

RESEARCH IMPACT

River and wetland ecosystem health

Supporting water management for the future



"...[O]ngoing monitoring is giving us information so we're not flying blind when we're making decisions about where or how water flows across this landscape".

Roseanne Farrant, Deniliquin landholder

Challenge

In Australia, our river systems (including rivers, wetlands, floodplains and other human made components) support agriculture, communities and biodiversity. Sustaining these systems into the future requires good information about the effects of management decisions and the natural changes in the ecosystems for decision-makers and communities.

Discovery

Charles Sturt University has been undertaking research in the Murray-Darling Basin and other river systems to help decision makers and provide information to communities. Led by Professor Robyn Watts and Dr Skye Wassens, a wealth of information has been developed about river and wetland ecosystems, the effects of water management interventions and environmental events.

Impact

By providing reliable, independent information, this program of research has contributed to water management planning, empowered communities to participate in decision-making, and been part of efforts to secure vulnerable aquatic species.

A program of research at Charles Sturt University has been developing knowledge of the Murray-Darling Basin and other water systems for over twenty years. Led by Professor Robyn Watts and Dr Skye Wassens, this research program has brought together a large team of experts across multiple research projects from Charles Sturt University and other organisations. Working in this system over an extended period, the team has built expertise across a wide range of ecological processes, from water quality issues such as algal blooms and hypoxic black water through to the conservation and ecology of native fish, frogs and waterbirds.

The current focus of this research program is two long-term intervention monitoring (LTIM) projects funded by the Commonwealth Environmental Water Office (CEWO). Charles Sturt University-led teams are evaluating the outcomes of the Commonwealth environmental watering actions in the Edward-Wakool and Murrumbidgee systems over a period of five years. Differences between sites receiving, and sites not receiving environmental water are being studied, with data used to inform adaptive management and refine our understanding of the effects of different watering actions under a range of conditions. The CEWO uses these results to ensure they are able to deliver on objectives of the Murray-Darling Basin Authority's Environmental Watering Plan.

Adaptive management, the process of allowing for decisions to be made in response to new information or changing circumstances, is central to the effective management and allocation of environmental water. This research program supports adaptive management of water by providing information and advice on condition of the rivers and wetland systems, and the changes that occur in response to environmental watering. This allows water managers to respond rapidly to changing conditions and refine future water strategies.

The teams work closely with government management agencies, landholders, interest groups and community members, sharing monitoring outcomes and providing robust evidence-based scientific advice to support discussion on the best use of environmental water. This advice can inform real time decision making during environmental watering actions, allowing for day-to-day modification of flow volumes to meet specific ecological outcomes. Research conducted by the team also supports long-term water planning and underpins environmental watering plans.

Members of the research teams also spend time with various decision-making organisations and community groups at the local, state and national level, such as:

- Interagency consultation group for long-term water planning under the Murray-Darling Basin Plan;

- CEWO and New South Wales Office of Environment and Heritage, including consulting for annual water priority planning;
- Yanga National Park Management Plan;
- Technical advisory groups; and
- Local reference groups.

The program has also contributed information to the Federal Government for decisions regarding use of water allocations. The Murray Darling Basin Authority has used the research produced by the team to inform annual Environmental Watering Priorities.

Providing information for communities

Working with people and communities who live around these water systems is a significant aspect of this research program. Local communities want the rivers to be healthier and many people are directly impacted by government water management. Landholders participate in information sessions and many are active and involved in serving on advisory committees where decision-making happens. Roseanna Farrant, a landholder from the Deniliquin area who is part of one such committee, says that the information from this research program is critical, and that through the involvement of the researchers, “communities are empowered to be part of the decision-making process”.

Team members have also been committed to engaging with communities through informal community activities and events. Josh Campbell from Murray Local Land Services is involved in organising the annual Edward-Wakool Fish Forum. He says that “Charles Sturt University has always been really good, coming out to fishing comps and things like that, just getting out in the community”.

Program Highlights

- Building knowledge through long-term research of the river and floodplain ecosystems.
- Engaging with decision-makers through a range of organisations.
- Researchers being actively involved with communities, providing opportunities to share learning.

Funding and Collaborators

The main project of this program, the long-term intervention monitoring project, is funded by the Commonwealth Environmental Water Office (CEWO), with in-kind and/or cash contributions from DPI Fisheries and the New South Wales Office of Environment and Heritage (OEH) and other organisations. Many collaborators have been a part of this research program through various research projects.



“...[W]e had to make some decisions very quickly about using environmental water...we had good data from Charles Sturt University...and it allowed us to make a prudent use of public assets, in a very timely way and on a large scale”.

Hilton Taylor, Assistant Secretary for Southern Water Use, Aquatic Science & Community Engagement Branch, CEWO

Securing the Southern Bell Frog

The Southern Bell Frog is a nationally vulnerable species. These iconic frogs have undergone rapid declines, with severe drought between 2000 and 2010 nearly driving key populations to extinction. Charles Sturt University researchers have worked in close partnership with New South Wales OEH, CEWO and landholders for over a decade. This work helped secure key populations and with careful use of environmental water has contributed to the recovery of Southern Bell Frog populations throughout the Murrumbidgee.

“The role of the university is to bring together a diverse group of people, provide strong, independent advice on which decisions can be made by the broader community about how we manage our natural resources into the future”.

Dr Skye Wassens, research team leader, Charles Sturt University

A fact sheet from the CEWO shows how this program of research has contributed to understanding results of water management: <https://tinyurl.com/ybq5co8a>

Research pages:

<https://www.csu.edu.au/research/ilws/research/sra-sustainable-water/murrumbidgee-ltim-project>

<https://www.csu.edu.au/research/ilws/research/sra-sustainable-water/edward-wakool-research-project>

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