
SCIENCE PROJECT 2013-4 RESTORING NATURAL RIPARIAN VEGETATION SYSTEMS ALONG THE WARREN AND DONNELLY RIVERS

PROGRESS REPORT

title and summary

Version created on June 19, 2014, 8:39 a.m.

Last Modified on by

Report Status

Status	Last Updated
Planning -	

Science Project Overview

Part	Checklist Last Updated
Part A - Summary & Approval	bla

Contents

Context Summary	3
Aims Summary	3
Progress	3
Management implications	3
Future directions	3

Context Summary

Current practices of seed sourcing for revegetation projects focus on local seed, based on a premise of maximising adaptation to local conditions, but this may not be most appropriate under changing climatic conditions. Identification of patterns of adaptive variation will enable more informed approaches to species selection and seed sourcing to maximise establishment and persistence of plants in revegetation programs.

This project will provide a climate change framework for revegetation of blackberry-decline sites on the Warren and Donnelly Rivers by determining the scale of adaptation to climate along the river system and determining the best seed source strategies to maximise resilience to future changes in climate in the revegetated populations.

Aims Summary

- Develop a climate change framework for revegetation of riparian vegetation along the Warren and Donnelly Rivers.
- Determine seed sourcing strategies that account for climate adaptation to enable resilient restoration of riparian vegetation along the Warren River and Donnelly Rivers.
- Test adaptation to climate through experimental plantings under operational conditions of establishment.

Progress

- Information was compiled for species selection and suitable sampling designs, including climatic distributions and the availability of wild populations spread throughout climatic zones.
- Initial field trips were undertaken with collaborators to assess the suitability of selected species and to identify potential collection sites.
- Initial leaf collections of potential species were made and DNA extraction was undertaken to evaluate suitability for continued work.
- Three study species were selected: *Astarte leptophylla*, *Callistachys lanceolata* and *Taxandria linearifolia*.
- Six species (including the above three) were selected for further climate modelling.

Management implications

Changing climates requires a re-evaluation of appropriate seed sourcing strategies for revegetation and restoration of ecological function in degraded sites. Use of local seed will not provide adequate resilience to maintain ecological function under changing climates, and understanding of climate adaptation will provide a scientific basis to undertake best-practice restoration and facilitate establishment of biodiverse plantings that maximise ecological function for enhanced persistence and resilience. Development of a strategic revegetation program for the riparian areas of the Warren and Donnelly catchments will provide an integrated approach to habitat restoration that promotes improved plant community function and improves the knowledge and capacity of restoration practitioners and land managers.

Future directions

- Collection of leaf and seed from 12 populations across three climate zones for each of the three species along the Warren River.
- Analysis of genetic adaptation between populations and climate zones for three species.

- Complete climate modelling for six species.
- Undertake experimental plantings of seed collected from populations across the climate gradient.