectoral fin rays.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Dwarf Flathead Gudgeon

(*Philypnodon macrostromus*)



**Family:** Eleotridae

**Other common names:** None known

**Description:** The Dwarf Flathead Gudgeon is a small fish with a broad head and a large mouth. Colour varies from pale to dark brown with black irregular blotches. Several dark bands radiate from the eyes. It rarely grows over 40 mm (maximum size is 65 mm).

**Fins:** The dorsal, pectoral, pelvic and anal fins are present. The tail is rounded.

**Habitat:** Prefers still or gently flowing streams, lakes, reservoirs and brackish estuaries over mud and rocky bottoms, often close to plants or woody debris.

**Conservation status & distribution:** This species occurs in the Murray-Darling Basin patchily and has only been recorded in few localities. This species is thought to be more common in coastal streams from southern Queensland to Wilson's Promontory in Victoria, and existing populations also occur in South Australia.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Breeding:** There is little detail available about the reproductive behaviour of the species, though it is thought to be similar to that of the Flathead Gudgeon.

**Eggs:** N/A

**Diet:** The diet consists of larvae, insects and microcrustaceans.

**Threats:** No known threats. Predation (larval and adult) by alien fishes may be threats. It is believed that interaction with alien species, such as Eastern Gambusia, may be major threats.

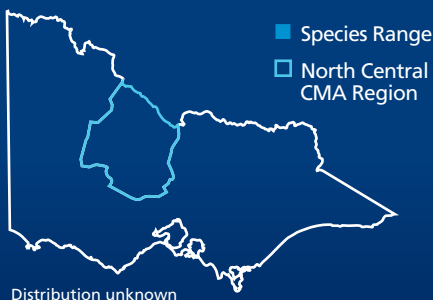
**Interesting facts and features:** This species can easily be confused with small Flathead Gudgeon, however Dwarf Flathead Gudgeon have a mouth which extends to, or just past the eye. In addition Flathead Gudgeon have a black bar at the base of the tail.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Southern Pygmy Perch

(*Nannoperca australis*)



**Family:** Nannopercidae

**Other common names:** Swamp Perch

**Description:** The Southern Pygmy Perch is a small, laterally-compressed fish, with a small mouth. The body is golden to olive-greenish, with a silvery-white belly. Dark blotches are present on the upper body. The adult size is about 60 mm (maximum size is 85 mm).

**Fins:** The dorsal, pectoral, pelvic and anal fins are present. The tail is slightly rounded.

**Habitat:** Slow flowing or still water with dense aquatic vegetation. Usually found in streams, channels and billabongs.

**Conservation status & distribution:** Not listed as threatened in Victoria, listed as vulnerable in New South Wales and protected in South Australia. Formerly known to occur in the Murray and lower Murrumbidgee catchments, is now thought to have disappeared from most locations in New South Wales. It is still common in southern (coastal) Victoria, but is patchily distributed from the Broken, Ovens, Campaspe, Goulburn, Kiewa, Mitta Mitta, Loddon and Wimmera basins.

## Spawning time

Jan

Feb

Mar

Apr

May





Photo Gunther Schmida

**Breeding:** Spawning occurs from spring to early summer when water temperatures reach 16°C. Males are territorial when breeding. Maturity is generally reached in the first 12 months. This species may live up to five years.

**Eggs:** Females produce between 100 and 4,200 round, transparent and non-adhesive eggs. Eggs are scattered on aquatic vegetation. Larvae hatch within two to four days.

**Diet:** A carnivorous species, its diet consists mainly of cladocerans, copepods, ostracods and small insect larvae such as chironomids, mosquito larvae and water bugs.

**Threats:** Threats include predation from alien species such as Brown Trout, Redfin Perch, and Eastern Gambusia, habitat alteration, cold water pollution and changes to flow.

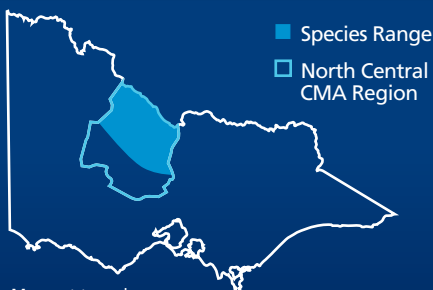
**Interesting facts and features:** Breeding males have prominent black colouration on the pelvic and anal fins and around the vent and fins go deep red colour during the breeding season.

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Carp Gudgeon species complex

(*Hypseleotris* spp)



Map not to scale

**Family:** Anguillidae

**Other common names:** None known

**Description:** Genetic studies of Carp Gudgeon have shown that at least four taxa are present, as well as a range of hybrids. In this booklet, Carp Gudgeons are treated as a group.

All Carp Gudgeons are small and laterally compressed, with a blunt head. Scales are present. Their body can be yellowish-grey to greenish-brown. The adult size is usually around 40 mm (maximum size is about 70 mm).

**Fins:** Anal, pectoral and two dorsal fins are present. The tail is slightly rounded.

**Habitat:** This group of species can be found in slow flowing or still waters, normally with aquatic vegetation.

**Conservation status & distribution:** Widespread and abundant. Commonly this group of Gudgeons are found in mid to low altitudes in the central and southern Murray-Darling Basin. Carp Gudgeon can also be found in coastal streams from New South Wales to central Queensland.

## Spawning time

Jan

Feb

Mar

Apr

May



Photo Gunther Schmida

**Breeding:** Spawning occurs in shallow water when temperatures reach approximately 22°C. The male guards and fans the eggs.

**Eggs:** Up to 2,000 small (0.5 mm in diameter), adhesive eggs are deposited onto submerged aquatic vegetation or twigs. Hatching occurs within two days.

**Diet:** Copepods, aquatic insects, cladocerans and ostracods, and chironomids are most frequently consumed.

**Threats:** In the Australian Capital Territory significant kills of Western Carp Gudgeon have resulted due to infestation by the introduced tapeworm *Bothriocephalus acheilognathi*.

**Interesting facts and features:** None known

Jun	Jul	Aug	Sep	Oct	Nov	Dec
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# Alien Species

## Brown Trout (*Salmo trutta*)

The Brown Trout is native to Europe and western Asia, and was first introduced to Australia in the 1860s.

It is a medium-sized fish (900 mm), with variable colouration, however is generally silvery to brownish, with dark reddish

to orange spots on the sides of the body, which can be surrounded by a pale halo. The dorsal, pelvic and anal fins are present. The tail is slightly forked. Most commonly found in cool mountainous streams, lakes, reservoirs and estuaries west of the Great Dividing Range in southern Australia. The Brown Trout has had a major impact on the distribution and abundance of galaxiids and frogs in water bodies in which it has been introduced.



Photo Neil Armstrong

## Rainbow Trout (*Oncorhynchus mykiss*)

Rainbow Trout is native to coastal drainages of western North America and eastern Siberia and was first introduced to Australia in the 1890s.

Rainbow Trout is a medium-sized, laterally-compressed fish (780 mm), which is usually

silvery to olive-brown in colour with a prominent pink stripe mid-laterally. Fine black spots may be present on the body and head. The dorsal, pelvic, pectoral, adipose and anal fins are present. The tail is slightly forked. Occupies cool flowing streams and lakes in Victoria, New South Wales, Tasmania and some streams in South Australia. The Rainbow Trout has had a major impact on the distribution and abundance of south east Australia galaxiids and native frog species.



Photo Neil Armstrong

## Carp (*Cyprinus carpio*)

The Carp is native to Asia, and was first introduced to Australia in the mid-1800s. The Carp is a medium-sized fish (grows to 1200 mm), olive to green or yellow-green to golden overall. The dorsal, pelvic, pectoral and anal fins are present. The tail is deeply forked. Four barbels surround the mouth. Carp is common throughout the Murray-Darling Basin, usually associated with warm slow flowing rivers or lakes. The impacts caused by carp are many. Their feeding behaviour has led to considerable increased turbidity, loss of aquatic vegetation and disturbance of native fish nest sites. While their large numbers and biomass has led to the species competing with native fish for food and space.



Photo Gunther Schmida

## Goldfish (*Carassius auratus*)

The Goldfish is native to eastern Asia, and was first introduced to Australia in the 1860s. Individuals are small, deep-bodied fish (grows to 400 mm), and vary in colour from olive bronze to deep gold on back and sides, with a silvery white belly. The dorsal, pelvic, pectoral and anal fins are present. The tail is moderately forked. The species is widespread throughout the Murray-Darling Basin in Victoria and New South Wales, in still or slow flowing waters. It is believed to be responsible for the disease 'goldfish ulcer' which affects salmonoid species.



Photo Gunther Schmida



# Alien Species cont.

## Eastern Gambusia (*Gambusia holbrooki*)

The Eastern Gambusia is native to the Gulf of Mexico, and was introduced to Australia in 1925. Individuals are small (maximum 60 mm),



Photo Gunther Schmida

pale to olive-green on the back, becoming grey to bluish on the sides, and silvery on the belly. Females have a dark spot near the vent. Dorsal, pelvic and anal fins are present and the tail is rounded. The Eastern Gambusia is widespread and abundant throughout Victoria, New South Wales and South Australia and in coastal drainages of Queensland and parts of Western Australia, preferring warm, still waters, usually around the edges of streams and lakes. The species is aggressive, chasing and fin-nipping other fish species and predated on eggs and larvae of native fish. This species has recently been listed as a major threatening process for frog species in New South Wales and has been implicated in the extinction of a number of fish species around the world.

## Oriental Weatherloach (*Misgurnus anguillicaudatus*)

The Oriental Weatherloach is native to Asia and was first introduced to Australia in 1960. The species is small (grows to 250 mm) elongated, and has five pairs of barbels around the mouth. It is greenish-brown to yellow with some darker mottling on



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its back. The dorsal, pectoral and anal fins are present. The tail is rounded with a distinct black spot at the base. This species has become established in many rivers and streams in south eastern Australia, preferring still or gently flowing water over a sandy or muddy substrate. Its diet is similar to the Mountain Galaxias and may be a predator of galaxiid eggs; studies have shown the species can significantly depress the number of macroinvertebrates and increase turbidity and nitrogen levels.

## Tench (*Tinca tinca*)

Tench is native to Europe and was first introduced to Australia in the 1870s. Individuals are thick-bodied, medium-sized fish (100-300 mm), olive in colour, with a gold iridescence on the side of the body. The dorsal, pelvic, pectoral and anal fins are present. The tail is slightly forked. Tench can be found mostly in Victoria in still or slow flowing waters. Little is known of the impacts on native fish; however competition with native fish for food and resources is likely.



## Redfin Perch (*Perca fluviatilis*)

The Redfin Perch is native to Northern Europe and was introduced to Australia in the 1850s. The Redfin Perch is a medium-sized, deep-bodied fish (maximum size is about 400 mm), olive-greenish to grey on the back and sides, with a silvery to white belly. It has six or more dark bands laterally on the body, and pelvic and anal fins have a distinct bright red or orange margin. The Redfin Perch is widespread in the cooler waters of New South Wales, Victoria, Tasmania, South Australia and south-western Western Australia. Found in still or slow flowing waters where there is abundant aquatic vegetation. The species is a vector for Epizootic Haematopoietic Necrosis Virus (EHNV), a disease which has led to sudden deaths of native species such as Macquarie Perch, Silver Perch, and Mountain Galaxias, and introduced species such as Brown Trout. The Redfin Perch is also a prolific predator, consuming larval, juvenile and small-bodied native fish.



# Glossary

**Adhesive:** sticks to

**Adipose fin:** small fleshy fin without rays found on the back behind the dorsal fin.

**Alien:** species that is not native

**Anal Fin:** single fin, behind the anus

**Aquatic:** associated with water

**Barbel:** slender, fleshy (whisker like) appendage usually found around the mouth of the fish

**Benthic:** bottom of rivers or lakes

**Billabong:** a meander where the section has been cut off from the main river

**Carnivore:** animal that eats other animals

**Catchment:** the area of land that drains into a stream

**Caudal fin:** tail of fish

**Copepods:** a group of crustaceans (shrimp like)

**Crustacean:** Animal with a hard exoskeleton (yabbies, prawns etc)

**Declining:** decrease in the number (of a population)

**Demersal:** fish that live and feed on or near the bottom of the sea or lakes

**Detritivore:** an animal that eats the detritus from the bottom of streams

**Detritus:** dead or decaying organic matter

**Dorsal fin:** fin located at the top of the fish

**Ecosystem:** biological system involving the interaction between living organisms and their physical, chemical and biological components

**Endangered:** category for animals that are in danger of extinction

**Ephemeral:** temporary, not permanent

**Family:** a grouping of genera

**Habitat:** where an animal lives

**Headwaters:** at the start of a river (small stream at the head of the catchment)

**Invertebrates:** animals without a backbone

**Larvae:** a life stage in the life cycle, directly after hatching

**Lateral:** relates to the sides of the animal

**Macroinvertebrates:** a small animal that can be seen with the naked eye

**Macrophytes:** used to describe water plants that are microscopic

**Microcrustaceans:** small animals such as water fleas

**Migratory:** has a pattern of movements

**Native:** Indigenous, occurs naturally

**Nocturnal:** active at night

**Omnivore:** an animal eating both plants and animals

**Operculum:** hard bony flap covering and protecting the gills

**Pectoral fin:** a pair of fins, usually just behind the gill openings

**Pelagic:** lives in the upper part of the water column

**Pelvic fin:** one of a pair of fins, usually behind the pectoral fins

**Pool:** section of the stream or habitat with still or slow flow

**Rare:** scarce or uncommon

**Radially:** developing symmetrically about a central point

**Remnant:** remainder of much more widespread population ►



**Riffle:** section of a stream with shallow, fast flowing water over rocks or cobbles

**Riparian Vegetation:** vegetation growing on the banks of the river

**Sedimentation:** the process of silt and sediment settling in a water body

**Snag:** fallen tree or log

**Spawning:** dispersal of eggs for breeding

**Species:** a group of animals that can breed and reproduce

**Submerged:** under the water

**Substrate:** the base of the waterway

**Suctorial:** adapted mouth parts for sucking

**Taxonomy:** classification of groups

**Threatened:** in danger of extinction, unless threatening processes are removed

**Translocated:** moved outside its natural range

**Turbidity:** transparency of the water (muddiness)

**Truncate:** square ended

**Ventral:** relating to the underside of an animal, its belly

## References & Recommended Reading

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