Burning for biodiversity and cultural values in Kakadu

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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.

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 in the Northern Territory to examine the environmental and 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.

Why burn wetlands?

In the absences of disturbance, floodplain grasses such as the native mudja (*Hymenachne acutigluma*) and introduced para grass (*Brachiaria mutica*) spread unchecked and develop into dense monocultures. The grasses choke 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 floodplain grasses, thereby maintaining habitat diversity.

Capturing traditional knowledge

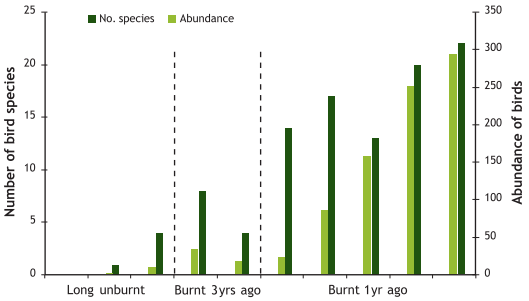
Indigenous Australians hold a wealth of ecological knowledge that could profitably be applied to contemporary land management. Unfortunately this has rarely happened and a large amount of Indigenous knowledge is being lost as elders pass away before the knowledge can be recorded or passed on. We are 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. 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 audience, from traditional owners to tourists.

Dense *Hymenachne* stands, while appearing lush and green (on left), are eerily quiet contrasting with mass movement and activity of life in adjacent burned areas.

Burning impacts

Results show that the re-application of traditional fire management dramatically enhances biodiversity and the cultural values of these wetlands for Aboriginal people. Water birds are good indicators of wetland health from biodiversity, cultural and tourism perspectives. 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, as shown in the graph below.



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.

Photo credits: Randy Larcombe and Greg Miles.

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