Understanding fish communities of the Barossa 2025

Mid to Lower North Para River

To effectively manage the natural resources of the Barossa it is important to understand its current condition. This assessment provides current knowledge of the Barossa fish populations to help inform water resource management.

The Barossa Valley has a rich vine and wine history and is situated in the northeastern part of the Adelaide Mount Lofty Ranges. To sustainably manage the area's natural resources, the Northern and Yorke (N&Y) Landscape Board, in partnership with the Department for Environment and Water, undertakes planning work. This includes the management of water resources of the Barossa Prescribed Water Resources Area (PWRA) through a Water Allocation Plan. This provides the water needs of economic, social, cultural and environmental users. To make sure that decisions are made on the most current environmental information, a selection of sites across the Barossa PWRA were sampled for fish communities. Fish are important indicators of watercourse health and environmental change. Monitoring patterns in the number and extent of the different species provides valuable information on changing conditions.

Status of fish communities of the Barossa region

In 2025, 15 sites across the Barossa PWRA were sampled to provide an update on the status of the fish community. All fish species encountered were identified, measured and

counted. Data was also recorded for water quality (flow, salinity, pH, temperature and dissolved oxygen), habitat and other animal species opportunistically encountered.

How are fish faring?

Comprehensive fish sampling undertaken in 2013, 2018, 2023, 2024 and 2025 across the Barossa PWRA by staff from Nature Glenelg Trust and coordinated by the N&Y Landscape Board showed that the fish communities across the region are generally in a poor state (Table 1). The area was dominated by alien species of fish during the 5 sampling periods, especially the declared noxious species Eastern Gambusia (*Gambusia holbrooki*) and to a lesser extent Redfin Perch (*Perca fluviatilis*).

Table 1. *Summary of fish catch in different years across the Barossa PWRA for native fish (blue) and alien fish (green).*

	2013	2018	2023	2024	2025
Mountain Galaxias	123	304	162	152	154
Common Galaxias	0	0	14	0	1
Flathead Gudgeon	2616	2091	1843	2142	2377
Carp Gudgeon	0	502	2749	7	8
Western Bluespot Goby	406	79	3	158	10
Eastern Gambusia	3191	4331	29395	8347	5392
Redfin Perch	481	35	7	37	152
Goldfish	6	0	2	0	1
Total	**6825**	**7349**	**34175**	**10843**	**8095**

The most common native species was Flathead Gudgeon (*Philypnodon grandiceps)* in most years, i.e. 2013, 2018, 2024 and 2025. Carp Gudgeon (*Hypseleotris* spp.) was first recorded in 2018 and the most dominant native species in 2023, but populations were not sustained during sampling in 2024 and 2025. There was also a strong population of the locally threatened and more sensitive Mountain Galaxias (*Galaxias olidus*, though they were localised to Jacob Creek and Tanunda Creek due to sections of permanent flow and better water quality.

Figure 1. *Alien Eastern Gambusia and freshwater shrimps (top); and Mountain Galaxias (bottom).*

How will the information be used?

The outcomes of the fish sampling will be used to inform the amendment of the water allocation plan for the Barossa PWRA that is currently underway. Furthermore, knowledge of where the different species of fish are present throughout the catchment allows for water planners to account for their needs in the planning process. Mountain Galaxias, for example, require longer flowing periods and better water quality than other native species of fish. This knowledge allows for a more targeted approach to water planning in the Barossa PWRA. It also increases our understanding of how the watercourses of the Barossa PWRA function and allows for more scientifically informed management of water resources for the benefit of all users.

Mid to Lower North Para River, including Jacob Creek and Tanunda Creek

Summary:

Jacob Creek and Tanunda Creek are perennially flowing streams that merge into the North Para River in the downstream section of the Barossa PWRA. During 2025, three sites were sampled in Jacob Creek and two sites in Tanunda Creek. At Jacob Creek, the Gauge site was fresher (e.g. lower salinity) in 2013, 2018, 2023 and 2024 (1246, 1193, 1177 and 1342 µScm^{-1}, respectively) compared to the most recent sampling in 2025 (1489 µScm^{-1}). The site at the Crossing was fresher in 2025 (2387 µScm^{-1}) than in 2024 and 2023 (3281 and 2686 µScm^{-1}, respectively), but not as fresh as in 2013 and 2018 (1968 and 1525 µScm^{-1}). Highland Hills property and downstream of Tanunda Creek were less fresh in 2025 (2901 and 6933 µScm^{-1}, respectively) than when it was first sampled in 2024 (2519 and 4831 µScm^{-1}, respectively). The salinity for another site at Tanunda Creek, downstream of Cascade Bethany Wines was similar in 2024 and 2025 (1360 and 1364 µScm^{-1}, respectively). Regari property was dry at the time of sampling.

Two sites sampled in the Lower-section (upstream Chatterton and Yaldara Weir, 6984 and 10,544 µScm^{-1}, respectively) and one site sampled in the Mid-section (St Halletts crossing, 9232 µScm^{-1}) of the North Para River were least fresh compared to Jacob Creek and Tanunda Creek. The sites at Yaldara Weir and St Halletts crossing were also less fresh than in 2024 (8709 and 4898 µScm^{-1}, respectively). Dissolved oxygen varied from 1.8 mgL^{-1} at Jacob Creek Crossing to 12.7 mgL^{-1} downstream of Cascade Bethany Wines. A dissolved oxygen level below 4.5 mgL^{-1} is stressful for fish and may even kill them if it gets below 2.5 mgL^{-1}(Table 2, orange and red respectively). The sites at Jacob Creek Gauge, Jacobs Creek Crossing, Highland Hills property, downstream of Tanunda Creek and Yaldara Weir all have dissolved oxygen levels that were below 4.5 mgL^{-1}. All sites had no or low flow during the 2025 sampling period.

Table 2. *Summary of pool condition, flow and water quality parameters for sites sampled in the Mid to Lower North Para River, Tanunda Creek and Jacob Creek. Orange = DO level <4.5 mgL^{-1} is harmful for fish. Red = level <2.5 mgL^{-1} is lethal for fish.*

Waterway	Pool Condition (level)	Flow	Salinity (µS cm^{-1})	pH	Temperature (°C)	Dissolved oxygen (mg L^{-1})
Jacob Creek	**Gauge** Low level (1m)	Low	1489	7.73	20.7	3.5
	Crossing Concentrated (0.2m)	None	2387	7.8	18.4	1.8
	Highland Hills property Concentrated (0.5m)	None	2901	7.07	19.2	3.6
Tanunda Creek	**Downstream Cascade Bethany Wines** Concentrated (0.8m)	Low	1360	8.42	19.1	12.7
Lower North Para River	**Upstream Chattertons** Concentrated (1m)	None	6894	8.11	21.2	5.1
	Yaldara Weir Concentrated (2m)	None	10,544	8.77	21.1	3.8
Mid North Para River	**St Halletts crossing** Low level (2+m)	None	9232	8.32	24	7.1
	Downstream Tanunda Creek Concentrated (1.8m)	None	6933	7.72	21.2	2.4

Fish catch:

Numbers of Mountain Galaxias, a native freshwater fish species, are similar in 2025 (154) compared to 2024 (152). They were found at two sites in 2025, e.g. Jacob Creek Gauge and downstream from Cascade Bethany Wines (Tanunda Creek). Mountain Galaxias were caught in Tanunda Creek in 2024 for the first time. Numbers of Mountain Galaxias seem to be declining since 2018 when 304 fish were caught at Jacob Creek. The small sizes of Mountain Galaxias sampled was indicative of a population comprising primarily recruits, suggesting possibly limited survivorship of the Mountain Galaxias over multiple years. Some sections of Jacob Creek and Tanunda Creek maintain perennial flows and, indeed, both sites where Mountain Galaxias were present were the only two sites where low flows were observed. This provides the necessary conditions for the native species in most years. However, lower sections of both creeks have dry to small pools over summer and autumn, which limits habitat suitability for the species. It is critical that adequate flow regimes are maintained in both creeks to support the sustainability of Mountain Galaxias populations.

The native Flathead Gudgeon (709 fish) was the dominant fish species in the Mid-section (St Halletts crossing and downstream from Tanunda Creek) and at one site in the Lower-section of the North Para River, i.e. upstream from Chattertons.

The less abundant Western Bluespot Goby (*Pseudogobius olorum*), an estuarine native fish, is only found in the Lower part of the North Para River, i.e. at Yaldara Weir and upstream Chattertons. Numbers in 2025 (10) were lower than in 2024 (158). The larger sizes of fish caught in 2025 suggests survivorship over the last year and no recruitment.

The alien Eastern Gambusia (2828 fish) was the dominant species at all sites in the Mid to Lower North Para River. No fish were recorded at the Jacob Creek Crossing and Highland Hills property.

Long-necked Turtle, Short-necked Turtle (Figure 2), Common Yabby, Freshwater Shrimp and Freshwater Prawn were sampled opportunistically.

Figure 2. *Short-necked turtle*

More information

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