

W16 Instream Vegetation: Understanding the drivers of instream vegetation distribution and management opportunities

Objective(s)

To build on the current (limited) knowledge on instream vegetation and develop tools that will enable Melbourne Water to incorporate instream vegetation as a key value in the next Healthy Waterway Strategy.

Why this research is important

Instream vegetation is a critical component of stream ecosystems. It plays an important role in abiotic processes such as sediment dynamics and stream hydraulics. It is an important contributor to stream primary and secondary productivity, and also provides food, habitat and shelter for stream biota from all trophic levels such as algae, fungi, bacteria, macroinvertebrates and fish.

Despite its importance, we lack an understanding of the distribution and drivers of instream vegetation across the Port Phillip and Western Port (PPWP) region. This project focuses on building foundational knowledge and co-developing tools and approaches that will enable Melbourne Water to better understand instream vegetation distribution, dynamics, response to urbanization and restoration by active and passive means. This knowledge and capability will support the goal of incorporating instream vegetation as a key value in the next Healthy Waterway Strategy

Contribution to Key Research Areas

- Streamside vegetation and instream habitat
Improving our understanding of instream habitat conditions, threats and processes across the region to inform works planning.

Achievements to date

- Surveys of 82 sites across Greater Melbourne to determine instream vegetation composition across several environmental gradients.
- Development of instream revegetation trials in collaboration with WLOs, monitoring existing instream revegetation efforts
- Investigation on how instream vegetation communities change over 1 and 4 years.

Approach for year 3

This project will be delivered through the following work programs:

- Monitoring of instream revegetation trials.

- Understanding macroinvertebrate and instream vegetation relationships.
- Assessing flow drivers of instream vegetation (and utilisation for HSMs).
- Instream vegetation habitat suitability models: refinement.
- Conceptual model development for the HWS.

Key outputs for year 3

- Co-developed revegetated sites with instream species for ongoing monitoring.
- Report on initial instream revegetation outcomes.
- Analyses and report on macroinvertebrate-instream plant relationships.
- Analysis and report on relationships between flow regime components and instream vegetation.
- Refined instream plant habitat suitability models
- Draft conceptual models of the drivers of and threats to, of instream vegetation.

Expected benefits

- Shared knowledge base and resource of what has been attempted with respect to instream revegetation in a range of environmental settings and operating conditions.
- Greatly enlarged presence-absence dataset of instream plant species for developing first-cut instream plant habitat suitability models.
- Ability to quantitatively capture relationships between instream plant species presence-absence and environmental descriptors
- Improved understanding of the drivers and rate of instream vegetation changes over time.
- Ability to use instream plant HSMs to predict probability of occurrence at unsampled waterway reaches

For more information

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