

Demonstration reaches

for native fish

Reversing the declines

The native fish of the Murray-Darling Basin have suffered serious declines in both distribution and abundance, particularly in the last 50 years. Close to one-third of the Basin's 35 native fish species are listed as threatened, including Australia's largest freshwater fish, the Murray cod. Eight key reasons for these declines have been identified that pose an ongoing threat to native fish populations.

These include flow regulation, habitat degradation, poor water quality, barriers that prevent fish passage, alien species, disease, exploitation and inappropriate translocation and stocking.

As fish are a strong indicator of river health, the poor status of our native fish tells us that something is very wrong with the rivers and wetlands upon which the Basin's communities depend.



Typical management interventions

The good news is that there are things we can do to slow and reverse these declines in both native fish populations and river health. These management interventions, which range widely in cost and the amount of resources required, address the threats to native fish.

Actions or 'management interventions' that can be taken, to manage or remove the impact of these key threats to native fish populations include:

Riparian rehabilitation

Riparian areas and vegetation provide habitat and nutrients essential for healthy fish populations, together with shade and a buffer for waterways. Riparian rehabilitation activities could include weed management and revegetation, as well as the protection of remnant riparian vegetation.



Snags on the Murray River near Yarrowonga

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A section of the Darling River near Bourke in need of habitat rehabilitation

Resnagging

Resnagging involves replacing snags, such as branches and fallen logs, which have been extensively removed from many of the Basin's rivers. These snags are important for native fish breeding, feeding and protection and also provide habitat for other aquatic and terrestrial species.

Alien species control

There are currently 11 alien species of fish in the Basin, such as Carp, Redfin perch and Gambusia. Alien species can impact on native fish through predation, competition for food and space, reducing water quality and transferring diseases. Activities such as biological and chemical control, commercial fishing, environmental manipulation and habitat improvement for native species aim to reduce the impact of alien species on native fish. Control is most effective when several of these activities are undertaken concurrently.

Improving fish passage

Many species of native fish in the Basin have evolved to move large distances both up and down the Basin's rivers, for example to breed, find food, or to escape unfavourable conditions. However, there are over 4000 structures (such as dams, weirs and culverts) that currently prevent fish passage in the Basin. Fishways that are designed to suit Australian river conditions and the swimming abilities of our native fish can be built to overcome these barriers.

Water quality

Salinity, excess nutrients, thermal pollution, acidity, turbidity and inadequate water flow, are all issues that impact on native fish populations and therefore have to be managed appropriately. Rehabilitation and protection of riparian vegetation, management of stock access and changes to land management are some of the ways that water quality may be improved.

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Results of tree clearing and desnagging upper Condamine

What is a demonstration reach?

When carried out in isolation, as is often the case, these management interventions may have a positive effect on native fish, but this effect may be small in scale and limited to one or few species. **The challenge is: how do we get the best result out of applying these management interventions across the Basin?**

One argument is that if we apply a number of these actions in one place, the cumulative benefit for native fish populations and communities will be much greater. This is one of the central ideas behind the demonstration reach concept.

Demonstration reaches are large scale river reaches or wetlands where a number of management interventions are applied to showcase the cumulative benefits of river rehabilitation on native fish populations.

Current rehabilitation projects relevant to native fish are spread thinly across the Murray-Darling Basin, diluting the effectiveness of limited resources.

Demonstration reaches aim to bring these resources together at one place, to maximise the benefits of multiple projects.

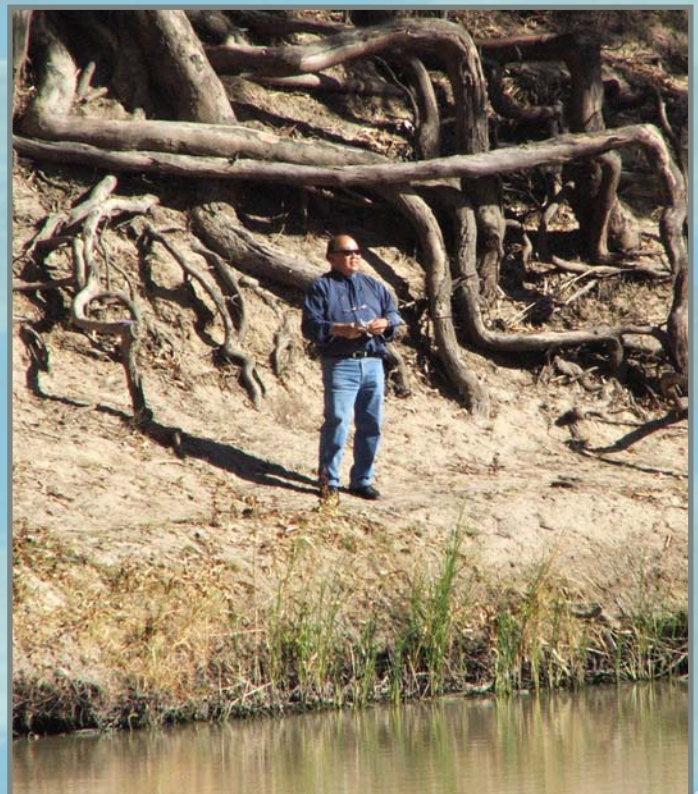
Demonstration reaches are also a useful way of showcasing the different management interventions that can contribute to improving native fish populations.

Demonstration reaches do not involve a reduction in access to, or use of, the river or riverbanks.



Habitat rehabilitation has been shown to benefit threatened species such as Trout cod

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Local communities, as well as native fish, will benefit from improved river health

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The role of the Community

Direct community involvement and leadership is essential to the success of a native fish demonstration reach. There are many opportunities for hands-on participation.

This involvement could include:

- site selection and management plan development during the planning phase;
- participation in management interventions such as rehabilitation of riparian vegetation during the implementation phase; and
- helping to establish and run a monitoring program, with hands-on involvement in measuring fish numbers, water quality, and vegetation responses to management.



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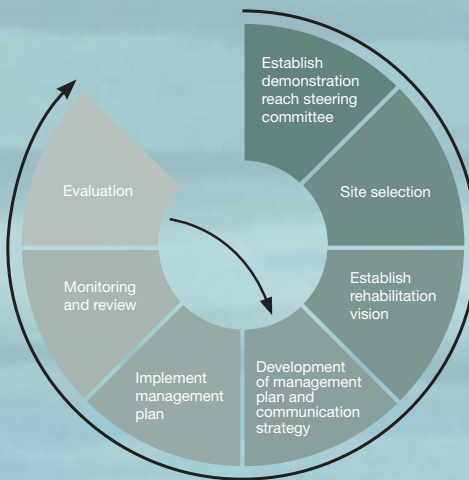
Measuring water quality



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Electrofishing on the River Murray

The process of establishing a demonstration reach
(Source: Barrett and Ansell 2005)



How can you get involved?

If you enjoy fishing, are interested in native fish rehabilitation, river restoration, or think your local area would suit a native fish demonstration reach, we would like to hear from you.

Further information

The Murray-Darling Basin Commission now has Native Fish Strategy Coordinators in NSW, SA, Victoria and Queensland who can help with the process of establishing a demonstration reach.

Please contact the MDBC on (02) 6279-0100 for further information about demonstration reaches, for a copy of the Native Fish Strategy, and for contact details for your nearest Native Fish Strategy Coordinator.



Resources available

The MDBC is developing a manual to assist community members and natural resource managers with the process of establishing a demonstration reach. The manual will cover all aspects, from design to implementation, and will contain conceptual and technical information relating to each of the management interventions that may be required for a given reach. If you would like to receive a copy, contact the MDBC.

Barrett, J. (2004) *Introducing the Murray-Darling Basin Native Fish Strategy and initial steps towards demonstration reaches. Ecological Management and Restoration*, 5, 15-23.

Barrett, J. & Ansell, D. (2005) *Demonstration reaches for native fish: moving from theory to practice*. In I. D. Rutherford, I. Wiszniewski, M. J. Askey-Doran & R. Glazik (Eds.) *Proceedings of the 4th Australian Stream Management Conference: linking rivers to landscapes*. (pp. 59-67). Department of Primary Industries, Water and Environment, Hobart, Tasmania.



Ph 02 6279 0100
www.mdbc.gov.au

