

## THEME: SCALING UP RESTORATION IN AGRICULTURAL LANDSCAPES

VISIT REGENTV - [HTTP://WWW.AABR.ORG.AU/REGENTV/](http://www.aabr.org.au/regentv/)

RELEVANT SECTION OF THE NATIONAL STANDARDS

- [HTTP://SERAUSTRALASIA.COM/STANDARDS/APPENDIX1.HTML](http://seraustrolasia.com/standards/appendix1.html)
- [HTTP://SERAUSTRALASIA.COM/STANDARDS/EGCORRIDORS.HTML](http://seraustrolasia.com/standards/egcorridors.html)

The National Standards states that, while the ideal aim of a discrete ecological restoration project is to achieve **five-star recovery** for all attributes, this is difficult to achieve at larger scales and is not possible across entire landscapes where there is a mix of land uses. In mixed landscapes, therefore, **Appendix 1** of the National Standards encourages the highest levels of recovery that are practically attainable in a landscape. This is because even limited gains can make a critical difference to biodiversity conservation if applied at larger scales – and restoration can be integrated into a range of other ‘restorative’ efforts to improve ecosystem functionality and reduce impacts in whole landscapes.

**Other values.** A mix of land uses invariably means that the chances of indigenous ecosystems being restored will be greater if the ecosystems are highly valued by the people who live in the landscape - either because the ecosystems are able to provide ecosystem services of direct relevance to those people or their industries – or because the ecosystems are valued for their own sake. A range of cases in the videos listed below provides examples of benefits of ecosystems to industries. We need to remember, however, that ecosystems and the activity of restoring them can have intrinsic cultural and spiritual significance to people, not only rural agricultural communities, but also Indigenous peoples who have managed these ecosystems for millennia.

### EXERCISES OVERVIEW.

Once you have viewed the relevant regenTV videos under theme **Scaling Up** select from the following exercises. These can suit individual study or group exercises.

*Further information is available in the online reports listed on each video’s page. We suggest you refer to at least one of those other resources when preparing your responses.*

TABLE 1. REGENTV VIDEOS RELEVANT TO THIS TOPIC (LEFT COLUMN) AND CORRESPONDING ONLINE REPORTS (RIGHT COLUMN)

| regenTV VIDEOS   | OTHER ONLINE INFORMATION  |
|--|---|
| <p><a href="#">Large scale reconstruction of semi-arid ecosystems in south-west Western Australia. Justin Jonson.</a></p>  | <ul style="list-style-type: none"> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/07/peniup-ecological-restoration-project/">https://site.emrprojectsummaries.org/2016/03/07/peniup-ecological-restoration-project/</a></li> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/06/defining-reference-communities-for-ecological-restoration-of-monjebup-north-reserve-in-gondwana-link/">https://site.emrprojectsummaries.org/2016/03/06/defining-reference-communities-for-ecological-restoration-of-monjebup-north-reserve-in-gondwana-link/</a></li> <li>• <a href="http://www.gondwanalink.org/aboutus/vision.aspx">http://www.gondwanalink.org/aboutus/vision.aspx</a></li> <li>• <a href="http://www.gondwanalink.org/whatshapwhere/fitz_stirlings.aspx">http://www.gondwanalink.org/whatshapwhere/fitz_stirlings.aspx</a></li> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/06/nowanup-healing-country-healing-people/">https://site.emrprojectsummaries.org/2016/03/06/nowanup-healing-country-healing-people/</a></li> </ul> |
| <p><a href="#">UPPING THE ANTE ON RESTORATION-LANDSCAPE SCALE RESTORATION ON TRAVELLING STOCK RESERVES IN THE NSW RIVERINA- IAN DAVIDSON.</a></p>  | <ul style="list-style-type: none"> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/06/learning-from-the-coreen-tsrs-and-scaling-up-biodiversity-recovery-works-at-hundreds-of-sites-in-the-riverina-nsw-2/">https://site.emrprojectsummaries.org/2016/03/06/learning-from-the-coreen-tsrs-and-scaling-up-biodiversity-recovery-works-at-hundreds-of-sites-in-the-riverina-nsw-2/</a></li> <li>• <a href="http://onlinelibrary.wiley.com/doi/10.1111/emr.12247/full">http://onlinelibrary.wiley.com/doi/10.1111/emr.12247/full</a></li> </ul>  |
| <p><a href="#">Integrating remnant regeneration, regrowth and plantings across an agricultural landscape: Big Scrub Rainforest, northern NSW: Mike Delaney</a></p> <p>Also see</p> <ul style="list-style-type: none"> <li>• <a href="#">Subtropical rainforest restoration at the Rous Water Rainforest Reserve, Rocky Creek Dam, 1983-2016. Brett Weisel</a></li> <li>• <a href="#">Restoration, Regeneration and Resilience in the tropics. Nigel Tucker</a> (rainforest starts at 2.47 mins)</li> </ul> | <ul style="list-style-type: none"> <li>• <a href="http://www.aabr.org.au/20-years-of-restoring-the-big-scrub-rainforests-big-scrub-landcare/">http://www.aabr.org.au/20-years-of-restoring-the-big-scrub-rainforests-big-scrub-landcare/</a></li> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/06/subtropical-rainforest-restoration-at-the-rous-water-rainforest-reserve-rocky-creek-dam-1983-2016/">https://site.emrprojectsummaries.org/2016/03/06/subtropical-rainforest-restoration-at-the-rous-water-rainforest-reserve-rocky-creek-dam-1983-2016/</a></li> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/06/establishment-of-an-assisted-natural-regeneration-model-for-big-scrub-sub-tropical-rainforest-the-woodford-method/">https://site.emrprojectsummaries.org/2016/03/06/establishment-of-an-assisted-natural-regeneration-model-for-big-scrub-sub-tropical-rainforest-the-woodford-method/</a></li> </ul>   |
| <p><a href="#">Goals and logistics of restoring grassy understoreys on mined land in the Hunter.Tim Berryman</a></p> <p>Also see</p> <ul style="list-style-type: none"> <li>• <a href="#">Genetics &amp; Restoration. Linda Broadhurst and Tein McDonald</a></li> <li>• <a href="#">Restoration in fragmented landscapes – The Importance of genetics. Linda Broadhurst</a></li> </ul>   | <ul style="list-style-type: none"> <li>• <a href="http://seraustroasia.com/standards/egseedproduction.html">http://seraustroasia.com/standards/egseedproduction.html</a></li> <li>• <a href="https://www.greeningaustralia.org.au/project/grassy-groundcover-restoration">https://www.greeningaustralia.org.au/project/grassy-groundcover-restoration</a></li> </ul>  |
| <p><a href="#">Wetland restoration case studies from the Discovery Bay Coast in South Australia and Victoria. Mark Bachmann</a></p>  | <ul style="list-style-type: none"> <li>• <a href="http://onlinelibrary.wiley.com/doi/10.1111/emr.12207/full">http://onlinelibrary.wiley.com/doi/10.1111/emr.12207/full</a></li> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/07/piccaninie-ponds-conservation-park-south-australia/">https://site.emrprojectsummaries.org/2016/03/07/piccaninie-ponds-conservation-park-south-australia/</a></li> <li>• <a href="https://site.emrprojectsummaries.org/2016/03/07/long-swamp-discovery-bay-coastal-park-victoria/">https://site.emrprojectsummaries.org/2016/03/07/long-swamp-discovery-bay-coastal-park-victoria/</a></li> <li>• <a href="http://natureglenelg.org.au/ngt-resources/publications/">http://natureglenelg.org.au/ngt-resources/publications/</a></li> </ul>  |
| <p><a href="#">Creating Waterponds to tackle the drought clay pans on the landscape. Ray Thompson</a></p>  | <ul style="list-style-type: none"> <li>• <a href="http://onlinelibrary.wiley.com/doi/10.1111/j.1442-8903.2008.00415.x/full">http://onlinelibrary.wiley.com/doi/10.1111/j.1442-8903.2008.00415.x/full</a></li> </ul>   |

ACTIVITY 1. GONDWANA LINK, WA (SEE JUSTIN JONSON'S VIDEO AND [GONDWANA LINK WEBSITE](#)).

This project works with sclerophyll ecosystems and contains multiple national parks of very high biodiversity value that are isolated in one of Australia's biodiversity hotspots\*. Gondwana Link Ltd formed in 2009 as an NGO dedicated to facilitating the covenanting and revegetation of lands within a 1000km corridor to link and extend these habitats to enhance their conservation.

1A

After viewing the video [Large scale reconstruction of semi-arid ecosystems in south-west Western Australia](#) and other online material, explain the main technique used at Peniup to [reconstruct](#) large acreages of revegetation and describe achievements to date.

1B

After reading Gondwana Link's [vision](#) and [key supporters](#) sections of the [Gondwana Link website](#), how many and what type of organisations are involved in the partnership and how do they link to the vision?

1C

Read about other similarly large-scale [linkage](#) projects in Australia. Choose one that could do with more publicity to stakeholders and outline a case to generate more community or stakeholder buy-in.

1D

How does your regional NRM organisation improve linkages between 'bottom up' projects in their region (Refer to Scaling Up Fact Sheet)? How could this be improved in your view?

ACTIVITY 2. TRAVELLING STOCK RESERVES, NSW (SEE [IAN DAVIDSON'S VIDEO](#))

Travelling Stock Routes (TSRs) are examples of [grassy ecosystems](#) that once extended throughout the Central West of NSW and into Victoria. Because they were favoured by the early pastoral industry, healthy examples of these ecosystems are now extremely rare. Potential exists however to at least partially restore these ecosystems and manage them in a manner compatible with agriculture.

2A.

Explain the main management technique used by the rangers that allows for the recovery of the grassy understorey at a large scale in this landscape.

2B

The role of TSR rangers is paramount in the success of recovery. What sort of knowledge, skills and experience are needed by a ranger to continuously improve the condition of the ecosystems?

2C

Explain the institutional arrangements that allows for TSRs to exist – including the economic base. Searching the web, (including other online material listed on p.1) explain how TSRs historically emerged and what directions are being considered for the future of TSRs?

2D

What fauna might be important targets of restoration in this landscape and why? What habitats do they need? What problems are encountered when attempting to manage the sites for recovery of this target group of species?

ACTIVITY 3. – BIG SCRUB LANDCARE, NSW ([WATCH MIKE DELANEY'S VIDEO](#))

The Big Scrub is a landscape scale [rainforest restoration](#) project attempting to inspire landholders and agencies to restore the prior vegetation to the extent possible by addressing the imbalance of primary\* and secondary species\* in the rainforest systems. In rainforest ecosystems, seed dispersal for most species is aided by flying frugivores such as birds and flying foxes ([see AABR Info Sheet 5](#)). Because of this additional resilience, Big Scrub Landcare focus on two primary strategies for landscape level recovery: (i) regenerating remnants and weedy regrowth areas and (ii) revegetating strategic corridors for optimum faunal habitat.

3A

Regenerating and expanding remnants – One case where a remnant has been expanded by manipulating weedy regrowth (in this case Lantana) is [Rocky Creek Dam](#). After watching this [short video](#), examine this project's recovery wheel (at 4:43 in video).

Discuss the results achieved for at least two of the six attributes used to measure the progress towards a restored state. (For further information on this see [Principle 4](#) of the National Standards).

3B

Planted corridors – Questions of genetic diversity are important in a fragmented landscape as well as in the context of changing climates. Read [Appendix 3](#) of the National Standards and watch [Trevor Booth's climate change video on RegenTV](#) to answer the following.

- i) What considerations should be made for future proofing planted corridors?
- ii) What role can dispersal and pollination by flying fauna play in assisting adaptation to climate change? (Students are encouraged to research specific flora and fauna relationships.)

3C

Landscape links - Consider the landscape scale maps at 1.44 and 12.45 mins into the [Big Scrub video](#) and read online about the [approaches for regenerating rainforest](#) to answer the following.

NB: For those interested in interpreting this question in a wetland context the Nature Glenelg Trust [website](#) and [Mark Bachmann's regenTV video](#) is a rich case study.

- i) Describe some ways for realising linkages across the landscape (socially and ecologically).
- ii) What are the constraints in the Big Scrub agricultural landscape?

3D

The National Standards' [Appendix 4](#) describes how an overall 'restorative' vision can inspire whole of landscape improvements including not only multiple ecological restoration sites but also rehabilitation and reduction of

impacts in parts of the landscape used for agriculture, urban and other pursuits that benefit society. This aligns with the [Forest Landscape Restoration](#) (FLR) movement promoted by IUCN and the World Bank, which inspires, enables and mobilises community action to attain reforestation outcomes in developing countries.

i) In the Big Scrub landscape, what existing and new industries need to be considered in the project's 'restorative' vision (referring to Appendix 4).

ii) What similarities and differences exist between the Big Scrub project and a typical FLR project?

#### ACTIVITY 4 RESTORING GRASSY UNDERSTORIES ON MINED LAND IN THE HUNTER, NSW ([WATCH TIM BERRYMAN'S VIDEO](#))

Mine site restoration research and practice at one site can offer lessons for [grassy ecosystem restoration](#) in other areas. This work in the Hunter depends to a large degree on the cultivation of native pastures in [seed production areas](#).

4A

Drawing on knowledge gained from [Tim Berryman's video](#) and that of the [Grassy Groundcovers Restoration project](#), brainstorm, either in written form (1 page) or in group discussion, how these techniques of revegetation might feasibly be expanded through the creation of regional seed production areas and seed banks for grassy ecosystems at a large scales in the agricultural landscape.

Watching the fascinating [Regent Honeyeater Project video](#) on the importance of the size (i.e. genetic diversity) of seed source parent populations (plus the videos: [Genetics and Restoration](#) and [Restoration in Fragmented landscapes](#)) will add further depth to the discussion.

#### EXERCISE 5 – WATERPONDING AT NYNGAN. ([WATCH RAY THOMPSON'S VIDEO](#))

This is an example of a restoration technique for rangeland landscapes where grazing occurs on native chenopod [grassland](#) including saltbushes and native grasses.

5A

i) What has historically caused the landscape degradation in Australia's rangelands?

ii) Explain, aided by a sketch, how installation of waterponds can retain water in a landscape and trigger breaking up of the sites' impenetrable soil crusts?

iii) How do plant propagules arrive at the sites?

5B

The waterponding method has resulted from a history of research and practice, illustrating [Principle 5](#) of the National Restoration Standards. After watching Ray Thompson's video, broadly describe the gradual evolution of the method through the decades of formal science and adaptive management by the NSW Soil Conservation Service.

5c

Waterponing has been proven to provide economic benefits to landholders through adding new grazing lands. What other economic incentives could support the rollout of waterponing on degraded lands?

5d

Apart from Nyngan, what other areas across Australia and overseas have already started to use this technique for rehabilitation of degraded lands?

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## \*GLOSSARY OF TERMS

### BIODIVERSITY HOTSPOT

Biogeographic regions that contain extraordinarily high biodiversity and intact natural ecosystems where the levels of stress or future threat is considered to be high.

### *PRIMARY SPECIES*

In rainforest primary species are the long-lived species typical of a mature phase rainforest. These may have taken hundreds of years to dominate secondary species in a natural succession after disturbance and they are less well represented in disturbed landscapes.

### *SECONDARY SPECIES*

In rainforest secondary species are the shorter-lived rapidly colonising species typical of an early successional rainforest. Secondary rainforests are over-represented in rainforests that are naturally regenerating across the world after extensive land clearing.