Mid-Goulburn River Fish survey results 2023

GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY

Survey sites

In the first fish assessment conducted for the reach, six monitoring sites were surveyed between Yea and Mitchellstown. Monitoring sites are listed upstream to downstream:

- Trawool Resnagging/ Liberation
- King Parrot Creek Junction
- Goulburn River Anabranch
- Goulburn Valley Highway/Greenslopes Road
- Hughes Creek Junction Resnagging
- Mitchellstown Resnagging

Submerged resnagging, near the Hughes Creek junction (right)

Fish and other aquatic fauna were captured using (medium) boat electrofishing methods. This information will contribute to a long-term evaluation of the stocking efforts and determine whether a self-sustained population of Macquarie perch , *Macquaria australasica* is or can be established in the Mid-Goulburn River.

The Mid-Goulburn River experienced higher-than-average flows across the majority of June and all of July (Figure 1) due to water releases from Lake Eildon. One of the sites was surveyed prior to Goulburn Murray Water's planned release in early June, while the remaining five sites were surveyed after flows recessed to baseline levels in mid-August.

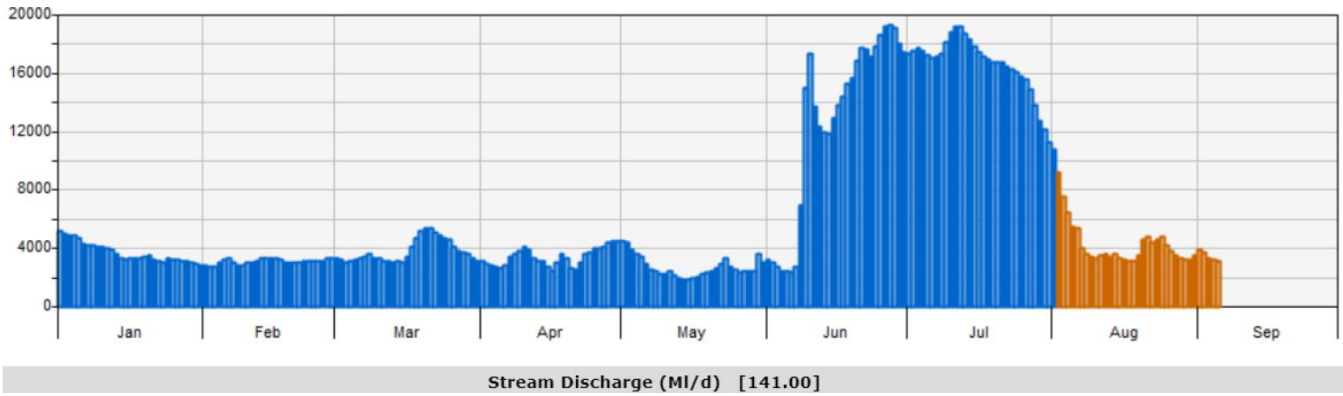

Figure 1. Stream discharge at the Mid-Goulburn River (Trawool) between January-September 2023.
(Validated data – blue, unvalidated telemetered data – orange)

Highlights

- A total of 201 fish were captured from the Mid-Goulburn River, which included eight native and five introduced fish species. Native fish accounted for 80% of the total fish catch. Common Yabby and Platypus were also recorded.
- Macquarie perch was recorded from the Trawool resnagging site (n=1) and nearby the King Parrot Creek junction (n=1). Both fish were large (likely mature) fish.
- Recorded at all six survey sites, Golden perch, *Macquaria ambigua* was the most abundant large-bodied native species captured (n=12).
- All native fish captured were found to be in good condition and free of the parasitic anchor worm, Lernaea infection, with a diversity of food resources observed (freshwater shrimp, *Paratya australiensis* and common yabbies) across the sites.

2023 results

Although only one Two-spined blackfish, *Gadopsis bispinosus* was captured from the King Parrot Creek junction site, it is of particular interest as during the King Parrot Creek fish surveys this species has only been reported from the most upstream survey site; following a declining trend that has emerged since 2019.

Two breeding-sized Murray cod, *Maccullochella peelii* were recorded.

Both juvenile and adult trout cod, *Maccullochella macquariensis* were captured exclusively from rock installed on the bank, which indicates successful breeding is occurring in the area.

Australian smelt, *Retropinna semoni* was the most abundant native species captured (n=135).

Murray cod (left)

Golden perch (right)

Two-spined blackfish (left)

Common carp, *Cyprinus carpio* was found to be the most abundant large-bodied species captured (n=20), noting that an additional 52 common carp adults were observed across the survey sites. Redfin perch, *Perca fluviatilis* was captured from four of the six survey sites (n=9). Rainbow (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*), abundance was largely concentrated around the most upstream site.

Discussion

Despite efforts in stocking into the Mid-Goulburn River, approx. 120,000 over ten years, the lack of juvenile Macquarie perch suggests either fish have not survived or fish have moved away from the release sites and are either elsewhere in the reach or in tributaries.

Year stocked	Number of fish stocked
2021	6,000
2022	58,100
2023	8,300

Table 1. Macquarie perch stocked by the VFA into the Mid-Goulburn River (between Yea and Trawool) from 2021-2023.

Water temperature has long been known to impact recruitment (wild spawned and stocking) success of Macquarie perch in other systems. The impact of flows, however, is a relatively novel consideration when assessing juvenile survival of our native fish species. Previous work assessing the impact of water releases on Murray cod juvenile survival revealed lower recruitment success during periods of high-water releases (high flow and lower water temperatures).

As such, further monitoring of the Mid-Goulburn River as well as incorporating genetic analyses of fin clips from fish collected in tributary streams is required to better determine the fate of these stocked individuals.

Recommendations

- Continue and expand fish population monitoring in Mid-Goulburn River during autumn 2024 to help identify factors that may be preventing the retention and survival of stocked Macquarie perch fingerlings in the system.
- Incorporate assessment of genetic samples into the broader Macquarie perch population assessment to determine the fate and potential movement of stocked fish, as well as the outcomes of some of the translocation activities in the region (genetic rescue).

This project is funded by the Victorian Government. Arthur Rylah Institute (DELWP) is engaged to undertake these surveys on behalf of the Goulburn Broken CMA.