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Burning for biodiversity: Walpole fine-grain mosaic burning trial

Ecosystem Science

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Program Leader	granted
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Context

Fire management based on sound science is fundamental to the conservation of biodiversity and the protection of life and property in fire-maintained ecosystems of south-west Western Australia. There is a substantial body of scientific evidence that, within ecologically circumscribed parameters, fire diversity can benefit biodiversity at the landscape scale. We hypothesise that a fine-grained mosaic of patches of vegetation representing a range of biologically-derived fire frequencies, seasons and intensities will provide diverse habitat opportunities and can also contribute to reducing the occurrence of large, damaging and homogenising wildfires.

Aims

- Determine whether a fine-scale mosaic of vegetation at different seral (post-fire) stages benefits biodiversity at the landscape scale.
- Develop the operational techniques to be able to use frequent and planned introduction of fire into the landscape (patch-burning) to create a fine-scale mosaic of patches of vegetation at different stages of post-fire development.

Progress

- Field work has been completed for this project. Data are being compiled, fungi and invertebrate collections have been sorted and documented. Data for invertebrates has been compiled, and analysis has commenced.
- A paper describing the theory of fire-induced mosaics, how to describe and characterise mosaics and operational challenges in creating fire mosaics is being prepared for publication.
- A paper on the response of *Banksia quercifolia* was published in *Fire Ecology*.
- Prescribed burning was undertaken in London block and the western half of Surprise blocks in spring 2015 as part of the Warren Region prescribed burn program. The resulting pattern of burn severity has been determined from Landsat imagery and is being examined in relation to the fuel age mosaic established during the project.

Management implications

This study demonstrates that fine-grain patch-burning is operationally feasible in forest areas. Although data analysis is incomplete, benefits to biodiversity at the landscape scale, especially invertebrates and fungi, are increasingly evident. Any benefits to higher order organisms may take longer to emerge. Large-scale implementation of mosaic burning by the frequent introduction of fire into the landscape is being considered by the Department as a strategy for increasing community protection while protecting biodiversity. The findings of this study will provide the underpinning science for this strategy.

Future directions

- Complete data analysis and publish papers.
- Commence technology transfer through formal and informal presentations and publications.