

Eco-sourcing guidelines

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What is eco-sourcing?

Eco-sourcing is the process of collecting plant material (seeds or cuttings) from similar ecosystems at the nearest viable locations when propagating plants as part of an ecological restoration project.

It forms part of the overall planning of successful restoration projects and complements other key parts of this process. These include:

- appropriate selection of species
- detailed planting plans
- selection, preparation, and proper maintenance of planting sites.

The guidelines at the base of this page are based on DOC's position on eco-sourcing and should be used when undertaking or supporting any form of restoration plantingⁱ¹. DOC staff also apply the guidelines in regulatory work, including as conditions on resource consents and in permissions framework, and by helping to ensure that plant nurseries can identify the source(s) of their plant material.

Why do it?

To maximise the chance of successful restoration

Planting material obtained from an ecosystem that is *similar* in environmental conditions (soil, climate, hydrology) and geographically *close* to the restoration site is more likely to result in a self-sustaining population, and one that maintains local genetic diversity. Concurrently, using plant material from a sufficient number of unique parent plants is more likely to create a new population resilient to environmental variability and stress. These two approaches are central to the contribution that eco-sourcing makes in successful restoration ecology.

To preserve evolutionary processes

All species are subject to a natural range, both geographically and in terms of what habitat they occupy. Ranges can change over time, but this would normally occur slowly through incremental change as a response to natural selection in a changing environment. As such, local endemic species (including subspecies and varieties) often reflect historic isolation (e.g., alpine plants on isolated mountains) or specialised habitats (e.g., limestone outcrops).

Because speciation is mostly driven by barriers to gene flow between populations, Eco-sourcing can ensure that restoration activities don't disrupt the normal, or background gene flow within and between populations. Natural evolutionary processes and selection pressures can therefore continue to operate, ultimately preserving biodiversity at local and regional scales.

Taxonomic uncertainty

Given the frequent level of taxonomic uncertainty for many species, isolated populations of taxa could be genetically distinct and should be treated as different entities during restoration efforts. The scale at which to apply this assumption differs between all species and may require specialist advice, or use of knowledge



available from creditable sources including DOC technical staff or the New Zealand Plant Conservation Network.

Other benefits of eco-sourcing

Ensuring that nurseries propagate their stock from local sources means there is less risk of transporting plant pathogens and pests across regions. It can also support the empowerment of local conservation efforts and a stronger connection to and appreciation of local flora.

Where are the boundaries for collecting from source populations

The ecological boundaries of Aotearoa New Zealand are defined by [the Ecological Region and District framework \(McEwen 1987\)](#)ⁱⁱ For eco-sourcing, these boundaries provide a pragmatic starting point, but it is important to also consider the habitat and local ecological conditions within them. For example, the Port Hills Ecological District near Christchurch contains multiple ecosystem and landscape features – dunes, wetlands, rocky bluffs, sub-alpine shrublands, and forest among others. These habitats are highly relevant when eco-sourcing and/or planning to restore areasⁱⁱⁱ.

Further nuance is required if a restoration site is close to the edge of a district as the nearest and most appropriate source material may be within the adjacent Ecological District. Similarly, if no matching habitat or ecosystems are available in the restoration site district (or adjacent district), a similar ecosystem may be the best source population for collections.

Other considerations

There are some circumstances when broader or more specific considerations are required to inform restoration efforts. In such situations, moving away from the guidelines below may be necessary or desirable, but in such cases technical and ecological advice is required. This advice can be sought from suitably qualified ecologists with a good knowledge of local situations.

These include:

- working with threatened plants, or in threatened ecosystems
- working with a species or sub-population that is approaching functional extinction
- when there is no reference ecosystem or knowledge of previous (historic) state
- when the previous range of a species is known, but no local source population is available (e.g. Podocarps in Central Otago); and
- for common, widespread indigenous species which have very wide **natural** distributions with **ongoing genetic mixing** that has occurred for recent evolutionary history.

We also strongly encourage that project managers engage with Tikanga. For iwi, runaka and hapū, the movement of species between different locations requires consideration of local protocols, with careful consideration of taonga and whakapapa of the species involved.

Guidelines for species choice when eco-sourcing

1. Only use species (or sub-species and varieties) if they **are reliably known to have been present** at or near the restoration site.

Guidelines for collecting when eco-sourcing

2. Only collect from source ecosystems and habitat types that match the intended restoration site.
3. Collection of seeds (preferable) or cuttings should take place from areas of native vegetation and from individuals which are clearly of natural (not planted) origin.
4. Collect material from as many individuals as is practical, ideally > 50 unique individuals, but minimise the number of seeds taken from individual plants, generally less than 10% of the total.

5. Seek permission to collect from Public Conservation Land and adhere to biosecurity procedures. www.doc.govt.nz/get-involved/apply-for-permits/research-and-collection/
6. Subject to the above considerations, use a source as close as possible to the restoration site, and within the adjacent Ecological District at furthest.

Guidelines for purchasing eco-sourced native plants for restoration

7. If purchasing plants from a nursery, support one that grows and specialises in eco-sourced plants using the criteria above.

¹Restoration planting does not include amenity gardens, ex-situ work for threatened species, or for research, cultural collection, or education purposes.

ⁱⁱ The Ecological District (ED) Framework divides the country into 85 regions and 268 districts, each characterized by unique combinations of climate, geology, soil and biological communities. It provides a detailed basis for conservation planning and environmental management, and is embedded in ecological significance criteria which are used in legal, statutory and ecological reporting processes. Map showing Ecological Districts and Regions: <https://maps.doc.govt.nz/externalmaps/Index.html?>

² www.lucas-associates.co.nz/resources/resources-map-regions/canterbury-region/