



## Kakadu Research News

### July 2014

#### Teaching quolls not to eat cane toads

In May wildlife ecologist Jonathan Webb gave a presentation in Jabiru on research investigating whether northern quolls can be trained to avoid eating cane toads. The northern quoll is a native carnivorous marsupial which is now listed as endangered, due to a rapid decline in numbers since the spread of cane toads.

Quolls readily attack toads but are poisoned by the toads' toxin, and die after coming into contact with large toads. Since 2009 Dr Webb has been trialling whether adult quolls can be trained to avoid attacking cane toads, and whether this improves their survival rate.

Working with Territory Wildlife Park and Kakadu staff, the research team trained 50 captive-reared northern quolls by feeding them small dead toads laced with a chemical that made them sick. These 'toad-smart' quolls later refused to attack live cane toads.

The quolls were then released back into suitable environments near the East Alligator Ranger Station. Twenty cage traps were placed along six trap lines (120 in total) in crevices, under overhangs, and near logs, where quolls live.

When a quoll was caught, it was weighed, given a health check, and identified according to its microchip number with a scanner. The animal was then released back into the wild with minimal stress.

The research team found that some toad smart quolls survived and had babies. Genetic analysis showed that these offspring also went on to have babies. Toad-trained quolls may be able to increase northern quoll populations in toad-infested areas, but only if other threats such as frequent fire and predation by animals like feral cats and dogs are addressed.

The latter part of Dr Webb's research in Kakadu was supported by the Northern Australia Hub, and he is now undertaking field work in the Kimberley. Cane toads are just now arriving in one of the last remaining stronghold populations of northern quolls in Western Australia.

This research will contribute to a better overall picture of mammals across northern Australia and how we can prevent further species decline. Dr Webb is a Senior Research Fellow at the University of Technology Sydney. For more information contact Dr Jonathan Webb [jonathan.webb@uts.edu.au](mailto:jonathan.webb@uts.edu.au) or 0435 960 687.



## What are aquatic species eating in Kakadu National Park?

For more than two years, researchers from Griffith University, the University of Western Australia and Charles Darwin University have been collecting samples from Kakadu's floodplains to find out what animals are eating and where the hotspots of productivity are.

Although many of the aquatic species in Kakadu are dependent on a complex diet of organic material, algae is emerging as the most important primary energy source.

Here are some of the key findings from the research in the floodplain billabongs:

- Small fish and invertebrates are dependent on three different primary carbon sources: leaf litter, algal film and plankton.
- Larger fish like barramundi move around more and also source energy from the floodplain and marine environments.
- Algae is the key energy source for larger fish because this is the main food source of the smaller animals they are consuming on the floodplains, in billabongs, and the main river channel.
- Crocodiles are largely disconnected from the local billabong food web, deriving a large proportion of their food from the surrounding savanna (land-based mammals).

Apart from the obvious importance of algae in sustaining significant parts of the food web, what this tells us is that larger animals like crocodiles and barramundi need to access other areas of the floodplain during the wet season to supplement their diet. This means it is important to maintain seasonal connectivity between floodplain areas and waterholes.

It's also important to reduce the spread of exotic plants such as para grass and salvinia, which inhibit algal production on the floodplain.

The research team would like to thank Kakadu staff and Traditional Owners for helping to develop a better understanding of the food webs in Kakadu.

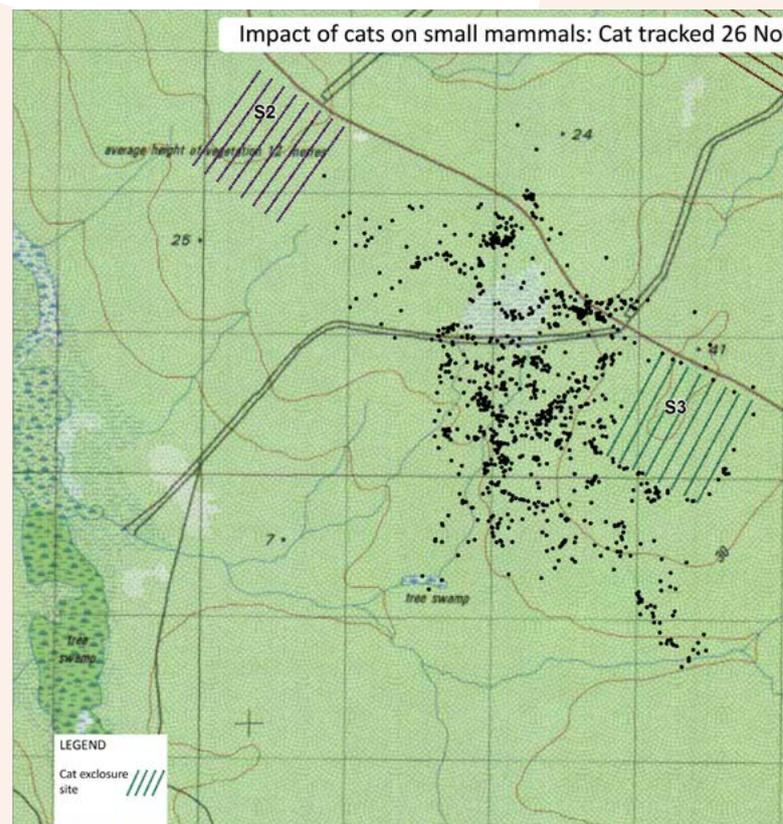


Researchers are sampling Kakadu's floodplains and billabongs to better understand the food web

## Cat fence update

Late last year two cat-proof enclosures were completed in Kakadu National Park to see whether native mammal numbers improve when predators are excluded. When the first enclosure fence was closed up, camera traps alerted us to the presence of a cat inside one of the enclosures.

The cat was trapped, and a GPS radio-collar was fitted so that we could see where it went outside the fence over the next two months. Each dot on the map represents the cat's location recorded by a GPS. The cat remained within the area where it was caught but did not get back inside the enclosure, so we know the fence is working. Our permanent surveillance cameras photographed another feral cat outside, so it is good to know that native animals inside the fence are protected.

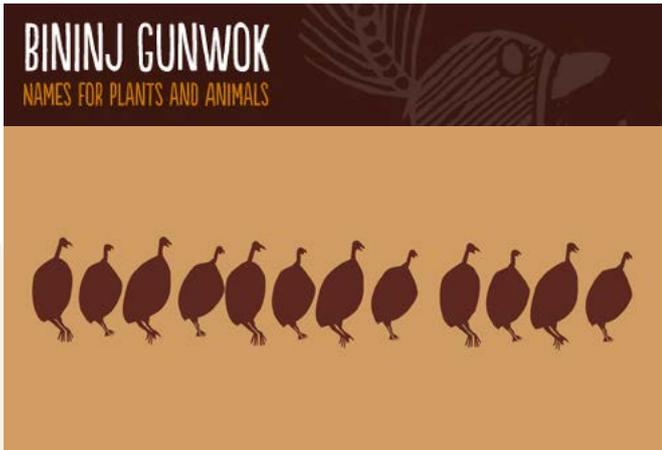


This map shows where a feral cat moved in the study area near Kapalga

## What do you call that plant or animal in Bininj Gunwok?

A new online resource documenting Aboriginal names for plants and animals in Kakadu and West Arnhem Land is now available.

For more than 20 years, linguist and anthropologist Murray Garde has been learning and working together with Bininj people to document and support the Bininj Gunwok dialects of the region.

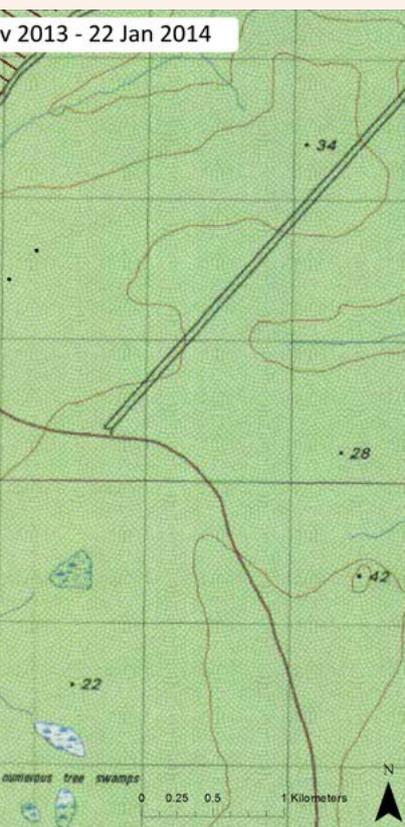


Bininj Gunwok is a dialect chain that stretches from Kakadu National Park in the west through to the Mann, Liverpool and Cadell river districts south of Maningrida.

The online resource includes the Bininj Gunwok names for common plant and animal species from the region, and features beautiful artwork and photographs.

Murray says that many people working and living in the region need to know the Bininj Gunwok names for natural species, because it is a basic first step in land management and ecological knowledge recording.

“Indigenous land management rangers, scientists, linguists, arts centre workers, tourists, students and others who have an interest in Indigenous ecological knowledge will find this online resource useful,” he said.



“Making lists of names may sound straightforward, but there are six different Bininj Gunwok dialects which often have vocabulary differences for various species, and Indigenous systems of taxonomy are different to those used in western science.”

It was decided at a Kakadu Board meeting in 2013 that making the names more accessible would take the burden away from Bininj involved in land management and non-Indigenous researchers, who are regularly asked for the correct names and spelling.

The interactive database includes audio files of the Bininj Gunwok name so that users can hear how to pronounce words. Users can also upload their own photos of natural species. The resource is a work in progress, as it will take some time to fill out all the categories for the various dialects.

Please help us by contributing information or photographs. Go online to <http://mayh-dja-kundulk.bininjgunwok.org.au/> or call (08) 8946 7619 or email [nerp.northern@cdu.edu.au](mailto:nerp.northern@cdu.edu.au).

## Tracking the movements of big fish in Kakadu

During the last wet season researchers from Charles Darwin University and NT Fisheries used radio-tracking technology to find out where barramundi and forktail catfish were moving.

Following the first major rainfall in early December, there was a big spike in fish movement, with some fish moving several kilometres out onto the floodplains. Overall the barramundi moved up to 30 km from where they were released, while the catfish moved up to 20 km.

With receding waters the majority of fish moved back to the billabong system they were tagged in. In many cases their last location in May was within a couple of hundred metres from their original tagging location.

These findings build a better understanding of the key factors that support aquatic species, and the importance of connectivity between the floodplain, river and ocean.



### New weed map for Kakadu

A map showing the current distribution of olive hymenachne and para grass across Kakadu National Park is now available. A model has been developed to predict where these invasive weeds are likely to spread to in the next five, ten and 20 years.

While the South Alligator River floodplain appears to be relatively free of weeds, management options are now being investigated for the Magela, Wildman River and West Alligator River floodplains.

Different zones for management are being considered. Some areas may be prioritised to eradicate small infestations so as to protect important sites, while other invaded areas will need to be managed to prevent further spread.

Contact us if you would like to see the map of current distribution of the invasive grasses in Kakadu.

### What is the NERP Northern Australia Hub?

We are a research group funded by the Australian Government’s National Environmental Research Program (NERP). We are working to improve biodiversity conservation in northern Australia’s tropical savannas and the region’s wetlands, waterways and estuaries.

Thanks to Kakadu National Park staff who have supported and participated in our research.

We greatly value the input of Traditional Owners to research happening on their country. If you are interested in paid work opportunities, or want to know more about any of the projects please contact:

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