DECEMBER 2020 ISSUE 6

THE BIDGEE BULLETIN

Quarterly Newsletter of the Murrumbidgee Monitoring Program

FIELD MONITORING UPDATE

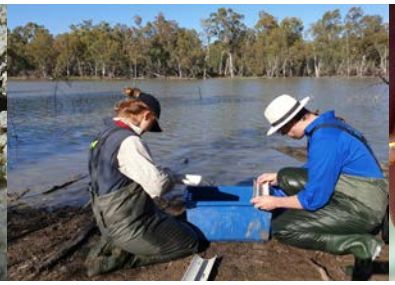
The first two wetland monitoring trips of the season took place in September and November with warm conditions and many wetlands inundated after winter rainfall and delivery of environmental water. In Yanga National Park Two Bridges Swamp and Piggery Lake have filled and are already showing a strong aquatic vegetation response. Our field team were excited to capture an adult Murray cod at Waugorah Lagoon, as well as good numbers of small native fish at several wetlands, including an un-specked hardyhead at Coocancoocabil Lagoon. Environmental water has been slowly been making its way south towards Yanga Lake. It is now starting to trickle in from Yanga Creek and the lake is expected to be full around Christmas. A great outcome!

Frog populations are voicing their approval of the wet conditions and all six Murrumbidgee frog species, including the threatened southern bell frog, were detected at multiple wetland locations across Yanga National Park and Gayini Nimmie-Caira. Notably, adult southern bell frogs were observed around residual water at Avalon Dam in Gayini Nimmie-Caira, which is exciting

Welcome to Issue 6 of The Bidgee Bulletin. In this issue we report on the September and November field monitoring trips, both notable for the wet conditions across the middle and lower Murrumbidgee. We also look at how aquatic plants make important contributions to wetland habitats and check in with the MER Program's Technical Officer Gaye Bourke who features in this issue's 'Who's Who in the Zoo'.

The Bidgee Bulletin is a quarterly newsletter designed to provide updates on our progress as we monitor the ecological outcomes of Commonwealth environmental water flows in the Murrumbidgee Selected Area. The 2019-2022 program builds on the previous five year monitoring period (2014-2019) and uses many of the same methods.





Clockwise from above: Josh Bruni releases a broad-shelled turtle, a large Murray cod captured at Yanga National Park, a marsh frog peeks from a muddy hidey-hole, Anna Turner & Matt Gill process a fish catch, and the un-specked hardyhead from Coocancoocabil Lagoon.

because they were last recorded at Avalon Dam in March 2018. In recent weeks environmental water has flowed into Avalon Dam, spilling out in to the lignum swamp beyond and triggering widespread southern bell frog calling activity.

Turtles were captured at wetlands across all three monitoring zones: Yanga National Park, Gayini Nimmie-Caira and the mid-Murrumbidgee, including a number of juvenile eastern long-neck turtles in several locations. We also recorded both broad-shelled and Macquarie River turtles at an additional wetland - Coocancoocabil Lagoon in the mid-Murrumbidgee - which we monitored to check on the size range and abundance of common carp and native fish prior to a planned environmental water delivery. We caught turtles ranging in size from a first-year juvenile eastern long-neck only 5 cm in length to a whopping 39-cm adult broad-shelled, which was probably well over 40 years old!

On the subject of reptiles, we've seen quite a few snakes out and about, whether it was hunting for frogs or drinking from a dam on a hot afternoon. Our spotting record was five different species in one day: the grey snake, curl snake, eastern brown snake, tiger snake and inland carpet python. We were fortunate enough to find two spectacular adult carpet pythons on the November trip, the larger of which was more than two metres long. The study into the ecology and conservation of the endangered grey snake is continuing and Dr Damian Michael has processed and microchipped several new individuals to look at survival and movement patterns.

SHINING A LIGHT ON:

The yabby

The common yabby, *Cherax destructor*, is a colourful resident of the Murrumbidgee catchment. It's a species that we frequently find in our nets: since 2014 we've caught more than 3,700 individuals. It is Australia's most widespread freshwater crustacean and lives in most types of water bodies that spring to mind, including rivers, creeks, wetlands, billabongs and dams. It eats a variety of animal and plant food sources such as detritus, macrophytes, algae, invertebrates and fish eggs. This makes it important for nutrient cycling and has earned it a keystone species status. A healthy wetland or riverine system wouldn't function as well without it! Populations can increase in size rapidly when enough water is available and when their homes dry up yabbies bury themselves in the mud and remain dormant for extended periods of time.

Below: While we use fyke nets to target fish, the common yabby frequently turns up in our catch (left). It has an impressive pair of pincers called chelipeds, can reach up to 25 cm in length and its colour varies from dark brown to beige to green-brown and the well-known blue. Females produce about 350 eggs per brood and these are carried undrneath her tail (right). The yabby escapes predators by rapidly flipping its poweful tail, propelling it backwards and away from danger at great speed.


SPRING WATERBIRD COUNTS

Spring waterbird counts were undertaken at 36 sites across the Murrumbidgee in October and December. Multiple two-person teams worked across all three zones to complete the surveys over a two week period. Fortunately the surveys slotted in nicely between dumps of rain but the boggy conditions did make access to some sites a little more challenging than in previous years. However, this also meant that some sites were accessible via a very pleasant paddle in a kayak. Additional surveys will be conducted in January and February.

GAYINI NIMMIE-CAIRA

Colonies of waterbirds, including straw-necked and glossy ibis, white-faced and nankeen night herons, and yellow-billed and royal spoonbills, have been gathering at wetlands across Gayini Nimmie-Caira to take advantage of the wet conditions. Nest construction activities are well underway and we're hoping to see further evidence of breeding at rookery sites as the season progresses. We were excited to hear endangered Australasian bitterns booming away at two different sites and our fingers are crossed in hope of breeding success. We'll be keeping a sharp eye on breeding activity using remote cameras, as well as teams on the ground, to ensure that water levels are sufficient to support breeding and the development of young birds.

REDBANK/YANGA NATIONAL PARK

Lots of birds were nesting, including three species of cormorant (little pied, little black and great black), darters and great crested grebes. Over 1000 eastern great egrets and nankeen night herons were observed on nests and hundreds of little pied and little black cormorants were seen with small to large chicks. We also spotted several pairs of swans being trailed by their fluffy, grey signets, which were anything but ugly. Other notable breeding birds included intermediate egrets, white-necked herons, white ibis and royal spoonbills. Australasian bitterns were heard booming at Two Bridges, where we also flushed a little bittern.

MID-MURRUMBIDGEE

The mid-Murrumbidgee didn't have breeding birds in the numbers seen in the other wetland zones, but 20-25 little pied cormorant nests were identified at Gooragool Lagoon.

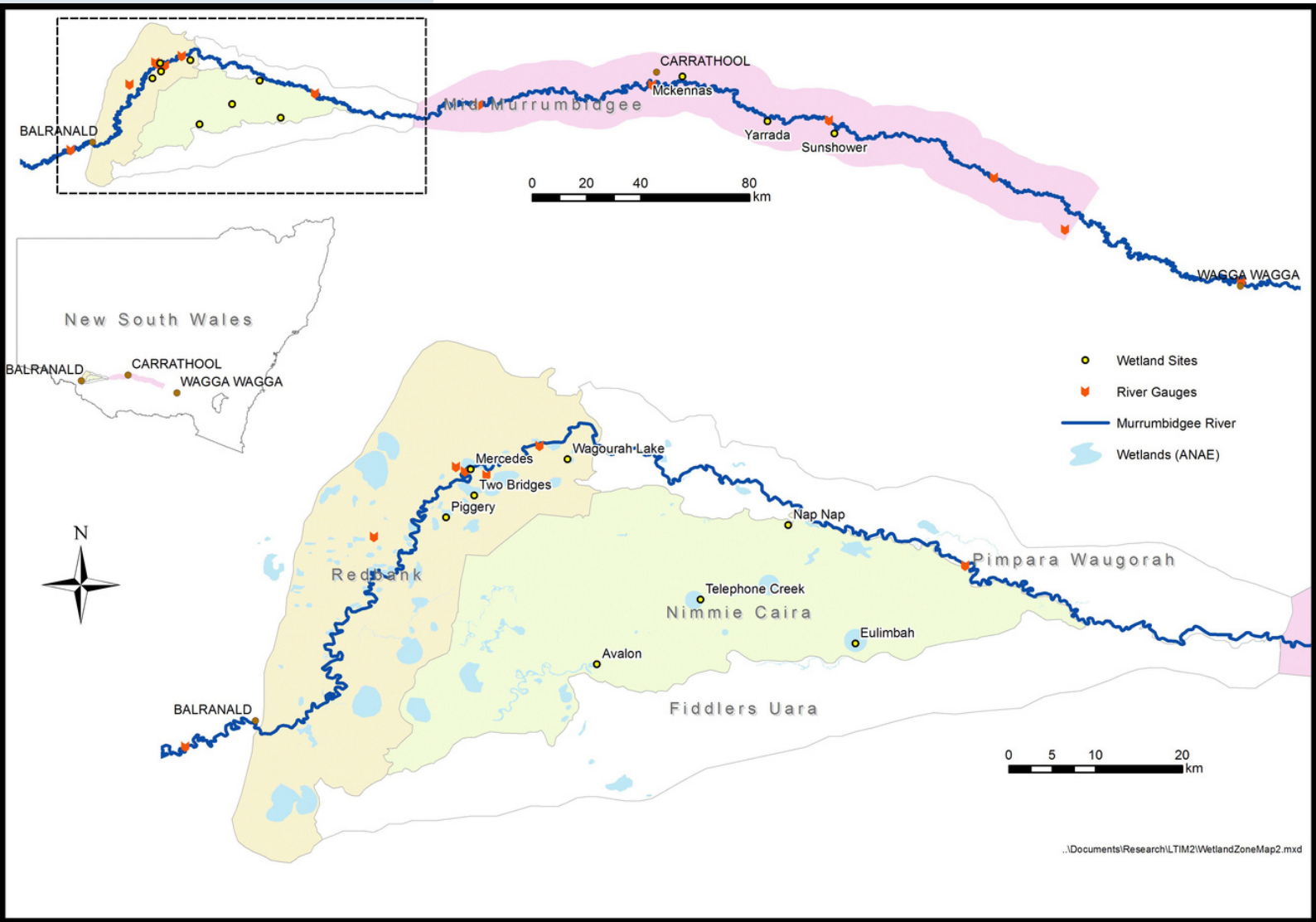
Many wetlands in the Murrumbidgee catchment contain highly diverse aquatic and semi-aquatic vegetation communities, with individual wetlands often having their own unique assortment of species. Some species like tall spike rush dominate frequently watered wetlands and dislike being dry for too long, whereas others like old man weed colonise mudflats when levels begin to recede. Nardoos are native ferns that enjoy periods of shallow inundation. The carnivorous bladderwort does not have roots and instead floats on the water surface catching zooplankton in specialised structures on its stems. Red milfoils (above) tolerate deep water and their red pigment allows then to capture longer wavelengths of light that reach deeper below the water's surface.

AQUATIC PLANT WORLD

Monitoring of wetland vegetation communities is undertaken four times per year. Vegetation surveys involve recording the names of each plant we see within a 1 m square, called a quadrat, as well as the percentage of the quadrat that each type of plant covers. At each site between 90 and 100 1 m quadrats are surveyed – that's about 34,500 quadrats surveyed since 2014. The quadrats are set out along a fixed line called a transect that starts above the high-water line and runs towards the deepest part of the wetland. This design allows us to describe the patterns of vegetation growth over the year as well as determe the influence of watering regimes.

Watering regimes have a big influence on wetland plants, not just in terms of the volume of water that plants receive, but also the ways in which water availability changes over time and with season. While some species rely on standing water to grow and reproduce, others rapidly colonise exposed mudflats when a wetland is drying out. Some plants can wait out long dry spells as either seeds, tubers or bulbs and spring back to life when water finally returns. Others are very sensitive to dry conditions and disappear from dry wetlands for long periods. This occurred in the mid-Murrumbidgee wetlands during the Millennium drought, when usually semi-permanent wetlands were dry for several years and many key plant species were lost. With the help of environmental water, native aquatic vegetation communities in these wetlands are being restored.

Map showing monitored wetlands within the three Murrumbidgee zones: Redbank, Gayini Nimmie-Caira and the mid-Murrumbidgee.



The next issue of The Bidgee Bulletin is out in late March 2021.

For more information or to join the newsletter mailing list please visit: https://www.csu.edu.au/research/ilws/research/environmental-water/murrumbidgee-mer

Wanted: Rakali (water rats)
Have you seen rakali recently? We have a new student project studying rakali ecology and we're looking for places where they've been spotted. If you know of a location, please contact Dr Jamie Turner (jaturner@csu.edu.au)

The Murrumbidgee MER team would like to acknowledge the consortium partners and local landholders with whom we work.

Australian Government
Commonwealth Environmental Water Office

FLOW Monitoring Evaluation Research

Charles Sturt University

We respectfully acknowledge the Wiradjuri, Nari Nari and Muthi Muthi peoples, traditional owners of the lands on which this publication is focused

WHO'S WHO IN THE ZOO?

This issue we find out a little more about our MER Program Technical Officer, Gaye Bourke ...

Name: *Gaye Bourke*
Organisation: *Institute of Land, Water & Society at Charles Sturt University*
Position: *Technical Officer. I organise and run the field monitoring trips, maintain equipment and supplies, distribute samples, manage data and contribute to reporting and documentation*
I studied at: *Rotorua Girls High School, then Wellington School of Nursing to train as a Registered Nurse, then (much) later at Charles Sturt University for a Honours degree in Environmental Science & Management*
In my previous job I: *Spent many months catching lizards in northern Australia, followed by long periods staring down a microscope examining toepads and scales – working on a research project exploring lizard diversity in the monsoonal tropics*
Food attitude: *Spicy*
Beverage of choice: *Coffee, coffee, coffee*
How would you describe your work to a child? *I look for birds, fish, frogs, yabbies and other things to see how healthy the river and wetlands are*
What's the best thing about your work? *Opportunities to escape from behind a desk*
Your work in three words? *Water, people, problems*
Is your career your parents fault? *Probably my fault for not listening to them*
It's now 2030, where are you? *Retired and riding my bike around the world (again)*
Flashback to 1999 – where were you then? *Operating supported cycling trips in outback Australia*
Given the chance, who would you like to be for a day? *I'd love to be able to sing, so maybe Aretha Franklin*
What's your favourite sign off? *Adios amigo*