

# The use and impacts of wet-season burning in the tropical savannas of Kakadu National Park

Project information



Resilient  
Landscapes

National Environmental Science Program



Sorghum (spear grass) can produce hot, intense fires if not managed properly. Photo: Natalie Rossiter-Rachor

This project will work in partnership with Traditional Owners and Parks Australia to investigate five interrelated components of wet-season burning: Indigenous knowledge and cultural indicators, spatial and temporal patterns, fuel dynamics and fire behaviour, ecological outcomes and economic costs. The outcomes will support fire management within Kakadu National Park and tropical savannas more broadly.

## Project details

Tropical savannas in northern Australia, particularly in Kakadu National Park, are key for biodiversity conservation, with grasslands forming the majority of the landscape. Regular fires, fueled by native grasses like spear grass (*Sorghum* species), are common, but late dry season fires can be damaging to both biodiversity and bush tucker. Spear grass thrives in these conditions, and its dominance can exacerbate fire intensity.

Historically, controlled burns in the early dry season reduced spear grass abundance, but changing fire and weather conditions due to climate change have made these burns hotter and more intense, thus less effective. As an alternative, wet-season burning is being investigated to disrupt spear grass reproduction by targeting seedlings before they can produce seed, while also reducing overall fuel load. This approach, informed by historical data and Indigenous knowledge, shows promise for managing fire and biodiversity in Kakadu National Park and other tropical savannas. Research is needed to better understand its effectiveness for long-term fire management.

## Key research areas

To fill key knowledge gaps about using wet season burning as a management tool for tropical savannas, this project is:

- documenting Indigenous knowledge of wet-season burning
- tracking timing, frequency and extent of wet-season burns
- assessing the different fuel loads and fire behaviors of wet-season burning and dry-season burning
- evaluating wet-season burning's impact on tropical savannas
- determining the economic costs of wet-season burning



Wet-season burns produce a less intense flame, safely reducing fuel loads. Photo: Victor Cooper



## What is the NESP Resilient Landscapes Hub?

The Australian Government's National Environmental Science Program (NESP) funds environment and climate research. NESP currently supports four multi-disciplinary research hubs, each hosted by an Australian research institution. The program:

- provides evidence for the design, delivery and on-ground outcomes for environmental programs
- helps decision-makers, including those from Indigenous communities, build resilience
- supports positive environmental, social and economic outcomes.

This project is funded by the NESP Resilient Landscapes Hub, which is hosted by The University of Western Australia. The Resilient Landscapes Hub's research supports the management of Australia's terrestrial and freshwater ecosystems and makes them more resilient to extreme events and pervasive pressures.



Researchers examine the native spear grass fuel load.  
Photo: Michael Douglas

## Further information

The project is being led by Professor Samantha Setterfield from The University of Western Australia, Victor Cooper and Margaret Rawlinson of the Bininj Mungguy Research Committee, and Dr Natalie Rossiter-Rachor from Charles Darwin University.

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