

THEME: SEED AND PLANT PRODUCTION AREAS & GENETIC ISSUES (SEED SOURCING)

See National Restoration Standards - [Principle 1](#), [Principle 2 \(incl. Box 2\)](#) and [Appendix 3](#).

WILL YOUR PLANTINGS BE ABLE TO REPRODUCE, ADAPT AND SURVIVE IN THE LONG TERM?

Implications to practice: Once you've identified a local indigenous reference ecosystem you will need to consider carefully the genetic sourcing of your plant material. It is vital that the plant species restored have enough genetic diversity to be able to breed with each other or adjacent plants. That is, your planting is just a starting point for reinstating a population that can reproduce itself over time – as well as adapt to changing conditions.

THE EFFECT OF FRAGMENTATION ON GENETIC DIVERSITY

Variety is the spice of life and this applies to seed collected for restoration projects. Historically it was believed that collecting seed very close to the restoration site was important to capture the 'local adaptation', however with an increase in understanding both from on-ground practitioners and scientists it is now considered that local adaptation is not as common as once believed and 'local' varieties of a plant can extend in range from 10-100s of kilometres.

With an increasingly fragmented landscape an additional problem of inbred populations has to be considered. When a plant population is small there can be reduced potential to reproduce and insufficient genetic variety to support adaptation.

In fragmented landscapes where vegetation stands are smaller, less dense and more isolated, collecting seed from wider distances and multiple sources will be necessary to capture sufficient genetic diversity to rebuild functional communities. This seed should be multiplied in regional seed production areas, however, to avoid overharvesting from remnants. ([Appendix 3, National Standards](#))

WHAT ABOUT CLIMATE CHANGE?

Climate change predictions are that in some instances some species will be lost from their current locations while others will colonise new areas altering the local species mix. For most species, however, there may be potential for persistence and adaptation if genetic diversity is high enough and genes can flow between sites

WHAT CAN WE DO TO SUPPORT ECOSYSTEMS IN A FRAGMENTED LANDSCAPE WITH A CHANGING CLIMATE?

Restoration planners can support ecosystem transitions by considering 'composite' or 'climate adjusted provenancing' strategies when selecting and collecting genetically diverse material to use in revegetation projects to enhance a species' 'adaptive potential'. (See [National Standards Box 1](#) and [Appendix 3](#) – as well as the revised [Florabank Guidelines](#).) Efforts are being made to develop regional **seed production areas** to serve the needs of rehabilitation and restoration nurseries. See more detail at: <http://seraustrolasia.com/standards/egseedproduction.html>