

Edward/Kolety-Wakool system Environmental Flows Newsletter

Issue Number 12 | 1 April – 30 June 2022

Edward/Kolety-Wakool Monitoring, Evaluation and Research Program



The Werai Forest Group came together for a meeting at Yarkuwa Indigenous Knowledge Centre in Deniliquin in May 2022 – see story on page 5 (Photo: Margrit Beemster)

What's in issue 12

Riverside community field day highlights collaboration

River blackfish in the Wakool River

Working together to manage Werai Forest

Update on fish community surveys

Aquatic and riverbank plant responses to flows and drying

Welcome to the issue 12 of the Edward/Kolety-Wakool Environmental Flows Newsletter - a quarterly newsletter that provides an update on our progress as we monitor and undertake research on the ecosystem outcomes of Commonwealth environmental watering actions in the Edward/Kolety-Wakool system.

The Edward/Kolety-Wakool MER Program is a collaboration between universities, state government agencies, consultants, and local community organisations. More information on the program can be found at: <https://flow-mer.org.au/selected-area-edward-kolety-wakool/> <https://www.csu.edu.au/research/ilws/research/environmental-water>



Riverside community field day highlights collaboration

The steady waters of the Edward/Kolety River as they flow below the steep riverbank at Four Posts Camp, near Deniliquin, are mesmerizing and are a reminder of the timelessness of this country and its waterways.

As such, the camp in its river red gum forest setting, was the ideal location for the Edward/Kolety Community Field Day held on Saturday 28th May. More than 75 people came together to share knowledge, learn about the river monitoring and research being undertaken in the area by different organisations, and to take part in the ‘hands-on’ activities.

“There was a good turn up with a range of people from different organisations and from Deniliquin and the surrounding area,” said Professor Robyn Watts from Charles Sturt University, who leads the Edward/Kolety-Wakool Flow-MER environmental water monitoring program funded by the Commonwealth Environmental Water Office (CEWO). “The day was a great success in terms of collaboration, people sharing knowledge and learning, and everyone just having fun and enjoying the day.”

Welcome to Country



The day’s activities began with a Welcome to Country by Jeanette Crew, OAM, a Wamba Wamba Pereppa Pereppa Nation woman, and a Smoking Ceremony.

“The message I want to get across is the importance of people working collaboratively or in partnership, not in isolation of each other,” said Jeanette, chairperson from the Yarkuwa Indigenous Knowledge Centre. “Days like this field day are extremely important in terms of sharing knowledge and experience; seeing the outcomes of all the work that has been done and is being done in this geographical area; and in emphasising the joint arrangement between Western science and our science where our science gets the recognition it deserves.”



Jeanette said this combined knowledge will be beneficial in terms of the future management of “not just the Werai Forest but all our Country.” She also said how proud she was of the Kolety Werkul River Rangers Team; the good work they were doing and how she hoped they will be the first of numerous teams doing the same kind of work “because we really need them.”

Figure 1. A Smoking Ceremony followed the Welcome to Country.
Figure 2. Ebony Mullin (left) and Kate Reid (right) from the CEWO chat with Traditional Owner Jeanette Crew on the banks of the Edward/Kolety River. (Photos: Margrit Beemster)

Hands-on activities

Activities on the day included an opportunity to look at fish larvae and water bugs under a microscope led by fish ecologist Dr Nicole McCasker, and a hands-on water quality activity led by environmental chemist Dr Shasha Liu. Dr James Van Dyke and the Kolety Werkul Rangers had display about turtle monitoring and conservation, and an animation of turtle movement in the Edward/Kolety River that was created using the results of their Flow-MER turtle research project. Dr Jason Thiem and Tim McGarry set up a display of fishing equipment used by Department of Primary Industries-Fisheries to monitor fish in the river system, and Thom Gower from Streamology showed how drones are used to assess riverbanks and vegetation. The Wetlands Section of the Commonwealth Environmental Water Office (CEWO) had a display on Ramsar wetlands and environmental water. There were other displays and activities by CSU’s Spatial Data Analysis Network (SPAN) and Murray Local Land Services.

A Successful Field Day

The day provided an opportunity not only for interested members of the public to come along and learn more about the river monitoring and research happening in the area, but also for people from the various partner organisations to meet each other and find out more about what they each do. As Josh Campbell, Land Services Officer with Murray LLS said: “It’s been a really good opportunity to catch up with project partners.”

Peter Newall, a consultant working for the Wetlands Section of CEWO, and Bernard Morris, and Erin Kirsch, of the Wetlands Section, used the day to talk about Ramsar wetlands and gather information about the ecological character of the Werai Forest for updating the Ramsar Information Sheet on the NSW Central Murray Forests Ramsar site. The Werai Forest is a part of the Central Murray Forests Ramsar site. Ramsar Wetlands are recognised as internationally important under Ramsar Convention.

“The day was very much about bringing everyone together to continue to share knowledge on Country,” said Kate Reid, water delivery officer for the Edward Kolety-Wakool System in CEWO’s Central Basin Delivery Section. “Traditional Owners have been working closely with scientists and the community over the past few years to exchange knowledge, collaborate and form friendships. It was great to be able to see everyone come together and connect on Country. We value being able to continuously learn from Traditional Owners to understand how we can support community to care for Country.”

“Everyone contributed to make the day successful including the Deniliquin Rotary Club who provided the wonderful lunch, Roseanne Farrant who did a marvellous job of coordinating the local logistics, and all the people from the different organisations,” said Robyn.

The day was hailed as a “huge success” by organisers and attendees. The field day was co-hosted by numerous groups including CSU, Yarkuwa Indigenous Knowledge Centre, Murray-Darling Wetlands Working Group, Werai Land and Water Aboriginal Corporation, Streamology, Edward-Wakool Angling Association, Murray Local Land Services (LLS), NSW DPI Fisheries, NSW Planning and Environment, La Trobe University, and the Department of Agriculture Water and the Environment (Australian Government).



Figure 3. Top left: Dr Nicole McCasker (CSU) shows Dakota Dunn (age 3), a fish larva. Top right: Dr Shasha Liu and Judy and Frank Bond. Bottom left: Attendee Trevor Clark (Chair of the Yanco Creek and Tributaries Advisory Council) with Dr Jason Thiem (NSW DPI Fisheries). Bottom right: Michael Clark, from the Edward Wakool Angling Association with Professor Robyn Watts (CSU). Michael has assisted with golden and silver perch monitoring. (Photos: Margrit Beemster)

River Blackfish in the Wakool River



Figure 4. Left: Juvenile river blackfish. Right: Adult river blackfish (right) from the Wakool River system. (Photos: John Trethewie)

River blackfish (*Gadopsis marmoratus*), also known as “slippery”, “slimy” and “marbled cod”, are a little understood species of freshwater fish that occurs in the Murray-Darling Basin as well some coastal rivers. Although considered the same species, the river blackfish that occur in the Murray-Darling Basin are smaller than their coastal counterparts, with any fish over 20 cm considered large. They have widely varied mottled markings between individuals with colours ranging from greens and greys through to black.

Fish populations have been monitored in the Edward/Koety-Wakool system since 2014, as part of the Flow-MER and previous Long-Term Intervention Monitoring (LTIM) programs. Over this period of eight years, river blackfish have been encountered sporadically as larvae, juveniles and adults. Early in the project they were detected at only one or two sites in the upper Wakool River, but over the last few years their range appears to have been increasing. They are now being detected throughout the Upper Wakool River and at sites in Yallakool Creek, as well as downstream of the junction of these two rivers.

Larval surveys undertaken in 2021-22 have further confirmed this spread, with larval river blackfish caught at eight survey sites, the highest number of sites since surveys began (Figure 5). This is a positive sign for the future of the river blackfish population in the system and here’s hoping they continue to extend their range into other parts of the system.

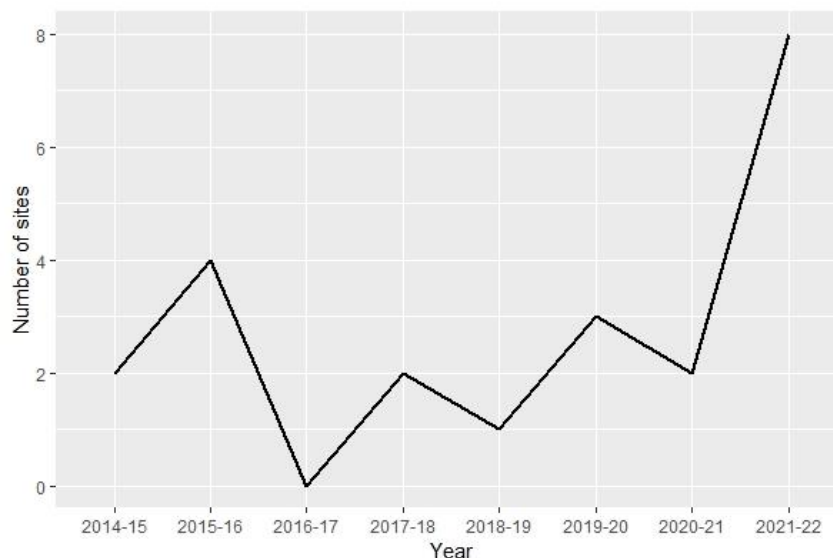


Figure 5. Number of sites where river blackfish larvae have been detected in the Wakool River and Yallakool Creek from 2014 – 2022.

Working together to manage Werai Forest

With the handover of the Werai Forest to its Traditional Owners, the Wamba Wamba Pereppa Pereppa Nation, imminent, the discussions and planning going on at informal monthly meetings are an important part of that transition.

Participants in the Werai Forest Group meetings had the opportunity for a face-to-face meeting at the Yarkuwa Indigenous Knowledge Centre, Deniliquin in May, prior to the riverside community field day at Four Posts Camp on the banks of the Edward/Kolety River (see story on the community field day on page 2 of this newsletter).

“The main aim of the meetings is for the Traditional Owners to inform us of their resource needs and desires for the Werai Forest and to assist in the coordination of actions required in the forest if needed such as feral control (weeds and animals), watering actions and training opportunities for local First Nations people,” said the Commonwealth Environmental Water Office (CEWO) Water Delivery Officer Kate Reid who facilitates the meetings.



Figure 6: The Werai Forest Group met at Yarkuwa Indigenous Knowledge Centre in Deniliquin in May. (Photo: Margrit Beemster)

The Werai Forest, located on the Edward/Kolety River downstream of Deniliquin, is one of three sub-sites in the NSW Central Murray Forests Ramsar Site that is listed as a wetland of international importance. The two other sub-sites are the Millewa Forest and the Koondrook Forest, all of which depend on flows in the Murray River. While Koondrook is managed by the Forestry Corporation of NSW, both Millewa and Werai are currently managed by NSW National Parks and Wildlife Services.

However, local Traditional Owners have been working towards having the Werai Forest become an Indigenous Protected Area (IPA) since 2009 and have established the Werai Land and Water Aboriginal Corporation that will take over the ownership of the freehold title, which will be followed by the dedication of the Werai Indigenous Protected Area.

The local Traditional Owners are represented at the monthly meetings by the Werai Land and Water Aboriginal Corporation, and members of the Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation including chair, Jeanette Crew, OAM.

“It is important for the future management of the Werai to collate past research findings and consider further research to consider management issues that better meet the needs of the Traditional Owners,” says Jeanette.

Other participant stakeholders in the “evolving and fluid” group include representatives from CEWO (from both its Water Delivery group and Wetlands group), Charles Sturt University, Murray Local Land Services (LLS), NSW Department of Planning and Environment (the water managers in NSW), Murray Darling Wetlands Working Group, and adjacent landholders.

“While waiting for this transfer of ownership to be finalised, the Werai Forest meetings have been ongoing so the future landholders, and others who have some knowledge of or who have worked in the Werai Forest, can get together to share their knowledge,” said Charles Sturt University’s Professor Robyn Watts, who leads a team monitoring and researching Commonwealth environmental water use in the Edward/Kolety-Wakool River system which includes the Werai Forest.



Through these discussions the Traditional Owners have identified information, training, and other support that they need to be able to manage Werai Forest. On-ground actions include a feral control program funded by Murray LLS that is being undertaken by the Kolety Werkul River Rangers Team. The rangers have also been working in the Werai Forest alongside Streamology, Charles Sturt University and the Murray-Darling Wetlands Working Group on a research project evaluating the effectiveness of drones for assessing the response of groundcover plants to inundation (see story in Newsletter #11).

Figure 7: Jeanette Crew (front) with the Kolety Werkul River Rangers Team. (Photo: Margrit Beemster)

The Werai Forest Group will continue to meet regularly. The information shared by the group will assist the future management of the forest and the delivery of Commonwealth environmental water to the forest and other nearby rivers and wetlands in the Edward/Kolety-Wakool system.



Figure 8: Floodrunner in Werai Forest following inundation in December 2021. (Photo: Andre Siebers)

Update on fish community surveys

As part of the Flow-MER project, staff from NSW Department of Primary Industries (Fisheries) and Charles Sturt University have been monitoring the fish community in the Edward/Kooley-Wakool System every year since 2015 using electrofishing and netting surveys.

Fish are measured, weighed, and released at the site of capture. This enables us to obtain data to understand the long-term trends in the fish community composition in relation to the flow regime.

Figure 9. Bryce Butler (DPI) with a Murray cod caught and released at Wakool Reserve



In the annual fish surveys undertaken in 2022, we recorded large numbers of Australian smelt, bony herring, carp gudgeon and common carp. The numbers of Murray cod and Murray-Darling rainbowfish caught were down compared to previous years. The unregulated flows in the Edward/Kooley-Wakool system this year may have reduced the catchability of these species due to the larger volume of water that needs to be surveyed.



Figure 10: Duncan McLay (DPI) on the electrofishing boat in the Wakool River.

Aquatic and riverbank plant responses to flows and drying

Monitoring of aquatic and riverbank vegetation for the Flow-MER program is undertaken by Sascha Healy (Murray-Darling Wetlands Working Group) at 20 sites each month. Sascha has observed good responses of riverbank vegetation to the unregulated flows that occurred in 2021-22.

Lignum plants have responded positively to the unregulated flows and rainfall, with new growth, flowers and seeds observed on plants. Lignum plants are monoecious, having separate male and female flowers that are small, and can be solitary or in whorl-like clusters along the branchlets (Figure 11).



Figure 11. Left: female lignum in flower May 2022. Right: Male lignum in flower May 2022. (Photos Sasha Healy).



Figure 12. Eelgrass (*Vallisneria australis*) exposed during the operational shutdown of Wakool River in June 2022. (Photo Sasha Healy)

Over the past two years we have observed an increase in the extent of eelgrass (*Vallisneria australis*) at several sites in the Wakool River. These plants were exposed in June 2022 when the Wakool River ceased to flow during the operational shutdown of Yallakool and Wakool regulators in winter. Exposing native aquatic plants to air and frost puts these plants at risk. We will continue to monitor the eelgrass beds and hopefully they will have survived to provide important source of food and habitat for fish and other aquatic animals.

More information

To join the newsletter mailing list please subscribe [here](#) or contact Professor Robyn Watts, Charles Sturt University, Albury NSW. rwatts@csu.edu.au

We respectfully acknowledge the Wamba Wamba or Wemba Wemba, and Perrepa Perrepa or Barapa Barapa peoples, traditional owners of the land on which the Edward/Kolety-Wakool program is focussed. We recognise their unique ability to care for Country and their deep spiritual connection to it. We honour Elders past, present and emerging whose knowledge and wisdom has ensured the continuation of culture and traditional practices. The Edward/Kolety-Wakool team would also like to acknowledge the local landholders with whom we work and thank them for their contribution to the monitoring and research.

Watts R.J., Beemster M., Trethewie J., Rourke M., Healy S. (2022) Edward/Kolety-Wakool System Environmental Flows Newsletter, Issue 12. Charles Sturt University.