



SAVING OUR NATIVE FISH POPULATIONS IN THE RIVER MURRAY

FROM DROUGHT TO FLOOD: ANNUAL VARIATION IN LARVAL FISH ASSEMBLAGES IN A HEAVILY REGULATED LOWLAND RIVER

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Project Partners:



Government of South Australia
Primary Industries and Regions SA



BACKGROUND

From 2002-2009, the Murray Darling Basin experienced one of the worst droughts on record – the Millennium Drought. This, combined with extensive river regulation, created highly unfavourable conditions for a number of native fish species. Some of these species, such as Golden Perch and Silver Perch, are flow-induced spawners and the limited availability of water threatened their survival. The conditions also compromised the growth and survival of several other species of native fish which, while not being flow-induced spawners, thrive when water flows are higher.

In 2010, the drought ended with a sustained period of high rainfall. Widespread flooding occurred and a water flow more representative of conditions before the heavily regulated regime was experienced.

ABOUT THE PROJECT

This study investigated the annual change in abundance and species diversity of native fish populations in the lower River Murray during varying hydrological conditions. Larval assemblages of both native and introduced species were examined after the 2010 flood and compared to those recorded during the Millennium Drought.

KEY FINDINGS

> Flow conditions experienced during the 2010 flood resulted in greater species diversity and larvae abundance of native fish – as compared to the diversity and abundance observed under the low flow conditions during the Millennium Drought.

- > During years of low water availability, the minimum flows delivered to South Australia are not sufficient to induce spawning in flow-induced native fish species.
- > Flow is a key driver of variations in spawning of fish species in the lower River Murray from year-to-year. Large bodied native species, such as the Murray Cod and Freshwater Catfish, do not require high flows to initiate spawning. However, higher flows benefit their survival and growth.
- > Conversely, in the lower River Murray species such as the Golden Perch and Silver Perch rely on higher water flows to initiate spawning. In fact, the water flows required were found to be higher than the minimum regulated conditions. As a result, continued low flow conditions pose a significant threat to these species.

WHAT IT MEANS FOR THE FUTURE

Restoring a more natural flow regime through the Murray Darling Basin is critical to maintain and restore native fish populations. An approach which combines environmental water allocation and modified river operations and management has the potential to provide a flow regime that is more representative of pre-development conditions. This would restore ecologically important in-channel flow processes and connectivity to the floodplain. Adopting these processes will support rehabilitation and ongoing maintenance of resilient populations of native fish.

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The Goyder Institute for Water Research is a partnership between the South Australian Government through the Department of Environment, Water and Natural Resources, CSIRO, Flinders University, University of Adelaide and the University of South Australia.

