Aboriginal wetland burning in Kakadu National Park

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Introduction

Aboriginal Australians successfully lived with landscape fire for tens of thousands of years prior to European settlement. Aboriginal traditional knowledge relating to fire management remains strong throughout much of northern Australia, and the opportunity still exists to re-apply such knowledge to landscape management in the north.

As part of the northern Australian 'Burning for Biodiversity' project, the Bushfire CRC is working with a family of traditional owners in Kakadu National Park to examine the cultural benefits of Aboriginal fire management as it is re-applied to floodplains associated with the South Alligator River. Initial work was conducted at Boggy Plain and has now been extended to the iconic Yellow Water wetlands further south in the Park. Results show that the re-application of traditional fire management dramatically enhances biodiversity and the cultural values of these wetlands for Aboriginal people.

Why burn wetlands?

For most of last century, Kakadu's wetlands were home to large herds of feral Asian water buffalo. When buffalo were removed from the Park in the 1980s, the native grass Mudja (*Hymenachne acutigluma*) spread unchecked and has now taken over many wetlands in Kakadu. Mudja chokes out other wetland plants, reducing the variety of habitats, preventing water birds from feeding, and limiting access for hunting and food gathering by Aboriginal people. Aboriginal people use fire to control the density of Mudja. It is thought that the water buffalo controlled Mudja in much the same way that Aboriginal fire management did before European settlement.

Surveying wetland waterbirds

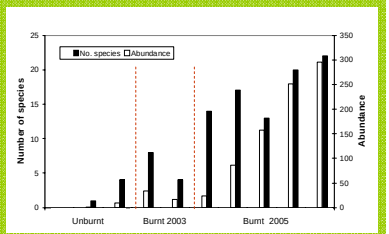
The effects of fire on vegetation and populations of water birds are being recorded at Yellow Water. The abundance and richness of water birds are very high at sites burnt during the previous year, moderately high at sites burnt three years ago, and very low at long-unburnt sites.

Dense stands of Mudja limit access to water and choke out species normally used for food by birdlife and Aboriginal people.

After burning, plant and bird diversity is dramatically increased.

Water birds are good indicators of wetland health from biodiversity, cultural and tourism perspectives.

Image: Randy Larcombe



Results from surveys in 2006 show that wetland burning increases both abundance and diversity of water birds.

Recording traditional wetland burning knowledge

Indigenous Australians hold a wealth of ecological knowledge that could profitably be applied to contemporary land management. Unfortunately this has rarely happened and a large amount of Indigenous knowledge is being lost as elders pass away before the knowledge can be recorded or passed on. CSIRO researchers are using Bayesian Belief Network (BBN) modelling for capturing traditional ecological knowledge and applying it to fire management in Kakadu's wetlands.

The Bayesian approach can use more qualitative information than the quantitative data of conventional process-based models. The approach also provides an intuitive means of exploring system dynamics.

Image: Randy Larcombe

Once a model is developed, it will provide a tool for recording traditional ecological knowledge, applying it to wetland management, and providing an interactive educational experience for a diverse range of audiences, including traditional owners, park rangers, students, and tourists.

This study serves as an internationally significant model for integrating Indigenous and Western knowledge systems to achieve positive outcomes for both traditional resource use and the conservation of biodiversity. It involves collaboration between the Bushfire CRC, CSIRO, Parks Australia North, and the Environmental Research Institute of the Supervising Scientist.