

Instream Woody Habitat Assessment

Our rivers need help!

What is instream woody habitat?

Instream woody habitat (IWH), commonly referred to as 'snags', consists of trees, branches and logs that fall or are washed into rivers and streams. IWH plays a vital role in a range of ecological, structural and chemical functions essential for maintaining the health of a waterway, and in turn supports recreational fisheries and other social and cultural values.

What is the impact of its removal?

In the past, IWH has been removed from many Victorian rivers for boating purposes, property protection and to facilitate flows.

Research has since shown that the removal of IWH has minimal impact on flood mitigation, and that such works impair river stability and degrade river health.

The removal of IWH has been identified as a major contributing factor in the decline of many freshwater fish populations.

River restoration programs help improve instream habitat and fish populations in Victorian rivers. These programs involve the re-introduction of IWH, and revegetating riparian zones to encourage long-term natural IWH input. To identify and prioritise areas where IWH needs protection and augmentation, baseline information on the level of IWH in rivers is required.



Re-introducing woody habitat to improve river function.

What is being done?

The Victorian Investment Framework funded this project to help the Government prioritise the protection and rehabilitation of IWH in Victorian rivers. Researchers from the Department of Environment and Primary Industries' (DEPI) Arthur Rylah Institute (ARI) have been working with Fisheries Victoria, Catchment Management Authorities, the University of Melbourne and Melbourne Water to investigate past and present IWH densities in Victorian rivers.

We mapped IWH densities in ~ 38,000 river reaches across Victoria, equalling ~ 27,700 km. Field assessments of natural IWH densities were undertaken in "pristine" river reaches using hand-held GPS and underwater sonar. This information was used in a predictive modelling approach to determine natural IWH densities in rivers across Victoria. Current densities of IWH across Victoria were then calculated using a combination of high resolution aerial photographs, field assessments and measures of riparian overhang.

A simple comparison of the predicted natural IWH densities and the current IWH densities enabled researchers to assess the condition of IWH densities in rivers throughout Victoria.

What were the findings?

The predicted natural IWH densities in Victorian rivers were on average $0.03 \text{ m}^3 / \text{m}^2$ and varied according to slope, stream width and climatic variables. In general, natural IWH densities were higher in lowland river reaches compared to upland river reaches, most likely a result of decreasing stream power.

Current densities of IWH in river reaches across Victoria are on average $0.01 \text{ m}^3 / \text{m}^2$ which equates to an average reduction of ~ 41% below estimated natural IWH levels.

Over 20,000 (53%) Victorian river reaches, equalling ~17,000 km, have severely or highly depleted IWH densities. 30% of river reaches were estimated to have IWH densities more than 80% below natural levels.

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IWH conditions in some regions of Victoria fared better than others. The South Western Floodplains, Glenelg and North Central Floodplain river regions were in very poor condition (90%, 83% and 79% IWH reductions respectively). The Alpine, North East Uplands and East Gippsland Uplands river regions displayed relatively minor variations from predicted natural IWH densities.

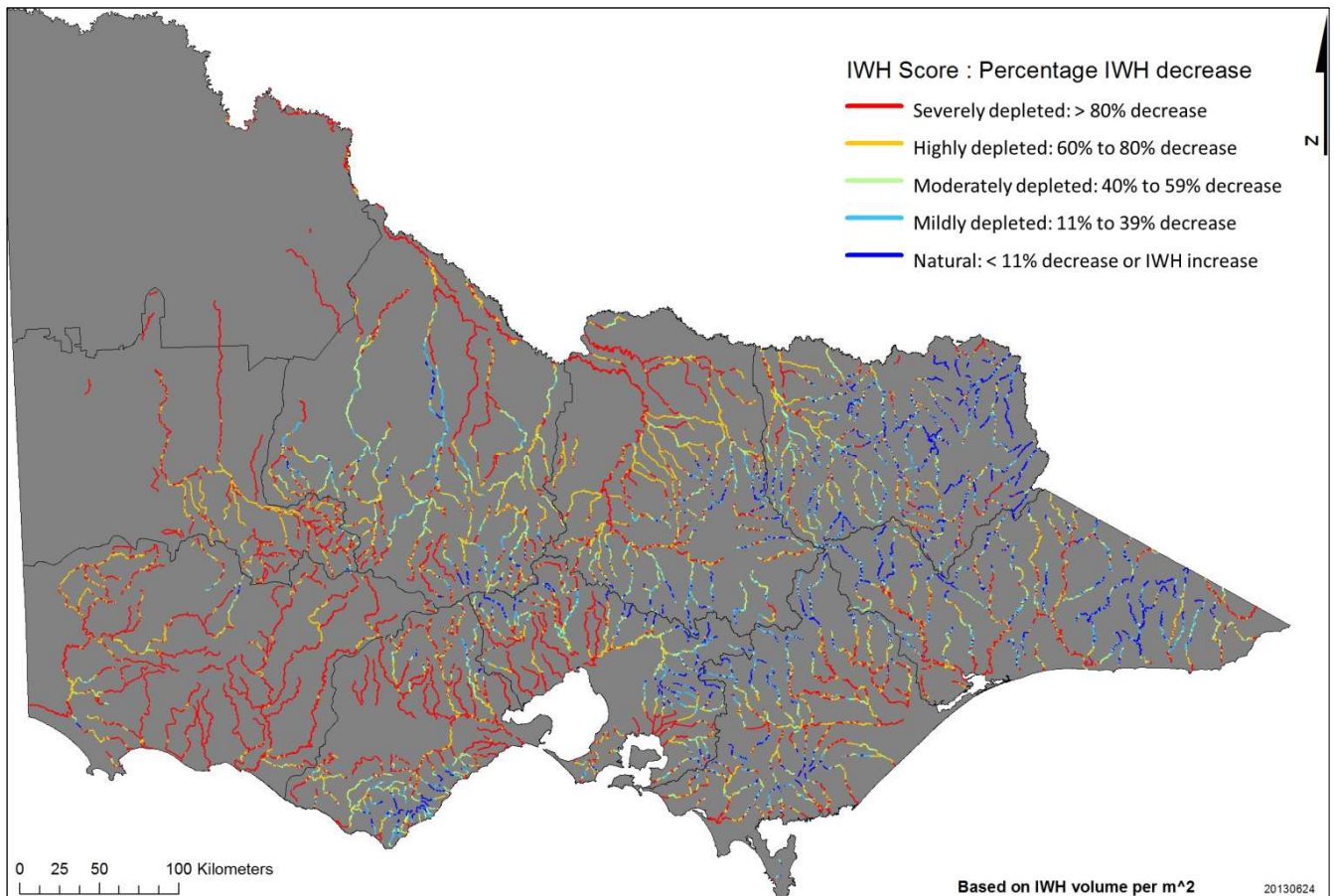
What work will be done in the future?

Prioritising areas for IWH rehabilitation is important, particularly to achieve best value for money. Managers can use this broad-scale assessment of IWH to identify areas in most need of rehabilitation activities. Further refinement of these reaches should encompass site-specific, field-based IWH assessments; consideration of riparian condition and; likelihood of ecological response to achieve a best “bang-for-buck” approach to IWH rehabilitation.

For example, the project team are currently investigating the relationship between IWH loads and fish populations across Victoria. This will ultimately allow estimates of the IWH levels required to maximise the benefits for particular fish species in a specific river reach. Research is also being undertaken to investigate the rates of natural accumulation of IWH, and how this relates to riparian condition and bank stabilisation works. The results of both research components will be disseminated to waterway managers upon completion.

Who can I contact for more information?

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