

Restoring the Ovens River: the Demonstration Reach approach

A simple four-step approach to river restoration



Background

Flowing freshwater environments are biodiversity hotspots, supporting a wide variety of plants and animals. However, globally freshwater systems are impacted by growing demands for human water security, agriculture, hydropower, and domestic consumption. Freshwater ecosystems have been altered through the construction of dams and weirs, river channelisation, removal of riparian vegetation and instream wood, flow modification and the proliferation of exotic species. Such altered conditions have had disastrous impacts on freshwater biota, particularly for native freshwater fish. Without intervention, freshwater ecosystems and their inhabitants will continue to decline.

In an effort to ameliorate threats and promote positive outcomes for native fish in south eastern Australia, the Murray-Darling Basin Authority (MDBA) has funded with the Joint Programs the Demonstration Reach approach to restoring river reaches. This approach 'focuses on highlighting the cumulative benefits of multiple river restoration actions for restoring native freshwater fish'.

The Ovens River Demo Reach

The Ovens River Demonstration Reach (ORDR) in northern Victoria, provides an example of how a simple four-step approach to river restoration was used successfully.

The four-step approach to river restoration

1. Planning

The first step to restoring a river reach was to build a river restoration team which ideally consists of participants from catchment management authorities, community groups (e.g. Landcare, angling clubs),

funding bodies, traditional owners and research scientists. The focus of the restoration team is to develop a restoration plan, identifying existing threats, actions, timelines and project aims.

2. Ongoing interventions

The second step was to choose and implement your restoration actions, taking particular care to align actions with restoring specific ecological processes such as providing instream habitat for breeding substrate and enhancing connectivity and shelter. Typically, the most successful river restoration programs incorporate multiple actions to ameliorate threats and to promote suitable conditions for native species.

In the case of the Ovens River, the following actions were carried out:

- instream wood (snags) was added to enhance habitat for spawning, shelter, predator evasion and hydrological diversity.
- fencing to restrict stock access was undertaken to reduce bank erosion and prevent excess sediment from entering the river.
- riparian vegetation was planted to; facilitate bank shoring, enhance shading to reduce instream water temperatures, to provide fish with food, improve water quality and as a future source of wood for fish habitat.
- introduced Willow trees were removed from the riverbanks to prevent their instream roots from trapping sediment, to allow native vegetation to regenerate and to prevent the seasonal dumping of large pulses of organic matter (leaves) into the river.
- a rock-ramp fishway was constructed to provide fish with improved connectivity around a weir to access additional resources such as habitat, food and breeding partners and spawning sites.

Restoring the Ovens River

- over 4000 exotic adult Carp were removed to reduce competition with native fish and to enhance water quality through reducing their destructive feeding behaviour.

3. Monitoring

The third step was to monitor the fish community to provide information on community assemblages (e.g. diversity) and enables detection of changes in population structure (e.g. age classes) and dynamics (e.g. size and numbers) over time. Annual sampling of the Ovens River fish assemblage (2008-2015) was undertaken using boat electrofishing which enabled robust data to be gathered to demonstrate the impact of restoration actions on native fish and allowed adaptive management of the processes that promote fish breeding, recruitment and survival.

4. Communication

The final step was to communicate your findings to the local community, managers, stakeholders, interest groups, scientists and the broader public. Sharing project outcomes helps others to understand the benefits and challenges of restoring fish communities, promotes a sense of pride within the restoration team, builds relationships between project partners and outlines an approach to develop similar programs in other waterways. The success of the ORDR program was outlined in annual client reports, videos, local newspapers and fishing magazines, community talks, factsheets, presentations at fisheries conferences and through publication in an international scientific journal.

Key findings

The multiple restoration actions undertaken in the Ovens River through the 'Demonstration Reach' program resulted in a 240% and 235% increase in the abundance of target species (Murray Cod, *Maccullochella peelii* and Trout Cod *Maccullochella macquariensis*), respectively. The increase in Murray Cod was correlated with the addition of woody habitat while trout cod numbers increased throughout the

reach.

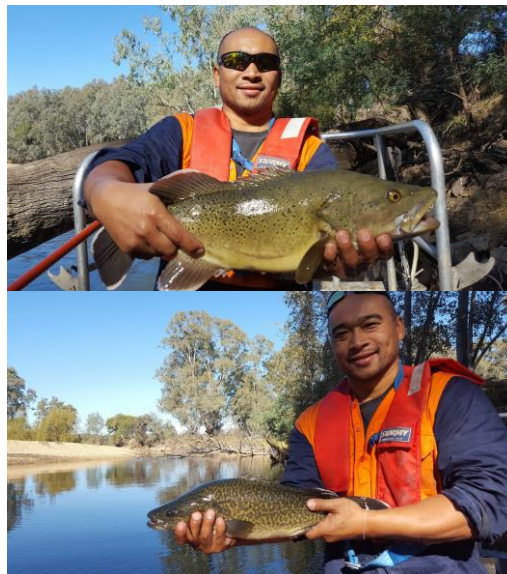


Figure 1: A healthy trout cod (top) and Murray cod (bottom) caught in the Ovens River (Photos: Scott Raymond)

Project partners

This project involves strong collaboration across a range of partners including:

- Department of Environment, Land, Water and Planning (DELWP) and the Arthur Rylah Institute for Environmental Research (ARI)
- Murray-Darling Basin Authority (MDBA)
- North East Catchment Management Authority
- Wangaratta Landcare and Sustainability Inc.
- Victorian Fisheries Authority (VFA), and
- interested community members who continue to advocate for healthy native fish communities across the southern Murray-Darling Basin

Partnering with relevant stakeholders has been essential to foster ownership in sampling and assisting in the recovery of native freshwater fish in north-eastern Victoria.

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