Ecology of the Murrumbidgee River: Translucency flow rules and wetted perimeter

Integrated Monitoring of Environmental Flows (IMEF) is a scientific program managed by the NSW Department of Water and Energy to monitor the ecological benefits provided by environmental flows.

This IMEF project investigates two of the expected benefits of using environmental flows to restore some of the natural variability of river flow, including periodic low and high flows:

1. Increasing or decreasing the volume of low flows toward their natural level will promote the growth of native water plants, fish and other aquatic life by maintaining their natural habitat in the river.

2. Protecting or restoring a portion of the natural variability of flow, including peak flows will assist the natural periodic scouring of silt and algae from stony riverbeds. This improves the habitat for fish, and stimulates the health of the small plants and animals that live close to the riverbed.

The results of this project will be used to improve monitoring of environmental flows and their ecological benefits. Data will be analysed to model the effects of water flow on habitat downstream of Burrinjuck Dam and in the larger billabongs of the Murrumbidgee floodplain. Analysis of environmental and economic costs and benefits will identify where and how the precious water available for environmental flows below Burrinjuck Dam can be used for the best ecological effect.

Natural resource managers implementing the Murrumbidgee Water Sharing Plan will benefit from more accurate predictions of how much water to provide for the environment, and when it should be released.

Modelling will provide information to assist decision making to:

- protect the volume of natural low flows, for example by raising pumping thresholds
- protect or restore the volume of high flows by restricting the use of off-allocation water, and by releasing flows from dams
- choose either the option of releasing a portion of natural high flows frequently, or the option of holding water for a bulk release that would flood billabongs along the river.

An earlier study has shown that downstream of Burrinjuck Dam scouring flows can improve habitat by renewing aquatic life in the shallow, more quickly flowing, rocky parts of the river. Environmental flows can reduce excessive growth of filamentous green algae dominating rocky areas downstream of Burrinjuck Dam, and improve the habitat for aquatic insects, which are eaten by native fish, water-rats and platypus.

Restoration of healthy ecology in the river will improve water quality and the value of the river as an amenity, and for recreational use. Local communities using the Murrumbidgee River as a major source of water for irrigation, livestock and domestic supplies will benefit from more efficient use of water and improved water quality.

The techniques developed during this project to assess and monitor the benefits of environmental flows could also be applied to similar studies in other catchments.

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Further reading


Project details
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Study area: The Murrumbidgee River downstream of Burrinjuck Dam, and the wetlands of the middle reaches of the Murrumbidgee River.