

The translocation design and ongoing management

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Photo: D Coates

Ch 6.

Pre-translocation preparation

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

Ch 7.

Implementation & maintenance

- Preparing plants
- Planting
- After-planting care



Photo: M Jusaitis

People and resources

- People

- Team leader
- Range of specialists and experts

- Resources – funding for:

- Research
- Surveys
- Collection
- Propagation
- Site prep
- Equipment
- Monitoring

- Facilities

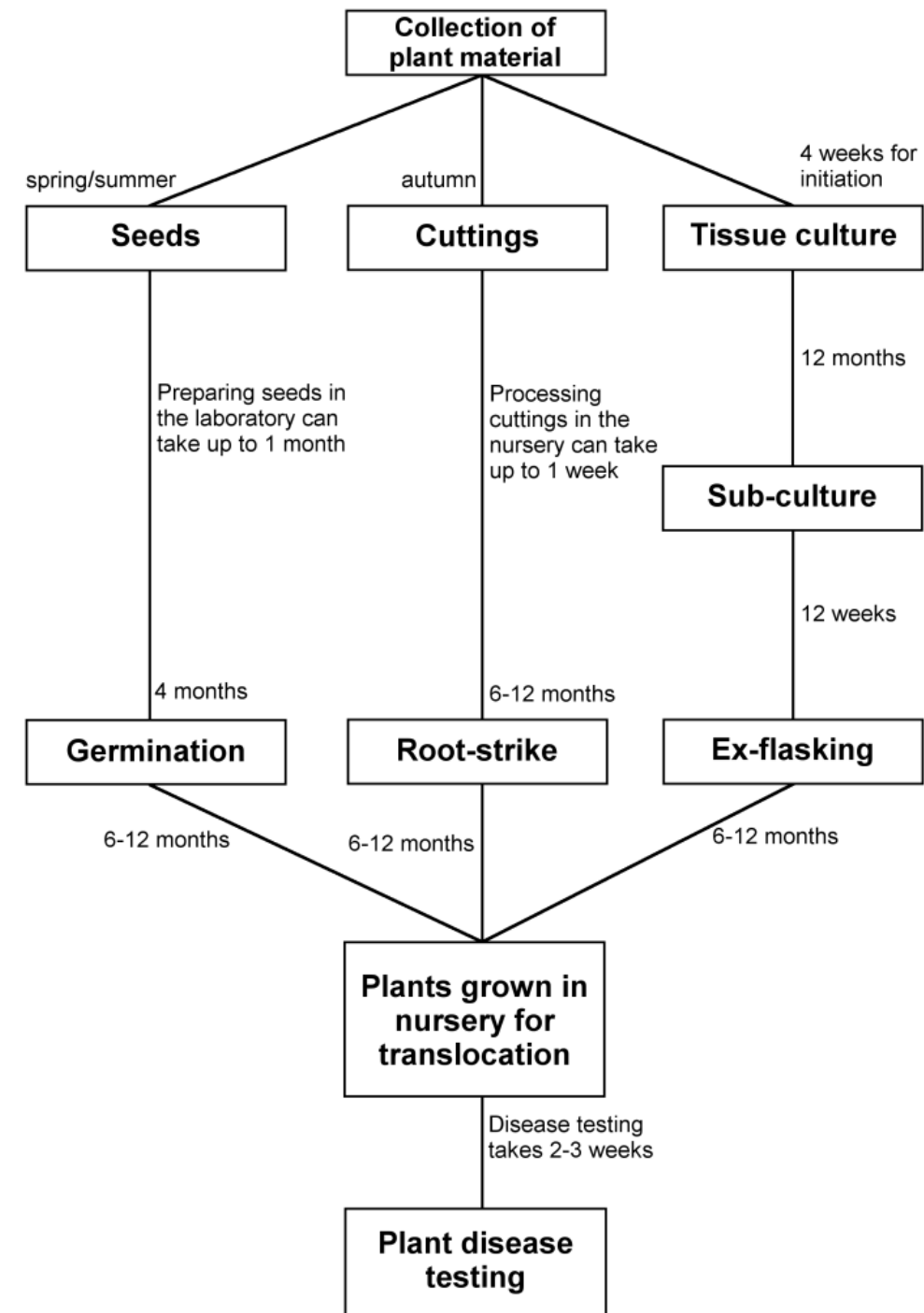
- Laboratories, seed store, nursery



Photo: R Snashall

Scheduling

- Timelines
 - Influenced by approvals, collection timing, propagation difficulty, growth rates, planting times
- Single year or multi-year planting
 - Risk spread for unfavourable season
 - Multiple seed collection seasons



Scheduling

Year 1	J	F	M	A	M	J	J	A	S	O	N	D
<i>Acacia cochlocarpa</i>	Transn proposal developed	Transn proposal submitted for review and approval			Transn proposal approved						Seed collectn	Seed germinn
<i>Andersonia annelsii</i>												
<i>Banksia cuneata</i>												

Collect all year round

Year 2	J	F	M	A	M	J	J	A	S	O	N	D
<i>Acacia cochlocarpa</i>	Nursery					Planting at site						
<i>Andersonia annelsii</i>	Nursery											
<i>Banksia cuneata</i>	Nursery				Planting at site							

Fast growing

Year 3	J	F	M	A	M	J
<i>Acacia cochlocarpa</i>						
<i>Andersonia annelsii</i>	Nursery					Planting at site
<i>Banksia cuneata</i>						

Fast growing

Collecting source material

- Decide on source material (seeds, cuttings, whole plants, soil seed bank)
- Determine optimum collection timing
- Develop sampling strategy
 - Usual guide is <20% of fruits or <10% plant material. Halve for Threatened Sp.
- Obtain licences
- Keep records to track collections through storage, propagation and planting



Photo: A Crawford



Photo: D Coates

Photo: R Garnett



Photo: A Benwell

Whole plants

- Method depends
 - Plant size and biology: herb/shrub/tree/rhizomes/tubers
 - Weather: wet vs dry soil
 - Resources
 - Substrate: sand/clay/rock
 - Equipment: excavator/tree spade/crane/truck
- Survey
 - Tag and GPS
- Direct transplanting from source to recipient site, or gradual transplanting (pruning root system prior to moving)
- Prune branches

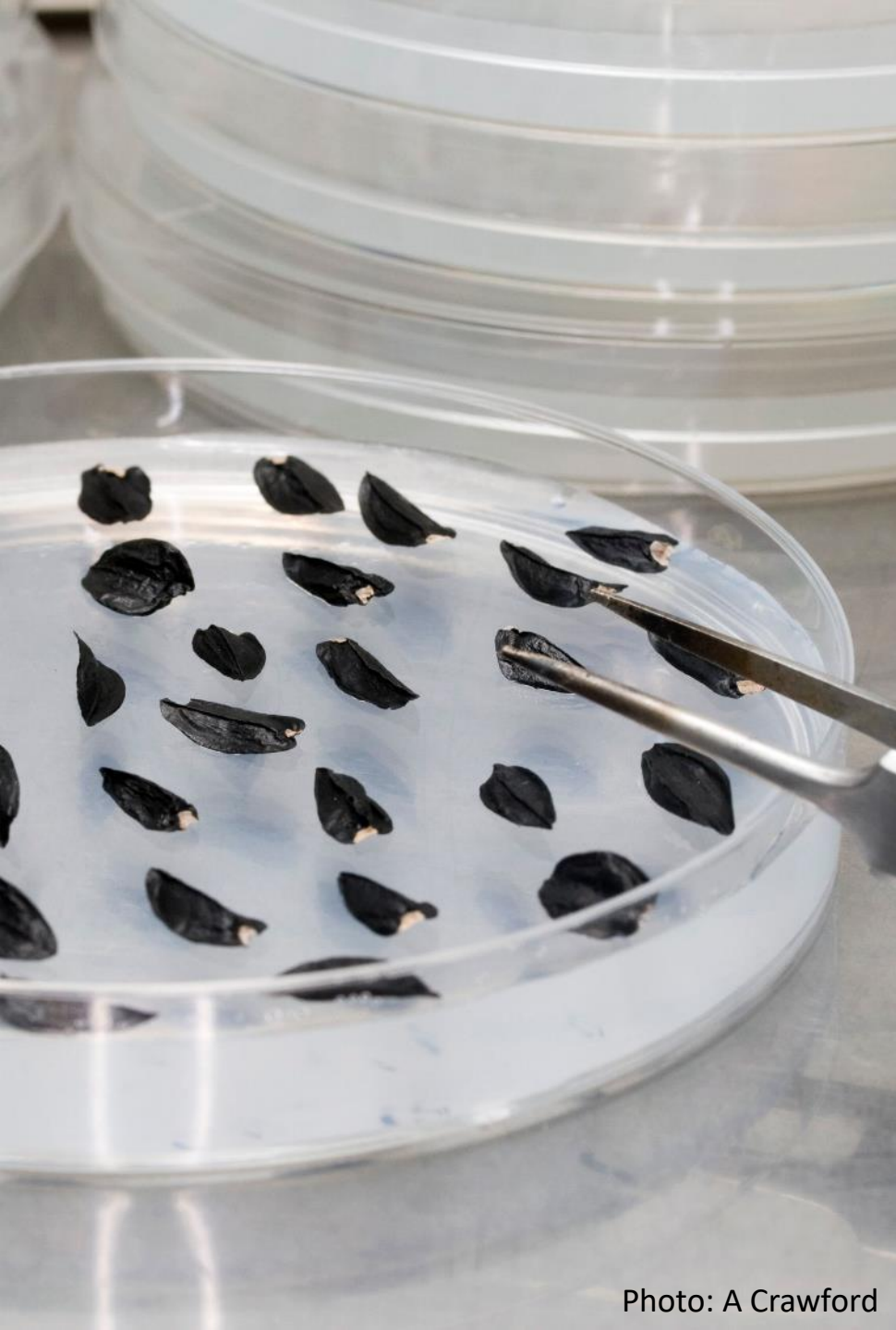


Photo: A Crawford

Ex situ collections

- Keep records to track material
- Horticultural / seed science expertise required
- Seeds
 - Clean (remove dehiscent fruits and non-seed material)
 - Dry (15-20% RH) and seal air-tight
 - Store cool (5°C or -18°C)
 - Germinate (appropriate temperature, light, moisture, requirements for dormancy loss)
- Vegetative propagation
 - Cuttings, division, tissue culture
- Keep records of what you did, learn for the future
 - E.g. type of cuttings, collection season, incubation conditions, germination %, pre-treatments



Phytosanitary considerations

- Raise plants free from pathogens pests and diseases
 - Use accredited potting media, or pasteurise potting media
 - Clean tools and benches
 - Inspect regularly

Experimental design

- Test ecological theories, compare management techniques and explore important research questions
- E.g.
 - causes of plant rarity
 - microhabitat requirements
 - compare propagation or sowing techniques
 - compare site preparation or post planting treatments
 - test outcomes of different seed sourcing strategies



Photo: M Jusaitis



Photo: L Monks / R Dillon

Experimental design

- Ask a question:
 - Do tree guards increase plant survival?
 - Do plants have higher growth in the sun compared with the shade?
 - Do cuttings have higher survival than seedlings?
 - Do plants grown from seeds sourced from the translocation site have higher growth from those sources from >100 km away?
- Implement the experiment
 - Assign half the plants to treatment 1 / the control (no tree guards) and the other half to treatment 2 (tree guards)
 - Randomly place the treatments so that one treatment isn't in a clump, use replicates / blocks
- Monitor the experiment
 - Count the live and dead plants, measure the height of the plants.
 - Monitor several times e.g. every few months in the 1st year, then yearly.
- Analyse the results using appropriate statistics



Photo: A Benwell

Identifying management and monitoring



Photo: A. Benwell

- Plan for ongoing management
 - Threat abatement
 - Costings, resources
- Plan for monitoring and evaluation
 - What to monitor, how often, for how long
 - What are the success criteria
 - Will you do adaptative management?

Site preparation

- Site mapping
- Remove threats
 - Weeds
- Soil preparation
 - Ripping
- Habitat restoration
- Fire
- Site protection
 - Fencing



Photo: M Jusaitis

Preparing nursery grown plants

- Label all plants
- Size – not too small, not pot-bound
- Remove flowers / fruit
- Shoot prune
- Harden off
- Sex ratio of dioecious plants



Photo A. Benwell

Planting timing

- Frost
- Moisture / rainfall
- Temperature
- Access
- Plant age
- Plant health



Photo: L Monks / R Dillon

Planting

- Hygiene
 - Avoid transport of pathogens and weed seeds
 - Clean vehicle, tools, shoes
- Layout
 - According to experimental design
 - Avoid grouping clones
 - Clumps / naturalistic / rows
 - Gaps for following year planting
- Labelling
 - Have a list, check off plants
 - Uniquely label individuals
- Planting
 - Pottiputki, trowel, shovel
 - Water in



Photos: L Monks

After-planting care and maintenance

- Mulch
- Watering
- Tree guards / caging
- Fencing
- Pesticides
- Wind and shade barriers
- Ongoing habitat restoration



Photo: R Dillon



Photo: L Monks

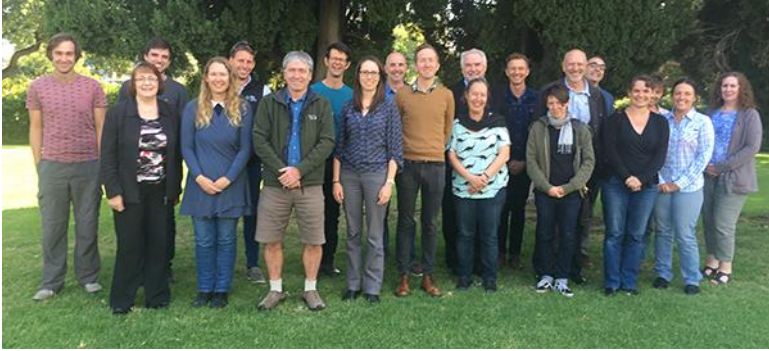


Photo: R Morgain



Photo: J Lynch

Thanks

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