

# What a difference some water makes!

The Banrock Station wetland has undergone a remarkable transformation after being partially refilled following a prolonged dry period. Refilling the wetland was necessary to prevent drought damage that could have been irreversible or taken many years to fix.



Banrock Station wetland - October 2008

## What has happened as a result of the refill?

The refill has been very successful in preventing potentially irreversible damage to the wetland. It has prevented rising salinity, revived severely stressed red gums, created abundant new plant and tree growth and attracted a large variety of wildlife.

Stressed red gums began exhibiting green shoots in September 2008, just four months after refilling, with this response increasingly apparent in October 2008 and continuing to improve. The water table has been recharged, providing most of the wetland's red gums with a source of water for when dry conditions return.

Opportunist birds such as the grey teal appeared almost immediately following commencement of the refill, and by September there was an abundance of birdlife including the rare musk duck, which bred in the wetland. Within 12 weeks of the refill commencing, the first broods of ducklings and cygnets were observed.

The distinctive calls of five species of frog including the endangered Southern Bell frog have been heard at various

points in the wetland, and tadpoles have also been found in increasing numbers. Three species of native turtle, including the rare broad-shelled turtle, have also returned to the wetland.

Thousands of native fish have entered the wetland through its connection to the River Murray, but importantly, the exotic pest species European carp has not joined them thanks to the efforts of scientists from the South Australian Research and Development Institute (SARDI). SARDI and Banrock Station personnel have trapped more than 5000 European carp, including many breeding females, preventing them from entering the wetland. Consequently, a marked improvement in water clarity has been observed for the first time in many decades.



Banrock Station wetland - April 2008



Banrock Station wetland - October 2008

Other scientists from the CSIRO have been monitoring water quality and acid sulphate soils in the wetland during the refill process to ensure that water flowing back into the river from the wetland would not adversely affect the river's water quality. Banrock Station has also monitored groundwater for rising salinity, which has been prevented by the refill.

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Banrock Station wetland - December 2008

### What has been learned as a result of the refill?

Observations and recordings made during the refill process have contributed a great deal of important knowledge about wetland management that will be very useful to other managers of wetlands on the Murray-Darling system. This knowledge will assist Banrock Station in its global conservation efforts to protect wetlands and wetland wildlife, to which it has contributed more than \$5 million across 96 projects to date.

An important finding has been the determination of the wetland's capacity to withstand prolonged dry periods. The dry period from January 2007 to May 2008 was the first fully dry period experienced by the wetland since the construction of the River Murray locks more than 80 years ago. We have found that 18 months of the wetland being dry is just about the limit before it begins to exhibit permanent damage.

### Why was the wetland dry in the first place?

Banrock Station voluntarily disconnected the wetland from the River Murray in January 2007 to prevent water being lost to evaporation and to simulate a natural drying cycle in order to improve the long-term health of the wetland. More than 1600 ML of water was saved from evaporation losses.

Managed drying during summer and autumn coincides with the natural dry phase in wetlands and is critical in their restoration. When the wetland was first dried in January 2007, it was intended to remain dry for only six months.

### Why was the wetland refilled?

By mid-2008 it was apparent the wetland was under extreme stress from the prolonged dry period with many of the wetland's red gums and critical habitats for rare and endangered animal species at considerable risk. Banrock Station and the Australian Government were obliged under the international Ramsar Convention to protect the ecological character of the wetland that existed at the time it was listed. The Murray-Darling Basin Commission therefore announced in May 2008 that it would provide 617 ML from an environmental entitlement under the Living Murray initiative to partially refill the wetland and Banrock Station provided an additional 215 ML. Refilling commenced in May 2008 and continued during the cooler winter months to minimise evaporation losses.



Native vegetation - May 2008



Native vegetation - October 2008

### What are Banrock Station's future plans for the wetland?

In future, it is intended to continue simulating the natural wet and dry wetland cycle, with a drying phase in summer and autumn, followed by refilling in winter and spring, as the ideal regime to maintain a healthy wetland.

### ANY QUESTIONS?

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