

Context Summary

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 h^{-1} . 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 Summary

- 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 pilot study was undertaken at seven sites to test the cost-effectiveness and practicality of different fuel sampling techniques.
- Four sites suitable for collecting fire behaviour data have been established within planned burn areas in Albany, Frankland, Perth Hills and Moora districts.
- Data from fires in Western Australian shrublands have been included in a fire spread model developed collaboratively by researchers from Australia, New Zealand and Mediterranean Europe.

Management implications

- Development of a systematic approach to describing fuels and predicting fire behaviour in coastal shrublands will allow the Department to better implement its fire management program.
- 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.

Future directions

- Collect fire behaviour from planned burns as these are implemented.
- Plan and conduct further experimental burning to quantify threshold conditions for sustained fire spread in shrublands of different structure and time since fire.
- Evaluate and verify the performance of the collaboratively-developed fire spread model for Western Australian shrublands.