

Translocating plant material for restoration purposes: potential climate change mitigation measure or weed risk?

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Background

- Climate change mitigation measures are starting to enter restoration planning discussions;
- Approaches include building ‘resilience’ into ecosystems and altering end targets to account for changing conditions;
- A third approach is to translocate ‘better suited’ provenances of locally adapted, yet widespread plant species to areas where the resident provenance is impacted by climate change;
- Translocation currently occurs for commercial reasons but not for systematic climate change mitigation;
- ‘Local is best’ vs. Translocation;
- Systematic plant translocations for climate change mitigation need to occur within a comprehensive risk management framework.



Weed risk assessment and its application to native plant species translocations

- Most weed risk assessment (WRA) systems rely on human history and plant characteristics;
- WRA systems are good at detecting weedy species but not particularly good at detecting non-weedy species;
- Most systems assess the risk of plants coming into an area;
- The approach used in this WRA system is to determine variations in plant characteristics between the local (sink) and non-local (source) provenances (or populations).



Proposed WRA system

- The proposed WRA system is designed to be an easy-to-use way to assess possible weed risk of native plant translocations;
- This is not a comprehensive risk assessment framework.

WRA system design

- WRA system is divided into two sections: Initial Assessment and Secondary Assessment. If the initial assessment is failed, a complete assessment is not necessary;
- If the initial assessment is passed, a secondary assessment is necessary;
- Every question must be answered;
- If a score of three or higher is received in the secondary assessment, the plant translocation should not go ahead.



Initial Assessment

Q1. Does the species (or sub-species) naturally occur in area of proposed restoration site?

Yes – continue to Q2

No – reject.

Q2. Are both the local and non-local provenances of the same sub-species?

Yes – continue to Q3

No – reject.

Q3. Is there evidence that the proposed source material is not the local provenance for that area?

Yes – reject

No – Secondary assessment.



Secondary Assessment

- Q1. Is there taxonomic confusion over the placement of either provenances (local or non-local)? Yes – 1 No – 0
- Q2. Does the non-local have broader climatic tolerances than the local provenance? Yes – 1 No – 0
- Q3. Does the non-local have broader ecological tolerances than the local provenance? Yes – 1 No – 0
- Q4. Is there a difference in the growth habit between local and non-local provenances? Yes – 1 No – 0
- Q5. Does the non-local have different fruiting / flowering times than the local provenance? Yes – 1 No – 0
- Q6. Does the non-local have greater reproductive potential than the local provenance? Yes – 1 No – 0
- Q7. Does the non-local provenance have any different reproductive methods? Yes – 1 No – 0



Discussion and Issues

- The system should be limited to widespread species that have been shown to be, or are likely to be, impacted by climate change;
- Use in situations where no local provenances were available for restoration activities;
- Attempts were made to clearly define questions;
- Other impacts of plant translocation include 'genetic pollution', disease transfer and provenance definition.

Future work

- Test system using case studies;
- Develop broader risk assessment framework for plant translocations;
- Develop site matching capabilities for plant translocations.

