

Progress Report SP 2006-008

Identification of seed collection zones for rehabilitation

Ecosystem Science

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Project Team

granted

Program Leader

granted

Directorate

required

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Context

The Forest and Ecosystem Management Division of the Department provides guidelines to the Forest Products Commission on seed collection zones for forest rehabilitation. Rehabilitation of sites through revegetation requires knowledge of the genetic adaptation of species to sites in order to manage in an ecologically sustainable fashion. This requires an understanding of the genetic structure and local adaptation of species.

Aims

Identify appropriate seed collection zones (provenances) for species being used for rehabilitation. Initial work is focused on species in the jarrah and karri forest where seed is used for rehabilitation after logging.

Progress

- Papers on population genetic structure and phylogeographic patterns in *Kennedia coccinea* and *Bossiaea ornata* have been published.
- Analysis of microsatellite variation and cpDNA variation in *Allocasuarina humilis* has been completed and a paper has been accepted for publication.
- Analysis of microsatellite variation and cpDNA variation in 28 eight populations of *Banksia sessilis* has been completed and drafting of a paper has progressed.
- Analysis of nuclear genetic variation and cpDNA variation in marri (*Corymbia calophylla*) has been completed and a paper is being prepared.

Management implications

Knowledge of genetic structure and local adaptation will enable identification of appropriate seed collection zones for rehabilitation of forest areas, in order to maintain the genetic integrity of the forest on a sustainable basis. Current data on *K. coccinea*, *B. ornata* and *A. humilis* indicate that seed collected from the same landscape management unit as the area to be rehabilitated would be an acceptable seed-sourcing strategy. Alternatively, where seed is not readily available from the relevant landscape management unit then use of seed from nearby areas in adjacent landscape management units would also suffice. This information has been used to update seed collection zones for forest rehabilitation in the *Forest Management Plan 2014-2023*.

Future directions

- Complete publication of papers on genetic analysis of phylogeographic patterns and genetic structure, and seed sourcing strategies for *B. sessilis*.
- Complete analysis of genetic structure and phylogeographic patterns in *C. calophylla* and prepare publication.