

## Murray Hardyhead – *Craterocephalus fluviatilis*

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Threatened Species Unit, Port Stephens Fisheries Institute



Figure 1: A Murray Hardyhead (Photo: G. Schmida)

### Introduction

Murray Hardyhead is a small freshwater fish, native to the floodplains of the southern Murray-Darling Basin. They were once widespread and abundant throughout their range; however the species has suffered a serious decline in abundance and distribution, and are now considered one of the most threatened vertebrate species in Australia. Murray Hardyhead is rare in NSW and only a few isolated populations occur in Victoria and South Australia. All populations are threatened by declining water levels, habitat loss and impacts of pest fish (including Gambusia, Redfin and Carp).

In NSW, Murray Hardyhead were listed as an endangered species in 2001, however in 2007 the Fisheries Scientific Committee reviewed the conservation status of the species and found a significant decline in the distribution and abundance of Murray Hardyhead in all river systems in NSW. The species was subsequently upgraded to a **critically endangered species**.

There are heavy penalties for harming, possessing, buying or selling them, or for damaging their habitat (see 'Legal Implications').

### Description

Murray Hardyhead is a highly mobile schooling fish that can grow to 76mm. Their colour varies from silvery-green to golden on top, with a silvery-black or golden-red stripe running along the body. The eyes and gill covers are bright silver, and the top of the head and snout are slightly darker. They have two small dorsal fins, the tail is forked and the pectoral fins are positioned high on the body.

Murray Hardyhead is similar in appearance to several other hardyhead species, including the Darling River Hardyhead, Lake Eyre Hardyhead and Unspecked Hardyhead (with which it can co-occur in the Southern Murray-Darling Basin). The scales of Murray Hardyhead are circular with pigment mostly around the edge, and irregularly arranged on the shoulder, whereas Unspecked Hardyhead scales are diamond shaped, arranged in rows on the shoulder and can contain pigment throughout the scale.

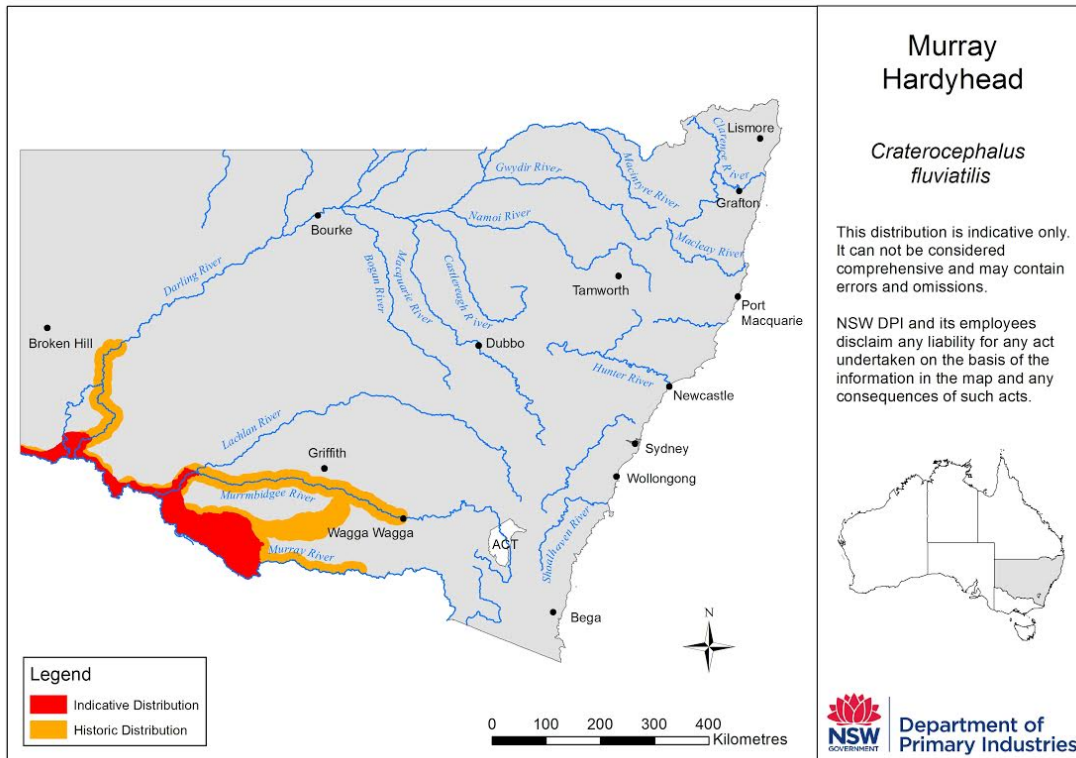


Figure 2: The historical and indicative distribution of Murray Hardyhead

## Habitat and ecology

- Murray Hardyhead live along the edges of wetlands and slow-flowing lowland rivers. They are often found among aquatic plants, particularly in saline waters containing few other fish species.
- They mostly feed on tiny crustaceans (plankton) and small aquatic insects such as mosquito larvae.
- Individuals are mature at around 25-30 mm in length, or 5-8 months of age.
- Murray Hardyhead has a prolonged spawning season from September to March, with peak larval abundance occurring in late October to early November.
- The species is a batch spawner, with females depositing clutches of eggs among submerged vegetation.
- Hatching occurs five to ten days after fertilisation in waters between 20 and 30°C.
- Murray Hardyhead is considered to be an annual species, although some individuals may survive into their second year. The abundance of adults declines at the end of the breeding season, with replacement by the maturing young-of-the-year cohort.
- Schools are usually formed of distinct size classes.

## Why is the Murray Hardyhead threatened?

- Habitat loss through altered flow regimes, drought and water availability.
- Habitat degradation, including loss of aquatic vegetation, excessive salinization, and predation by and competition with introduced fish, such as Redfin Perch, Carp and Eastern Gambusia.
- Weirs, dams and other barriers isolate wetland habitats and impede fish passage, thus fragmenting populations and preventing recolonization of habitats during flood events.

## Conservation and recovery actions

- Undertake work to identify, restore and protect known and potential Murray Hardyhead habitats and address key threats such as habitat degradation and water quality decline from expanding development.
- Implement relevant State policies and programs in an effort to reduce water pollution impacts on Murray Hardyhead habitats in NSW.
- Maximise compliance with the ban on collection of Murray Hardyhead for aquariums.
- Provide information on the potential habitat and distribution of Murray Hardyhead to local councils and determining authorities to ensure

appropriate consideration during development assessment processes.

- Conduct targeted surveys to determine the current distribution and abundance of Murray Hardyhead in NSW.
- Implement the NSW Freshwater Fish Stocking Fishery Management Strategy to prevent significant impacts from stocking on Murray Hardyhead populations.
- Report any sightings of the species via the NSW DPI online form:  
<http://www.dpi.nsw.gov.au/fisheries/species-protection/report-it>
- A full list of strategies that have been adopted for promoting the recovery of the Murray Hardyhead is set out in the NSW DPI Priorities Action Statement:  
<http://www.dpi.nsw.gov.au/fisheries/species-protection/priorities-action-statement2>
- A National Recovery Plan has been prepared for the species and is currently being revised.

## Legal implications

It is illegal to catch and keep, buy, sell, possess or harm Murray Hardyhead (or any other threatened species in NSW) without a specific permit, licence or other appropriate approval, and significant penalties apply. For critically endangered species, these penalties can include fines of up to \$220,000 and up to 2 years in prison.

There can also be significant penalties for causing damage to the habitat of a threatened species without approval, through actions such as dredging river beds, removing large woody debris and constructing barriers that block the free passage of fish.

Clearing that constitutes a routine agricultural management activity, and certain routine farming practice activities (other than clearing) are permitted, provided the activities are to the minimum extent reasonably necessary and all other relevant statutory approvals or authorities have been obtained.

The impacts of developments or activities that require consent or approval in accordance with the *Environmental Planning and Assessment Act 1979* must be assessed and considered by consent or determining authorities. Where such actions are likely to result in significant impact on a threatened species or its habitat, a detailed species impact statement must be prepared.

Strategies to be adopted for promoting the recovery of Murray Hardyhead are set out in the NSW DPI Priorities Action Statement.



Figure 3: A Murray Hardyhead (Photo: G. Schmida)

## Bibliography and further reading

Backhouse, G., Lyon, J. and Cant, B. (2008) National Recovery Plan for the Murray Hardyhead *Craterocephalus fluviatilis*. Department of Sustainability and Environment, Melbourne.

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Fisheries Scientific Committee (2007) Final Determination: *Craterocephalus fluviatilis* – Murray Hardyhead.

Lintermans, M. (2007) *Fishes of the Murray-Darling Basin: An introductory guide*. MDBC Publication No. 10/07.

## For further information

See the NSW DPI website: [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

Contact the NSW DPI Threatened Species Unit:  
Locked Bag 1  
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