NSW Rivers Environmental Restoration Program

This information sheet summarises the scientific investigations under the NSW Rivers Environmental Restoration Program.

Environmental water: what is it?

‘Environmental water’ is water that is committed by management plans for fundamental ecosystem health or other specified environmental purposes. The Department of Environment, Climate Change and Water is responsible for managing environmental water in NSW.

Wetlands at risk …

Growing concern over the health of the Murray–Darling Basin has increased attention on environmental flows and how to maximise the environmental benefits they can provide to floodplain wetlands and water quality.

In 2007, the Australian and New South Wales Governments established the Rivers Environmental Restoration Program (RERP) to address the urgent need to improve the health of some of the most significant and threatened wetlands of the Murray–Darling Basin. RERP builds on the NSW Wetland Recovery Program and is using market-based water recovery and the effective management of environmental water to arrest the decline of the most stressed and iconic rivers and wetlands of inland NSW.

RERP focuses on the wetlands of the Gwydir and Lachlan rivers, the lower Murrumbidgee (Lowbidgee) floodplain, and the Macquarie Marshes and Narran Lakes. The program supports these threatened environments by purchasing and delivering water to the wetlands and improving our understanding of their ecology and water requirements.

RERP science

The Rivers and Wetlands Unit of the NSW Department of Environment, Climate Change and Water (DECCW) manages the scientific investigations undertaken by RERP. This research has involved ecological and hydrological investigations to increase the scientific knowledge underpinning the management of environmental flows and achieve three key objectives:

- improve understanding of the water needs of stressed wetlands
- demonstrate the ecological outcomes that can be achieved by the use of environmental water
- increase government capacity for adaptive management and efficient use of water for the environment.
New South Wales Rivers Environmental Restoration Program

Improved understanding

RERP science projects have guided the better use of environmental water by improving our understanding of the ecological character of key wetlands and the relationships between ecological assets and flow regimes. Projects have explored the physical components, hydrological drivers and ecological response of significant wetlands as well as providing mechanisms for sharing and exchanging knowledge.

A suite of projects

Projects funded under RERP have defined the ecological character of significant wetlands in the Murray–Darling Basin, modelled the flow-ecology relationships and monitored condition. Models of ecosystem response and water movement feed into decision support tools that assist managers of significant wetlands make scientifically rigorous and transparent decisions for the optimal delivery of environmental water. Research findings have contributed to an improved understanding of these important wetland systems and how to manage their biodiversity values.

Ecological response projects have improved knowledge of the core assets in the target wetlands by:

- understanding the trophic dynamics of food webs
- surveying fish and waterbirds
- determining the extent of vegetation communities and their response to flooding
- understanding how the endangered southern bell frog (*Litoria raniformis*) responds to environmental flows and predators in the Lowbidgee floodplain

- documenting the ecological character of the Lowbidgee floodplain and lower Lachlan wetlands.

Landscape component projects characterised the physical features of the wetlands, contributing to the development of wetland hydrological models and increasing our understanding of how water moves through the wetlands. These include the development of:

- digital elevation and terrain models using the optical remote sensing technology LiDAR (Light Detection and Ranging)
- maps of historical and current vegetation structure
- maps of soils and their properties.

Hydrological projects have improved our knowledge about wetland flood regimes (their timing, frequency and duration) and flood patterns (the spatial distribution of water) through:

- development of hydrodynamic models of the movement of water through the wetlands
- expansion of river hydrology models to include floodplain wetlands
- preparation of maps showing the historic inundation of wetlands.

Outcomes

The scientific knowledge being assembled by RERP will improve decision-making about environmental water in the Murray–Darling Basin. This knowledge forms the heart of the Decision Support Systems (DSS) which relate scenarios on the volume and timing of water delivery to ecological outcomes. DSS will provide a transparent and scientifically rigorous process for decision-making.

By developing and applying this understanding, RERP science is improving the use of environmental water with great benefits for the health of our wetlands.

© 2010 State of NSW and Department of Environment, Climate Change and Water NSW

Published by:
Department of Environment, Climate Change and Water NSW
59 Goulburn Street, Sydney
PO Box A290, Sydney South 1232
Phone: (02) 9995 5000
Phone: 131 555
Phone: 1300 361 967
Fax: (02) 9995 5999
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au
Banner photo front page: Yanga NP wetland/R. Thomas DECCW
ISBN 978 1 74232 907 9
DECCW 2010/731
September 2010