

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



CSU researcher Damian Michael demonstrates tadpole identification to Dakota Grace, Sunshower Lagoon, March 2020

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Ecological responses to Commonwealth environmental water in the Murrumbidgee system as of 31 March 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](#).

Routine monitoring of birds, fish, frogs, tadpoles, water quality and vegetation diversity was undertaken at the 12 MER wetland monitoring sites in the Murrumbidgee Selected Area during March 2020. All Redbank and mid-Murrumbidgee wetland sites were accessible, with three wetlands being either dry or holding insufficient water for sampling (Piggery Lake, Two Bridges and Mercedes). As previously, Mantangery Lagoon was monitored in place of McKenna's Lagoon in the mid-Murrumbidgee. In the Nimmie-Caira three wetland sites (Telephone Creek, Eulimbah Swamp and Avalon Dam) were inaccessible for netting due to the Covid-19 shutdown of the Gayini Nimmie-Caira reserve. Vegetation surveys were completed at these wetlands prior to the shutdown. Nap Nap Swamp was monitored but held insufficient water for nets.

Weather conditions were mild with daytime temperatures between 20 - 30°C and overnight lows dropping to around 8 -10°C. A small amount of rain (<1mm) fell in the Lowbidgee.

Our mid-Murrumbidgee field crew was joined by a Darlington Point local, Dakota Grace, a recent graduate from the Clontarf Indigenous School in Griffith. Although completely new to wetland monitoring he embraced the opportunity and was a great member of the team. Our thanks to Dakota and Gary Currey from NSW Department of Planning, Industry and Environment for facilitating his involvement.

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 continues to hold water, Gooragool Lagoon and Yarradda Lagoon are drying down. The water level at Sunshower Lagoon is currently around 90cm deep.

- Gayini Nimmie-Caira: Nap Nap Swamp has dried to a series of shallow pools with the level around 40cm at the deepest point. As at 12th March (when vegetation surveys were conducted) Telephone Creek held water in the main channel, Avalon held water in the main dam, and Eulimbah Swamp had water both in the main channel and extending into the wetlands.

-Redbank (Yanga NP): Waugorah Lagoon has filled since January and is now full. Two Bridges Swamp is predominantly dry with insufficient water to set nets. Mercedes Swamp has dried completely and Piggery Lake is also dry.

Table 1 - Site Summary

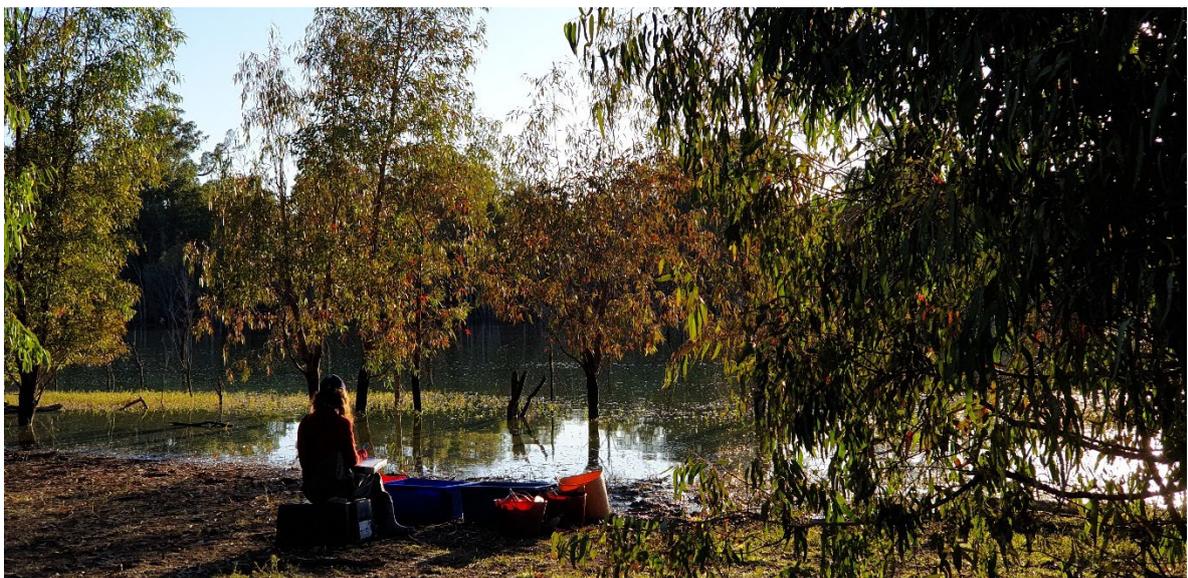
	Status	Notes
Mantangery	Full	A juvenile Murray cod, flathead gudgeon and bony bream detected.
Gooragool	Drying down	Nets dominated by adult and juvenile carp. Large carp observed breeding in the lagoon.
Sunshower	Wet	Eastern long-necked turtles, shrimps and tadpoles captured in nets. Dissolved oxygen levels now around 5 mg/L.
Yarradda	Half full	Four native fish species detected.
Nap Nap	Very low	High abundances of southern bell frogs observed. Lignum remains in good condition.
Avalon Swamp	Wetland dry, water retained in dam	Two species of nardoo identified.
Eulimbah Swamp	Channel is wet	High diversity of water-dependent vegetation species.
Telephone Creek	Creek line is wet	Limited inundation of vegetation transects.
Waugorah	Full	Bony bream and carp gudgeon detected. Small number of juvenile carp captured.
Piggery	Dry	Limited vegetation cover, vegetation typical of a dry phase mainly consisting of weedy annual species
Two Bridges	Very Low	Residual water only.
Mercedes	Dry	Drying down, expected vegetation response.

Key outcomes

Routine wetland monitoring activities targeting vegetation, water quality, fish, frogs and tadpoles were completed at five sites. Three sites (Piggery Lake, Mercedes Swamp and McKenna's Lagoon) were completely dry, and two sites contained insufficient water for netting (Two Bridges, Nap Nap Swamp). Mantangery Lagoon was monitored as an alternative wetland in the mid-Murrumbidgee. Waugorah Lagoon was full, and Avalon Dam, Eulimbah Swamp and Telephone Creek were inaccessible due to the Covid-19 shutdown of the Gayini Nimmie-Caira reserve.



Netting at Mantangery Lagoon, March 2020



Morning light at Yarradda Lagoon, March 2020

Frogs and tadpoles: As expected, calling activity has now largely ceased for the season, with no calling activity recorded across the Lowbidgee sites. Frogs were continuing to call in small numbers at all wet sites in the mid-Murrumbidgee, with four species heard calling at Sunshower Lagoon (barking and spotted marsh frogs, Peron's tree frog and plains froglet). The absence of southern bell frog records during this monitoring period is most likely related to low numbers and hence low probability of detection. The southern bell frog population at Sunshower is expected to increase with the use of environmental water to maintain more natural flow regimes, restore wetland vegetation and create breeding opportunities.



Inland banjo frog observed at Two Bridges Swamp, March 2020

Across all wetland sites, spotted and barking marsh frogs (*Limnodynastes tasmaniensis* and *L. fletcheri*), along with smaller numbers of Peron's tree frogs (*Litoria peronii*) were recorded at most sites that contained water. Southern bell frogs (*Litoria raniformis*, EPBC Act listed as Vulnerable) were observed in high numbers (200+) at Nap Nap Swamp. Inland banjo frogs (*Limnodynastes interioris*) were observed at Waugorah Lagoon (2) and Two Bridges Swamp (2). Tadpoles were captured at Sunshower Lagoon and Yarradda Lagoon, with 37 inland banjo frog tadpoles recorded at Sunshower Lagoon.

Turtles: Two turtle species (eastern long-necked and broad-shelled turtles) were captured during March monitoring activities. A juvenile broad-shelled turtle was detected at Waugorah Lagoon, and three eastern long-necked turtles were captured at Sunshower Lagoon. These are the first turtles detected since the wetland was filled in December 2019. A broad-shelled turtle was detected at Yarradda Lagoon for the first time since January 2018.



First eastern long-necked turtles recorded at Sunshower Lagoon since watering commenced late last year, March 2020

Wetland fish: Total numbers of fish caught in wet sites were generally low as expected for March monitoring. Native fish captures at Waugorah Lagoon were dominated by carp gudgeon (231), with Australian smelt and bony bream also detected. Small numbers of exotic European carp (46) and gambusia (1) were captured.

In the mid-Murrumbidgee, Yarradda Lagoon had high native fish diversity with four species detected including bony bream (40), flathead gudgeon (62), Australian smelt (34) and carp gudgeon (90). Numbers of exotic species were low, with small numbers of goldfish (10), weatherloach (3) and European carp (11) detected. The largest carp recorded was 340mm. Four native fish species were also recorded at Mantangery Lagoon including one juvenile Murray cod (90mm), bony bream (23), carp gudgeon (865) and flathead gudgeon (21). Captures at Gooragool Lagoon were dominated by exotic species including European carp (104), goldfish (202), weatherloach (9) and gambusia (12). Native carp gudgeon were also detected in small numbers (70).



Juvenile Murray cod captured at Mantangery Lagoon, March 2020

No fish were detected at Sunshower Lagoon, however dissolved oxygen levels have improved from <math><1.0\text{mg/L}</math> in January to over

Wetland vegetation: In the mid-Murrumbidgee Yarradda and Gooragool Lagoons displayed vegetation responses similar to previous years with reasonable diversity and cover of aquatic species at both wetlands. Both Gooragool and Yarradda are drying down and large carp were observed feeding within vegetation at Gooragool. Sunshower has had a very good vegetation response following pumping, with large mats of spiny mudgrass establishing and a big increase in aquatic species diversity when compared to previous years.

In Gayini Nimmie-Caira Nap Nap Swamp is almost dry and lignum remains in good condition, Telephone Creek contains water in the main channel but there was limited inundation of the survey transects this year. Eulimbah Swamp has an exceptionally high diversity of water dependent species and very clear water within the main body of the wetland (although quite turbid along the channel). Avalon contains water in the dam, there was limited inundation of the vegetation transects this year, although two species of nardoo were identified.



Submerged aquatic vegetation – red watermilfoil and small spike rush at Eulimbah Swamp, March 2020

In Yanga NP, Mercedes Swamp contains residual water in the main body, with several larger carp (deceased) noted at the deepest point. Two Bridges Swamp, Piggery Lake and Waugorah Lagoon are dominated by colonising annuals including common crumbweed, heliotrope and small amounts of common sneezeweed.

The next field monitoring trip is scheduled for late September 2020.