



# Monitoring native fish responses to environmental flows in the lower Goulburn River

## What is water for the environment?

Environmental water is water set aside to improve or maintain the health of rivers, floodplains, wetlands and estuaries - including the plants and animals that depend on them.

## Why is the lower Goulburn River important?

The lower Goulburn River includes the river and associated wetlands and floodplains between the Goulburn Weir and the Murray River (235km). The river supports large areas of river red gum forest, numerous floodplain wetlands, a range of native fish (including Murray cod, trout cod, silver perch and golden perch) and a variety of recreational activities such as fishing and boating. The river also has many important cultural heritage sites and provides water for agriculture and urban centers.

Regulation of the Goulburn River has affected natural flow patterns and volumes.

This, along with droughts and floods, has led to a decline in the environmental health of the river.

## How is water for the environment used?

The Commonwealth Environmental Water Holder (CEWH), the Victorian Environmental Water Holder and the Murray-Darling Basin Authority hold environmental water entitlements available for use in the Goulburn River. To date environmental water use in the lower Goulburn River has focused on:

- increasing base flows throughout the year to increase habitat for native fish and invertebrates; and
- providing 'freshes' (short pulses of flow) to provide life cycle cues for native fish, maintain water quality and support the establishment of vegetation on the riverbank.

## What is the FLOW-MER Project?

The CEWH has established the FLOW-MER project to monitor and evaluate the ecological outcomes of water for the environment. It builds on the Long-Term Intervention Monitoring project (2014 to 2019) and is being delivered at seven Selected Areas including the lower Goulburn River.

Monitoring and evaluation is essential to ensure water for the environment is used as effectively and efficiently as possible, and that the Commonwealth Environmental Water Holder meets its obligations under the *Water Act (2007)*. The project aims to evaluate the large-scale effect of environmental water use, as well as specific responses in each Selected Area.

Data from this project will also be analysed with data from the other six Selected Areas to inform a Basin-scale evaluation of the contribution of environmental water to the environmental objectives of the Basin Plan (<https://flow-mer.org.au/>).

*The Flow-MER program team acknowledges and respects the Traditional Owners of the land and waterways. We pay our respects to Elders past, present and emerging.*



### Why are fish being monitored?

Monitoring has been established in the lower Goulburn River to assess the effect of water for the environment on a range of values, including fish. Supporting native fish populations is a key element of the Murray-Darling Basin Plan's goal to protect biodiversity, as well as being a key objective of fisheries management and natural resource management agencies. Providing environmental flows is an important element in protecting and restoring native fish populations.

Research and monitoring of the fish community within the Goulburn River has occurred for more than 10 years. Coupled with the fish monitoring data from the Long-Term Intervention Monitoring and FLOW-MER projects, this provides information over a range of climatic conditions including record droughts and floods, and a major blackwater event.

*A significant finding of the 2019–20 surveys was the collection of the nationally threatened trout cod during drift surveys and electrofishing surveys. Trout cod had not been collected in the annual surveys for three years (since 2016) but were collected again in 2020. Spawning of trout cod was also detected in the November 2019 drift surveys and has now been detected in each of the last three (2017 to 2019) spawning seasons.*

The long term nature of the monitoring provides valuable information about the Goulburn River fish community and its response to a range of scenarios.

### The fish of the Goulburn River

The Goulburn River supports a diverse native fish fauna with particularly high conservation and recreational fisher values. Significant species include trout cod, Murray cod, silver perch, golden perch and freshwater catfish.

### What do the fish surveys involve?

Surveys look at the types of fish present, their numbers and size. Fish breeding is assessed by carrying out yearly surveys to understand the mix of ages of fish and by searching for larvae and juveniles. There is also assessment of fish movement in response to particular flow events. Fish are tagged with small transmitters so they can be tracked as they move along the river.

Golden perch are a particular focus of the surveys as they are thought to be the key species within the Goulburn River that needs increased water releases to breed.

The surveys will help us understand how water flows can contribute to fish breeding successfully, by monitoring how many fish spawn and lay eggs, how many eggs survive to become larvae and then juveniles, and how all stages move and disperse throughout the river.

### Who is undertaking the work?

Our project team is a collaboration between the Goulburn Broken Catchment Management Authority, University of Melbourne, the Arthur Rylah Institute (Department of Environment, Land, Water and Planning), RMIT, Monash University, Streamology, Yorta Yorta Nation Aboriginal Corporation and Jacobs.

### How can I find out more?

For further information contact Simon Casanelia at the Goulburn Broken Catchment Management Authority ([simonc@ gbcma.vic.gov.au](mailto:simonc@ gbcma.vic.gov.au)).