GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Australian Government
Commonwealth Environmental Water Office

MONITORING THE EFFECTS OF ENVIRONMENTAL WATER IN THE GOULBURN RIVER

What is environmental water?

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

How is environmental water 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 Long-Term Intervention Monitoring Project?

The CEWH has established the Long-Term Intervention Monitoring project to monitor and evaluate the ecological outcomes of environmental water use. The Long-Term Intervention Monitoring project is being implemented over five years (2014 to 2019) at seven Selected Areas including the lower Goulburn River.

Monitoring and evaluation is essential to ensure the environmental water 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 (http://www.environment.gov.au/water/cewo/monitoring/ltim-project).

What is being monitored?

The following monitoring programs have been established in the lower Goulburn River to assess the effect of environmental water:

Vegetation

The abundance and diversity of plant species along the riverbanks will be regularly monitored to assess the short-term influences of specific flow events and the long-term influences of watering.

Fish

The fish community will be surveyed to understand the types of fish present, their numbers and ages. Fish breeding will be assessed by carrying out yearly surveys to understand the mix of ages of fish and by searching for larvae and juveniles. Fish tracking surveys will identify how fish move in response to particular flows. Of particular interest is golden perch as their breeding is linked to river flows.

Invertebrates (waterbugs)

Invertebrates (small animals without backbones such as insects) are an important component of river foodwebs, and changes in their amount (known as 'biomass') affects other species such as fish. Monitoring will assess how environmental flows influence invertebrate biomass, using new measuring approaches before and after environmental flow events.

Stream metabolism

Measuring stream metabolism helps us understand the processes that sustain aquatic foodwebs. This includes 'gross primary productivity' which is the total amount of organic matter, and 'ecosystem respiration' which is the total respiration of all living things in a particular environment. These are directly related to the health of the ecosystem, including healthy fish populations. Monitoring of stream metabolism will assess how environmental water contributes to amounts and changes in organic matter and its decomposition.

Underwater habitat

Water flowing into a river will influence many aspects of underwater habitats, including their quality, quantity and distribution in the river channel. Measuring changes in these habitats is important for understanding how organisms respond to environmental watering. This is particularly important for larval fish, vegetation along the riverbank and invertebrate numbers.

Riverbank condition

Riverbank erosion is a natural process, however excessive erosion can effect whether plants can grow and survive along the riverbank, as well as affecting water quality and collection of sediment on the streambed. Monitoring will determine whether flow releases contribute to erosion and if so, how flow delivery can be managed to reduce impacts.

Sharing Information

The Goulburn-Broken Catchment Management Authority recognises that many people care about the health of the Goulburn River and how environmental water is used to protect and restore ecosystems.

Information regarding the Long-term Intervention Monitoring project, including monitoring and evaluation results for each key component, will be shared via www.gbcma.vic.gov.au

Who is undertaking the work?

The 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), Monash University, Streamology, Goulburn Valley Water, and Jacobs.

How can I find out more?

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