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Aspects of dieback behaviour relevant to the formulation of jarrah silviculture guidelines

Ecosystem Science

Project Core Team

Supervising Scientist	Lachie Mccaw
Data Custodian	Lachie Mccaw

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Terminated and closed

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Project Team	granted
Program Leader	granted
Directorate	granted

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M Stukely

Context

Jarrah stands are managed in accordance with *Sustainable Forest Management Guideline No.1: Silvicultural Practice in the Jarrah Forest*, to promote the growth of crop trees for timber production and to conserve other forest values. The presence of the pathogen *Phytophthora cinnamomi* requires implementation of appropriate measures to minimise the impact of *Phytophthora* dieback disease on the forest and the consequent reduction in its productivity and ecological integrity. On sites where disease impact is predicted to be moderate to high, the silvicultural operation termed 'Selective cut in dieback' is in general use. A number of key assumptions underpin this guideline.

Aims

- Understand the effect of current silvicultural treatments on dieback expression.
- Understand the effect of alternative approaches to silvicultural treatment on dieback expression.
- Investigate the effect of retained overstorey in relation to dieback impact escalation.
- Investigate the occurrence and persistence of jarrah regeneration (and key tolerant species) in the presence of *P. cinnamomi* on different sites.

Progress

- Measurement of overstorey and mid-storey trees has been completed at six sites in Cobiac block near Jarrahdale that represent different combinations of thinning intensity, dieback status and topographic position.
- Measurement of overstorey and mid-storey trees has been completed at two sites established in Gordon block in adjacent areas of dieback-affected and dieback-free forest to represent the silvicultural treatment of selective cut in dieback with herbicide thinning to a stand basal area of 15 m ha^{-2}.
- Permanent back-up tagging of trees has been undertaken to facilitate long-term monitoring.
- Hemispherical digital photography has been undertaken to quantify canopy condition at each site as a basis for monitoring change over time.
- Dieback disease fronts adjacent to all sites have been mapped by trained dieback interpreters and permanently marked to allow monitoring of disease spread upslope, downslope and across slope under different stand conditions.

Management implications

- The project provides scientific data and conclusions to evaluate key assumptions that underpin *SFM Guideline No.1*. The findings are relevant primarily to jarrah forest areas that are managed for timber production in the presence of *Phytophthora* dieback, and some key elements also apply to management for nature conservation values.
- Knowledge gained will be used to support, modify and update the guideline. The project will contribute to the provision of a clearer scientific basis for the adaptive management of jarrah forest in the presence of *Phytophthora* dieback. Long-term detailed monitoring will be possible.

Future directions

This project will be continued by Forest and Ecosystem Management Division staff with assistance in data analysis as required.