Raising the standard in bushland restoration

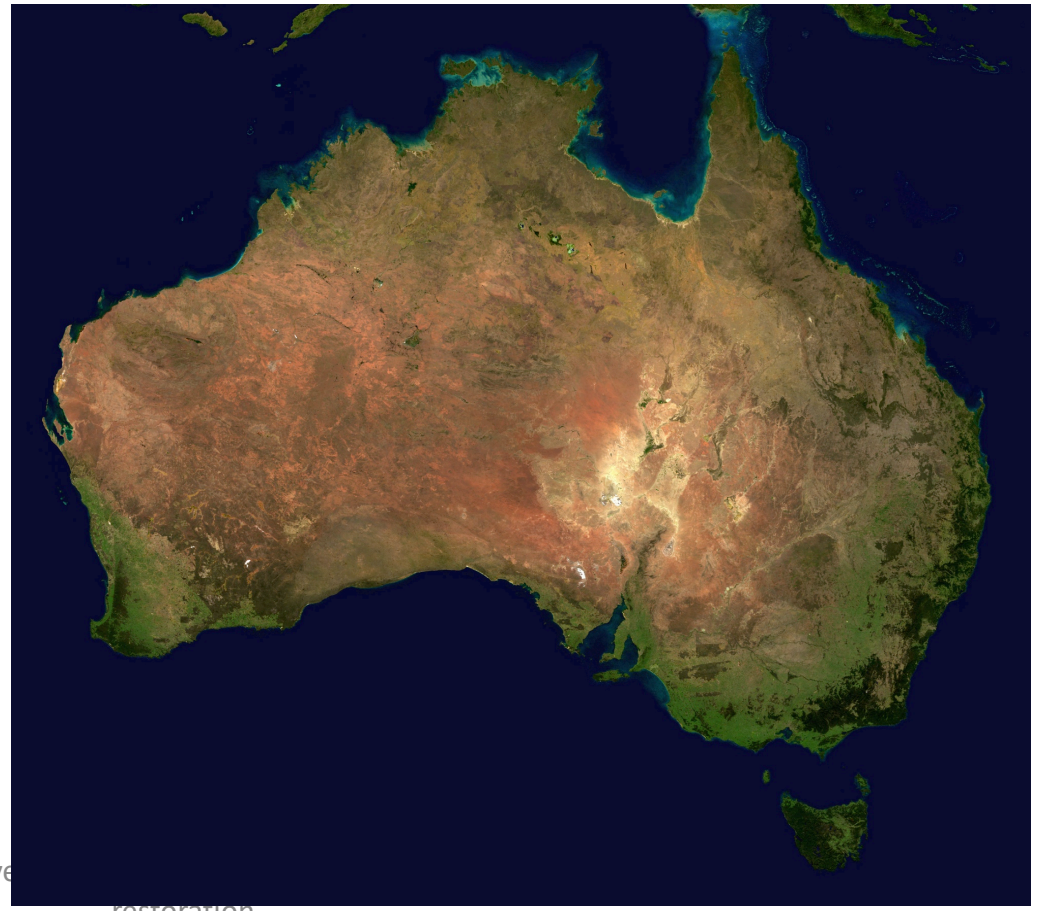
Smoke promotes germination in up to 96% of the soil stored seed bank

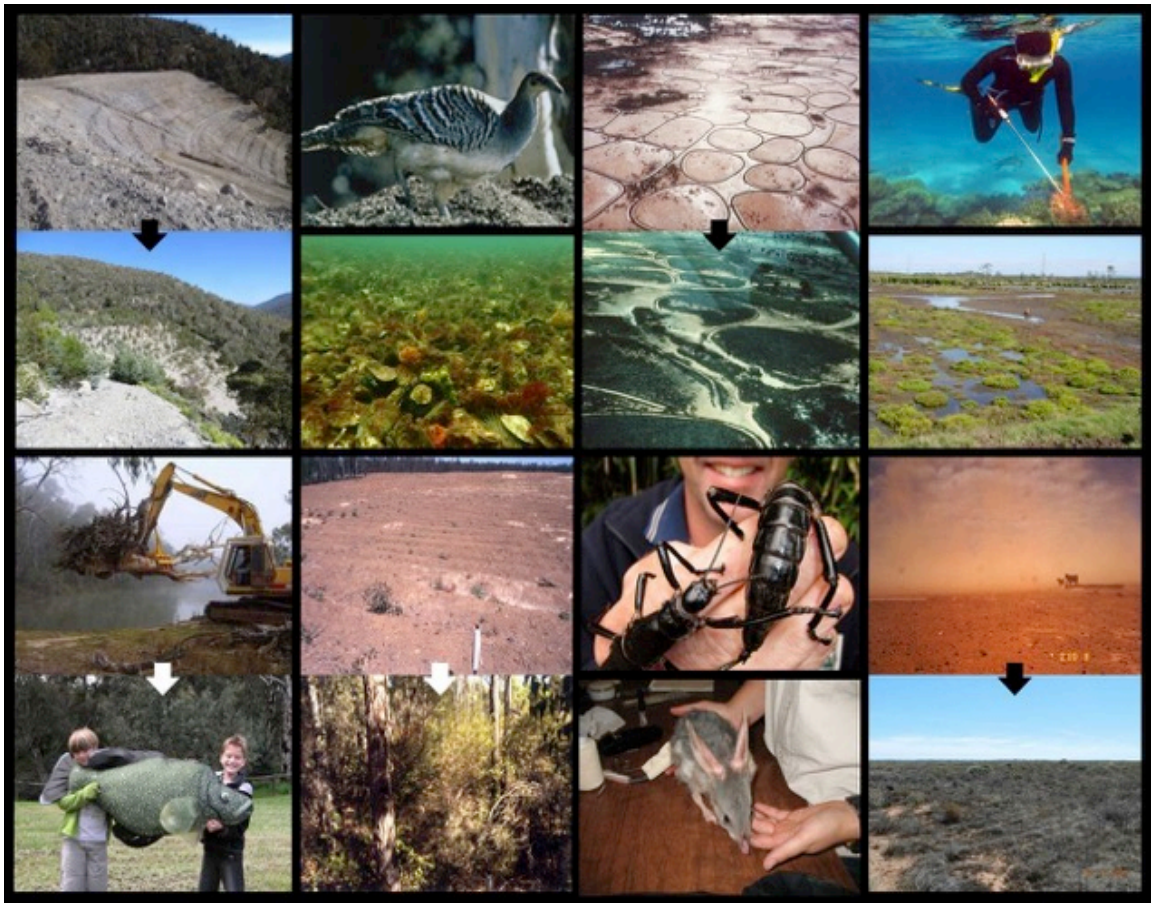
- Dilleniaceae (2spp)
- Cyperaceae (3 spp)
- Restionaceae (2 spp)
- Stylidiaceae (3spp)
- Ericaceae (3 spp) (drupaceous/seeded)
- Fabaceae (2 spp)
- Asteraceae (2spp)
- Apiaceae (2spp)
- Poaceae (1spp)
- Haemodoraceae (2spp)
- Lomandraceae (1spp)

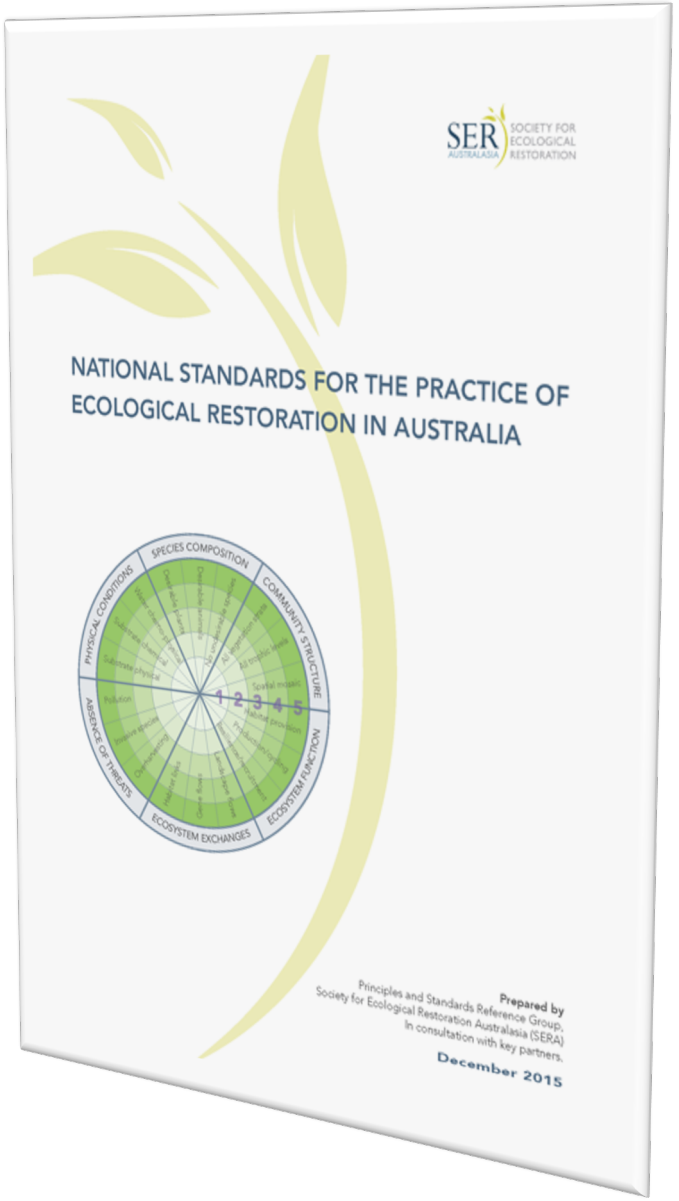
Do we need Standards ?

95-98% of wild seed that is broadcast fails

- $1.8B of government environmental funding = 38% success (Pannell et al 2010)
- Now $3.8B with carbon economy







The Nature Conservancy Australia

AABR

BUSH HERITAGE AUSTRALIA

Greening Australia

gondwana link

Indigenous Flora and Fauna Association

AUSTRALIAN SEEDBANK PARTNERSHIP

Trees For Life

Trust for Nature

wetlandcare australia

Minister's Foreword

"The National standards for the Practice of Ecological Restoration in Australia represents the most contemporary approach to ecological restoration and effective management of Australia's ecological communities."

"Ecological restoration, guided by the SERA Standards, is essential to support recovery of many of Australia's threatened species and ecological communities and is a priority action in national recovery plans and conservation advices."

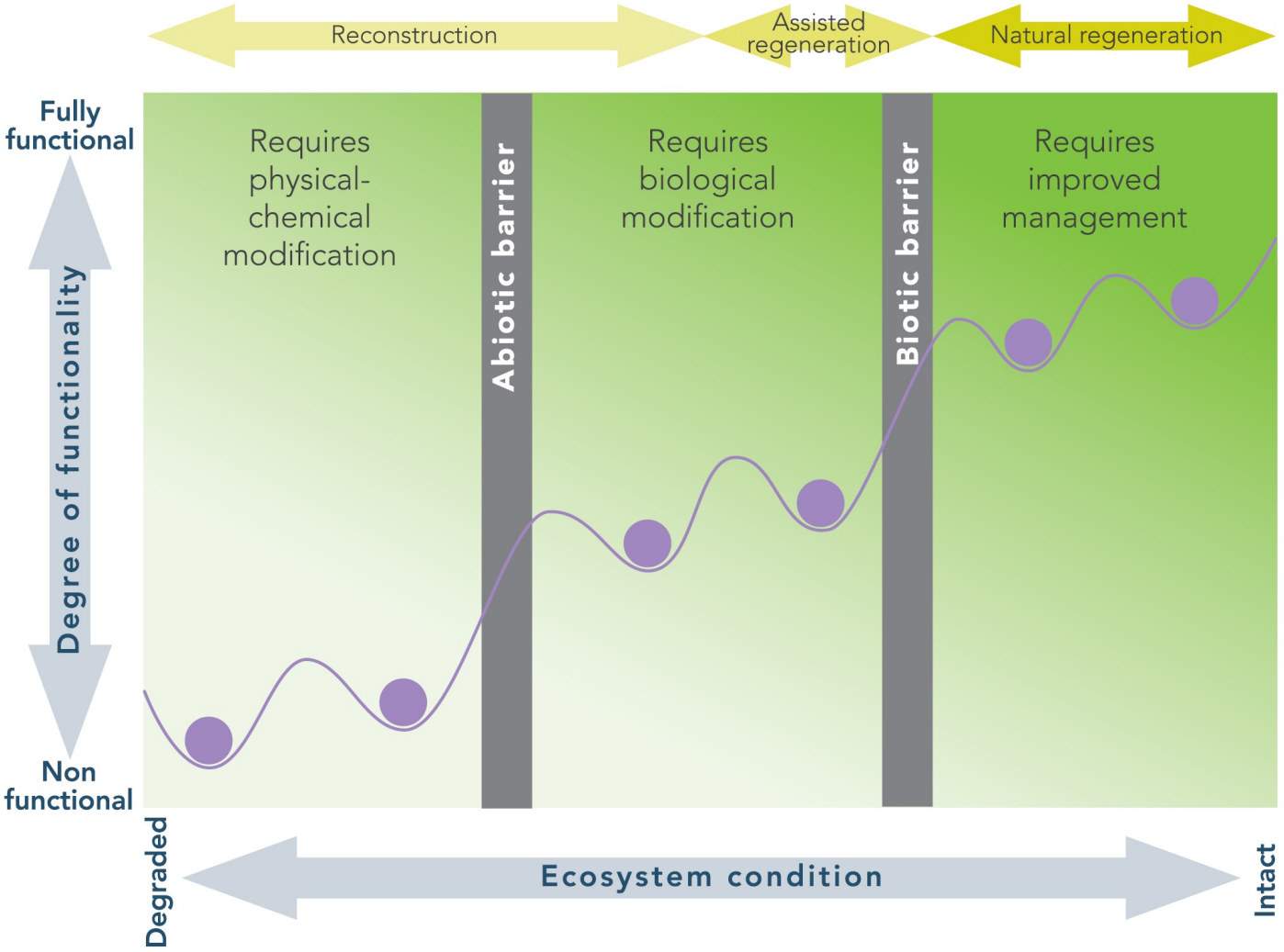
"I commend them to everyone who cares about and works to support our natural environment."

The Hon. Josh Frydenberg MP
Minister for the Environment and Energy
November 2017

The UN Decade of Ecosystem Restoration 2021 - 2030
Launch: 5 June 2021

April 2008 300,000 tonnes of sand dumped Beijing from deforested areas and Gobi Desert- 1 billion trees planted to halt the advance

J Qui 2011 Nature 471- 149


Reconstruction
Assisted regeneration
Natural regeneration
Fully functional
Degree of functionality
Non functional
Requires physical-chemical modification
Abiotic barrier
Requires biological modification
Biotic barrier
Requires improved management
Degraded
Ecosystem condition
Intact

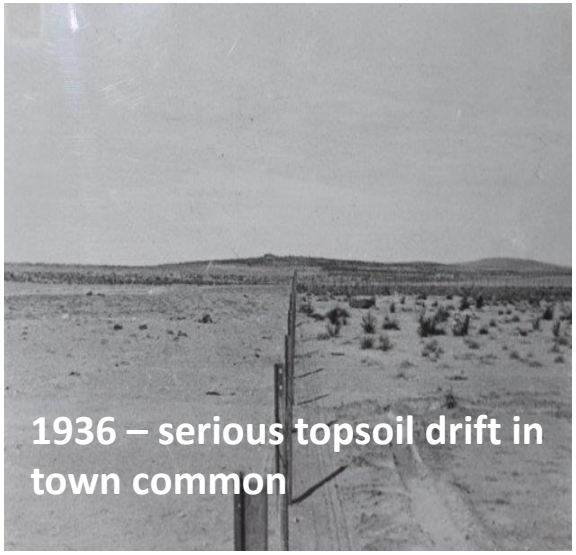
Aldo Leopold to Ted Sperry…. ".. go plant a prairie." (1936)

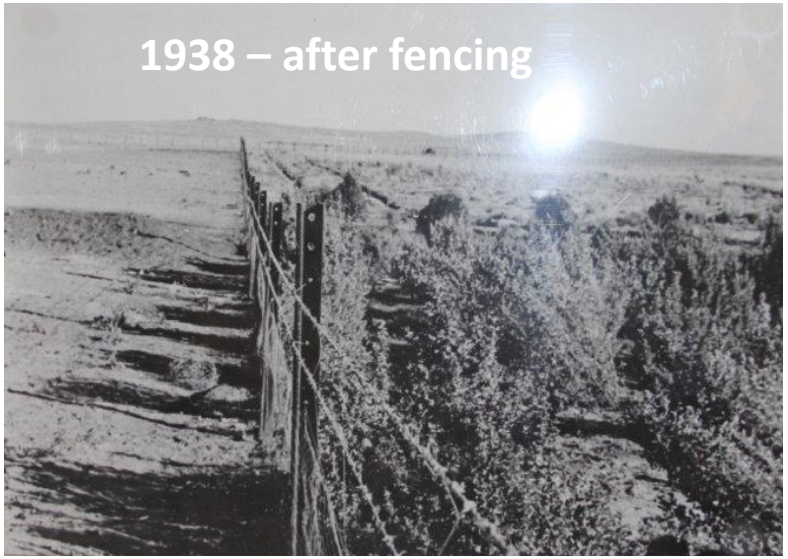
University of Wisconsin -Madison Arboretum's John T. Curtis Prairie
IMAGES: Coutesy Curt Meine

Aldo Leopold to Ted Sperry…. ".. go plant a prairie." (1936)

Australia equals oldest continuous restoration site

1936 - Albert Morris, Barrier Field Naturalists Club and the Zinc Corporation (now BHP)





Barrier Field Naturalists Club - formed 1920 and still going strong

So they restored a native bushland belt around the town..still functional and highly valued 83yrs on.

Why restoration standards are needed

Biodiverse restoration 96% seed failure Recover 33% of species

We degrade at 10,000 times the rate we restore

Healthy communities are linked to healthy environments

Engaging, resilient, biodiverse, enduring ecosystems

48% of the continent altered/degraded

50,000 abandoned mines

Impact 15,000 plants and animal species

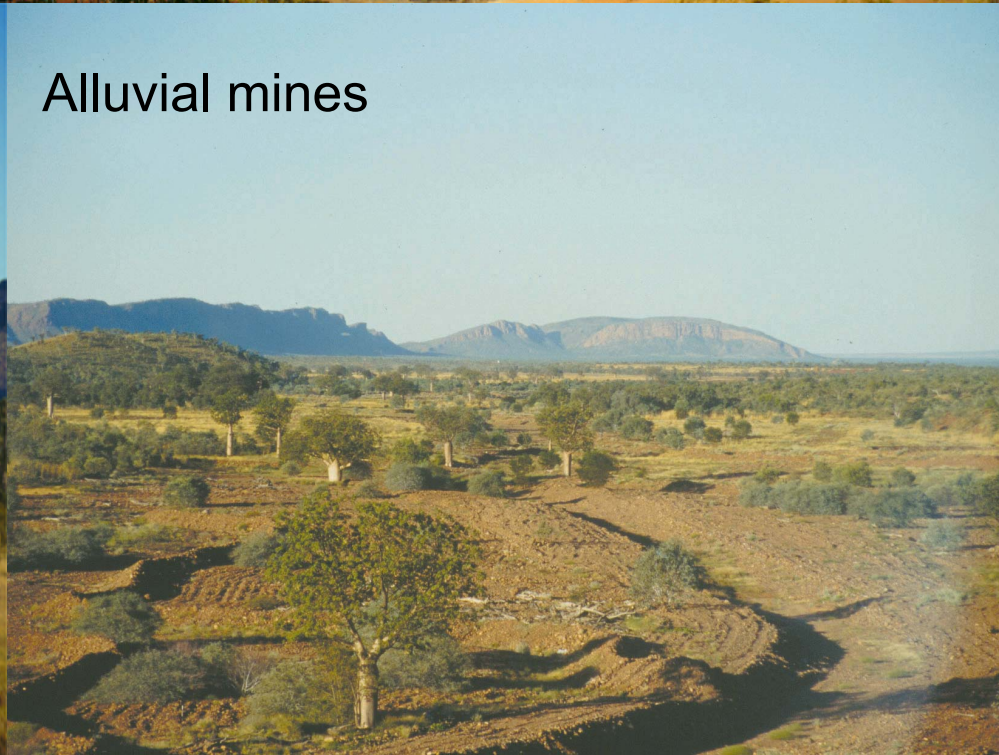
Key issues: (i) Difficulty of restoring ecosystems at highly modified e.g. mine sites (ii) institutional and management weaknesses and (iii) loose regulatory frameworks = high level of company self-regulation.

CONSEQUENCES: ……


AK1pit

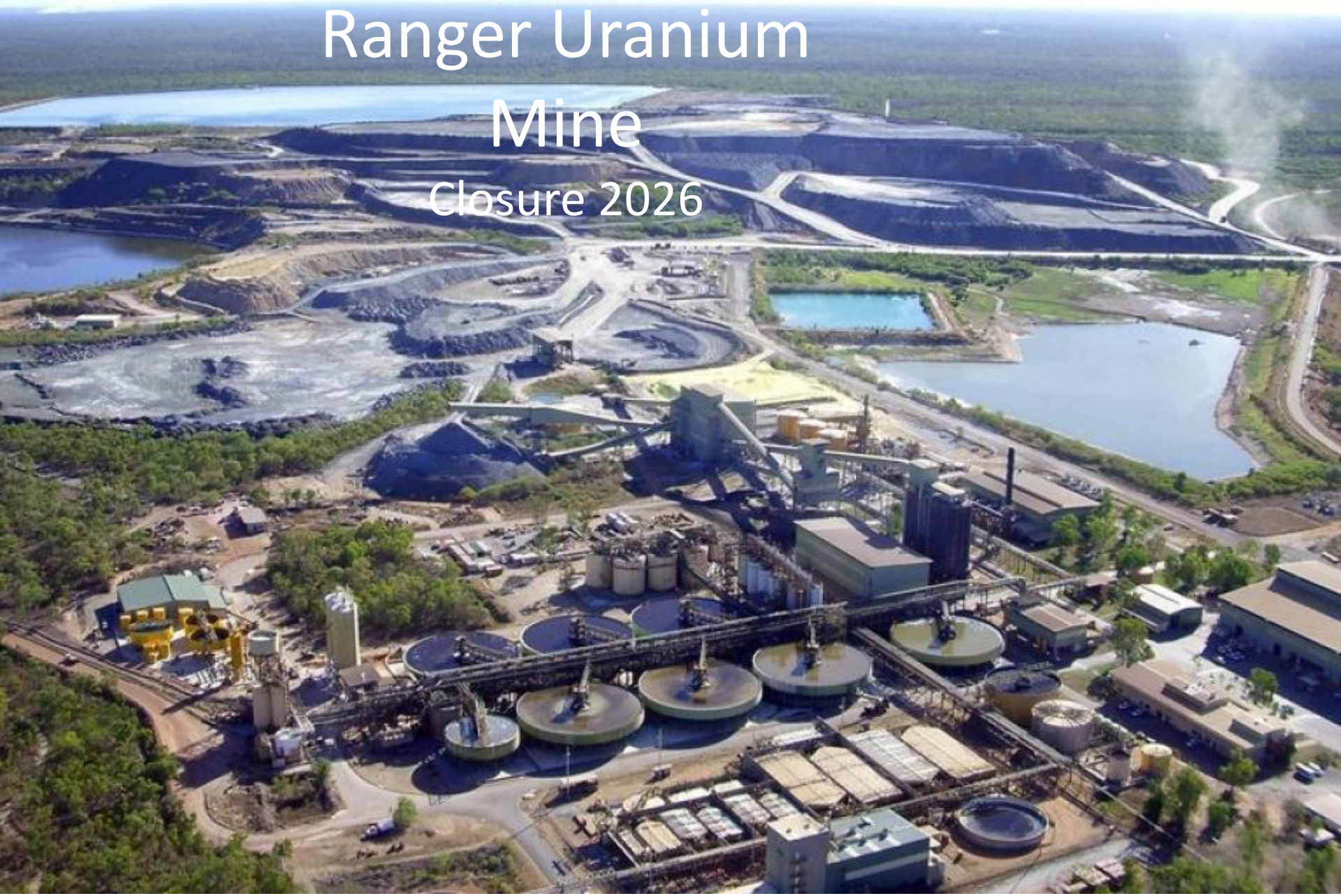

Tailings facilities


Waste dumps from open-cut operation


Alluvial mines

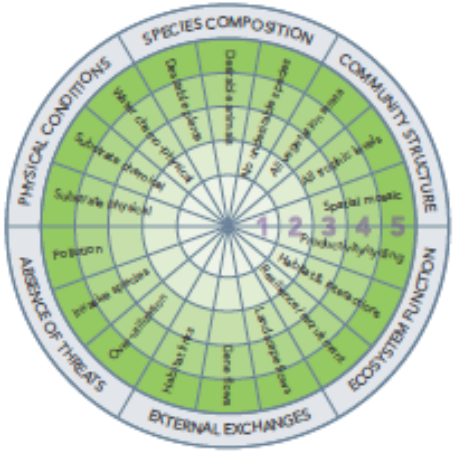
Ranger Uranium Mine

Closure 2026



SER SOCIETY FOR ECOLOGICAL RESTORATION AUSTRALASIA

National standards for the practice of ecological restoration in Australia



Prepared by
Standards Reference Group,
Society for Ecological Restoration Australasia (SERA)
In consultation with key partners.

Second edition
October 2017

SIX KEY TENETS

1. **Use a local indigenous reference ecosystem**

2. Ensure you have measures of success for goals and objectives

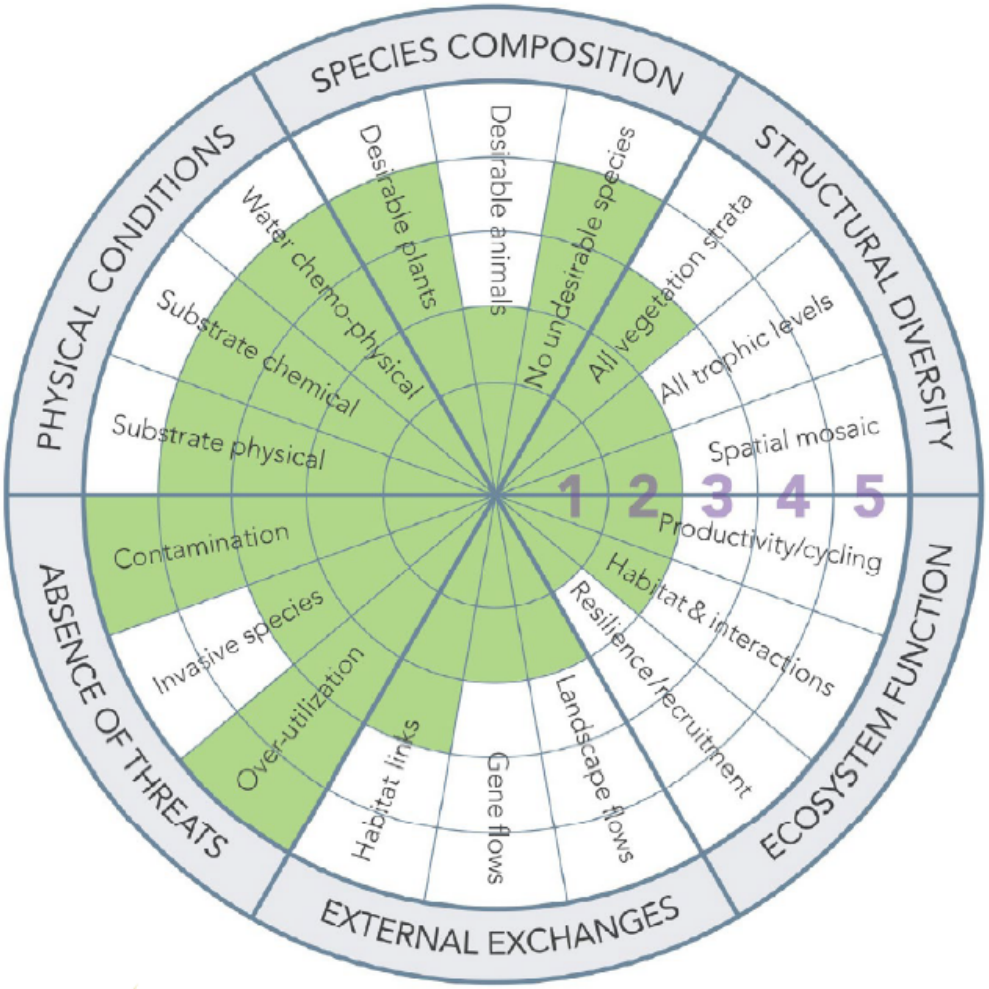
3. Do things that maximise biodiversity at the least cost

4. Commit to highest and best outcomes – we don't have all the answers yet

5. Draw on all forms of knowledge

6. Social licence

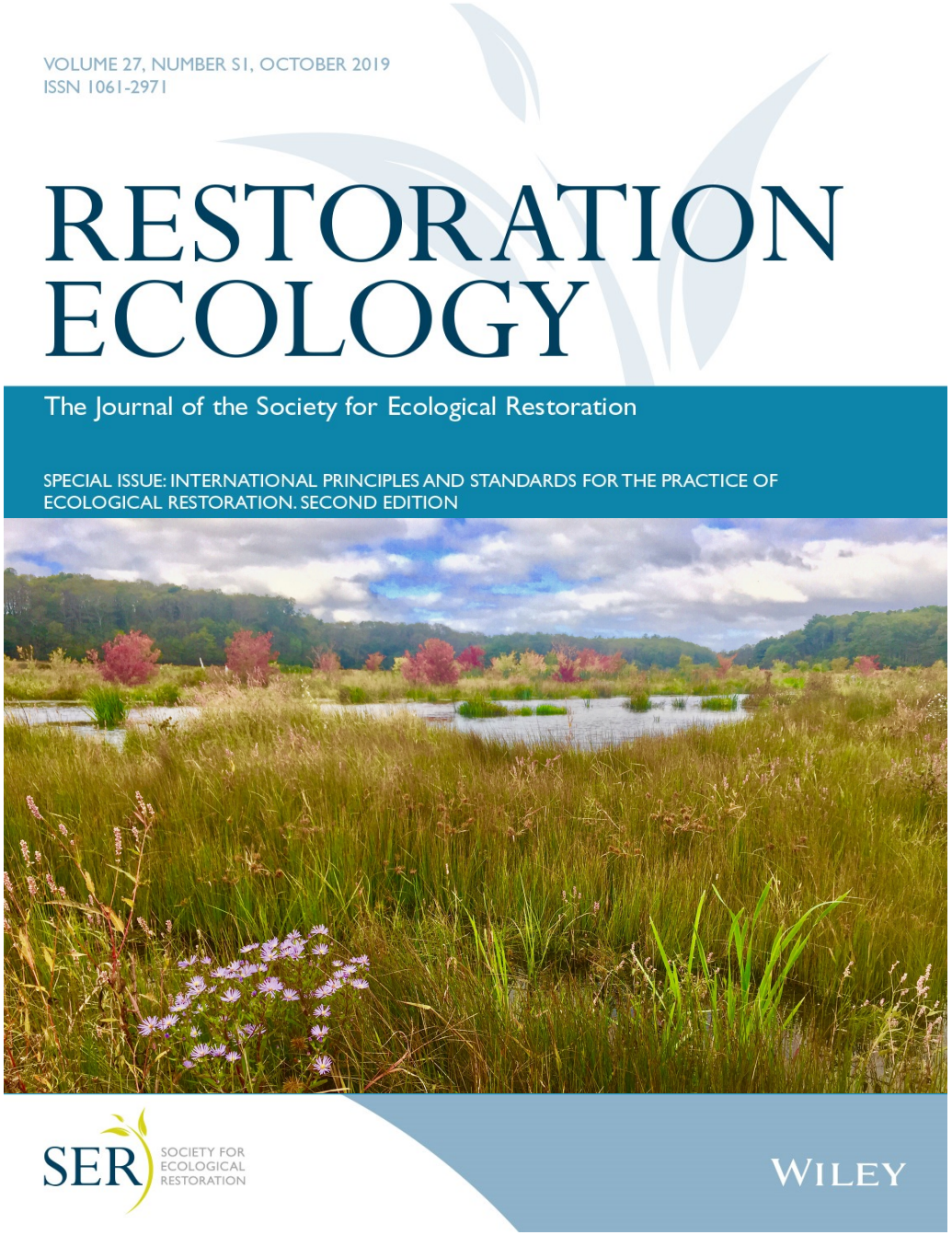
SIX KEY CONCEPTS



1. Identifying an **appropriate local native reference ecosystem**, taking environmental change into account

Why local species are best in restoring :

- Climate adapted
- Soil suited
- Provide ecological network – native pollinators to support crops
- Resilient ecologies



Principles and Standards for the practice of Ecological Restoration

2nd Edition

Now available Open access

Downloads:
21,000 and growing daily

Eight Principles Underpinning Ecological Restoration

1 ENGAGES **STAKEHOLDERS**

2 DRAWS ON **MANY TYPES OF KNOWLEDGE**

3 IS INFORMED BY **NATIVE REFERENCE ECOSYSTEMS,** WHILE CONSIDERING ENVIRONMENTAL CHANGE

4 SUPPORTS **ECOSYSTEM RECOVERY PROCESSES**

5 IS ASSESSED AGAINST **CLEAR GOALS AND OBJECTIVES** USING MEASURABLE INDICATORS

6 SEEKS THE **HIGHEST LEVEL OF RECOVERY** POSSIBLE

7 **GAINS CUMULATIVE VALUE** WHEN APPLIED AT LARGE SCALES

8 IS PART OF A **CONTINUUM** OF **RESTORATIVE ACTIVITIES**

SER SOCIETY FOR ECOLOGICAL RESTORATION

THE RESTORATIVE

CONTINUUM

Improving biodiversity, ecological integrity, and ecosystem services

REDUCING	IMPROVING	REPAIRING	INITIATING	PARTIALLY	FULLY
SOCIETAL IMPACTS	ECOSYSTEM MANAGEMENT	ECOSYSTEM FUNCTION	NATIVE RECOVERY	RECOVERING NATIVE ECOSYSTEMS	RECOVERING NATIVE ECOSYSTEMS

REDUCED IMPACTS

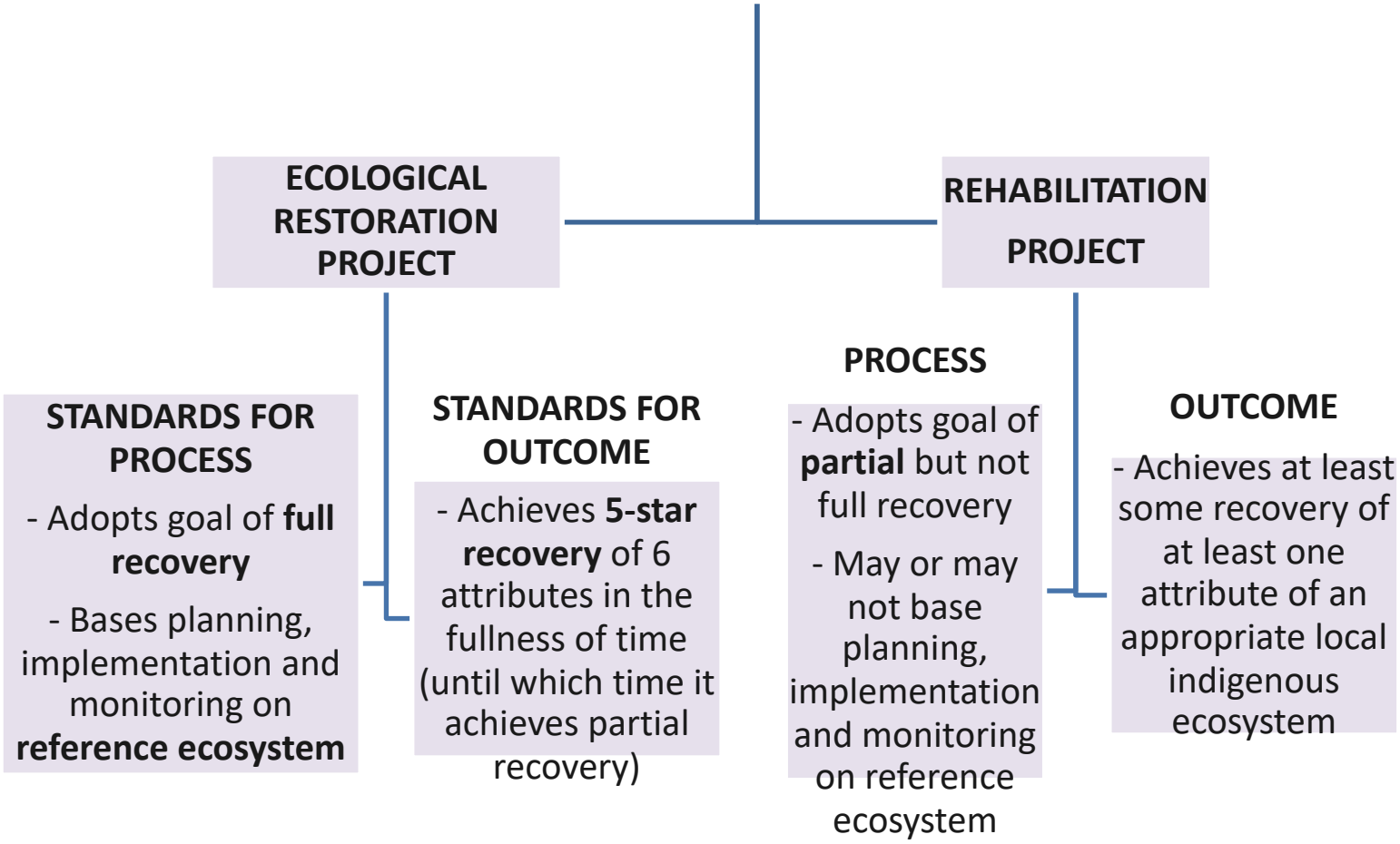
REMEDIATION

REHABILITATION

ECOLOGICAL RESTORATION

SER SOCIETY FOR ECOLOGICAL RESTORATION

To support all genuine efforts to continuously improve ecosystem recovery



All ecosystems









Mown

First year's growth

5-10 years

All sectors

Who Should Use this Document?

Regulatory bodies (to assist them setting consent conditions)
Offset
Mine development
Local government

Funding bodies (to assist project selection and to guide project reporting)
Federal agencies
State agencies
Regional NRM groups
Philanthropic trusts

Agencies, organisations and industry (implementing restoration)
Natural area managers at all tiers of government
Private conservation trusts
Infrastructure agencies (main roads, ultilities agencies)
Consultants and contractors
Care groups
Private landholders
Students of restoration at University and TAFE

The Carbon Economy!!!!

The Standards build vision and capacity

Community: *"Effective, efficient, engaging"*

Regulator: *"Resilient, biodiverse"*.

Industry :

"We do it once.
The outcome is predictable.
Product is replicable."

.

Callaway (2017) Nature 548

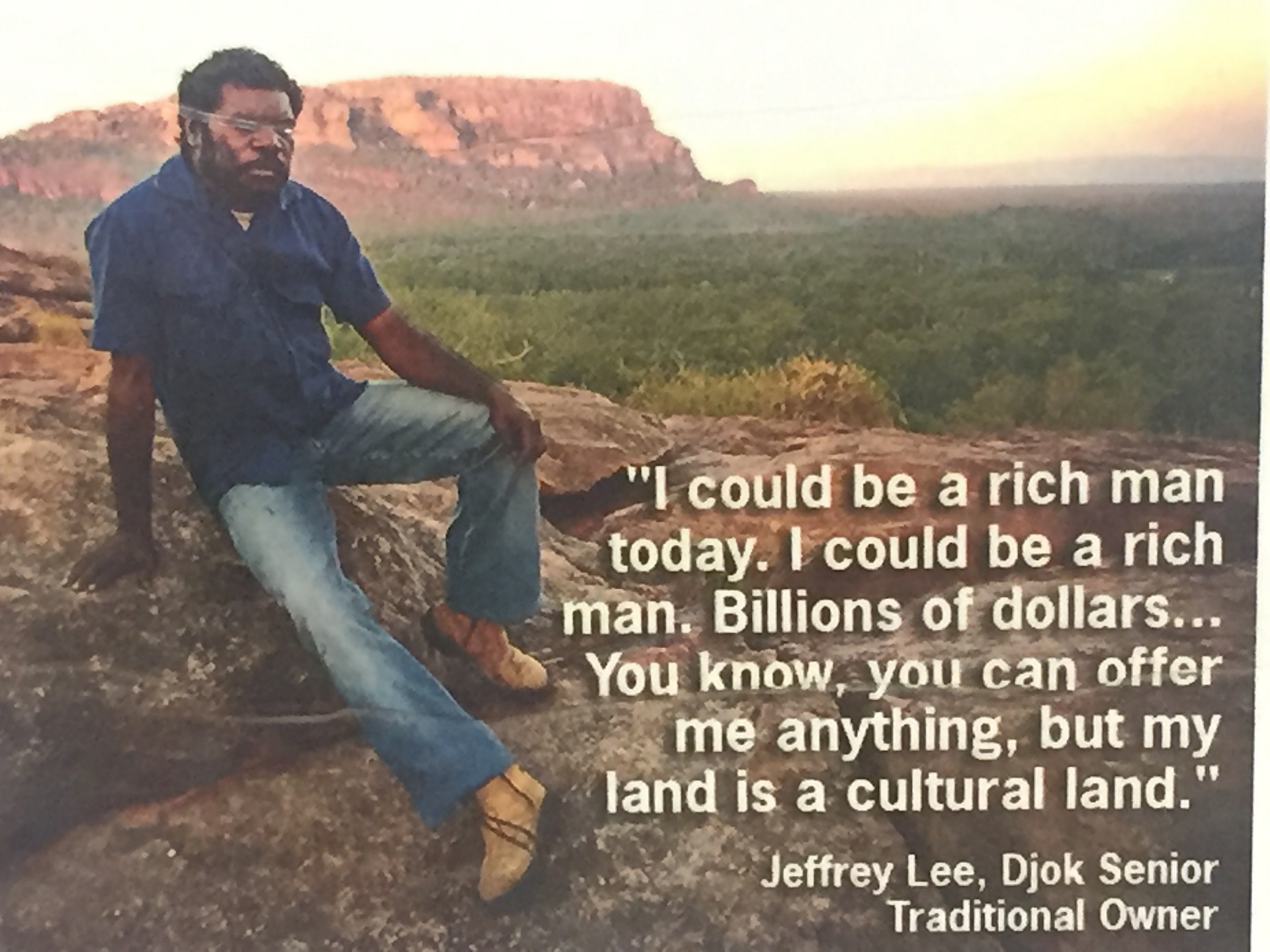
Five Star is achievable, replicable and predictable

Snowy Mountain Restoration – Five years on

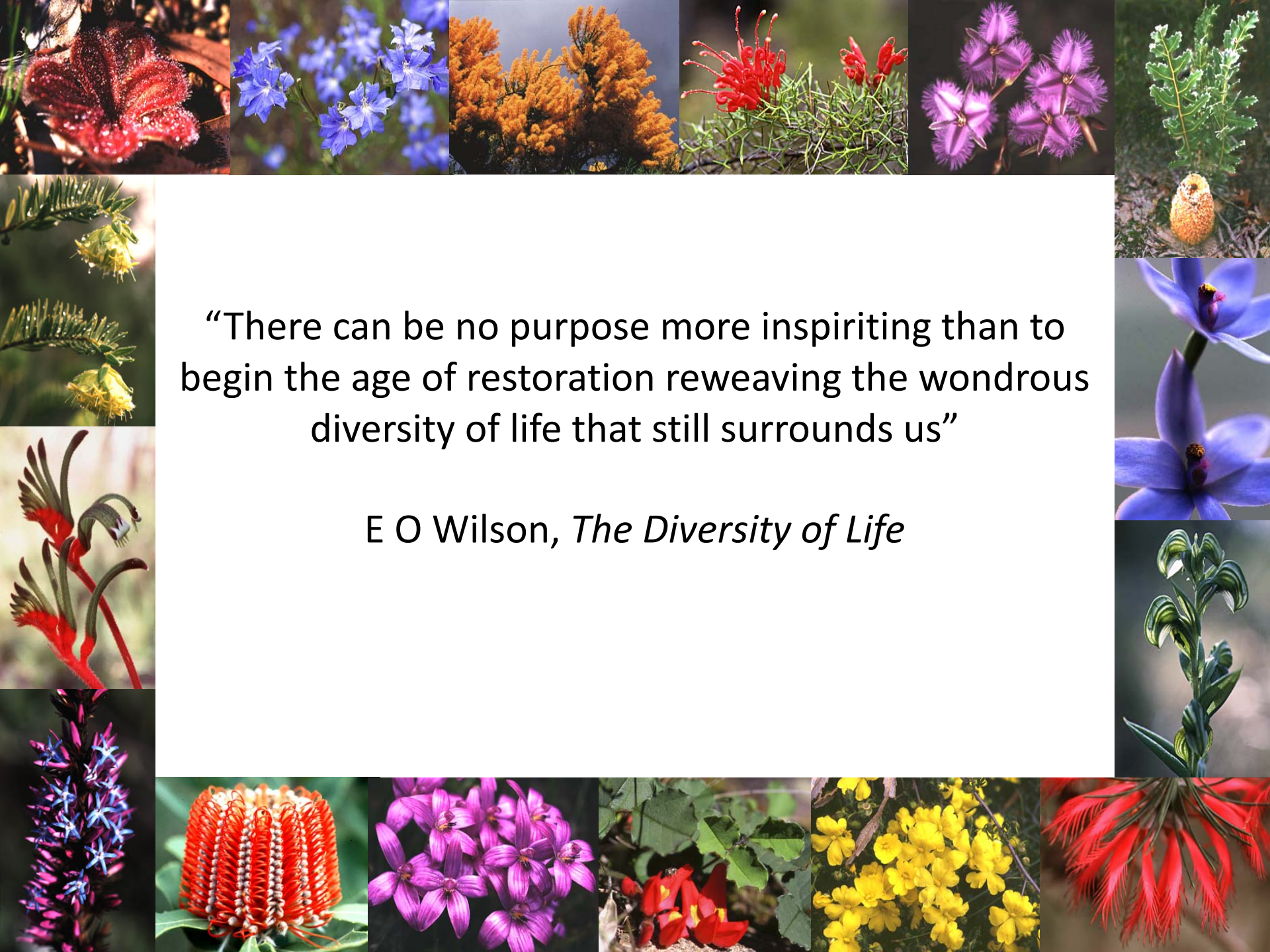
Five threatened species were recorded in the rehabilitation area, with one additional listed species, the Powerful Owl *(Ninox strenua)*, located adjacent.

The Standards should not be used to predicate the loss of irreplaceable environmental assets

- Helena Aurora Range – high endemism per unit area


"I could be a rich man today. I could be a rich man. Billions of dollars... You know, you can offer me anything, but my land is a cultural land."
Jeffrey Lee, Djok Senior Traditional Owner

There are some things restoration can’t achieve



"There can be no purpose more inspiriting than to begin the age of restoration reweaving the wondrous diversity of life that still surrounds us"

E O Wilson, *The Diversity of Life*

"Without stronger and more effective government control, Australia will continue travelling at breakneck speed toward the bottom of the quarry."

PAUL CLEARY

In the Black, Nov 2016