Monitoring the outcomes of revegetation

Using community data to make revegetation more effective

The importance of revegetation

Across much of south-eastern Australia, landscapes have been extensively cleared for farming, as well as for cities, towns and industry. This loss of native vegetation in many regions has had a range of negative consequences – for native plants and animals, and for sustainable land-use in rural environments.

Revegetation with native vegetation can help to restore landscapes. It can increase areas of native bushland for animals to live and thrive, as well as provide corridors to connect isolated bushland areas. It can contribute to more sustainable rural landscapes by reducing soil loss, providing shelter for stock, capturing and storing carbon, and along gullies and creeks, revegetation can help protect water quality by filtering run-off from the surroundings. Revegetation also provides social benefits, as it contributes to aesthetic values and an attractive environment in urban and agricultural landscapes.

Many groups are involved in revegetation activities, including Catchment Management Authorities (CMAs), Landcare groups, non-government organisations such as Greening Australia, and individuals. Much has been learned about techniques and approaches for effective revegetation, and knowledge continues to grow about the values of revegetation for native fauna. One area where a better understanding is required relates to the outcomes of planting, particularly the survival of plants and why this varies between the species planted and between planting sites.

Adaptive Learning - Revegetation monitoring

This project is being undertaken by LaTrobe University and the Arthur Rylah Institute, Department of Environment, Land, Water & Planning (DELWP). Its aim is to:

- assess the outcomes of revegetation, in terms of the survival of planted trees, shrubs and understory plants;
- determine the factors that affect variation in survival among different species, and different regions;
- develop a monitoring protocol that community groups can use to collect information in a standard way to monitor planting outcomes.

Fig 1: Monitoring plant survival after revegetation.
(Photo: Sacha Jellinek)

An initial trial (see below) has been undertaken to develop a simple monitoring protocol. The next stage is to use this monitoring procedure across a range of revegetation sites in Victoria. There is an opportunity for

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CMAs, Landcare groups and other organisations to help gather this information on the outcomes of their revegetation activities. Through the participation of many groups and individuals, we will gain a better understanding of how planting success varies between plant species, how it varies between sites, the factors that influence planting success, and how revegetation might be more effective in the future.

What monitoring has occurred?

In 2018/19, a trial was undertaken at 11 sites (involving 30 monitoring plots) across five CMAs in Victoria. Monitoring plots were established directly after planting at each site (June to October). This was done by setting-up at least two permanent survey plots (50 m x 4 m area) per site. These were assessed by recording (counting) all native plants and species that were planted. Information on land-use history, site preparation and planting technique were also recorded (Fig 1).

These surveys were repeated after the first summer (in March - approximately 9 months after planting). All native plants and species (previously planted) that were alive were recorded.

This trial monitoring showed that after this first summer, the overall number of individual plants that survived was 55% of those planted. Survival was highest in the CMA areas in the south, with higher rainfall.

Survival across the species commonly planted was highly variable, with 68% of the species diversity that were planted surviving. For example, Blackwood (*Acacia melanoxylon* - 8 sites), Swamp Gum (*Eucalyptus ovata* - 6 sites) and Manna Gum (*E. viminalis* - 7 sites) survival averaged >70%, while Spiky Teatree (*Leptospermum continentale* - 10 sites), Sweet Bursaria (*Bursaria spinosa* - 10 sites) and Drooping Sheoak (*Allocasuarina verticillata* - 7 sites) survival averaged <35% across the sites that were planted (Fig 2).

Broad factors that influenced survival included where planting occurred (CMA area) and whether the planting area was grazed (especially by livestock).

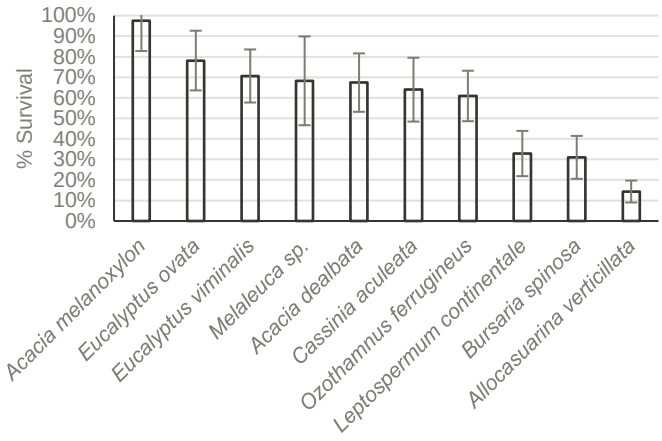
How can I contribute?

Organisations and individuals who are undertaking revegetation activities this year are invited to contribute to this monitoring. This involves using the standard monitoring protocol and associated guidelines.

- Marking two or more monitoring plots within a planting site
- Recording all plants that are planted within the plot area directly after planting.
- Noting information on the land-use history, a description of the landscape being planted, the site preparation undertaken and the planting techniques.
- Revisiting these sites after the first summer and recording plants that are alive in the monitoring plots and their approximate height.

If you would like to monitor the outcomes of your revegetation project, please contact me on the email below. An ability to identify the plants to species level is necessary to undertake this monitoring effectively.

Fig 2: Survival of species commonly planted after the first summer of monitoring.



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