### Plant translocations in Australia

### Overview of the Translocation Guidelines

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## Threatened plants

- 1355 threatened flora species in Australia (EPBC)
- Conservation actions to prevent extinction:
  - Habitat protection
  - Threat management
  - Ex-situ conservation
  - Translocation



## Translocation

- The intentional transfer of plants or regenerative plant material from an ex situ collection or natural population to a new location.
  - Introduction
    - establish a population in a site where it has not previously occurred but is within the known range of the species
  - Reintroduction
    - establish a population in a site or habitat type where it no longer occurs (locally extinct).
  - Reinforcement (augmentation)
    - Adding individuals of a species into an existing population
  - Assisted migration
    - establish a species, for the purpose of conservation, outside its indigenous range in what is considered to provide appropriate habitat for the species based on climate change or habitat change predictions.



Translocation is an ancient practice

>50 species recorded as being deliberately translocated





Silcock et al, unpublished

### Australian Plant Translocation Database

Number

#### 1001 translocations of 376 taxa

- Difficult to predict translocation performance of translocations ٠ - importance of inherent traits of spp.
- Importance of long-term commitment and • monitoring
- Success related to sufficient founder propagules (500)
- Second-generation recruitment major factor inhibiting success

Silcock et al, unpublished



## Translocation Guidelines: need for an update



### The revision process

- TSR Hub Project 4.3
  - Improving threatened plant reintroduction success and species recovery
- ANPC Steering committee:
  - David Coates, Linda Broadhurst, Bob Makinson, Cathy Offord, Maria Matthes
- 1 project manager
- May 2017 October 2018
- Guidelines workshop and information day in Sydney
- Genetic mixing workshop in Melbourne
- 30+ chapter authors
- Case study authors







## What's new



### The structure of the Guidelines



8:30	Registration		1
Session 1	1 – Introduction and co	ntext	Introduction
9:00	Lucy Commander	Welcome	
9:15	Margaret Byrne	Introduction	V
9:30	Lucy Commander	Plant translocations in Australia and an overview of the Translocation Guidelines	2. Deciding
10:00	Colin Yates	Ecology of Threatened Flora	<u> </u>
10:20	Juliet Wege	Taxonomy for conservation – documenting Western Australia's most vulnerable species	$\checkmark$
10:40	Morning Tea		3. Assessment
Session 2	2 – Pre-translocation p	reparation	of biology &
11:00	Andrew Crawford	Collecting and storing seed of Threatened Flora for translocation	
11:20	Shane Turner	Seed biology and nursery propagation of Threatened Flora for translocation	V
11:40	Eric Bunn	Micropropagation and cryobanking of Threatened Flora	4. Site
12:00	Questions and discussion		Selection
12:15	Lunch	Optional tour of seed bank	
Session 3 – Site selection, policy and proposals, implementation and assessment		5. Policy,	
1:15	David Coates	Genetics in planning and monitoring plant translocations	proposals
1:40	Melanie Smith	WA policy, legislation and approvals required for translocations	$\checkmark$
2:00	Tanya Llorens	Preparing a translocation proposal in Western Australia	
2:20	Leonie Monks	Implementing and assessing translocations in Western Australia	6. Preparation
2:50	Questions and discu	ission	
3:00	Afternoon tea		<b>↓</b>
Session 4	4 – Case studies and br	eakout groups	7. The
3:30	Carole Elliott	Case studies of translocation in the mining sector	translocation
3:50	Siegy Krauss	Long term translocation monitoring: Grevillea scapigera case study	$\checkmark$
4:10	Panel discussion	1. Pre-translocation preparation	8. Monitoring
		2. Approvals process	and
		3. Implementation and assessment	evaluation
4.50	Final wrap up		V
5:00	Close		9. Community
	Optional drinks at t	he Como (cnr Canning Hwy and South Tce)	participation

Chapter 2. Deciding whether to translocate

#### Conservation actions available

Benefits and risks

Is it necessary?

Goals and objectives

Decision making framework

## Benefits and risks

- Benefits
  - Only way for species to survive
  - Minimise extinction risk when few populations
  - Minimise effects of declining population size
- Risks
  - No survival = wasted resources
  - Negative consequences of genetic mixing
  - Introducing pests and diseases
  - Detrimental effects on other species (competition, disturbance)
  - Population may not persist due to absence of pollinators etc.
  - Additional risks for mitigation translocations



# Is translocation necessary?

- Ensure taxonomic status is clear
- Target surveys for additional populations
- Are factors that limit distribution and abundance known?
  - Removal of threats may be sufficient
- Have previous translocations been successful?



## Decision making





Recovery team / translocation working group

- Bring together people from a range of disciplines who have experience in conserving a species
- Experts and stakeholders

# Chapter 3. Pre-translocation assessment of biology and ecology



Collect all the information about the species that is needed for the translocation

Informs everything from site selection to monitoring



This information will go in the translocation proposal

# How to collate the information?

- Literature
- Books
- Experts (see appendix)
- Related species
- Species with similar habitat
- Research plan
- Case studies in APC (available on ANPC website)
- Australian Plant Translocation Database (Jen Silcock and Laura Simmonds)

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## What do you need to know about the species?

- Life history
  - Longevity
  - Regeneration
  - Pollination
  - Seed maturation season
  - Seed dispersal
  - Seed viability, dormancy, germination
  - Seed bank type
  - Germination phenology
- Disturbance and Threat
  - Fire sensitivity
  - Response to flood
  - Disease susceptibility (e.g. *Phytophthora*, Myrtle Rust)
  - Resilience to grazing
  - Resilience to weeds
  - Effect of herbicides

- Abiotic
  - Soil
  - Water
  - Slope
  - Landform
  - Precipitation
  - Temperature
- Biotic
  - rhizobia
  - mycorrhizae
  - pollinators
  - seed dispersal vectors
  - habitat characteristics e.g. canopy cover





Photo: M Jusaitis

#### Photo: A Crawford

### How do you source the plants?

- With propagation
- Propagation techniques
  - Seed
  - Cuttings
  - Tissue culture
- Pluses and minuses
- Costs and timing



Photo: M Jusaitis

## Sourcing plants

- Without propagation
  - Direct seeding
  - Soil transfer
  - Transplantation











# Chapter 4. Selecting source and recipient sites

- Selecting source population: issues to consider
  - Which source populations?
  - Should you mix populations?
  - How many individuals?
  - How many plants to propagate?
- Selecting recipient sites
  - Decreasing extinction risk
  - How many sites?
  - Site assessment
    - Habitat, climate, tenure, threat management, size
- Selecting sites beyond the known range assisted migration
  - Abiotic and biotic suitability, pollinators
  - Potential for use of predictive tools



## Site selection to decrease extinction risk

- Extinction risk for plants includes:
  - rate of decline
  - reduction in geographic distribution
  - reduction in population abundance
- Introduction, reintroduction or reinforcement?



**SSC** 

IUCN Standards and Petitions Subcommittee (2017) Guidelines for using the IUCN Red List categories and criteria. Version 13. <u>http://www.iucnredlist.org/documents/RedListGuidelines.pdf</u>.

# Preventing unintended consequences

- Do a risk assessment
- Disturbance
  - Introduction of weeds, pathogens, pests
  - Trampling of existing vegetation
- Ecological impacts
  - Competition, invasion
- Cultural values
  - Engage with Traditional Owners in the co-design of the translocation process, especially the selection of the recipient site(s) to consider potential impacts on cultural values



Chapter 5. Policy, approvals and translocation proposals

#### Translocation policies

- Explains or guides how a government authority or agency will process or consider proposals to translocate
- Other policies may be relevant, such as those for threatened species

#### **Requirements for approval**

- Licences and permits may be required.
- May need multiple approvals from different authorities
- Consent from traditional owners
- Can be time consuming start applying early!

## **Translocation Proposal**



Essential information necessary to understand who, what, why, where, how, and when a translocation is proposed.



Management plan



Provide information for a decision whether or not to proceed



Reference document to monitor progress and determine success.

# Chapter 6. Pre-translocation preparation

- People and resources
- Timelines
- Collecting material
- Ex-situ collections
- Experimental design
- Planning for management, monitoring and evaluation
- Site preparation



# Chapter 7. Implementing the translocation and ongoing maintenance

- Timing
  - Rainfall
  - Plant age, health, acclimatisation
- Preparing plants
- Planting
  - Hygiene, layout, labelling
- After-planting care
  - Watering, guards
  - Site management



Photo: L Monks





## Chapter 8. Translocation monitoring and evaluation

- **Document** what you're trying to achieve (goals, objectives).
- Give yourself the best chance to explain the results (explanatory variables – management, environment).
- Permanently tag and **census** all plants.
- Monitor **frequently** in year one, and then **annually**. Compare like with like.
- Be **clear** on what you're measuring, but look out for **surprises**.

# Chapter 9. Community participation and support

- 'Community' consists of
  - NRM bodies, local gvt, consultants, nursery, friends groups, traditional owners, native plant societies, local environmental centres
- Practical support
  - Surveys
  - Reducing threats
  - Local contacts
- Raising the profile
- Citizen Science
- Celebrate achievements and recognise community



## Where to find more

- Translocation Guidelines
  - Purchase
    - <u>http://www.anpc.asn.au/translocation</u>
  - Download
    - <u>https://tsrhub.worldsecuresystems.com/news/plan</u> <u>t-translocation-new-guidelines-a-game-changer</u>
- Case Studies
  - <u>https://www.anpc.asn.au/translocation-case-studies-2/</u>
- Australasian Plant Conservation
  - https://www.anpc.asn.au/apc/
- Join the ANPC
  - https://www.anpc.asn.au/membership/

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Photo: D Coates