

Murrumbidgee Monitoring, Evaluation and Research Program, ecological responses to Commonwealth environmental water, Field Report no. 12. April 2022



Freshwater catfish caught in the Yanco Creek near Bundure, April 2022. Photo credit: Anna Turner.

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Ecological responses to Commonwealth environmental water in the Murrumbidgee system as of April 2022

This quarterly report describes preliminary outcomes of Commonwealth environmental watering actions at selected wetlands in the mid and lower Murrumbidgee and the Yanco Creek system (YCS). 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 in the mid-Murrumbidgee, Lowbidgee floodplain and YCS as outlined in the Murrumbidgee Monitoring and Evaluation Plan (<https://www.awe.gov.au/sites/default/files/documents/murrumbidgee-me-plan-revised-2018.pdf>).

Due to high water levels, Covid19 restrictions and inclement weather, routine monitoring for the 2021/22 field-season was delayed by a month, resulting in the fourth and final surveys for the season being conducted in April. Routine monitoring of birds, fish, frogs, tadpoles, water quality and vegetation diversity was undertaken at four sites in the mid Murrumbidgee (Yarradda, Sunshower, Gooragool, McKenna's Lagoons) and four sites in Gayini Nimmie-Caira (Banim (Avalon) Swamp, Bala (Eulimbah) Swamp, Bayil (Telephone) Creek and Nap Nap). In the Redbank systems, there was no access to the usual monitoring sites at Piggery Lake, Two Bridges and Mercedes swamps. April surveys were carried out at Waugorah, Yanga Lake inflow, Uara Creek and Shaw's wetland, consistent with December and February surveys.



Recent hatchling Murray River turtle at Eight Mile escape channel, Wanganella, April 2022. Photo credit: Anna Turner

Wetland survey sites and paired river sites in the YCS (Rhyola, Wanganella, Bundure and Broome) were monitored for the fourth time this season. Data from bat recorders deployed at an additional ten sites in the YCS was collected in mid-April. Data from call recorders are due to be analysed in the coming months. Platypus surveys were conducted in late March 2022 by Gilad Bino from UNSW. Four nights of netting were conducted upstream of Morundah; however, no platypus were detected despite recent positive detection via eDNA sampling. High and fast flowing water in the creek meant conditions were not ideal for platypus monitoring, and repeat surveys are planned for the 2022/23 water year.

This report summarises the activities and outcomes of monitoring in the mid and lower Murrumbidgee as well as the Yanco Creek system conducted in April 2022. Water bird surveys were completed at all wetlands in conjunction with netting and other monitoring activities.

Watering update

The Murrumbidgee catchment received above average rainfall in the lead up to the 2021-22 monitoring season. Above average rainfall has continued to the end of 2021 and early 2022, with March receiving over double (70 mm) the long-term average rainfall (29.2 mm; BOM 2022). This has resulted in very high-water levels in all the mid and lower Murrumbidgee monitoring sites, in some cases preventing access via road.

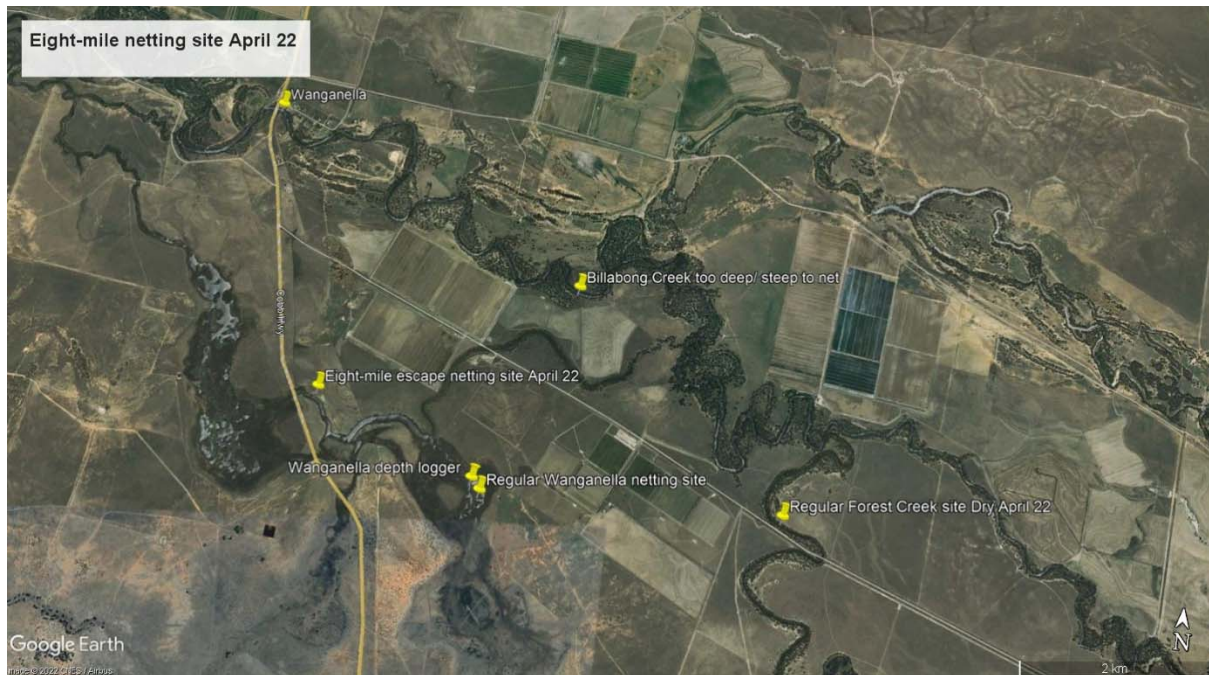
Mid-Murrumbidgee: All four of the core monitoring sites were wet. Overall, water levels have decreased since February monitoring. Large and small fyke nets were set at all sites. Water quality was at a stable level with average dissolved oxygen in the range 4.27 – 9.02 mg/L.

Gayini Nimmie-Caira: Large and small fyke nets were set at all sites except Nap Nap where smaller 'D' fykes were required. At Banim Swamp the dam was full and overflowing into the surrounding wetland. Bala Swamp was full with water flowing fast out into Fairfax Swamp (Suicide Bank) and into floodplains to the south. Access was again possible to Bayil Creek and nets were once again set at the regular site. At Nap Nap, the wetland retained residual water at 50 cm deep and as a result, nets were set on the eastern side near the regulator.

Redbank (Yanga NP): Water levels at Waugorah Lagoon have increased slightly since February, water was still overbanking into the adjacent lignum community; large and small fyke nets were set. Two Bridges Swamp, Piggery Lake and Mercedes Swamp were inaccessible via road due to high water levels. Yanga Lake inflow, Uara Creek and Shaws wetland were monitored in Redbank as a substitute; these three sites also had high water levels, although 'D' fykes were set at Shaws, which was too shallow for large fyke nets.

Yanco Creek System (YCS): Wetlands were paired with nearby creek sites in the YCS. The water level at Rhyola wetland was 10 cm deep, and it was not possible to set nets.

Monitoring was therefore conducted in the feeder channel to the wetland, Forest Anabranch, consistent with February monitoring. At Wanganella, nets were set in the southern part of the wetland east of the Cobb Highway. The adjacent Forest Creek near the confluence with Billabong Creek was dry; nets were set at Eight Mile escape channel as a substitute. At Broome, large and small fyke nets were set in the wetland and nearby in Yanco Creek. At Bundure, 'D' fykes were required in the wetland due to reduced water levels. Water levels were lower than during February surveys.



Waypoints in of the supplementary netting site on Eight Mile escape channel during April monitoring. Source: Google Earth



Lots of turtles caught at Yarradda Lagoon during April monitoring surveys, Lachlan, Anna and Eva, 2022.
Photo credit: Anna Turner.

Table 1- Site summary of findings

Site	Water level	Fish	Turtles	Frogs
Mid Murrumbidgee				
McKennas	Full	Carp gudgeon, 9 Murray Darling rainbowfish and many carp (n = 680), gambusia, oriental weatherloach, yabbies and shrimp.	None	Spotted marsh frogs and Peron's tree frogs
Gooragool	Full	83 bony bream, > 570 carp gudgeon, one Murray Darling rainbowfish, three flat-headed gudgeon, carp, yabbies and shrimp.	None	One Limno tadpole. No frogs detected
Sunshower	Full	19 Murray Darling rainbowfish, 63 smelt, carp gudgeon, carp, gambusia, shrimp and yabbies and oriental weatherloach.	One eastern long-necked turtle.	No frogs detected
Yarradda	Full	10 Murray Darling rainbowfish, carp gudgeon, 7 flat-headed gudgeon, 3 smelt, one silver perch, 2 golden perch, 6 bony bream, yabbies and shrimp. Carp, gambusia and oriental weather loach.	Five broad-shelled and 10 Murray River turtles.	Peron's tree frog, barking and spotted marsh frogs.
Lower Murrumbidgee				
Nap Nap	Full	Small catch carp gudgeon, carp, oriental weather loach and gambusia.	Two eastern long-necked turtles.	Southern bell frogs, barking marsh frogs and Peron's tree frogs.
Banim (Avalon) Swamp	Dam full and wetland is ½ full	Small catch carp gudgeon, and two smelt, carp, gambusia, many oriental weatherloach, yabbies and shrimp.	One eastern long-necked turtle.	Southern bell frog, eastern sign-bearing froglet, barking marsh and spotted marsh frog
Bala (Eulimbah) Swamp	Full. Channel and lignum wet	Small catch carp gudgeon, one bony bream, carp, goldfish, gambusia, oriental weather loach, yabbies and shrimp.	None	Many southern bell frogs and a few barking marsh frogs.
Bayil (Telephone) Creek	Full	Small catch carp gudgeon, one smelt, yabbies, shrimp, carp, gambusia and oriental weatherloach.	One eastern long-necked turtle.	Peron's tree frogs and spotted marsh frogs.
Waugorah	Full/ overflowing into second wetland	Large catch carp gudgeon, yabbies, carp, gambusia and oriental weather loach.	One broad-shelled turtle and 9 eastern long-necked turtles.	Southern bell frogs, Peron's tree frogs, eastern sign-bearing froglets and barking marsh frogs.
Piggery	Full	Not surveyed, inaccessible		
Two Bridges	Full	Not surveyed, inaccessible		
Mercedes	Full	Not surveyed, inaccessible		
Yanga Lake inflow	Full	Carp gudgeon, 57 bony bream, carp, oriental weather loach, yabbies and shrimp.	None	Spotted marsh frogs
Uara creek	Full	Carp gudgeon, Murray Darling rainbowfish, carp, gambusia, oriental weather loach, yabbies and shrimp.	Three eastern long-necked turtles.	Peron's tree frogs, barking and spotted marsh frogs and one giant banjo frog.
Shaws wetland	Full	Large numbers of carp gudgeon, yabbies in small numbers, carp, gambusia and oriental weather loach.	Three eastern long-necked turtles.	Peron's tree frog, spotted marsh frog and barking marsh frog, eastern sign-bearing froglets and one southern bell frog.

Site	Water level	Fish	Turtles	Frogs
Yanco Creek system				
Forest Anabranch at Rhyola	3/4	Murray darling rainbowfish, carp gudgeon and gambusia.	Two eastern long-necked turtles.	<i>Limno.</i> and Peron's tree frog tadpoles, Peron's tree frogs, eastern sign-bearing froglet and spotted marsh frogs.
Billabong Creek at Rhyola	3/4	44 bony bream, carp gudgeon, carp and shrimp.	One Murray short-necked turtle.	Peron's tree frogs, spotted marsh frogs and two giant banjo frogs.
Wanganella Wetland	Full	14 smelt, two Murray darling rainbowfish, carp gudgeon, oriental weather loach, yabbies, shrimp.	One eastern long-necked turtle.	Spotted and barking marsh frogs.
Eight Mile escape channel. Paired	Full	Small number of smelt, Murray darling rainbowfish, carp gudgeon, approx. 400 small carp.	33 eastern long-necked turtles and one Murray River turtle.	Spotted and barking marsh frogs and eastern sign-bearing froglets.
Broome Wetland	$\frac{3}{4}$	Carp gudgeon, yabbies, shrimp, carp, redfin and gambusia.	10 eastern long-necked turtles and four broad-shelled turtles.	Peron's tree frogs.
Yanco Creek at Broome. Paired	Full	Small numbers of carp, carp gudgeon, gambusia, yabbies, shrimp, one redfin perch.	One eastern long-necked turtles.	Peron's tree frogs and spotted marsh frogs and one giant banjo frog (80 mm)
Bundure Wetland	Full	Carp gudgeon, yabbies, carp, oriental weather loach and shrimp.	Two Murray River turtles.	Spotted and barking marsh frogs and Peron's tree frogs
Yanco Creek at Bundure. Paired	Full	Small numbers of carp gudgeon, shrimp, yabbies, carp and gambusia. One freshwater catfish (70 mm).	None	Peron's tree frogs.

Key outcomes

Routine wetland monitoring activities targeting vegetation, water quality, fish, frog and tadpoles were completed at four sites in the mid Murrumbidgee, eight sites in the lower Murrumbidgee and eight sites in the Yanco Creek system. Water levels were high across all sites due to above average rainfall in 2021 and early 2022. Piggery, Mercedes and Two Bridges were not accessible during this survey period due to high water levels.

Wetland fish:

Native fish captures were dominated by carp gudgeon and bony bream. Small native fish, including Murray-Darling rainbow fish, flat-headed gudgeon and Australian smelt, were recorded across all mid and lower Murrumbidgee sites. One freshwater catfish was recorded in the Yanco Creek and both silver and golden perch were detected at Yarradda Lagoon. Carp, gambusia and oriental weather loach recorded at most wetlands. Redfin perch were detected at Broome wetland and in the Yanco Creek at Broome.



Golden perch caught at Yarradda Lagoon, April 2022. Photo credit: Anna Turner.

Frogs and tadpoles

All six frog species present in the Murrumbidgee were detected during spotlight searches in the mid and lower Murrumbidgee; however, diversity varied between sites with southern bell frogs (*Litoria raniformis*, Vulnerable EPBC Act) seen at Nap Nap Swamp, Bala Swamp and Banim Swamp in Gayini Nimmie-Caira, and Waugorah and Shaws in Redbank.

In the Yanco Creek system, five species were detected: Peron's tree frog, giant banjo frog, spotted and barking marsh frog, and eastern sign-bearing froglets. However, reports and photos of southern bell frogs have been received from properties near Moulamein, where southern bell frogs were found inhabiting irrigated rice fields.



Southern bell frog, *Litoria raniformis*, at Bala swamp in GNC, April 2022. Photo credit: Anna Turner.

Turtles

Many turtles were recorded across sites in the mid and lower Murrumbidgee and the YCS. A massive catch of 33 eastern long-necked turtles occurred at Eight-mile escape channel at Wanganella. Many adult turtles were also caught at Yarradda Lagoon including 5 broad-shelled and 10 Murray River turtles. While the majority of turtles collected were adults, hatchling Murray River turtles were detected at Wanganella, Broome and Nap Nap swamp



Broad-shelled turtle (*Chelodina expansa*) at Eight mile escape channel, Wanganella, April 2022. Photo credit: Anna Turner.

Wetland birds, general observations

High waterbird diversity was seen throughout mid and lower Murrumbidgee. Commonly encountered species included the little pied cormorant, Australian white ibis, Pacific black duck, white-necked heron, white-faced heron, great cormorant, Australian wood duck, Australian pelican, Eurasian coot, grey teal, hoary-headed grebe and royal spoonbill. In the Yanco Creek system, waterbird diversity was considerably lower than the mid and lower-Murrumbidgee. More diversity was observed on the wetlands than the creeks. At Rhyola, in the feeder channel to the wetland, waterbird numbers were relatively high with pink-eared duck, little pied cormorant, black swan, Eurasian coot, Australasian shoveler, grey teal, hoary-headed grebe and white-faced heron. At Wanganella waterbird species included white-faced heron, grey teal, Australian shoveler and Pacific black duck, white-necked heron, pelican, lapwing plover, black kite and black-shouldered kite. At Broome, there was a family of purple swamphens, and black swans were seen at Bundure.



A diversity of waterbirds fly across the sunset at Bala (Eulimbah) swamp, April 2022. Photo credit: Anna Turner

Vegetation

Vegetation surveys were undertaken in November 2021, January 2022 and March 2022. There was no access to three sites within Yanga National Park (Mercedes, Two Bridges and Piggery) and there was no access to Gayini in January 2022 due to Covid restrictions. A summary of outcomes for each wetland is presented in Table 2.

Table 2 Summary of vegetation outcomes November 2021- March 2022.

	
<p>November 2021</p>	<p>January 2022</p>
	<p>Wagourah Only one transect was inundated in March 2022 and vegetation cover was low; however, a good diversity of aquatic species including floating pond weed, waterwort and milfoil were identified along transect 1.</p>
<p>March 2022</p>	
	
<p>November 2021</p>	<p>March 2022</p>
<p>Bay Water levels had declined along all three transects. High cover of common water milfoil and slender knotweed along transect 1, while cover along transect 2 and 3 was reduced.</p>	



November 2021



March 2022

Banim

All three transects at Banim were inundated. Cover of nardoo was reduced in transect 1 and 2 due to increased water levels and water movement through these sites. Nardoo was well established along transect 3.



Bala

Bala was very deep, and access to the survey transects was not possible. Overall cover was low, but areas of common and course water milfoil were observed.



November 2021



March 2022

Nap Nap

Nap Nap continues drying down with water approximately 50 cm at the deepest point. The majority of transect 2 was dry, but vegetation cover and diversity were similar to previous surveys with common spike rush, water primrose, and course and common water milfoil.



November 2021



January 2022



March 2022

Sunshower
 Water levels have fluctuated substantially between November, January and March. Inundation into the tree line has triggered the emergence of a high diversity of native forbs, areas of common spike rush and small spike rush. Patches of spiny mud grass remain, but cover was reduced due to high water levels.



November 2021



January 2022



Mckennas
 Vegetation cover was low within Mckennas lagoon, although areas of spiny mud grass were identified in the main wetland. There is substaintail river red gum encoargement within Mckennas lagoon, inundation has so far been insufficient to reduce the cover of River red gum within the main wetland.



November 2021



January 2022



March 2022

Gooragool

Gooragool also had fluctuating water depths. Water levels had receded between January and March with high cover of common spike rush.