



Northern Australia
Environmental
Resources
Hub

National Environmental Science Programme

Managing savanna riparian zones

Start-up factsheet

The challenge

Riverbank (riparian) zones are a vital part of the savanna landscape. In Australia's tropical north, riparian zones range from narrow strips of land alongside small creeks through to large floodplains adjacent to major rivers. These areas are critical to the health of the surrounding environment and support significant economic, environmental and cultural values.

However, savanna riparian zones are highly vulnerable to a number of threats such as invasive plants, feral animals and fire. Threats to riparian health are compounded by intensified development in northern Australia, such as irrigated agriculture. Practical guidelines to support the sustainable use of riparian habitats in northern Australia are therefore timely.

How will this research help?

This research aims to guide improved management of riparian habitats. The project will deliver knowledge on the health of these key environmental areas and where resources should be directed to protect them. The project involves three complementary case studies to develop practical guidelines to support the sustainable use of riparian habitats:

1. Fire management along creeks and streams in Kakadu National Park. Protection of riparian habitats along streams and creeks is crucial for maintaining biodiversity in savannas. These are prime breeding areas

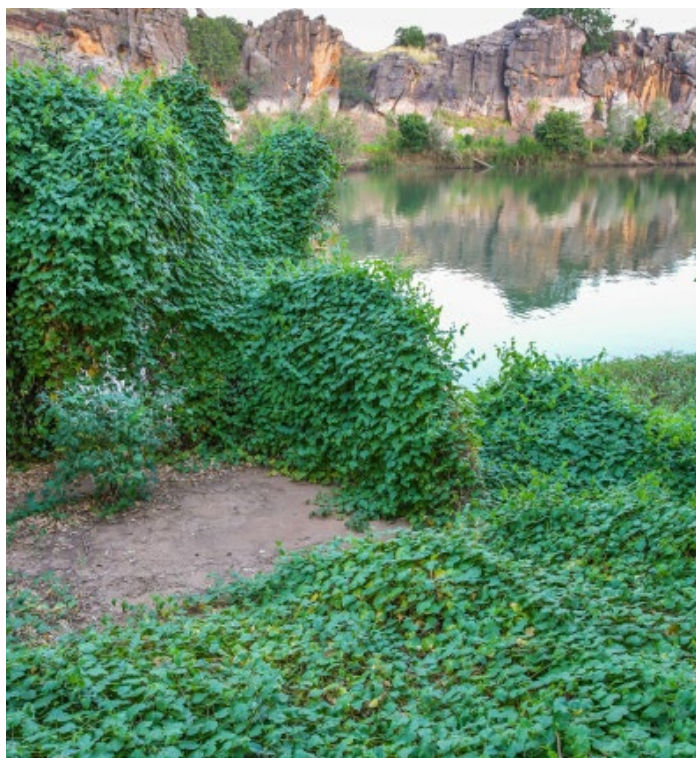
and also where significant numbers of many mammal species are found. Despite this, fire management in much of the savanna landscape is applied and assessed at a broad scale that doesn't recognise the more fire sensitive nature of riparian vegetation. This case study will generate knowledge about the effectiveness of fire management activities, and of weed and feral animal management, in riparian areas. The case study complements another Hub project 'Kakadu's threatened species' that is investigating threat management in the park and sampling will be done jointly with that project.



Top and bottom images: examples of riparian zones in Kakadu National Park, photos Michael Douglas

2. Weeds, sea-level rise and threat management of Northern Territory coastal floodplains. The large and diverse floodplains of the Northern Territory, such as those in Kakadu National Park, are recognised nationally and internationally for their outstanding environmental and cultural values. The integrity of floodplains and the linkages between them is critically important. Despite this, there is a lack of research documenting the cumulative threats and impacts across floodplains. Instead there is a range of studies on specific threats, such as weed invasion or sea level rise. This component of the project is a desk-top study that will use existing data sets to examine the current state of floodplains in Kakadu National Park and nearby floodplains, as well as the tipping point at which floodplains fail to support healthy ecosystems or culturally important species. The case study will also identify critical areas for ongoing protection to maintain the health of floodplains.

3. Impacts and management of an invasive weed in the Fitzroy River. This part of the project will generate insight on direct and indirect impacts of the invasive vine stinking passionflower on riparian communities in Geikie Gorge (Darngku) National Park. The stinking passionflower is one of the most detrimental invasive weeds in Western Australia's north. In Geikie George and elsewhere in the Kimberley, the vine is obstructing the nesting habitat of one of the last remaining strong populations of the Australian freshwater crocodile. As a result freshwater crocodiles are forced to nest at other sites that aren't optimal for the success of hatching. This research will investigate the case for stronger investment to manage stinking passionflower. This includes documenting the range of impacts that the weed has on riparian communities, developing a tool that can predict the weed's impact on freshwater crocodile populations at Geikie Gorge and providing targeted control options.



Stinking passionflower in Geikie Gorge (Darngku) National Park, photo Michael Douglas

Where is the research happening?

The first case study will be undertaken in Kakadu National Park in the Northern Territory. The second will take place in Kakadu's floodplains, as well as on the East Alligator, Mary, Adelaide, and Daly Rivers. The final component will be undertaken in Geikie Gorge National Park in Western Australia's Fitzroy River catchment.

Who is involved?

The overall project will be led by Associate Professor Samantha Setterfield.

Dr Setterfield will also lead the second case study of floodplain threats in Kakadu National Park. Professor Michael Douglas from University of Western Australia leads the fire management project in Kakadu National Park. The third component of weed management in the Fitzroy River catchment will be led by Adjunct Associate Professor Bruce Webber from CSIRO.

Researchers from Western Australia's Department of Parks and Wildlife, University of Western Australia, CSIRO and Charles Darwin University will also support the project.

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