Progress Report SP 2006-003

FORESTCHECK: Integrated site-based monitoring of the effects of timber harvesting and silviculture in the jarrah forest

Ecosystem Science

Project Core Team

Supervising Scientist	Lachie Mccaw
Data Custodian	Verna Tunsell
Site Custodian	

Project status as of Sept. 15, 2020, 9:01 a.m.

Approved and active

Document endorsements and approvals as of Sept. 15, 2020, 9:01 a.m.

Project Team	granted
Program Leader	granted
Directorate	granted

FORESTCHECK: Integrated site-based monitoring of the effects of timber harvesting and silviculture in the jarrah forest

J Farr, V Tunsell, B Ward, A Wills, L McCaw

Context

FORESTCHECK is a long-term monitoring program and results will be used by forest managers to report against Montreal Process criteria and indicators for ecologically sustainable forest management. Initiated as a Ministerial Condition on the *Forest Management Plan 1994-2003*, FORESTCHECK has continued to be incorporated in the *Forest Management Plan 2014-2023* as a strategy for increasing knowledge on the maintenance of biodiversity and management effectiveness in Western Australian forests.

Aims

- Quantify the effects of current timber harvesting and silvicultural practices in the jarrah forest (gap creation, shelterwood, post-harvest burning) on forest structural attributes, soil and foliar nutrients, soil compaction and the composition of the major biodiversity groups including: macrofungi, cryptogams, vascular plants, invertebrates, terrestrial vertebrates and birds.

Progress

- Seven monitoring grids in the Jarrah Forest Sandy Basins ecosystem were re-measured for plant species composition, cover and structure. Camera surveys of vertebrate fauna activity were undertaken.
- Post-burn assessments were undertaken on grids at Plavins and Gobblecannup blocks burnt by prescribed fire. Six grids burnt by the Yourdamung bushfire in December 2019 were also visited to assess fire severity and restore fire-damaged infrastructure. Consumption of coarse woody debris was quantified at all burnt grids by re-measuring permanent transects.
- A paper reporting monthly patterns of understorey flowering activity over a two year period following fire was published in *Australian Forestry*. This paper utilised data collected following prescribed burning at four monitoring grids in Perth Hills District and following summer bushfire at six grids in Wellington District.
- A manuscript examining understorey flowering activity in relation to environmental conditions and the Noongar seasonal calendar is being prepared for publication.
- A manuscript examining ground surface macroinvertebrate responses to silviculture and wildfire is being prepared for publication.

Management implications

- FORESTCHECK provides a systematic framework for evaluating the effects of current silvicultural practices across a range of forest types and provides a sound basis for adaptive management. Sixty seven monitoring grids have now been established, all of them sampled at least twice.
- Findings from the project continue to inform a variety of forest management policies and practices and have been incorporated in periodic revision of silvicultural guidance documents. Monitoring data have been used to verify predictive models for forest growth and species occurrence.
- The network of FORESTCHECK grids also provides a framework for monitoring responses to random disturbance events such as bushfires and extreme droughts, and for examining the impacts of a changing climate over the longer term.

Future directions

- Report on findings from monitoring undertaken in Jarrah Forest South and Jarrah Forest Sandy Basins ecosystems.

- Explore the potential of genomic techniques for ecological monitoring, for example using the fire chronosequence of grids in Perth Hills District.
- Ensure FORESTCHECK datasets are available in corporate databases.
- Publish findings from the 10-year monitoring period (2002-2012).