

***Murrumbidgee Monitoring, Evaluation and Research Program, ecological responses to Commonwealth environmental water, Field Report. March 2021***



Setting fyke nets in Piggery Lake, March 2021.

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**Further information:**

Dr Skye Wassens

School of Environmental Sciences, and Institute for Land, Water and Society

Charles Sturt University, PO Box 789, Albury NSW 2640

Ph: +61 2 6051 9513 Email: [swassens@csu.edu.au](mailto:swassens@csu.edu.au)

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## ***Ecological responses to Commonwealth environmental water in the Murrumbidgee system as of 31 March 2021***

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 (MER) 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 January 2021. All Redbank and Gayini Nimmie-Caira wetland sites were accessible, although water levels at Mercedes Swamp were too low to set any fyke nets. In the mid-Murrumbidgee, three core wetland sites held sufficient water to set nets (Yarradda, Sunshower and Gooragool Lagoons), and, as in previous years, Mantangery Lagoon was monitored in place of McKenna's Lagoon, which was dry. In addition, fish, frogs and birds were monitored at Coonancoocabil Lagoon and Yarradda West Lagoon. The surveys at Coonancoocabil Lagoon enabled us to obtain information on the size range and density of carp and occurrence of native fish species in a residual pool of water. Vegetation surveys and waterbird surveys were completed at all wetlands in conjunction with netting and other monitoring activities.

Weather conditions were warm, with daytime maximum temperatures between 24 – 31°C and overnight lows dropping to between 7 – 20°C. There was considerable rainfall (87 mm) in the week between field trips but this did not affect site access.

### **Watering update**

- Mid-Murrumbidgee: Three of the four core monitoring sites were wet. Only small fykes were set at Sunshower Lagoon due to shallow water levels. Mantangery Lagoon was surveyed in place of McKenna's Lagoon, which remains dry. The water level at the usual monitoring site at Gooragool Lagoon was too low to set nets, therefore monitoring was conducted closer to the connecting channel.
- Gayini Nimmie-Caira: Telephone Creek was full, Avalon Dam was full in the main dam and almost 100% of the main horseshoe lagoon was inundated, and Eulimbah Swamp was high with water extending from the main channel back into the lignum swamp. Nap Nap Swamp was ¾ full.

- Redbank (Yanga NP): Two Bridges Swamp was full, Waugorah Lagoon was  $\frac{3}{4}$  full and the water level in Piggery Lake had dropped to about half full. Mercedes Swamp was dry.

**Table 1 - Site Summary**

Site	Status	Notes
<b>Mantangery Lagoon</b>	$\frac{3}{4}$ full	Moderate numbers of carp gudgeon, three bony bream and several flat-headed gudgeon detected. All three species of turtle in nets: broad-shelled (2), eastern long-necked (11) and Murray river short-necked (3). Three frog species detected.
<b>Gooragool Lagoon</b>	$\frac{1}{2}$ full	Few fish caught (32 in total), including a 730-mm carp. Five Murray River short-necked turtles. Spotted marsh frogs and eastern sign-bearing froglets calling.
<b>Sunshower Lagoon</b>	$\frac{3}{4}$ full	Water only deep enough for two small fyke nets. 19 Murray-Darling rainbowfish and a single carp gudgeon caught. Several Peron's tree frog and <i>Limnodynastes</i> sp. tadpoles detected. Three frog species detected.
<b>Yarradda Lagoon</b>	$\frac{1}{2}$ full	Small fish caught were mostly carp gudgeon with a few flat-headed gudgeon and high shrimp numbers. 31 bony bream (115-288 mm) and one Murray River short-necked turtle. A few barking marsh frogs detected.
<b>Yarradda West Lagoon</b>	Full	One juvenile golden perch (95 mm) and three bony bream detected. Low numbers of carp gudgeon and gambusia and moderate numbers of mostly juvenile carp. Several Peron's tree frog tadpoles in nets as well as 10 eastern long-necked turtles and a single broad-shelled turtle. Three frog species detected.
<b>Coonancoocabil Lagoon</b>	$\frac{3}{4}$ full	Catch in small fykes were dominated by native carp gudgeon (~2300 individuals). All three turtle species recorded. Low numbers of spotted marsh frogs detected.
<b>Nap Nap Swamp</b>	$\frac{3}{4}$ full	Dissolved oxygen was low so very few fish were caught. Nine eastern long-necked turtles. No frogs were calling but good numbers of southern bell frogs observed. Three grey snakes microchipped.
<b>Avalon Dam</b>	Full	Seven flat-headed gudgeon among moderate numbers of carp gudgeon, gambusia and shrimp. Weather loach numbers lower than January. A few southern bell frogs seen and heard, as well as observations of three other species. Three eastern long-necked turtles and eight southern bell frog tadpoles caught.
<b>Eulimbah Swamp</b>	Full	Relatively few fish recorded (predominantly carp/goldfish and gambusia). No frogs calling and a few southern bell frogs observed. Black-tailed native hens were the most common waterbird (150) and tree martins were in high numbers (>700).
<b>Telephone Creek</b>	Full	High numbers of carp gudgeon detected, a single bony bream and rainbowfish and several Australian smelt. Exotic fish numbers low. A few spotted and barking marsh frogs observed. Two pairs of little pied cormorants were still nesting.
<b>Waugorah Lagoon</b>	$\frac{3}{4}$ full	Two bony bream recorded. Small fykes were dominated by native carp gudgeon. Six large broad-shelled turtles caught, averaging 365 mm in length. Four Peron's tree frogs detected.
<b>Piggery Lake</b>	$\frac{1}{2}$ full	Nine rainbowfish and relatively low numbers of other fish caught. Several <i>Limnodynastes</i> spp. tadpoles caught and moderate numbers of spotted and barking marsh frogs detected. High numbers of Eurasian coots, grey teals and black swans.
<b>Two Bridges Swamp</b>	Full	Moderate numbers of carp gudgeon, carp/goldfish and gambusia recorded. Several <i>Limnodynastes</i> spp. tadpoles in nets and low



		numbers of four frog species detected, including southern bell frogs. Twenty eastern long-necked turtles and a single juvenile Murray River short-necked turtle caught. Fifteen grey snakes were observed and eight were microchipped.
<b>Mercedes Swamp</b>	Dry	No nets deployed.



The team processing grey snakes at Nap Nap Swamp, January 2021. Left to right: Eva Moore, UNSW volunteer Dana Lanceman, Dr Damian Michael and new Honours student Talia Schlen.



Indigenous cadetship recipient Paul Tomczyk and Anna Turner make water quality measurements in Sunshower Lagoon, March 2021.

## Key outcomes

Frogs and tadpoles: Calling activity was reduced at most sites, which is expected for March. Southern bell frogs (*Litoria raniformis*, Endangered in NSW) were detected at multiple wetlands in Gayini Nimmie-Caira (Avalon Dam, Eulimbah Swamp and Nap Nap Swamp) but only at Two Bridges Swamp in Redbank. However, several southern bell frogs exceeded 75 mm in length and one adult individual observed at Piggery Lake was 91 mm. Overall diversity of detected frogs was lower than in summer but four species were heard or seen at Avalon Dam and Two Bridges Swamp. The most commonly detected frog was the spotted marsh frog, followed by the barking marsh frog and southern bell frog. Few frogs were calling in the mid-Murrumbidgee, which were mostly spotted marsh frogs and eastern sign-bearing froglets (both found at four sites), but Peron's tree frogs and barking marsh frogs were also detected at three and two sites, respectively.

As expected for March, tadpoles were captured in low numbers in the lowbidgee and only at Piggery Lake, Two Bridges Swamp and Avalon dam, where eight southern bell frog tadpoles were found. In the mid-Murrumbidgee, tadpoles were only detected at Sunshower and Yarradda West Lagoons and these were either Peron's tree frogs or *Limnodynastes* sp.



Peron's tree frogs are famous for hiding behind acoustic recorders. Avalon Dam, March 2021.



Turtles: Turtles were captured in low numbers at multiple wetlands across all monitoring zones. In Redbank, twenty eastern long-necked turtles and a single Murray River short-necked were detected at Two Bridges Swamp and six large broad-shelled turtles, all over 30 cm in length, were caught in fyke nets at Waugorah Lagoon. In Gayini Nimmie-Caira, eastern long-necked turtles were detected at Nap Nap Swamp (9) and Avalon Dam (3). All three species of turtle were recorded at Mantangery and Coonancoocabil Lagoons in the mid-Murrumbidgee. Turtles were also detected at Gooragool, Yarradda and Yarradda West Lagoons.



Three large broad-shelled turtles caught in Waugorah Lagoon, March 2021.

Wetland fish: We netted Yarradda West Lagoon for the first time this season and were excited to detect a single golden perch (95 mm). The carp gudgeon was the most frequently detected native fish, with high numbers in Telephone Creek, Two Bridges Swamp, Waugorah Lagoon and Coonancoocabil Lagoon, and low numbers of flat-headed gudgeon, Murray-Darling rainbowfish and Australian smelt were recorded at several sites. Only two bony bream were detected in the lowbidgee—one at Telephone Creek (260 mm) and the other at Waugorah Lagoon (71 mm)—whereas 37 individuals were caught across three mid-Murrumbidgee sites. Total numbers of exotic fish were moderate on this trip and were predominantly gambusia and juvenile carp. The weather loach was recorded at most wetlands but numbers were much lower than those seen in January.





The golden perch caught in Yarradda West Lagoon (top). Glass shrimp, freshwater prawns and yabbies were caught frequently on the March 2021 field trip (bottom left; photo Dana Lanceman); a freshwater prawn at Waugorah Lagoon (bottom right; photo Dana Lanceman).

Wetland vegetation: With many wetlands remaining wet through March, there has been little change in vegetation community composition since January. Deep water tolerating species including water ribbon, common watermilfoil and red watermilfoil are common in deeper areas across the Lowbidgee. Winged starwort remains common at Piggery Lagoon. In Gayini Nimmie-Caira, wetland vegetation communities have responded well to environmental water delivery and are establishing well at each site. Recent inundation of wetlands bordering Telephone Creek triggered emergence of common spike rush and water primrose but this was drying down in March and small numbers of mud flat colonising species such as old man weed and lesser joyweed were starting to germinate. Avalon remains inundated across the entire wetland with areas of Nardoo, azollas, water primrose and swamp lily

establishing. In the mid-Murrumbidgee water levels were starting to decline although areas of tall spike rush, common spike rush and mud grass were still common at Yarradda Lagoon.



Ribbon weed under water (left) and wavy marshwort above water (right) at Piggery Lake, March 2021.

Wetland birds: Waterbird numbers were down, indicating that breeding is over for most species; fewer than 40 ibis were observed during the surveys. Piggery Lake again supported the highest number of birds, with 71 intermediate egrets, 93 black swans, 387 grey teal and 618 Eurasian coots observed. In Gayini Nimmie-Caira, we were excited to make an incidental observation of an individual freckled duck, classified as Vulnerable in NSW. Additionally, black-tailed native-hens were in relatively high numbers (150) in Eulimbah Swamp. No nesting birds were observed in the mid-Murrumbidgee and both waterbird (only 3 – 9 species detected) and overall bird diversity (13 – 22 species) was generally low.





A Vulnerable freckled duck (foreground) at Suicide Bank, March 2021.

The next monitoring trip is scheduled for mid-late September 2021.