Freshwater Fish, Crayfish and Turtles *of North East Victoria*
An Identification and Conservation Guide

Victoria's freshwater environments encompass approximately 85,000 kilometres of streams, rivers and creeks as well as 16,700 wetlands covering 541,000 hectares. Unfortunately many native freshwater fish, crayfish and turtle species in Australia are now threatened. These species are declining due to habitat degradation, reduced water quality, barriers to movement, and predation by and competition with introduced species. See inside this brochure for ways to help conserve native freshwater fish, crayfish and turtles. Please refer to the Victorian Recreational Fishing Guide for the legal requirements on fishing from these waters.

Species Status

\# Member of the threatened Lowland Riverine Fish Community of the southern Murray-Darling Basin, Victorian *Flora and Fauna Guarantee Act 1988*

NE Species listed nationally as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

NV Species listed nationally as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

L Species listed as Threatened under the Victorian *Flora and Fauna Guaranteed Act 1988*

Victorian Department of Sustainability and Environment – (2007) Advisory List of Threatened Vertebrate Fauna in Victoria (2009) Advisory List of Threatened Invertebrate Fauna in Victoria
CR: Critically Endangered **EN**: Endangered **NT:** Near threatened **VU**: Vulnerable **DD**: Data deficient **NAS:** Species declared as a Noxious Aquatic Species under the Victorian *Fisheries Act 1995* **TN**: Native species translocated outside of its natural range

Size:

Fish - Approximate length from tip of snout with mouth closed, to tip of tail (cm)
Crayfish - Approximate length from the rear of the eye socket to the nearest part of the rear edge of the carapace (main body shell) (cm)
Turtle - Approximate length of the carapace (top of the shell) (cm)

Guide to colour symbols

- **Rivers:** species commonly found in rivers.
- **Wetlands:** species commonly found in wetlands.
- **Angling:** species commonly caught for recreational or commercial fishing purposes.
- **Migration:** species undergo migration during their life cycle.

Websites:

Department of Sustainability and Environment www.dse.vic.gov.au *(search for the 'Conserving Threatened Species & Communities,' 'Freshwater Ecosystems,' 'Victorian Biodiversity Atlas' and 'Arthur Rylah Institute' web pages)*
Fisheries Victoria www.dpi.vic.gov.au/fisheries
VRFish www.vrfish.com.au
Murray-Darling Basin Authority www.mdba.gov.au
Victorian Recreational Fishing Guide www.dpi.vic.gov.au/fisheries/recreational-fishing/recreational-fishing-guide
VRFish Recreational Fishing Code of Conduct www.vrfish.com.au/fishing-in-victoria/code-of-conduct

For more information:

Department of Sustainability and Environment: www.dse.vic.gov.au
Wangaratta: (03) 5723 8600 Wodonga: (02) 6043 7900
Benalla: (03) 5761 1611 Arthur Rylah Institute: (03) 9450 8600
North East Catchment Management Authority: www.necma.vic.gov.au
Wodonga: (02) 6043 7600
Goulburn Broken Catchment Management Authority: www.gbcma.vic.gov.au
Shepparton: (03) 5820 1100
Murray-Darling Basin Authority: www.mdba.gov.au
Canberra: (02) 6279 0100

Acknowledgements:

Photographs donated by: Jarod Lyon **(JL)**, Joanne Kearns **(JK)**, Gunther Schmida ©MDBA **(GS)**, Tarmo Raadik **(TR)**, Neil Armstrong **(NA)**, Keith Ward **(KW)**, Katie Howard **(KH)**, Scott Raymond **(SR)**, Justin O'Connor **(JO)**, Glen Johnson **(GJ)**, Department of Primary Industries Fisheries Victoria **(DPI FV)** & Kylie Hall **(KHa)**. Cover photographs and illustration: Lower Ovens River **(GJ)**, Murray Cod **(DPI FV)**, Barmah Swamp Yabby **(TR)** and Common Long-necked Turtle **(KW)**. Compiled by: Renae Ayres, Glen Johnson & Jarod Lyon (Department of Sustainability and Environment)

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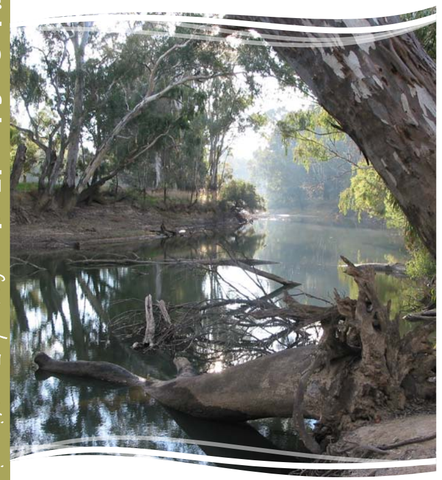


GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY | Australian Government | MURRAY–DARLING BASIN AUTHORITY | NORTH EAST CATCHMENT MANAGEMENT AUTHORITY

State Government Victoria — Department of Sustainability and Environment

Native Fish

Murray Cod
Maccullochella peelii
NV L EN
Commonly 45 - 65 cm (JL)

Trout Cod (Bluenose Cod)
Maccullochella macquariensis
NE L CR
Commonly 40 – 50 cm (JL)

Golden Perch
Macquaria ambigua
VU
Commonly 25 - 45 cm (JL)

Macquarie Perch
Macquaria australasica
NE L EN
Commonly 25 - 35 cm (JK)

Silver Perch
Bidyanus bidyanus
L CR
Commonly 30 - 45 cm (GS)

Freshwater Catfish
Tandanus tandanus
L EN
Commonly 30 - 45 cm (GS)

Native Fish

River Blackfish
Gadopsis marmoratus
#
Commonly 20 - 25 cm (GS)

Two-spined Blackfish
Gadopsis bispinosus
Commonly < 20 cm (GS)

Short-finned Eel
Anguilla australis
TN
Commonly 70 cm (TR)

Short-headed Lamprey
Mordacia mordax
Commonly 30 - 40 cm (TR)

Southern Pygmy Perch
Nannoperca australis
Commonly 4 – 6 cm (GS)

Murray-Darling Rainbowfish (Crimson-spotted Rainbowfish)
Melanotaenia fluviatilis
L DD
Commonly 5 - 7 cm (GS)

Native Fish

Flat-headed Gudgeon
Philypnodon grandiceps
#
Commonly 8 cm (TR)

Dwarf Flat-headed Gudgeon
Philypnodon macrostomus
Commonly < 4 cm (TR)

Carp Gudgeon Complex
Hypseleotris spp.
#
Commonly 3 - 5 cm (GS)

Bony Herring (Bony Bream)
Nematalosa erebi
#
Commonly 10 - 20 cm (GS)

Australian Smelt
Retropinna semoni
Commonly 4 -7 cm (TR)

Unspecked Hardyhead
Craterocephalus strecusmuscarum fulvus
L DD
Commonly 5 - 7 cm (GS)

Native Fish

Climbing Galaxias (Broad-finned Galaxias)
Galaxias brevipinnis
TN
Commonly 15 cm (NA)

Barred Galaxias
Galaxias fuscus
NE L CR
Commonly 7 - 9 cm (TR)

Mountain Galaxias
Galaxias olidus
Commonly 8 cm (TR)

Flat-headed Galaxias
Galaxias rostratus
VU
Commonly < 10 cm (TR)

Obscure Galaxias
Galaxias sp .1
Commonly 8 – 9 cm (TR)

Riffle Galaxias
Galaxias sp .2
Commonly 6 – 7 cm (TR)

Introduced Fish

Rainbow Trout
Oncorhynchus mykiss
Commonly < 60 cm, < 5 kg (NA)

Brown Trout
Salmo trutta
Commonly < 90 cm, < 8 kg (NA)

Atlantic Salmon
Salmo salar
Commonly 1 – 3 kg (KHa)

Brook Char
Salvelinus fontinalis
Commonly 80 – 85 cm (NA)

Redfin Perch
Perca fluviatilis
Commonly 40 cm, < 2.5 kg (GS)

Introduced Fish

Common Carp
Cyprinus carpio
NAS
Max. 120 cm (JL)

Goldfish
Carassius auratus
Commonly 20 cm (JL)

Oriental Weatherloach
Misgurnus anguillicaudatus
NAS
Max. 25 cm, commonly < 19 cm (GS)

Eastern Gambusia
Gambusia holbrooki
NAS
Max. 6 cm (TR)

Tench
Tinca tinca
Commonly 10 - 30 cm (TR)

Roach
Rutilus rutilus
Commonly 15 - 20 cm (GS)

Crayfish

Central Highlands Spiny Crayfish
Euastacus woiwuru
Max. 7 cm, commonly 4 - 5 cm (TR)

Murray Spiny Crayfish
Euastacus armatus
L NT
Max. 15 cm (GS)

Alpine Spiny Crayfish
Euastacus crassus
L EN
Max. 6 cm (TR)

Yabby
Cherax destructor
Commonly 9 - 11 cm (GS)

Barmah Swamp Yabby
Cherax sp. nov.
Max. 12 cm, commonly 9 – 10 cm (TR)

Upland Burrowing Crayfish
Engaeus lyelli
Max. 4 cm (TR)

North-eastern Burrowing Crayfish
Engaeus cymus
Max. 4 cm (NA)

Central Highlands Burrowing Crayfish
Engaeus affinis
Max. 4 cm (TR)

Turtles

Common Long-necked Turtle
Chelodina longicollis
Max. 30 cm, commonly < 25 cm (KW)

Broad-shelled Turtle
Chelodina expansa
L EN
Max. 46 cm (KH)

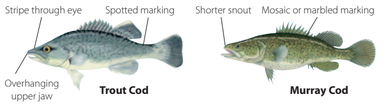
Murray River Turtle
Emydura macquarii
DD
Max. 32 cm (KW)

Declining native freshwater fish, crayfish and turtle communities

Victoria's freshwater environments support a rich variety of animals and plants which require specific environmental conditions for their survival. Unfortunately many native freshwater fish, crayfish and turtle species in Australia are now threatened. Under the *Flora and Fauna Guarantee Act 1988*, the Lowland Riverine Fish Community of the southern Murray-Darling Basin is listed as a threatened ecological community. Thirteen of the fifteen fish species from that community are found in northeast Victoria and are shown in this brochure.

Why are native freshwater fish, crayfish and turtle numbers declining?

- **Flow regulation**
  Dams, weirs and water extraction alter natural flow regimes and effect flow volume, velocity and natural flow variation. Flow regulation impacts water quality and the diversity and availability of in-stream habitats for fish, crayfish and turtles. Many native fish species rely on natural seasonal flow regimes as a cue for migration and spawning.
- **Habitat degradation**
  Includes removing in-stream woody debris (de-snagging) and rocks, clearing of river bank vegetation, river bank realignment and erosion resulting from negative human-induced changes, and weed invasion and competition e.g. willow, blackberry and aquatic weeds.
- **Reduced water quality**
  Inputs of nutrients e.g. artificial fertiliser run off and excess stock excrement, sediments, salinity, pesticides and other chemicals, as well as artificial changes in water temperature can adversely affect the health and survival of fish, crayfish and turtles.
- **Barriers to fish passage**
  Physical barriers such as dams, weirs, culverts and road-crossings, and non-physical barriers such as increased flow velocities, reduced habitats and water quality can prevent fish, crayfish and turtle movement between habitats and limit their movement between populations.
- **Introduced species**
  Freshwater fish species have been introduced into Victoria for recreational angling, ornamental trade and biological control purposes. While some introduced freshwater fish are important angling species, many predate on native species and/or compete with native species for habitat, food and other resources. Some can also introduce and spread new diseases, viruses and parasites. Certain introduced species are classified as noxious. Introduced foxes harm turtle populations by predating on turtle eggs and nesting adults.
- **Disease**
  The outbreak and spread of diseases, viruses and parasites can impact the health of fish, crayfish and turtle populations.
- **Exploitation and illegal fishing**
  Illegal commercial and recreational take and over fishing contribute to the decline of fish populations. Turtles can become trapped and drown in illegal fishing nets and may get caught on illegal set lines.
- **Loss of genetic diversity**
  Illegal and uninformed stocking and translocation of fish species can negatively affect the genetic integrity and fitness of wild populations.
- **Road kill**
  Turtles are often hit by motor vehicles when crossing roads.



Distinguishing features of Trout Cod and Murray Cod (DPI FV)

You can help

To help conserve Victoria's freshwater fish, crayfish and turtles you can:

- **Join a local community group** such as an angling club, Landcare, 'Friends of', or environmental group or club; adopt a stream and protect the environment.
- **Submit records** to the Victorian Biodiversity Atlas of fish, crayfish and turtles you have seen or captured, especially tagged fish and rare species.
- **Fish responsibly:** adhere to fishing regulations, e.g. closed seasons and bag, gear and size limits; practice catch and release fishing with minimal handling; use barbless hooks. Refer to the Victorian Recreational Guide and VRFish Recreational Fishing Code of Conduct. Return all captured turtles safely to the water.
- **Keep your boat and fishing gear clean, dispose unwanted live bait in a bin and never return noxious aquatic species to the water** to prevent the introduction and spread of noxious aquatic species.
- **Be a responsible pet owner** and never flush or dump unwanted pet fish, crayfish or turtles in waterways.
- **Report illegal fishing - call 13 FISH (133 474)**.
- **Spread the word, join in discussions** – use positive messages to educate others about conserving native fish, crayfish and turtles and their habitat.

A tagged Golden Perch (JL). Research agencies and organisations tag and release fish to obtain information about their distribution, growth, movement and exploitation. Compiling this information contributes to the management of waterways to ensure fish populations and communities are healthy and self-sustaining. If you capture a tagged fish, please record the tag number, date, time, location, length, weight and name of the species caught, and phone the contact number on the tag.

Tips for adjacent land holders and managers of rivers and wetlands

- **Protect and rehabilitate native riparian vegetation** including weed control, to stabilise river banks, reduce nutrient and sediment loads into waterways, and enhance fish habitat. Revegetate areas with locally endemic plants.
- **Protect and restore diverse in-stream habitats** such as logs, native aquatic vegetation, pools and riffles to provide refuges, food sources and spawning sites for fish, crayfish and turtles.
- **Maintain or reinstate natural flow regimes** as far as possible, to benefit fish populations and re-connect aquatic habitats such as floodplain wetlands to rivers.
- **Restrict or manage stock access and grazing** by fencing off freshwater environments and providing alternative water sources.
- **Remove barriers or install fishways** to provide fish passage.
- **Apply for grants** to support waterway habitat improvement activities for example, through your local Catchment Management Authority or the Victorian Recreational Fishing Grants Program.
- **Gain further knowledge and ideas:** Refer to further information and contacts on the back of this brochure.

Riparian revegetation helps restore fish habitat (SR)

Fishways allow fish to move around barriers such as weirs (JO)