

# **Ecological response to an experimental high flow release in the upper Yarra River, Victoria, Australia**

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Environmental flow recommendations have been developed for the Yarra River, Victoria, Australia. The recommendations are based on the FLOWS method that determines flow requirements to meet reach-based environmental objectives. Recommendations have been developed for a number of flow components such as high flows, low flows and overbank flows.

The threatened Australian Grayling (*Prototroctes maraena*) requires a high flow of at least 1,300 ML/day to provide a cue for migration and spawning although these are rarely delivered to downstream reaches. This poses a risk to the short-lived Grayling that require frequent spawning events to maintain populations. To meet objectives of downstream reaches, additional releases from storages is required. However, high flows are not recommended for the upper Yarra River to minimise risks to native fish and macroinvertebrates.

The release recommendations for the upper Yarra River is compromising the ability to meet high flow targets in downstream reaches. Not delivering critical flows may be more detrimental to overall objectives than delivering higher than normal flows in upstream reaches. A flow review suggested that 600 ML/day can potentially be delivered without significant ecological impacts although it was recommended that an experimental release occur and ecological conditions monitored.

This study monitored ecological conditions of the upper Yarra River prior to and following a high flow release of 600 ML/day. Firstly, we found that additional physical habitat was inundated that could provide refuge for macroinvertebrates, fish and platypus. Secondly, while there were changes in abundances of macroinvertebrate taxa the community composition was unchanged. Thirdly, native River Blackfish (*Gadopsis marmoratus*) persisted although there was an increase in average length of the population. Results test the assumptions and risks relating to high flows in the upper Yarra River and provide information to allow flexibility in the delivery of future environmental water releases from the Upper Yarra Reservoir.

## **Biography**

Peter Lind has been part of the GHD Aquatic Sciences Group in Melbourne, Australia for almost 10 years working as an aquatic ecologist. Much of his work involves applied monitoring of the effects of environmental flows and impacts due to flow regulation. Other projects he currently works on include ecological risk assessment and management plans, fish and macroinvertebrate surveys, and long-term trends in ecological condition. Prior to GHD, he was worked on a range of research projects at Deakin University. His PhD thesis investigated the ecological benefits of environmental flows in two lowland rivers.