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Fire behavior and fuel dynamics in coastal shrublands

Fire Science

Project Core Team

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Project Team	granted
Program Leader	granted
Directorate	granted

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L McCaw

Context

Shrubland ecosystems are widespread in south-western Australia and are the predominant vegetation type in coastal areas between Geraldton and Esperance. Coastal shrublands are renowned for their flammability, and fires can be fast-moving and intense when dead fine fuels are dry and wind speeds exceed 15 km per hour. Fires may transition abruptly from the litter layer to the shrub layer in response to minor changes in wind speed and fuel dryness, making it difficult to use prescribed fire reliably to meet management objectives. Currently the department does not have a fire behaviour prediction guide specific to coastal shrublands, and this represents a significant gap in science-based decision making to underpin the use of fire for bushfire risk management and biodiversity conservation. This issue was highlighted by the Special Inquiry into the November 2011 Margaret River bushfire conducted by the Hon. Mick Keelty. This project addresses Recommendation 4 of the Keelty Special Inquiry that the department be supported to conduct further research into the fuel management of coastal heath in the south-west of Western Australia exploring alternatives to burning as well as best practice for burning.

Aims

- Provide a systematic approach for describing fuel characteristics and predicting fire behaviour in coastal shrublands in order to more effectively manage prescribed burning and bushfires.
- Facilitate evaluation of the effectiveness of prescribed fire and other fuel management practices for mitigating the impact of bushfires.

Progress

- A paper examining fire behaviour during the November 2015 Two Peoples Bay bushfire was submitted for publication.
- Monthly sampling of live foliage moisture content was undertaken for a second year at Yanchep as part of a study evaluating the potential application of remote sensing to quantify dryness and flammability in coastal shrublands.

Management implications

- Development of a systematic approach to describing fuels and predicting fire behaviour in coastal shrublands will permit the implementation of better informed fire management programs in this habitat that is a critical component of urban environments.
- Improved knowledge of factors determining fire behaviour in shrublands will contribute to more effective training programs for fire managers and fire-fighters from the department and other organisations with responsibility for fire preparedness, management and suppression.

Future directions

- Analyse and publish the findings from the study of remote sensing of live fuel moisture content.
- Collect fire behaviour metrics from planned burns to verify the performance of the collaboratively-developed fire spread model for Western Australian shrublands.