Department of **Biodiversity, Conservation and Attractions**

Biodiversity and Conservation Science

GOVERNMENT OF WESTERN AUSTRALIA

Species distribution and habitat attributes guide translocation planning of a threatened plant

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Background

Halting or reversing population declines, often requires foundational knowledge on the distribution or ecology of species. The translocation of propagules to new locations is a recovery tool used to establish or maintain self-sustainable populations in locations where threatening processes have been minimised or are absent. The success of plant translocations depends on defining the habitat attributes critical for establishment and survival, and on locating this habitat in the landscape.

Selecting suitable translocation sites requires scrutiny of natural or wild localities occupied by the target species – to define critical environmental and habitat attributes and identify potential sites in the landscape with these attributes that will support a translocated population. The use of systematic approaches to define criteria important for translocation success, such as habitat modelling, field surveys and experimental translocations has been limited. Lastly, the practical reality of translocation site selection requires consideration of constraints due to the needs of stakeholders such as practitioners, site/land managers and government regulators.

Field surveys measured 22 local habitat attributes to determine the habitat requirements of *Tetratheca erubescens*, a threatened shrub restricted to cliff faces on a single, banded ironstone range in semi-arid south-west Western Australia. Photo: Carole Elliott

We identified 'potential translocation sites' of *Tetratheca erubescens* J.P.Bull (Elaeocarpaceae) by using species distribution modelling and field surveys of local habitat attributes to define its habitat requirements at three spatial scales (landscape, locality, microsite). We used these outcomes to present a conceptual model for practitioners and regulators that outlines our approach for identifying 'potential translocation sites' and guides the ranking of their suitability within the context of three assessment filters: species requirements, management-operational constraints and regulatory considerations.

Findings

- Habitat requirements were strongly associated with high elevation (>475 m), steep slopes (>30°) of no dominant orientation, cliff face habitat with high rock cover, and microsites that were relatively water gaining and had wider cracks containing organic soils.
- 24 'potential translocation sites' were identified in unoccupied natural habitat.
- Stakeholders considered the ecological (e.g. site carrying capacity), economic (e.g. commercial potential) or occupational health and safety (e.g. access to site) aspects of implementing translocations at the sites identified, when ranking and selecting sites for approval.

Management implications

Plant translocations require locating suitable habitat in the landscape and defining habitat attributes critical for establishment and survival of the species. Species distribution modelling and field surveys achieve this and are essential for guiding the translocation process. There are several management implications:

- Stakeholder engagement is essential to approving sites and in the case of *T. erubescens*, the factors important to ranking sites for selection were diverse among stakeholders (Fig. 1).
- Experimental translocations can be used to test and validate "potential translocation sites".
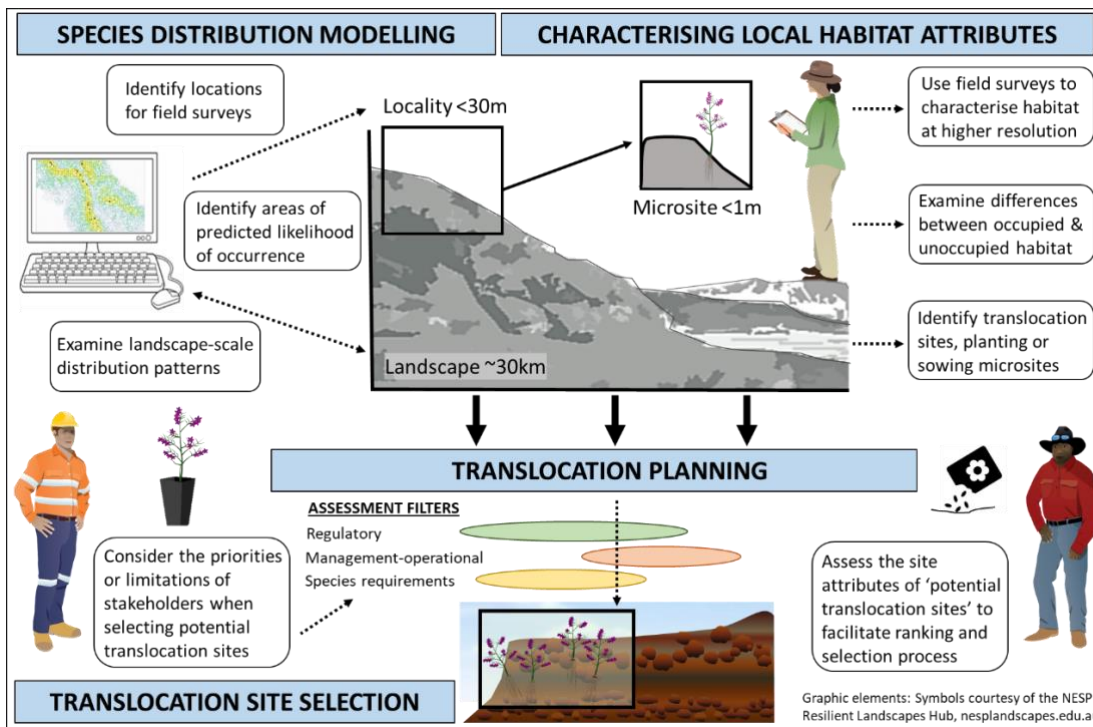- High resolution habitat requirements can be used to develop targeted translocation protocols.

Figure 1. The approach characterises the habitat of *T. erubescens* at different spatial scales (30km landscape; 20m locality or <1m microsite) and illustrates integrating all stakeholder needs.

Conservation actions, like the implementation of translocations, require input from multiple stakeholders to inform decisions for ranking and selecting translocation sites. This includes 1) species requirements for translocation; 2) regulatory considerations for managing conservation outcomes; and 3) land manger considerations for managing translocation activities.

(graphic design A. Ritchie).

Although relevant specifically to *T. erubescens* and not exhaustive, the conceptual model of our approach (Fig. 1) was intended to provide a platform for discussion for other practitioners and regulators on ranking and selecting 'potential translocation sites' that incorporates multiple stakeholder perspectives and, coupled with translocation guidelines, should be applicable to most species targeted for translocation.

Assessment of site attributes of the identified 'potential translocation sites' for *T. erubescens*. Photo: Carole Elliott

Further information

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