Australian Government
Department of Sustainability, Environment, Water, Population and Communities

Wetlands Australia

NATIONAL WETLANDS UPDATE, JULY 2013 – Issue No 23

Managing Environmental Water for Wetlands

Other chapters can be downloaded from:

http://www.environment.gov.au/water/publications/environmental/wetlands/wetlands-australia/wa23.html

MANAGING ENVIRONMENTAL WATER FOR WETLANDS

Red gums and mixed marsh at Mole Marsh, April 2013 *(Daniel Rothenfluh, CEWO).*

Environmental water into the Macquarie Marshes—building resilience

Commonwealth Environmental Water Office

In late spring 2012, delivery of 100 gigalitres (GL) of Commonwealth environmental water to the Ramsar listed Macquarie Marshes in central west NSW commenced. This volume complemented 166 GL of NSW environmental flows, making it the largest managed environmental water delivery event ever undertaken in the Macquarie Marshes. The target was the ecologically diverse reed beds, eucalypt forests and woodlands that make the Marshes such a unique and environmentally valuable asset.

It followed two years of good inundation from a combination of runoff from large natural rainfall events and smaller managed environmental water delivery. The condition and species richness of wetland vegetation showed signs of improved health compared to the situation at the end of the Millennium Drought in 2010.

In recognition of the need to re-build the wetland's capacity to be resilient to drought periods, the 266 GL was delivered into the

Wavy marshwort in the southern lagoons *(Daniel Rothenfluh, CEWO)*

Marshes by late January 2013. This water supported new growth in river red gums and reed beds and provided habitat for native fish, frogs, birds and other animals well into autumn 2013. The flows also assisted to suppress dryland weed species that have encroached into the system as a result of river regulation and periods of drought. While large numbers of waterbirds were observed foraging in the Marshes in early 2013, only small bird breeding events occurred, possibly as a result of a drier than average spring and summer.

Since Commonwealth environmental watering began in the Macquarie Marshes in 2010 nearly 168 GL has been provided to the Marshes in cooperation with the NSW Office of Environment and Heritage (OEH), the Macquarie Marshes Environmental Flow Reference Group (EFRG) and NSW State Water.

When undertaking environmental watering, the Murray-Darling Basin Plan requires the Commonwealth Environmental Water Holder (CEWH) to maximise environmental benefit, including by having regard to Indigenous values. In consultation with OEH and the EFRG, the Commonwealth Environmental Water Office is currently planning to contribute to another watering action in winter-spring 2013 into the core wetlands, which need to receive flows on an annual basis. This action will support plants like cumbungi, nardoo and spike rush which are important to the Wailwan community, the area's Traditional Owners. Other important species will also benefit from continued flows into the Macquarie Marshes, one of Australia's important and iconic Wetlands of International Importance.

Example of understorey response at wetland that did not receive environmental water, February 2013 *(Sascha Healy, NSW Office of Environment and Heritage).*

To intervene or not intervene – the value of environmental water during drought

Sascha Healy and Paula D'Santos, NSW Office of Environment and Heritage and Cherie Campbell, Murray-Darling Freshwater Research Centre

Understorey vegetation plays an important role in riparian and floodplain ecosystems of the Murray-Darling Basin. Wetland and floodplain plants provide habitat for fauna, contribute to food webs, nutrient cycling and water quality processes and generally contribute to the biodiversity of ecosystems.

The NSW Office of Environment and Heritage and the Murray-Darling Freshwater Research Centre recently completed a project focusing on understorey vegetation at eight wetlands on the Murray River between Wentworth and the South Australian border in New South Wales. The study comprised four wetlands that received environmental water during the drought (2001-2010) and four wetlands that remained dry during this period. All eight wetlands received overbank flows in 2010-11. The objective of the study was to evaluate the benefit of management intervention during the drought with regard to response of wetland vegetation post-flooding.

Example of understorey response at wetland that received environmental water February 2013 *(Sascha Healy, NSW Office of Environment and Heritage).*

Wetlands that received environmental water during the drought responded better to the 2010-11 floods by developing a more diverse and abundant wetland plant community than wetlands that remained dry. Environmental watering during drought years seems to have provided some resilience to the wetlands in terms of their ability to respond to a flooding event. Environmental watering should enable numerous soil stored seeds and propagules to germinate, grow, complete their life-cycles and re-set-seed, thus replenishing the seed bank and enabling wetland plant communities to establish with greater abundance during the next favourable conditions.

However, the response of components of the wetland vegetation post-flooding, particularly submerged macrophytes, was limited. There was a scarcity of submerged macrophytes observed, including wetlands previously known to have developed these communities following environmental watering. A potential explanation is that sediment deposition during the recent flood, which was several inches thick at some wetlands, may have inhibited germination of wetland plants. Other contributing factors may include disturbance from carp, the depth and duration of the flooding event and water quality (e.g. turbidity).

Findings from the monitoring provide support for the ongoing environmental water management of the Murray River and its associated floodplains and wetlands especially during drought periods. This will assist in the continued management of these individual sites.

* *OEH and MDFRC wish to acknowledge Murray Darling Wetlands Working Group who permitted access to data from 2008-09*