Capturing and communicating traditional burning knowledge

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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 has been 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 in Kakadu's wetlands. Results have shown that the re-application of traditional fire management dramatically enhances biodiversity and the cultural values of wetlands.

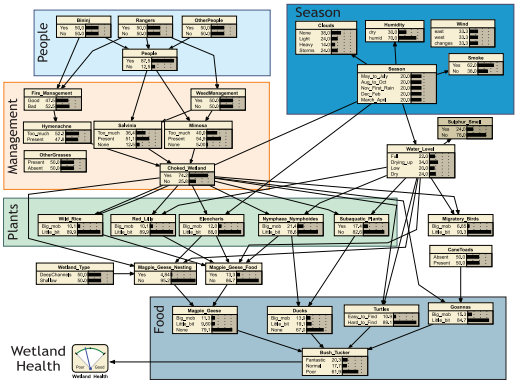
Why use a Bayesian Belief Network model?

Aboriginal 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 knowledge is being lost as elders pass away before the knowledge can be recorded or passed on. The Bayesian Belief Network (BBN) modelling approach is ideal for representing traditional ecological knowledge and applying it to it to fire management in Kakadu's wetlands, as it can use more qualitative information than the quantitative data required by conventional process-based models.

Developing the model

The aim of this project was to develop a model understanding of Aboriginal wetland knowledge, while at the same time ensuring that intellectual ownership of the information was maintained by our Aboriginal partners. This was achieved by ensuring our partners understood the logic behind the model, its role and potential purposes, and by allowing sufficient time for each task required to build the model.

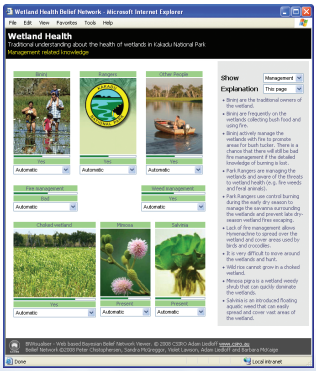
The second component of the project involved the development of a graphical web-based interface for exploring the model. The graphical approach illustrates how the nature and appearance of wetlands change with season and different management interventions. An Aboriginal manager's understanding of wetlands includes factors such as sights, sounds and smells, and these have also been incorporated into the visualisation of the model.



Bayesian Belief network representing Aboriginal ecological knowledge about wetland health in Kakadu

Conclusion

The Bayesian Belief Network model provides a valuable tool for recording traditional ecological knowledge, applying it to land management, and providing an interactive educational experience for a diverse audience, from traditional owners to tourists.



An example of the web-based visualisation of a belief network. This page shows the Aboriginal land management understanding within the belief network.

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