



Australian Government
Land & Water Australia



NORTH CENTRAL
Catchment Management Authority



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Restoring landscapes with confidence — a summary of key findings and recommendations

This fact sheet presents the key findings and recommendations from the Land & Water Australia managed project: **Restoring landscapes with confidence — an evaluation of the science, the methods and their on-ground application.**

The complete final report, and a draft 'State of knowledge discussion paper on landscape restoration science in Australia' is downloadable from <http://www.lwa.gov.au/nativevegetation>

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In recent years, planning and implementation of on-ground actions for biodiversity conservation and landscape restoration through the regional natural resource management process has greatly increased, principally under the Natural Heritage Trust and through regional natural resource management (NRM) bodies (e.g. catchment management authorities). More recently, a number of non-government organisations (NGOs) have also initiated landscape restoration projects.





There has also been significant research in recent decades related to the function, condition, recovery and management of vegetation and biodiversity in agricultural and pastoral landscapes both internationally and across Australia. However, it is unclear how well the science and practice of landscape and restoration ecology has been integrated into, and benefited, the planning and implementation of on-ground activities at regional, sub-catchment and property scales. Of particular interest is the degree of confidence from landholders, extension staff, planners, and ecologists in the impact of on-ground activities on ecological processes including habitat improvement.



Photo Nadeem Sammakay.

Photo Roger Charlton.

This fact sheet summarises the findings from a Land & Water Australia managed project which documented and evaluated the contemporary approaches to landscape restoration being employed in selected regions of Australia, in cooperation with regional NRM organisations, Greening Australia, and others. It looked at the appropriateness, accessibility, awareness, understanding, and application of relevant science-based knowledge and planning tools available by planners and practitioners, the importance of locally-derived information, and the confidence in the approach(es) being used in a region. The project has identified a number of initiatives and actions for addressing deficiencies in the organisation, form, accessibility and local relevance of the current knowledge base that underpins landscape restoration efforts. Attending to these actions should greatly improve the capacity and confidence of planners and practitioners to implement landscape restoration initiatives, leading in turn, to better outcomes for biodiversity and ecosystem services at the landscape scale.

Executive summary

- Landscape restoration is a relatively new science in Australia, which has generated a large volume of knowledge and is essential to underpin increasing levels of investment. Land & Water Australia's (LWA) Native Vegetation and Biodiversity Research and Development (R&D) Program and its predecessors, have funded a number of projects over the last decade on how best to protect, rehabilitate and restore native vegetation and biodiversity in agricultural and pastoral landscapes. This project was commissioned by LWA as a timely assessment of the extent to which the research, tools and information that are currently available on landscape restoration are being used by regional natural resource management agencies and other organisations to achieve on-ground outcomes.
- Landscape restoration is a term that is widely used to cover activities aimed at improving native vegetation and biodiversity outcomes at paddock to landscape scales. There is no one definition to which everyone refers; rather, it is an umbrella concept under which a number of different philosophies and approaches are grouped. The concept appears to have greater currency in the more highly cleared landscapes of southern and eastern Australia, compared to the more intact systems in central and northern Australia. The term 'restoration' is applied much more broadly than its definition encompasses, including activities that are more closely aligned with landscape rehabilitation (while the latter also seeks to improve the condition of degraded areas, it is not necessarily concerned with moving the landscape in the direction of the pre-existing state). There is also an extensive range of landscape restoration approaches, tools and guidelines available. This diversity of intent, approaches and tools, makes it difficult for people to work out which approach or technique best applies to them and the work they are doing. Further, the range of approaches, tools and guidelines are scattered amongst websites, publications, guidelines and in 'people's heads'. This makes it hard for people to know if they are accessing the most up to date, or relevant, work for their region.
- Landscape restoration research is grouped around a number of 'themes', including connectivity and corridors, buffers and edge effects, vegetation patterns in the landscape, ecological processes and disturbance, resilience and recovery. The focus varies geographically in Australia, and includes both increasing the extent of native vegetation in highly cleared areas, and maintaining and enhancing vegetation condition across all landscapes. Research has largely focused on mammals and birds, less on plants (apart from vegetation as habitat), and even less on soils, although these areas are starting to gain more attention. While conservation planning and prioritisation science and tools are not usually included in the ambit of landscape restoration science, they have an important role to play and are of keen interest to policy and on-ground practitioners.



Photo Nadeem Sammakay.

- The context within which landscape restoration research is undertaken and applied is critical, as is setting clear restoration goals. The main restoration approaches used by regional groups include focal species, thresholds, improving vegetation condition, maintaining or enhancing structural and floristic diversity, and establishing connectivity/corridors in the intensive land-use zone. The effectiveness of these approaches once implemented is largely untested. The concept of ecosystem services is being increasingly adopted, but there is limited quantitative information available that is relevant to regional decision-making. Emerging trends are the increasing number of large-scale 'biolink' style projects to combat threats such as climate change and continuing fragmentation. These approaches have a limited scientific basis at the moment, but it is likely this will be addressed as part of ongoing monitoring, evaluation and research assessments.
- Greening Australia, as a key national organisation with a proven track record of on-ground works engaging local communities and individuals, has recently taken a strategic decision to move towards transforming landscapes rather than simply maintaining its past focus on engaging with others to do local on-ground works. The organisation is using the Conservation Action Planning tools in implementing this shift. While this has potential to play an important role in bringing together good science and local knowledge to ensure that landscape-scale projects are strategic in their work, it also presents a cultural and capacity challenge to Greening Australia. The organisation's credibility rests heavily on its history of community-based on-ground works. The challenge will be to embrace the new philosophical approach, while also retaining 'grass-roots' delivery of on-ground programs.

- Landscape restoration theories and approaches need to be demonstrated in action, and the 'real life' challenges and opportunities they bring need to be clearly communicated. There are many projects underway across Australia that claim to be about 'landscape restoration'. These projects are diverse, and there are a large number of different agencies and organisations running them. Within states and territories there is no central coordinating mechanism, so it is quite common for projects to be underway that only a few people or groups know about.
- Experts are often inaccessible, and there is a high demand for people with knowledge about landscape restoration who can work with others to build capacity and translate that knowledge into on-ground action.
- There is a lack of 'logic' for people to use to work out which landscape restoration approach is best suited to the work they are doing. Research findings are scattered amongst different publications, and there is little synthesised information that clearly compares and contrasts different approaches to landscape restoration.

Photo Roger Charlton.



- People working in the area of landscape restoration are time poor and seemingly overwhelmed with demands to achieve on-ground outcomes in short, unrealistic project time-frames. Attending workshops and investing in building organisational and individual capacity, is a low priority for senior management. In addition, many people report being 'workshopped out' and 'consulted out'. This has implications for the design of communication strategies as people are often unwilling or unable to attend meetings and workshops that are viewed as outside 'core business'.
- Policy and funding program frameworks are not conducive to achieving long-term sustainable landscape restoration outcomes. In general, funding programs demand on-ground investments within two to three years, leaving little time for planning and sourcing sound scientific advice to underpin projects. The short time-frames also mean it is impossible to effectively engage local communities, as there is little time to invest in the building of relationships prior to work being undertaken, or to maintain relationships in the longer term.
- The focus of many landscape restoration projects and policies has been on private land, with a parallel set of initiatives on publicly funded conservation reserves. These two areas will need to form closer partnerships in the future if effective landscape scale restoration is to occur.
- Staff turnover in organisations at all levels results in a loss of corporate memory and difficulties engaging with local communities, as relationships of trust cannot be established with the constant changeover in personnel. This has implications both for undertaking longer-term landscape restoration projects, and for follow-up evaluation and shared learning. Landowners need to feel confident in the staff they are working with, and need to trust that they will receive consistent support. Unless monitoring and evaluation objectives are well defined and resourced beyond the life of an initial project, replacement staff are unlikely to be able to continue this work.
- Non-government organisations and private sector groups are becoming major players in large-scale restoration projects, with industry having the potential to increase their influence as well. There is a need to reflect this changing dynamic in policies and programs that have previously focused on regional groups and state agencies as the main organisations working in landscape restoration. With this shift, and with growing frustration of non-government and private sector organisations at the inadequacies and 'red tape' of government programs, a disengagement with what governments have to offer is occurring. Various organisations are increasingly seeking out other sources of support, whether from philanthropic organisations, the corporate sector or elsewhere. While this may have short-term benefits to the public purse, it will exacerbate an already growing disconnect between strategic on-ground action and the policy and program environment in which people operate.
- There is a need for research into landscape restoration and socio-cultural issues. It is difficult to undertake landscape restoration approaches without a willing community to be involved with and supporting such approaches, yet there is little work being undertaken in this area.
- Numerous research gaps in landscape restoration were identified through workshops, interviews and questionnaires. These ranged from a need to better understand the role of cryptic biota such as fungi and rhizobia in restoration, through to improving the transferability of results between species and regions. The rapid increase in the number of large-scale 'biolink' projects was also identified as an area requiring investment so that the scientific basis underpinning such projects could be evaluated.

Photo Nadeem Sammakay



Recommendations

1. Invest in the development of an 'information hub' on landscape restoration. The 'hub' could be hosted on existing sites such as the LWA Native Vegetation and Biodiversity R&D Program or Greening Australia's Exchange website. Alternatively, a new site could be established. The information hub would:

- provide a source of good quality, peer-reviewed scientific information collated to emphasise guiding principles and to identify which are likely to be most applicable to particular landscapes and restoration goals;
- synthesise scientific and case study material into a series of fact sheets, guidelines and manuals that address topics identified by end-users;
- provide access to case studies where particular landscape restoration approaches have been applied, and to the landscape restoration reports and other materials produced by other organisations;

- host a community-of-practice on different landscape restoration topics and encourage people to work together and share experiences. An early task would be to develop a checklist of steps that all restoration projects need to include that is based on adult learning principles (similar to that produced by LWA for river restoration projects), and to consider methods for achieving several objectives within one restoration project;
- tailor existing information about landscape restoration for different bio-regions so that people can learn from the work that has been done, and have it link directly to their local environment.
- provide access to an oral history series in which the knowledge and experience of key individuals involved in the development of large-scale landscape restoration projects in differing parts of Australia, capture and showcase their experiences;
- feature local champions and advocates working in 'landscape restoration' so that experiences and approaches can be shared with others;
- host the proposed landscape restoration and science communication 'webinars' and 'lectopia' information sessions (see following recommendations);
- host 'talking to an expert' on-line advice where people can write in with requests for assistance;
- link to organisations undertaking landscape restoration projects;
- manage the landscape restoration project database (see following recommendations); and,
- provide a dynamic, interactive 'hub' that people can turn to when they need assistance, support and motivation to continue the work they are doing in landscape restoration.

2. **Develop a framework for integrating the various principles and approaches of landscape restoration**, and provide a logic for people to be able to work out which approach is best suited to the work they are doing. Case studies showing how the logic has been applied are required to 'bring it to life'. This will be a key part of the 'information hub' described in Recommendation 1.
3. **Invest in the development of a distance education Landscape Restoration course** (modelled on the River Restoration and Management Course run by Charles Sturt University and funded by the National Rivers Consortium). Distance education enables people to do the bulk of their work at home or in the office, with the residential schools consolidating theory and practice. The residential schools also give people the opportunity to share experiences and build connections with other people working in the area.
4. **Invest in the development of a practical, science communication course** for graduates and people working in academic institutions so that they can learn how to make their science relevant to people working 'on-the-ground'. It is likely that the basis for such a course exists already, for example at the Australian National University, but may not be in a distance education format.
5. **Establish a national database of landscape restoration projects** that will enable people to look at what has been done, see what is underway and make connections to integrate work, rather than operating in isolation. This would use basic information about landscape type and project objectives to enable users to quickly identify projects of interest/relevance to them, and to then use the contact details provided to seek further information about those.
6. **Work with scientists, science communicators and education experts to develop an on-line series of 'information sessions'** using 'webinars' (on-line seminars) and 'lectopia' (lectures on-line with follow up tutorials with the teacher) to cover key topics in landscape restoration. As with all applications of these new approaches to information-sharing, presenters will require some initial training to ensure their sessions are dynamic and engaging in ways that are less critical in face-to-face sessions. This enables people to get access to the science and the scientists, but on-line. This could then be supported by regional workshops and 'train the trainer' courses so that capacity can be built in the regions. The content of these sessions could also cover building effective partnerships, understanding group dynamics, and working together to achieve common goals.
7. **Develop material designed specifically for a policy audience** that clearly articulates the need for a shift in the philosophy of funding programs so that longer-term landscape restoration projects can be undertaken, and relationships built within local communities.
8. **'Mine' the LWA Social and Institutional Research Program and Cooperative Venture for Capacity Building material**, and tailor it for people working in the conservation of native vegetation and biodiversity. Many reports have been written on social engagement and, rather than investing in new research, assess what has already been done and work out ways to make it relevant and accessible for people working in landscape restoration.
9. **Co-invest in projects being undertaken by the Tropical Rivers and Coastal Knowledge Initiative** to tailor findings about how best to engage with and include indigenous knowledge in research and communication outputs. Consider concepts such as the 'quadruple bottom line' with a fourth goal, indigenous wellbeing, to augment the traditional three goals of social, economic and environmental capital.

Photo Roger Charlton.



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Exchange: the national vegetation knowledge service is an initiative of the Australian Government, delivered by Greening Australia.

A steering committee provided overall guidance to the project comprised of the funding partners and a representative from CSIRO Sustainable Ecosystems.

10. Develop terms of reference and selection criteria for a Landscape Restoration Prospectus of R&D projects

to address science gaps identified through the workshops and interviews. This prospectus could then be distributed to all those organisations and individuals who participated in the workshops and interviews for this project. Priorities include: methods for long-term monitoring and evaluation, especially of large-scale projects, and greater understanding of the socio-economic factors affecting restoration projects. Overarching the R&D prospectus is the need to develop, accommodate, encourage and facilitate a research cycle that enables the bringing together of different forms of knowledge (scientific/technical, experiential and individual) from the project concept stage through to completion. Projects that bring together researchers and practitioners to share knowledge and work collaboratively should also be encouraged.



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