Bush Regeneration

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Why does the bush need our help?

Since European settlement in Australia, more than 70% of all native vegetation has been removed or significantly modified, followed by impacts on water and land resources.

In Queensland today, the destruction of bushland continues at an unprecedented rate, with hundreds of thousands of hectares of native vegetation being cleared each year. Pest plants and animals, pollution, salinity, development and other pressures further undermine the diversity, ecology and beauty of remaining bushland remnants.

Bush regeneration aims to "restore and maintain an ecosystem in which natural regeneration can occur" (National Trust NSW 1986).

Natural regeneration processes

The key to maintaining long-term ecological health and functioning of remnant ecosystems may lie in understanding their natural regeneration processes. Many of today's bush regeneration techniques look at encouraging or mimicking these.

Disturbance is recognised as a major natural process driving regeneration in native plant communities. Natural disturbances include:

- Rainforest - cyclones, landslips, tree fall gaps
- Bushland & grassland - fires, drought, grazing
- Wetlands – flooding, erosion, siltation

However, original disturbance regimes no longer exist in many of today's remnants. Important disturbances may be absent (eg. fire) or less frequent or replaced by new pressures (eg. high grazing intensity) or regimes (eg. changed intensity levels). Understanding a site's disturbance characteristics is a vital step toward gauging its recovery potential.

What is bush regeneration?

Bush regeneration gained momentum in Sydney during the 1970's through the work of Joan and Eileen Bradley. Their technique, the 'Bradley Method', involved the removal of weeds from *least* infested areas first, giving native species a chance to regenerate naturally.

Today, bush regeneration means different things to different people. In its purest sense, it implies a minimal level of intervention that is designed to facilitate natural colonisation processes. More generally, it is defined as

" the rehabilitation of bush from a weed infested or otherwise degraded plant community to a healthy community composed of native plants." (Buchanan 1989)

Degrees of intervention

Rehabilitation approaches can be broken down into various levels of intervention and resourcing, reflecting different remnant conditions and capacities for recovery.

A controlled burn is sometimes used to trigger natural regeneration processes (Photo courtesy of DPI).

The first step in developing a rehabilitation program for a site is to assess its recovery capacity. To do this:

- Identify any natural regeneration processes that might have historically operated at the site. Consider available treatments that could 'trigger' regeneration by mimicking these processes (eg. fire, flooding).

- Identify any degrading or threatening processes such as excessive clearing, grazing, changed water or fire regimes,

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nutrient input or weed invasion. Consider ways of reducing or removing these. In some cases, degradation may be difficult to reverse (eg. enriched phosphorus levels through superphosphate fertiliser use).

- Identify any native species existing on-site and nearby. Consider which of these might be threatened by examining past species lists, historical records and the flora of similar or neighbouring remnants. Such species may need to be reintroduced, especially if they are thought to be 'key' species in terms of the remnant's structure or functioning.
- Consider how species disperse (eg. via wind, water or animals) and regenerate (eg. via seed or vegetative sprouting) as decisions relating to types and scales of intervention (eg. whether or when to implement burning) will be influenced by this.
- Map zones of highest to lowest recovery potential. Estimate the resources and intervention priorities required for each zone. At the same time, consider how one zone may influence another in the recovery process (eg. via seed inputs).

A continuum of rehabilitation

The rehabilitation process involves a wide range of techniques that represent a gradient of intervention levels. Ideally, approaches and associated techniques should be selected to reflect the recovery capacity of the site or specific parts of the site. Approaches include (McDonald, unpublished):

Natural regeneration - recovery is automatic and intervention not needed since natural disturbance regimes and regeneration processes are intact.

Assisted or accelerated regeneration - "triggering" interventions (either disturbance or resource provision) are used to facilitate natural recovery processes by:

- promoting germination from the natural seed bank through careful weed removal.
- stimulating resprouting and seed germination by using fire or smoke.
- altering the grazing regime using fencing, enabling native species to regenerate without trampling, nutrient enrichment or herbivory.
- altering water and nutrient inputs to the site by diverting or filtering stormwater, reducing weed seed inputs and weed growth.

Reconstruction - living (eg. animals and plants) and non-living (substrate) elements are introduced or enhanced on more disturbed sites before recovery can begin.

Type conversion (fabrication) – better suited ecosystems are created to replace those unable to survive due to permanently changed conditions (eg. a forest that is established over the top of a permanently infilled wetland site, such as an industrial landfill).

Understanding what works

What works at one site may not work at another. Opportunities to test different treatments and measure their "success" can be accommodated within a monitoring and evaluation framework. In doing so, it is possible to:

- measure the natural capacity for recovery.
- determine which treatments are most effective.
- reveal unexpected benefits, relationships or changes.
- show whether a regeneration project has met its objectives.

Effective planning and community effort is the key to successful regeneration and continued improvement.

What you can do

- Become a Greening Australia (GA) member & get involved in our volunteer activities.
- Participate in local rehabilitation programs through GA and your local Bushcare groups.
- Seek input from local indigenous groups.
- Improve your skills, knowledge & understanding of native vegetation through GA training workshops.
- Speak up and show that you care.

References

Buchanan R.A. 1989. *Bush Regeneration: Recovering Australian Landscapes.* TAFE New South Wales.
McDonald, T. *Plant Community Resilience and Restoration* (unpublished notes).
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