National Environmental Research Program

NORTHERN AUSTRALIA HUB

Improving biodiversity conservation in northern Australia

Kakadu Research News

December 2014

Breathing new life into Kakadu

Kakadu is blessed with a rich array of native plants, animals and insect species, some of which occur nowhere else in the world. Amongst these are 75 threatened species, many of which have suffered worrying declines in recent years.

An ambitious strategy launched last month is tackling these declines head-on.

The new 'Kakadu Threatened Species Strategy' was commissioned by Kakadu National Park and developed by the Northern Australian Hub with input from park managers, Traditional Owners and other conservation scientists. View the plan here.

In response, the Federal Government has committed an extra $750,000 to begin work on the plan, which prioritises the mammals, plants, birds, fish and reptiles at risk of extinction in the park. Funding to implement the 10 year strategy will also be drawn from the park's $17 million annual budget.

Hibbertia tricornis **by Kym Brennan**

Northern Quoll *Dasyurus hallucatus* by Jonathan Webb

The extra $750,000 will deliver four priority projects. This includes work to target threats from fire, weeds and feral animals and the creation of a wildlife refuge on Gardangarl (Field Island).

Many of the threats facing threatened species in Kakadu are deeply rooted and turning things around will take time.

Lead author and wildlife expert Professor John Woinarski says the strategy will operate over 10 years.

"The strategy and the actions in the strategy are being implemented and properly resourced. If that continues, then the future of Kakadu and its extraordinary biodiversity will be secured," Professor Woinarski said.

Flood mapping of Kakadu floodplains

By looking at satellite images we now know more about flooding patterns on Kakadu floodplains.

Hub researchers from Griffith University have examined over two and a half decades worth of satellite images, taken over different seasons in the Alligator Rivers region of Kakadu National Park.

The images helped researchers to work out which floodplain areas were inundated, how much water they were holding and for how long.

The images, between 1985 and 2011, showed that on average at the end of the wet season (March/April) about 1700km^2 of floodplains were underwater. By the late dry season (August/September) this had reduced to about a quarter of the area. In the wettest year analysed twice as much land (2300 km^2) was flooded than in the driest year (1300km^2).

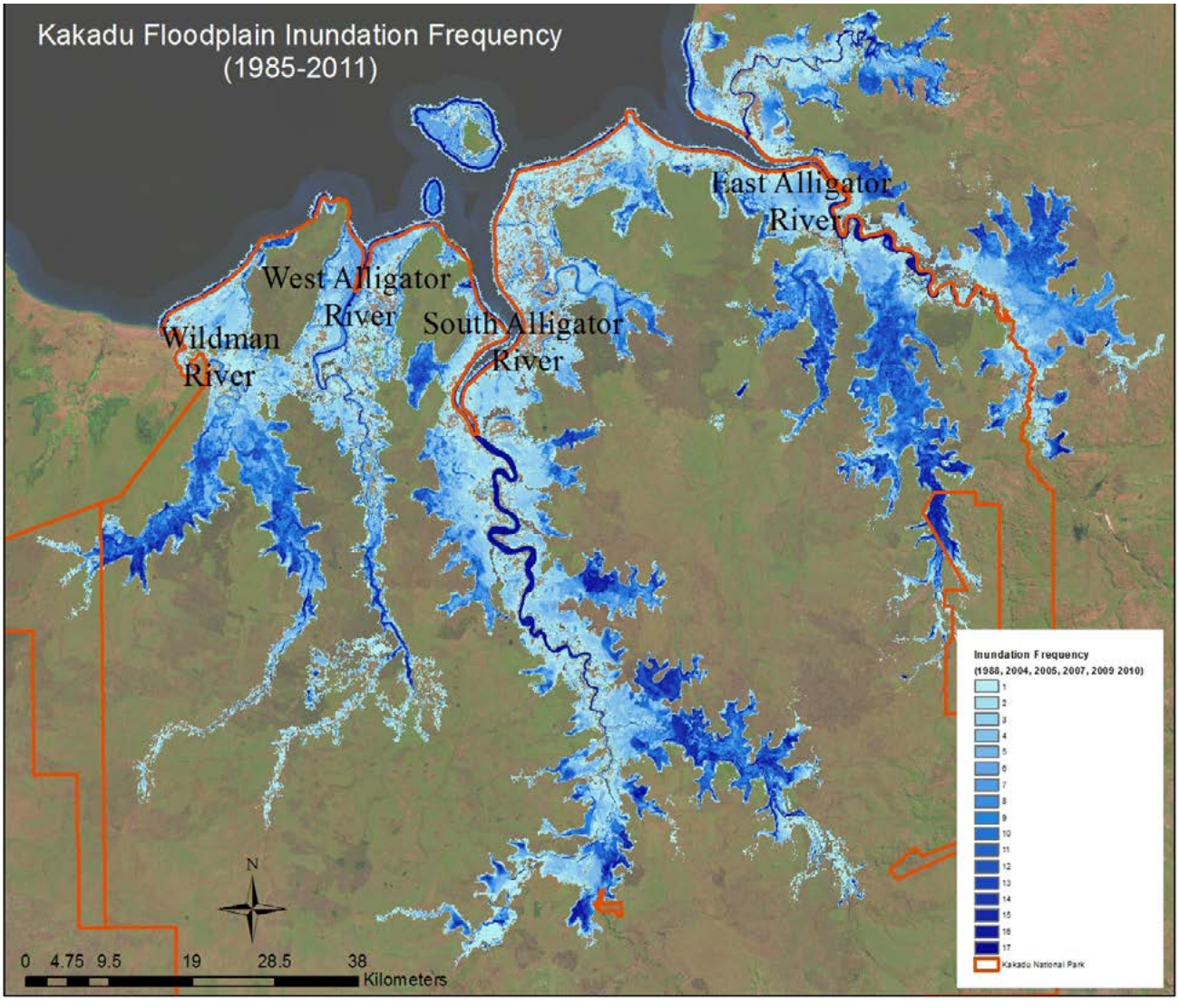
The map below shows which areas flood. The information was collected from satellite images that were taken in different seasons over 26 years. The darkest blue areas were underwater the most often in the photos and the lightest blue areas were flooded the least often. It is interesting to see that often areas further away from the main channels were under water more of the time than areas near the channel.

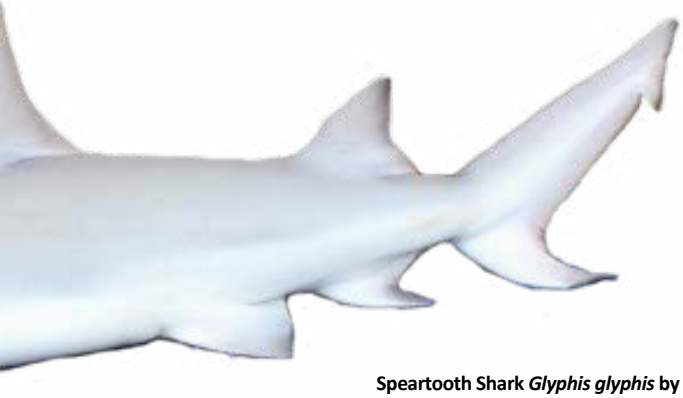
The results are part of research that will help park managers understand which floodplain areas are the most important for supporting wetland food chains. It will also help them better understand areas that may be affected by sea level rise and the spread of weeds.

Read more about this project here and find more information about spacial data and meta data here.

Rare shark in Wildman River

A rare species of tropical shark has been recorded for the first time in the Wildman River in Kakadu National Park. The Speartooth Shark *Glyphis glyphis* which was captured in August is nationally listed as Critically Endangered.





Speartooth Shark *Glyphis glyphis* by Peter Kyne

The discovery was made by Charles Darwin University researcher Peter Kyne, who is investigating the populations of river sharks and sawfish in the rivers that drain into Van Diemen Gulf.

An important question that the research team want to answer is whether sharks from one river system move to other rivers, or if each river contains a separate population of sharks with little movement in between. This has important management implications. If shark numbers go down in one river, will sharks from other rivers arrive to help rebuild the population?

To answer this question the research team has set up a network of acoustic receivers at the mouth of each Kakadu river, in addition to networks in the South Alligator and Adelaide Rivers. Each shark that is caught has some measurements taken and a selection of sharks have been tagged with acoustic tags before being released. Over 150 river sharks have been tagged in the South Alligator and Adelaide Rivers.

The team has taken part in four field trips to Kakadu between July and October this year to download data from the receivers. The results from these trips will help us better understand how these threatened species move between rivers and freshwater and saltwater areas in estuaries, and which habitats they use.

This is a joint project between the Marine Biodiversity Hub and the Northern Australia Hub of the National Environmental Research Program.

Pushing mud upstream

For several years, Hub researcher Dr David Williams from the Australian Institute of Marine Science has been looking at the flow of sediment and water within the Alligator Rivers estuaries.

The floodplains are very flat, along a 120km stretch of the river it only drops by 1 metre, but the tides are huge – up to 6 metres. This means that the tides can push far inland.

A lot of mud builds up in the channels over the dry season, and each year the wet season flows flush this out to sea. This can lower the bottom of the channel by up to 2 metres at the narrower part of the channel, some 15 kilometres upstream of the Arnhem Highway Bridge.

But where does all the mud come from during the dry season? If you guessed from upstream you would be wrong. The mud comes from Van Diemen Gulf and the estuary and is pushed in by the tides.

How can the tides push mud upstream on the incoming tide without washing it out again on the outgoing tide? This happens because the speed of the water in the incoming tide - pushed by the ocean - is a lot faster than the speed of the water on the outgoing tide, when it is draining out of channels and off floodplains. The faster incoming tide can carry more mud.

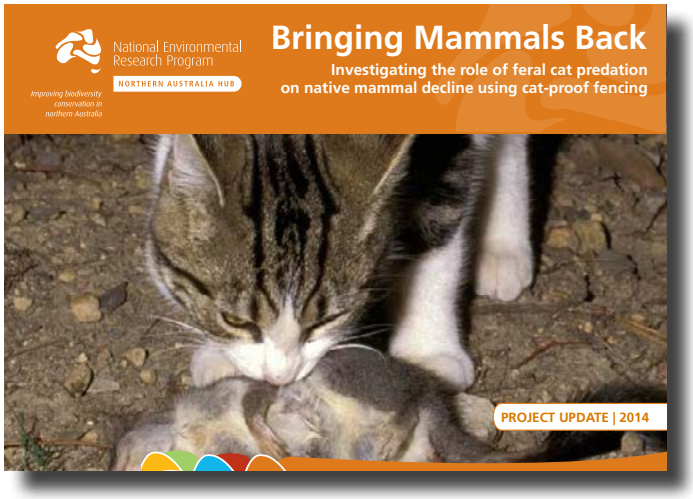
A good understanding of the water and sediment movements in these floodplains is important to underpin any predictions about how sea level changes in future will affect this area.

Cat fence booklet now available

An informative booklet about the cat-proof fence in Kakadu has been released.

Late last year, Northern Territory Government scientists, with the support of Park staff and Traditional Owners, established two fenced areas in the Kapalga region, to see whether native mammal numbers improve when cats are excluded.

To learn more about the fence research you can view a copy of the booklet here or contact us if you would like a printed copy.



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 and Traditional Owners who have supported and participated in our research.

We greatly value the input of Traditional Owners to research happening on their country. If you want to know more about any of the projects please contact:

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