Section 2.8: Revegetation

WHAT IS THE ISSUE?

The coverage of native vegetation in the Mount Lofty Ranges has been reduced to around 10% of its pre colonisation extent. In parts of the Mount Lofty Ranges region there have been significant loss of Sheoak species which has impacted on the survival of the Diamond fire-tail bird. Flooding of the River Torrens was seasonal, and a natural process but hydrology systems have now been altered. River Red Gums require biannual flooding (R. Myers, pers. comm. 2020).

For many years land managers have been addressing this loss of habitat and investing in revegetation projects in riparian zones and elsewhere. Examples of successful revegetation and habitat restoration projects include Frahn's Farm at Monarto which is a partnership between the Landscape SA Boards, Trees for Life and BioR. The research suggests that to avoid losing several species of declining woodland birds from the Mount Lofty Ranges, 30% native vegetation cover needs to be achieved. This equates to approximately 150,000 hectares of high value new revegetation on good agricultural land. This needs to be largely achieved in the next 10 years or so to avoid further losses. (BioR 2019). Revegetation on the Southern Yorke Peninsula is another example of successful large-scale conservation projects to conserve high-priority sites for declining woodland birds (Landscape SA Northern and Yorke).

Among the successful projects are those that are attempting to reproduce original vegetation associations. Natural climax vegetation associations are naturally balanced and should require minimal maintenance, provided that external threats from pest plants and animals are monitored. Other revegetation projects employ the "windbreak-style plantings", which is "one of the most dominant planting designs applied in agricultural landscapes, and block-shaped planting, which represent a more idealistic configuration from an ecological perspective in terms of maximal habitat area" (Ansell 2016).

The mass clearance of native vegetation by European agriculture has degraded the natural balance that once existed. Refer to Appendix 2 maps showing the extent of vegetation clearance between 1945 and 1980 and the present native vegetation cover (2020). The protection and utilisation of our unique ecosystems is vital. Facilitating natural regeneration through controlling pests and excluding stock and revegetation with local plant species (known as local provenance) is the most effective way to restore natural systems, also resulting in improved water quality and soil health. These factors can directly influence commercial productivity.

Where remnant bush or isolated trees still exist, natural regeneration should be encouraged. Areas of bush or lone trees can be fenced-off to allow young seedlings to establish. Watercourses must be fenced from stock and since the Decade of Landcare, this is well known to be the best remedial action (R. Myers, pers. comm. 2020).

Other issues that land managers are faced with when considering and planning a revegetation and restoration project include: management of pest grazing and emerging pest species (weeds and animals), weed control, native plant species selection, number of plants required, management of erosion, declining native species, drought conditions, restoring after a bushfire, plant species to mitigate bushfire risks, and climate change. The selection species appropriate to the project, that "fit the purpose" and are resilient to climate change is one of the many challenges of a revegetation project.

The relationships between water, land, air, and the biota are complex, but this should not stop land managers from experimenting and also seeking best current practices and advice, to best manage their natural resources.

HOW DOES IT AFFECT YOU AND YOUR CATCHMENT?

To improve the condition and biodiversity of your watercourse, revegetation can provide very successful outcomes with a long-term approach and appropriate timing. As a landholder you may want to consider a 'vision' or the goals of what you want to achieve on your property which will require project planning. Revegetation can be done following stock exclusion and some targeted weed control activities. Planting a mix of native species (e.g. trees, shrubs, grasses, reeds, sedges, and rushes), will stabilise the banks while some plants will come back on their own with careful weed control. Regeneration of planted species should be encouraged and managed along with the follow up of project outcomes. Once established and protected, plantings will naturally take care of themselves (R. Myers, pers. comm. 2020), but may require long-term monitoring of weed emergence and possibly the adding of more plantings if others have not survived. At times, stand back, look at what you have achieved, adjust your project if required and manage your expectations.

Revegetation projects can end up being costly, so consideration must be made as to how the works will be funded to achieve successful outcomes. You will need to consider costs of contractors (if applicable) and plants, site preparation and pre and post weed and pest control. Although it can be financially costly to protect large-scale plantings with guards, it is recommended to minimise loss of species from pest grazing species, such as rabbits, kangaroos, goats, and deer.

Control of these pest species will need to be considered as Declared pest species are to be managed and controlled under the *Landscape South Australia Act 2019*, formerly known as the *Natural Resources Management Act 2004,* as they can have significant impacts on industries and the environment. Seek advice from your local Landscape SA Boards office and local Landcare SA group for management of pest species. A permit to destroy wildlife will need to be applied for relating to control of native species such as kangaroos. Always refer to the current policy regarding this as these can change.

The Native Vegetation Council encourages landowners to conserve or re-establish native vegetation. You may be able to apply for a Significant Environmental Benefit Grant to fund on-ground native vegetation restoration works. Revegetation is generally not protected by the Native Vegetation Act 1991 and can be cleared. without seeking approval, however, there are several ways you can give it the same level of protection as any other area of native vegetation. Enquiries for native vegetation management should be directed to your local Natural Resources Centre.

Shelterbelts, riparian reserves and remnant bush have been shown to benefit adjacent crop and pasture production. However, research into shelter belts and windbreaks, show they are not always cost effective. But "windbreak plants can provide important ecological functions such as improved connectivity and for some farmers, may provide the only acceptable planting configuration and therefore continue to be important habitat restoration strategies" (Ansell 2016).

In an article from Bush Heritage Magazine. Summer 2020 "*Bustracks*", it states "losing riparian vegetation can impact river heath in lots of ways, but luckily we find that when we restore that connectivity, there are benefits not only for the immediate site but also downstream. It goes on to say "There are a whole host of benefits associated with riparian vegetation. It filters runoff and thereby protects water quality, it helps with bank stability, provides shade that helps to regulate water temperature. And it provides cover and protection for lots of different animals".

Consider the purpose of your revegetation project. Planting native species along a watercourse to slow down water flow to manage erosion may be the

key purpose, while planting habitat specific species for a native bird may be another driving factor. Other reasons may be for biodiversity benefits such as planting paddock trees and restoring and protecting watercourses with riparian plants, restoring and revegetation habitat after a fire, and establishing shelterbelts. Building nest boxes after a fire can be particularly important to provide an artificial home to many native animals, which can be a component of your revegetation project.

Planting deep-rooted salt-tolerant plants on saline ground, along with other perennials on the margins of affected areas, will help to lower the watertable, thereby removing saline water from the root zone of pastures and crops. Over time, revegetation can increase the potential of formerly unproductive parts of the farm.

Both Australian and introduced salt-tolerant species are used to revegetate saline areas. Once these species establish, the salinisation of soils can be halted and reversed. Strategically located native flora will enhance the quality of the water flowing into and down a watercourse.

Planting native grasses is known to mitigate bushfire risks with its low fuel load (J. Gibbs, pers. comm., 2020). A pilot regeneration program is being undertaken at a Cuddle Creek property affected by the 2019 bushfire to create a vegetation regeneration project to reduce bushfire risk. Local provenance protocols **do not apply to native grasses**. Australian native grasses have a wide variety of breeding systems and a high degree of flexibility. Any variations come from mutational changes under climatic influences (Whalley 2000 & 2003). Much research has been done since the nineties until today, explaining the positive implications of their evolutionary strengths. Planting C_3 and C_4 grasses and sedges will provide ground cover.

Planting native plant species that are adaptable and resilient can be a solution to minimising the effects of climate change. Through drought conditions, plants may need to be watered more often to support establishment and survival.

Revegetating watercourses and other revegetation projects provide an opportunity to engage with the broader and local community, and these have proven to be successful with projects such as the Habitat Alliance Recovery and the River Torrens Recovery projects.

MANAGEMENT OPTIONS

- Survey what you do have remaining in terms of native vegetation and monitor for natural regeneration after stock have been excluded, or after a flood or fire. Regeneration is the cheapest form of revegetation!
- Create a revegetation plan with a long-term approach.
- Seek advice from local people involved in revegetation.
- Manage and control pest grazing species – use of the guards and stakes are effective to protect plants. Consider the type and cost of these materials. Although mesh guards may slightly cost more than the plastic style, they tend to be more effective at minimising grazing impacts and are longer lasting
- Part of your planning consider the purpose of revegetation project and species selection and numbers.
- Control weeds and monitor for weed emergence.
- Make nest boxes installation a component of your revegetation project, particularly after a bushfire, to provide an artificial home for native species when the natural hollows have been destroyed.
- Use the easiest option – the exclusion of livestock from an area may promote natural regeneration, provided a seed source is still present and weed species and rabbits are controlled.

- Use local provenance (not a requirement for native grasses), as these species are naturally adapted to local conditions, and this will enhance your success. *(See Appendices for species lists.)*

- Investigate the use of native grasses for revegetation and restoration projects and in pasture situations to provide perennial ground cover and improve soil condition and to mitigate fire risk.

- Aim to create or link habitat for native wildlife. Consider planting species that support threatened bird species that are habitat specific.

- Use native vegetation for windbreaks, land class management and commercial wood production.

- Consider the complete picture – planting trees and a few shrubs is just part of the picture. Include native groundcover species (including grasses) in your revegetation program to create a more diverse and balanced reserve.

- Consider the cost of the project. Funding support may be available through grant money held by local Landcare SA groups or through the Landscape SA Boards.

FURTHER RESOURCES

Natural Resource Centres:

Adelaide Hills Natural Resource Centre – Norton Summit
Mount Pleasant Natural Resource Centre
Strathalbyn Natural Resource Centre

Other resources:

Ansell, D. H. (2016). The Cost-Effectiveness of Biodiversity Conservation in Agricultural Landscapes, thesis, Australian National University.
BioR - http://bior.org.au/
Climate change - https://www.environment.sa.gov.au/topics/climate-change
https://www.environment.gov.au/climate-change/adaptation/publications/australias-biodiversity-climate-change
Fire Resistant and Retardant Plants – Australian Plants Society (Victoria)
Greening Australia – https://www.greeningaustralia.org.au/
Landcare SA - https://landcaresa.asn.au/
Native vegetation - https://www.environment.sa.gov.au/topics/native-vegetation
Native vegetation management - https://www.naturalresources.sa.gov.au/adelaidemtloftyranges/plants-and-animals/native-plants-animals-and-biodiversity/native-vegetation-management
Pedler, J. A. (2002). From Watercourse Weeds to Native Revegetation: A Planning Guide, Adelaide, South Australia.
SA Legislation – https://www.environment.sa.gov.au/about-us/Legislation
Seeding Natives Incorporated - https://www.seedingnatives.org.au/
Trees For Life / Bush For Life – https://treesforlife.org.au/bush-for-life
Revegetating Watercourses – Revegetation watercourses and riparian – Landscape SA Northern and Yorke
Watercourse Restoration Guideline – GWLAP
Water Wise No. Factsheet 2, Revegetating Watercourses, EPA, South Australia.
Upper River Torrens Landcare Group - http://www.torrenslandcare.org/

Plant species suppliers contacts:

Barossa Bushgardens: 653 Research Rd, Nuriootpa, Barossa Valley SA 5355.
https://barossabushgardens.com.au/
Future Generation Natives: PO Box 24, Mt Torrens SA 5244.
http://www.futurenatives.com.au
Greening Australia:
https://www.greeningaustralia.org.au/

Plant species suppliers contacts:
Kersbrook Landcare Nursery: 176 South Para Road, Williamstown, SA 5351.
http://kersbrook.landcaregroup.org.au/
McLaren Vale Natives plant nursery: 33 Stump Hill Road, McLaren Vale, SA 5171
https://www.facebook.com/mclarenvalenatives/
Seeding Natives Incorporated, 132 Melrose Street, Mt Pleasant, SA 5235:
https://www.seedingnatives.org.au
State Flora at Murray Bridge or Belair, South Australia: https://www.stateflora.sa.gov.au

Datasheets provided:
Watercourse Revegetation: Native Sedges, Rushes, Reeds and Grasses
Watercourse Revegetation: Basic Understorey and Canopy
Watercourse Revegetation: Zones and Native Plant Species List
Direct Seeding of Native Species