Deciding whether to translocate, and pre-translocation assessment of biology and ecology

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Photo: D. Coates

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

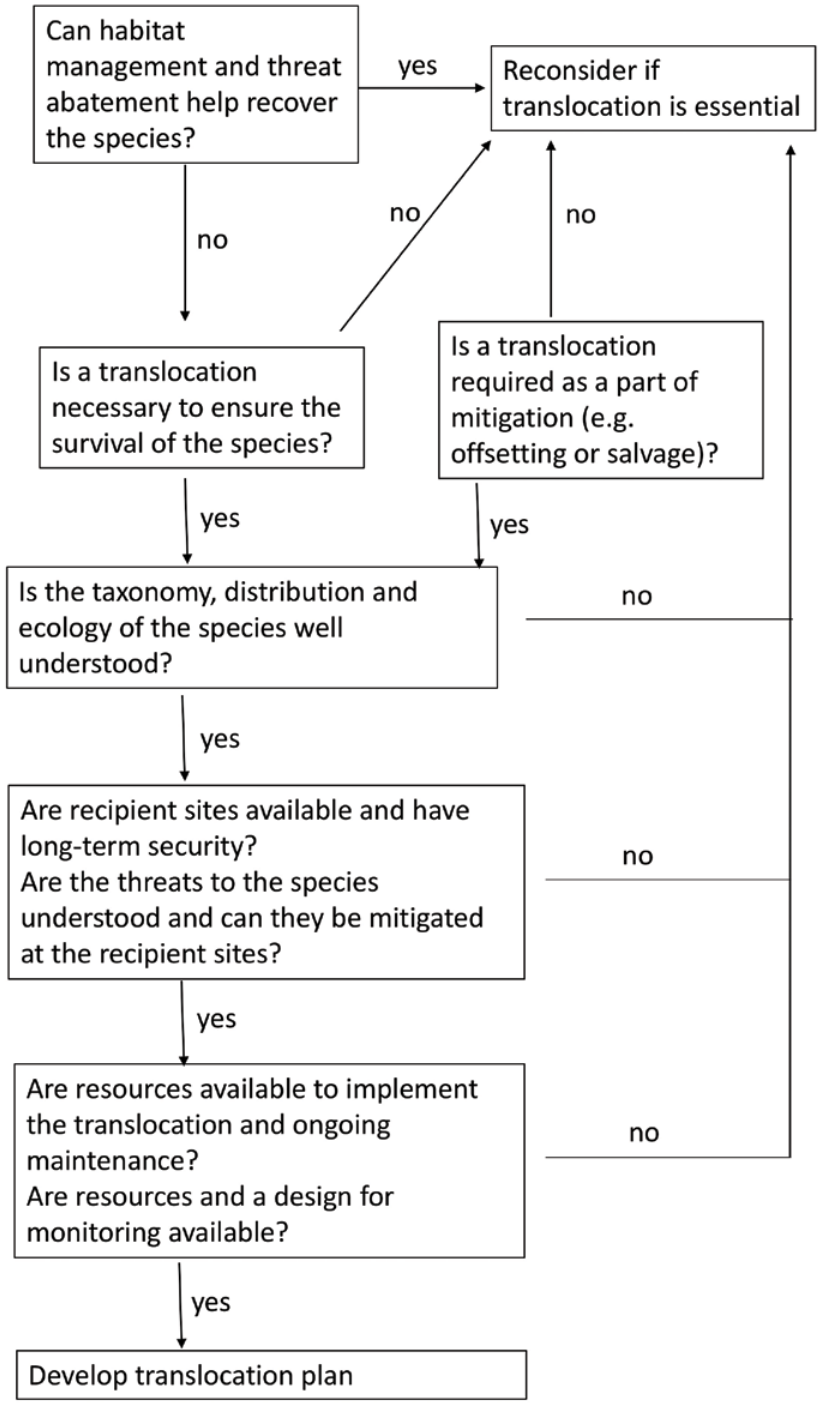
Dead translocated Wollemi Pine. (Photo: H. Zimmer)

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?

(Photo: L Commander)

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

(Photo: L Monks

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
- Jen Silcock's review

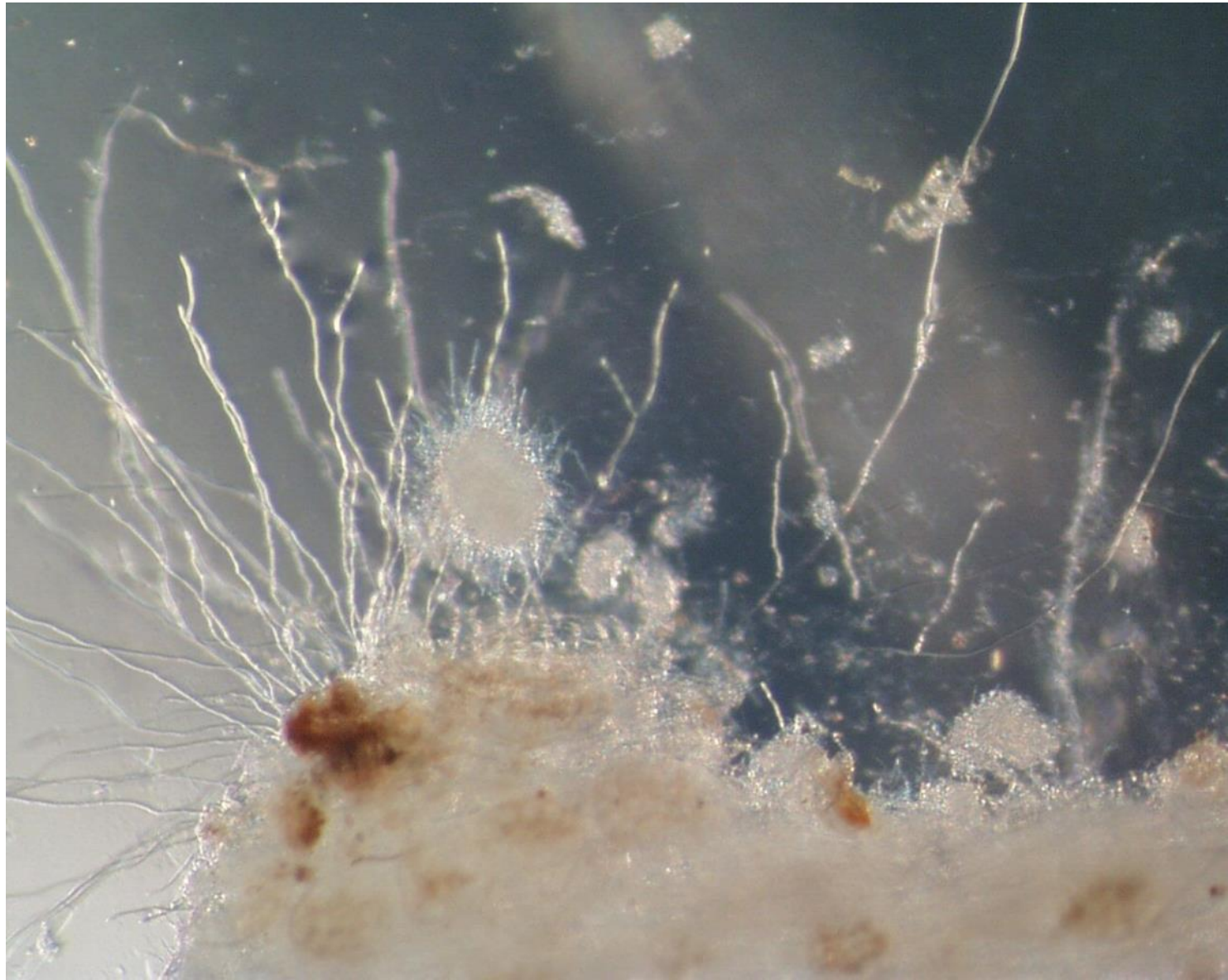
What do you need to know about the species?

- Life history
  - Longevity
  - Regeneration
  - Pollination
  - Seed maturation season
  - Seed dispersal
  - Seed viability, dormancy, germination
  - Seed bank type
  - Germination phenology

(Photo: D Coates)

What do you need to know about the species?

- Biotic
  - rhizobia
  - mycorrhizae
  - pollinators
  - seed dispersal vectors
  - habitat characteristics e.g. canopy cover



(Photo: M Jusaitis)

What do you need to know about the species?

- Abiotic
  - Soil
  - Water
  - Slope
  - Landform
  - Precipitation
  - Temperature




(Photos: C Elliott)

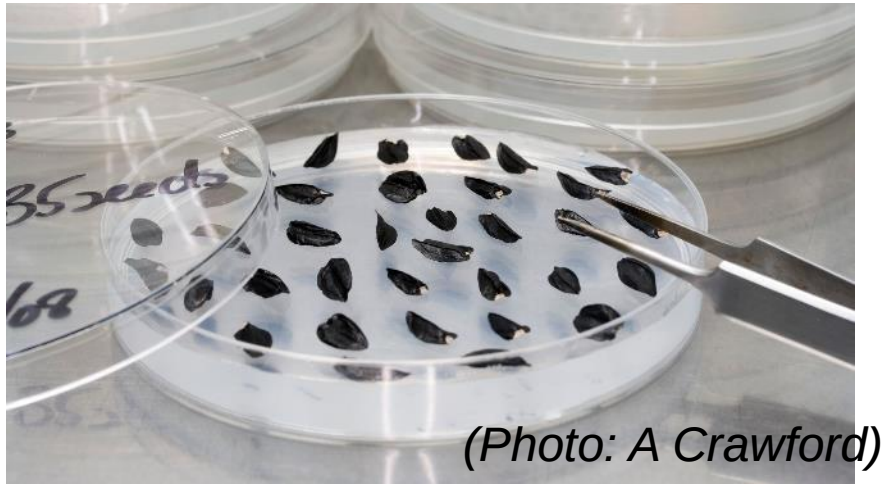
What do you need to know about the species?

- Disturbance and Threat
  - Fire sensitivity
  - Response to flood
  - Disease susceptibility (e.g. *Phytophthora*, Myrtle Rust)
  - Resilience to grazing
  - Resilience to weeds
  - Effect of herbicides

(Photo: L Monks)

Sourcing plants for translocation

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



(Photo: A Crawford)

(Photo: M Jusaitis)

Propagation categories

The cost of propagation increases from Category A to D. Dormancy types are abbreviated as follows: ND: Non-dormant, PY: Physical Dormancy, PD: Physiological Dormancy, MPD: Morphophysiological Dormancy.

Category	Seed collection	Seed storage	Germination/strike rate	Dormancy	Growing time	E.g.
A	Easy	Easy	High	ND, PY	6-12 months Seeds (not cuttings)	*Acacia, Eucalyptus, Casuarina, Pultenaea*.
B	Moderately easy to collect but long term storage unreliable.	Unreliable	Moderately reliable	ND, PD	12-18 months Seeds or cuttings	*Grevillea* (some), *Prostanthera, Hakea.*
C	Difficult	Difficult	Often unreliable	PD, MPD	12 -24 months	*Hibbertia, Persoonia, Zieria, Boronia, Pimelea*, Rainforest trees.
D	Difficult	Difficult	Difficult to germinate or strike. Require high technical input and research	PD, MPD	~3 years	Rainforest species, Terrestrial orchids, *Epacris, Leucopogon, Persoonia.*

Case Study: An experimental translocation identifies the best propagation method

- Emery et al. 2018
- *Persoonia pauciflora*
- Are seedlings or cuttings more successful?
- Three sites, 24 plants per site
- Higher survival from cuttings (81%) compared with seedlings (58%)

Translocation without propagation

- Direct seeding
- Soil transfer
- Transplantation

(Photo: A Benwell)

(Photo: Stocklands Bundilla)