Yellingbo hydrology works MERI program

Project D4:
Yellingbo

This project will identify best approach to mitigate the threat that altered hydrology poses to vegetation that supports Victoria's faunal emblems—the Helmeted Honeyeater and Leadbeater's Possum.

Project Team:
University of Melbourne
Joe Greet
Chris Walsh
Sarah Fischer
Kathy Rusell

Melbourne Water
Sarah Gregor
Sarah Gaskill
Steve Hosking
Will Steele
Toufeek Edross

This project supports a targeted monitoring, evaluation, reporting and improvement (MERI) program to accompany current Melbourne Water (MW) hydrology works at the Cockatoo Swamp, Yellingbo Nature Conservation Reserve (YNCR).

The works, which include partial levee bank removals and a four-year pumping trial, are aimed at naturalising water regimes within the Cockatoo Swamp, thus arresting tree dieback and improving the condition of vital habitat for the critically endangered Helmeted Honeyeater and lowland Leadbeater's Possum.

The levee breaks were completed in late 2017 and the final year of a four-year pumping trial is planned for 2020/2021. A targeted hydrological and vegetation monitoring program has been implemented for the past six years.

This project will see the continuation of the monitoring program for 2021, to inform adaptive management of the hydrology works at this ecologically significant site.

Methodology

The vegetation condition monitoring program to assess the efficacy of the hydrology works in naturalising water regimes within Cockatoo Swamp (and improving vegetation condition) is well established, and includes:

- Surface water-level monitoring at several important locations with data downloaded every two months;
- Annual individual tree condition assessments of 180 trees across six sites;
- Annual stand condition assessments at these six sites using hemispherical photography (Figure 1);
- Annual surveys of three permanent 5m x 5m quadrats at each site to monitor for seedling recruitment and mid-under-storey vegetation change;
- Monthly seedfall monitoring at four sites using funnel traps with samples grown out at Burnley nursery;
- Photo-point monitoring at all six sites; and
- Landscape-scale surveys every two years using a drone to capture multi-level LiDAR and multispectral imagery.

Figure 1: Example of hemispherical photographs being used to monitor canopy condition of critical swamp forests at Yellingbo NR.

Expected Outcomes

- Refinement of knowledge on water regime requirements of critical Eucalyptus camphora swamp forests at Yellingbo Nature Conservation Reserve.
- Informing of the adaptive management of Melbourne Water's hydrology works program to rehabilitate habitat of Victoria's critically endangered faunal emblems.

Melbourne Water
Enhancing Life and Liveability

Waterway Ecosystem Research Group