Experimental threatened flora translocations and determining criteria to assess translocation success

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The successful recovery of threatened flora, particularly Critically Endangered species, will rely increasingly on translocations and introductions to secure sites where the amelioration of threats has been successful or where current threats are absent. Translocations are both costly and time consuming and in many cases involve relatively small numbers of plants so it is important that effective and efficient methodologies are developed for establishment and success. The goal of translocations is to create viable self-sustaining populations and it is critical that adequate, meaningful and measurable success criteria are developed to accurately assess whether this goal has been achieved. Appropriate success criteria will also enable the assessment of possible changes in a species listing and prioritization of resources. Translocations or preparation for translocations have been identified as a recovery action in most of the 108 approved and 12 draft Interim Recovery Plans for threatened plant species. Translocations have been implemented by The Department of Environment and Conservation for 56 threatened species over the last 17 years. Of these 29 have been experimental translocations with ongoing monitoring accessing a range of establishment, reproductive and recruitment criteria as measures of success. In species such as *Lambertia orbifolia* third generation recruits have now established. Recently more detailed experiments are currently underway to evaluate the effects of nursery pretreatments, time of transplant, microhabitats, and different watering treatments on seedling growth and survival of two Critically Endangered species *Acacia awestonia* and *Banksia ionthocarpa ssp ionthocarpa*. These will involve identifying factors affecting seedling growth and survival by closely monitoring both seedling physiological activity (e.g. chlorophyll fluorescence, leaf temperature as a proxy for seedling transpiration) and changes in local abiotic factors (e.g. soil moisture, temperature, radiation). We are also investigating other options for assessing success such as Population Viability Analysis and estimating mating system parameters and genetic diversity. Although the development of workable success criteria for plant translocations requires further investigation studies to date have been invaluable in improving establishment rates, survival and recruitment in recent translocations.

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