

W13 Climate Impacts & Vegetation: Approaches to increasing the resilience of vegetation in a changing climate.

Objective(s)

To better understand strategies that can foster remnant vegetation and revegetation resilience to the range of climate and compound impacts, what these strategies involve, the relative merits of candidate strategies and the implications for knowledge needs, planning, management and implementation..

Why this research is important

Vegetation management and revegetation are key activities of Melbourne Water for the maintenance and/or improvement of riparian and waterway habitat and condition. Climate change is a major threat to native vegetation and a challenge for its ongoing management. Updated climate change projections have revealed that we have likely underestimated long-term predicted impacts to environmental conditions and values.

Climate breakdown represents a large threat to the conditions and values of the region, and sustained warming and drying patterns are expected to be accompanied by extreme events. To deal with this risk requires strategies that can foster remnant vegetation and revegetation resilience to the range of climate and compound impacts.

Contribution to Melbourne Water research priorities

- MWRPP-12 (RV4, RV6, RV8): Managing the impacts of climate change on remnant vegetation, revegetation and weeds.

Approach

This project will be delivered through the four actions:

- *Synthesis of climate change impacts and vegetation management.* Consolidate relevant work that has been undertaken so far, and also to explore what we need to understand to think strategically about managing for climate resilient vegetation
- *Detailed documentation of lessons learnt in climate-adjusted planting projects.* Collate and document past and current Melbourne Water attempts at implementing climate-adjusted planting projects
- *Trait-based approaches to understanding plant performance and resilience to climate impacts—a foundation for climate-resilient vegetation management.*
- *Refinement of Map Lap implementation sharing predicted habitat suitability maps of 31 commonly*

used revegetation species. Includes presenting and communicating underlying assumptions and uncertainties, and provide guidance on what this implies for practical decision.

Key outputs

- Synthesis report on climate change impacts and vegetation management
- Report on lessons learnt in attempted climate-adjusted planting projects
- List and description of climate-resilience relevant physiological, life-history and genetic traits.
- Database of climate-resilience relevant traits for species of interest to Melbourne Water (e.g. species of conservation interest and species used in revegetation).
- Refined Map Lab implementation of predicted habitat suitability maps of 31 commonly used revegetation species.

Expected benefits

- Better understanding of what climate phenomenon and extremes might be expected in a climate-impacted future.
- Practical and conceptual approaches to vegetation management under a changing climate.
- Recommendations for no/low-regret actions that can be implemented in the near-term.
- Better understanding of the range and nature of challenges associated with implementing climate-adjusted provenancing.
- Knowledge resource introducing physiological, life-history and genetic plant traits that we hypothesise are pertinent to climate-resilience, enabling a more mechanistic understanding of why and how they are important in a climate-impacted future

Project teams

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