

Murrumbidgee Monitoring Evaluation and Research Program, ecological responses to Commonwealth environmental water, Field Report. January 2020



Bringing in nets at Mantangery Lagoon, January 2020

Bourke, G., Wassens, S. and Bruni, J. (2020). Murrumbidgee Monitoring Evaluation and Research Program, ecological responses to Commonwealth environmental water, Field report. Number 3, January 2020. Charles Sturt University, Institute for Land, Water and Society. Prepared for the Commonwealth Environmental Water Office.

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Ecological responses to Commonwealth environmental water in the Murrumbidgee system as of 31 January 2020

This report describes preliminary outcomes of Commonwealth environmental watering actions at selected wetlands in the mid and lower Murrumbidgee. These surveys are conducted four times a year as part of the Murrumbidgee Monitoring, Evaluation and Research Program and include assessment of ecological outcomes in the Murrumbidgee River and connected wetlands through the mid-Murrumbidgee and Lowbidgee floodplain wetlands as outlined in [the Murrumbidgee Monitoring and Evaluation Plan](#).



Monitoring waterbirds at Mercedes Lagoon, January 2020

Routine monitoring of fish, frogs, tadpoles, water quality and vegetation diversity was undertaken at the 12 MER wetland monitoring sites in the Murrumbidgee Selected Area during January 2020. All sites were accessible, but two sites were either dry or held insufficient water to set nets. An additional pumped wetland site in the mid-Murrumbidgee (Mantangery Lagoon) was also monitored.

Weather conditions were variable, with mild daytime temperatures and several mm of rain falling in the Lowbidgee. Strong winds and dust storms also occurred at Gayini Nimmie-Caira during the first survey week. Conditions were hot and sunny in the mid-Murrumbidgee where

daytime maximum temperatures reached 38-42°C and overnight lows dropped to around 20°C.

Watering update

- Mid-Murrumbidgee: Three of the four core monitoring sites are wet, with Mantangery surveyed in place of McKenna's Lagoon which remains dry. Mantangery Lagoon and Gooragool Lagoon have recently received a top up flow, and both are full. Yarradda Lagoon remains around half full following pumping during 2018-19. Pumping into Sunshower Lagoon has just ceased and the water level is currently around 1.1m deep.

- Gayini Nimmie-Caira: Nap Nap Swamp remains around half full. Avalon Dam is holding water, but the surrounding wetlands are dry. Telephone Creek is full. Eulimbah Swamp is holding water in the borrow pit with shallow water extending into the lignum swamp beyond.

- Redbank (Yanga NP): Waugorah Lagoon has filled since November. Two Bridges Swamp is very low with insufficient water to set large fyke nets. Mercedes Swamp has filled, and Piggery Lake is dry. Monkem Creek was surveyed in place of Piggery Lake



Monitoring at Nap Nap Swamp, January 2020



Setting nets during a dust storm at Avalon Dam, Gayini Nimmie-Caira, January 2020



Spike rush carpets the water at Mercedes Swamp, January 2020

Table 1 - Site Summary

	Status	Notes
Mantangery	Full	Flathead gudgeon and bony bream detected.
Gooragool	Full	Hundreds of pelicans present. Nets dominated by adult and juvenile carp.
Sunshower	Lagoon full	Multiple frog species (including southern bell frogs) were heard calling, barking and spotted marsh frog tadpoles captured in nets.
Yarradda	Partially wet	Four native fish species detected. Benches with mud grass are now dry
Nap Nap	Partially wet	High abundances of southern bell frogs observed.
Avalon Swamp	Wetland dry, water retained in dam	Juvenile Murray cod was captured.
Eulimbah Swamp	Channel is wet	High abundances of southern bell frogs observed
Telephone Creek	Creek line is wet	Reasonable native vegetation in the riparian zone, southern bell frogs observed
Waugorah	Water level up	Broad-shelled and eastern long-necked turtles detected.
Piggery	Dry	Limited vegetation cover, vegetation typical of summer dry phase mainly consisting of weedy annual species
Two Bridges	Low	Nets dominated by adult and juvenile carp
Mercedes	Wet	Good aquatic vegetation response. Five eastern long-necked turtles detected.

Key outcomes

There was insufficient water to monitor all indicators at all 12 Murrumbidgee MER wetland sites during January 2020. Routine wetland monitoring activities targeting vegetation, water quality, fish, frogs and tadpoles were completed at eleven sites. Two sites (Piggery Lake, McKenna's Lagoon) were completely dry, and Mantangery Lagoon was monitored as an alternative wetland in the mid-Murrumbidgee.

Monkem Creek (accessed from Waugorah Road) was also monitored to check for the possible presence of golden perch in the waterway. Captures at this site included a variety of small native fish (Australian smelt, carp gudgeon, flathead gudgeon), four eastern long-necked turtles, and exotic fish (gambusia, goldfish, European carp and weatherloach). No golden perch were detected.



Southern bell frog at Eulimbah Swamp, January 2020

Frogs and tadpoles: Frog calling had largely ceased across the Lowbidgee wetland sites by late January. In the mid-Murrumbidgee frogs were heard calling at Sunshower Lagoon and Mantangery Lagoon. Pumping into Sunshower had only just ceased and multiple frog species were heard calling (Peron's tree frogs, barking and spotted marsh frogs, southern bell frogs and plains froglet).

Frog observations were dominated by spotted and barking marsh frogs (*Limnodynastes* sp.), with smaller numbers of Peron's tree frogs (*Litoria peronii*) at most wetlands. Both adult and juvenile southern bell frogs (*Litoria raniformis*, EPBC Act listed as Vulnerable) were observed at Eulimbah Swamp, and also occurred in high numbers at Nap Nap Swamp, and in lower numbers at Telephone Creek. One bell frog was seen at Two Bridges. Tadpoles (Peron's tree frog and spotted and barking marsh frog) were captured in low numbers at Monkem Creek, Mercedes Swamp, Two Bridges, Sunshower Lagoon and Yarradda Lagoon.

Two turtle species were captured (eastern long-necked and broad-shelled turtles) at multiple wetlands across all three regions. Both species were detected at Waugorah Lagoon, and eastern long-necked turtles were also captured at Mercedes Lagoon (5), Nap Nap Lagoon (3), Telephone Creek (1), Avalon Dam (2), Mantangery Lagoon (1) and Yarradda Lagoon (1).



Anna Turner holds a broad-shelled turtle at Waugorah Lagoon, January 2020

Wetland fish: Total numbers of fish caught in the wet sites were relatively high in comparison to September and November surveys. Fish captures at Waugorah Lagoon were dominated by native carp gudgeon (1145 individuals) and included moderate numbers of exotic European carp and gambusia. Nets at Two Bridges contained predominantly European carp – five large and 8000+ juveniles in 20-50mm size range. At Nap Nap Lagoon native juvenile carp gudgeon were numerically dominant (3600+) but captures also included small numbers of bony bream and exotic European carp and weatherloach. Native flathead gudgeon were detected in small numbers, at multiple wetland sites including Avalon Dam, Eulimbah Swamp, Mantangery Lagoon and Yarradda Lagoon. Native fish diversity was highest at Yarradda Lagoon, with four small-bodied native fish species captured (carp gudgeon, smelt, flathead gudgeon and bony bream). Small to moderate numbers of exotic species (European carp, goldfish, gambusia) were detected at all wetlands, and numerous large carp were observed in the water at Mantangery and Gooragool Lagoons.

Dissolved oxygen levels were low at Sunshower Lagoon following recent pumping. The accumulated leaf litter and the extremely hot and dry conditions prior to filling are likely to have contributed to localised hypoxic black water. Spot checks using a Horiba water quality meter recorded dissolved oxygen levels ranging from 0.44 to 0.66 mg/L. A miniDot dissolved oxygen logger left in the water overnight recorded a maximum dissolved oxygen level of 1.891, minimum of 0.072 and a median level of 0.488 mg/L. Both tadpoles and adult frogs

can obtain oxygen from air breathing and those observed did not appear affected by the low dissolved oxygen in the lagoon. Around 30 tadpoles (Peron's tree frog, barking and spotted marsh frog) were captured in nets but no fish were detected. Dissolved oxygen levels are expected to improve over time as the accumulated leaf litter breaks down and water levels are topped up.

The next field trip is scheduled for mid-March 2020.