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**Worth of Water: Environment, Society and Sustainability
Session 2 10.25am Healthy Waterways?**



Presentation: **Wetlands et al**

Multiple impacts on wetlands

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The Science Forums

- *key words/terms: wetlands, aquatic systems, habitat, Ramsar*
- *applications: ecological management, rehabilitation, sustainability*

Wetlands are among the most valuable of all aquatic systems in both economical and ecological terms. They provide habitat for birds and fish, stabilise sediments and prevent erosion, remove nutrients from adjacent lands, intercept floodwaters, support local communities and are a source of recreation for fisherman and nature lovers. They are, however, subject to a wide range of environmental impacts, including alteration to their natural hydrology from flooding or drainage, salinisation and soil acidification, nutrient enrichment, destruction of habitat via vegetation clearing, invasion by weeds, and colonisation by exotic fish such as carp. Most studies of wetlands have addressed these environmental threats one by one, yet wetlands are usually afflicted by multiple impacts that interact together to severely degrade high-value sites.

The universities of Victoria and Monash are collaborating on a project to examine the interactive effects and management of multiple environmental impacts – altered water regime, salinisation, soil acidification and presence of carp – in high-value wetlands of the Gippsland Lakes, south-eastern Australia.

Dowd Morass is the focus of the project. It is a Ramsar-listed wetland (Ramsar is an Internationally protected wetland for their bird populations) on the southwestern shore of Lake Wellington, the western most lake of the Gippsland Lakes complex. It is densely vegetated by the swamp paperbark (*Melaleuca ericifolia*) and supports large and diverse waterbird communities. The Morass has been flooded almost permanently for the past 20 years, and the health of the paperbarks has deteriorated markedly. The water is often unacceptably salty and the salinity can reach alarming levels. Carp are also present, and may inhibit the growth of the wetland's aquatic plants.

The project will use existing levees, which divide Dowd Morass into discrete sections, to draw down the water in one part of the wetland in 2003, while maintaining the water level in a matching part of the wetland as a control. Comparison sites will be established also in the nearby Clydebank Morass.

The response of wetland plants and birds to the return to a more natural water regime will be monitored in the field after the draw down.

Meanwhile, revegetation strategies in the Morass will be trialled to determine how to enhance the wetland's biodiversity. Pond, glasshouse and laboratory experiments will be undertaken to complement these field observations. The impact of carp on the wetland will also be assessed, using areas of the Morass that have been fenced to exclude large fish.

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The project is looking to determine how the plants and birds in a high-value Ramsar-listed wetland respond to the return to a more natural water regime; how water regime interacts with salinity, soil acidification and the presence of carp to degrade wetlands and lower their biodiversity; how best to revegetate wetlands where the natural plants are subject to a wide range of synergistic environmental impacts; and to build collaborative teams involving ecologists, natural-resource agencies and community groups to improve the health of wetlands.

Profile

Associate. Prof. Paul Boon has worked on the ecology and management of inland and coastal wetlands for over 20 years. His most recent project addresses the poor condition of the wetlands that fringe the Gippsland Lakes in southern Victoria. Previously, his research projects have examined the impacts of nutrient enrichment on urban lakes and wetlands, and the ecology of billabongs along the River Murray. Paul currently works in the Department of Ecology and Sustainability at Victoria University; before taking up this position he worked for the CSIRO (Land & Water), the consulting firm Sinclair Knight Merz, and Monash University.

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