



A prescribed gamba grass burn south of Darwin, photo Glenn Campbell



**Northern Australia
Environmental
Resources
Hub**

National Environmental Science Programme

Fire and weeds in the Top End

Start-up factsheet

The challenge

Parts of northern Australia's valuable landscape have been transformed by weeds and changed fire patterns. Coupled with land clearing for agricultural development, this has impacted significantly on ecological, social and cultural assets.

One example is the Northern Territory's greater Darwin region and Daly River catchment, where areas of the tropical savanna have been invaded by weeds that threaten native plants and animals and impede access to parts of the landscape. Some weeds also carry high fuel loads, ultimately leading to more intense fires.

Invasion by grassy weeds and the resulting changes in fire regimes has the ability to significantly alter ecosystem processes and may eventually lead to ecosystem failure. However, our current understanding about the combined impacts of these threats and the action needed to improve ecosystem function is limited.

How will this research help?

This project will draw on existing information about the impacts of land clearing, weed invasion and changes to fire patterns on the natural landscape. Researchers will collect additional data where necessary and use this information to model the likely scenarios of changes in ecosystem function over the next 30 years in the Darwin and Daly regions. This information is critical to land use planning and management to predict, and hopefully prevent ecosystem failure.



Understory invaded by gamba grass, photo Sam Setterfield



Tree death after gamba grass fire, photo Natalie Rossiter-Rachor



Gamba grass invading a floodplain, photo Jaana Dielenberg

Anticipated outcomes

- Better planning and management practices based on an improved ability to predict catchment scale changes that may lead to ecosystem failure;
- Assessment of the use of fire behaviour models and fire spread simulators for northern Australia;
- Revised conceptual models of savanna transformation following invasion by invasive grasses;
- Improved understanding of the impact of invasive

grasses on ecosystems and how this relates to the severity of invasion and fire impacts; and

- Evidence-based advice on how to account for gamba grass-invaded savanna in the Federal Government's Carbon Farming Initiative's Savanna Burning Methodology.

Where is the research happening?

The research will take place in the greater Darwin region and Daly River catchment in the Northern Territory.



Gamba grass tussocks up-close, photo Michael Lawrence-Taylor

Who is involved?

The project will be led by Dr Natalie Rossiter-Rachor from Charles Darwin University and Associate Professor Samantha Setterfield from the University of Western Australia.

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