



# Hughes Creek Fish survey results 2023



## Survey sites

The Hughes Creek has a long history of sedimentation in the form of sand deposition (sand slugs) which is a major contributor to the decline of large-bodied native fish species in the creek, including Macquarie perch, *Macquaria australasica*, and River blackfish, *Gadopsis marmoratus*. Existing large sand deposits within the channel continue to move through the system during large flow events, causing the infilling of deep pools which is the primary habitat for Macquarie perch.

In the last eight years, the Goulburn Broken Catchment Authority (GB CMA) has completed extensive habitat restoration works within the Hughes Creek catchment, informed by near annual monitoring of fish populations since 2007 (Figure 1). This summary report presents the results of the 2023 fish survey undertaken following the extreme flood event that occurred in Spring 2022.

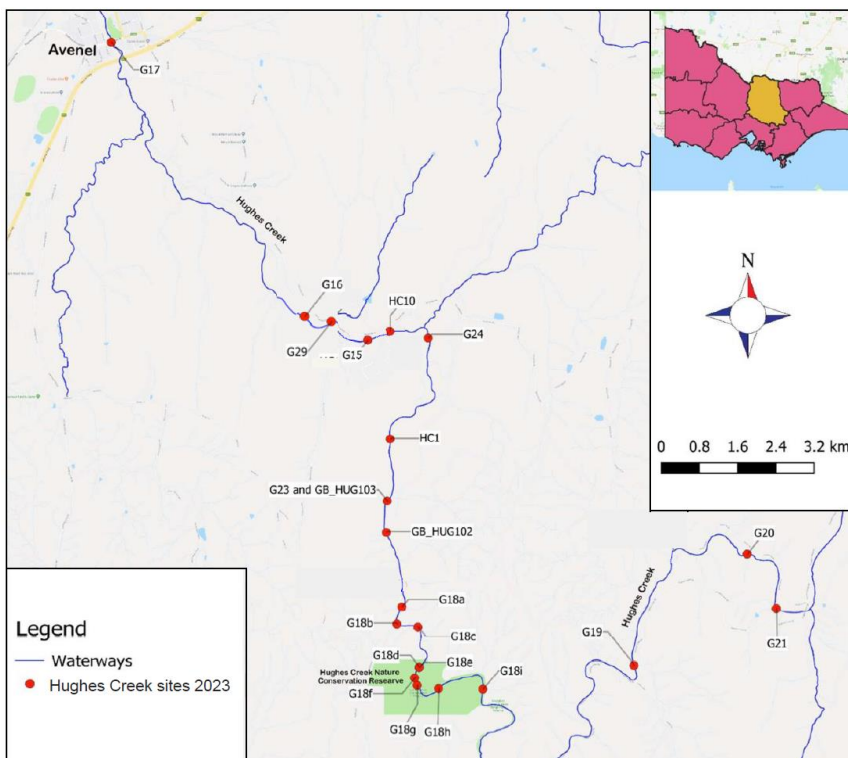


Figure 1. Map of survey sites in Hughes Creek

## Highlights

- A total of 538 fish were captured, representing six native fish (n=345) and four introduced species (n=189). Macquarie perch, River blackfish, Golden perch (*Macquaria ambigua*), Flat-headed gudgeon (*Philypnodon grandiceps*), Mountain galaxias (*Galaxias olidus*) and Southern pygmy perch (*Nannoperca australis*), accounted for 65% of the total catch, which is 20% decrease from last year's survey.
- Once again, the most abundant native species caught was River blackfish (n=188), while the most abundant introduced species was Common carp, *Cyprinus carpio*, (n=155).
- Higher incidences of the parasitic anchor worm, *Lernaea*, were observed on native fish in the creek which is attributed to stress caused by the October flood.

## Methods

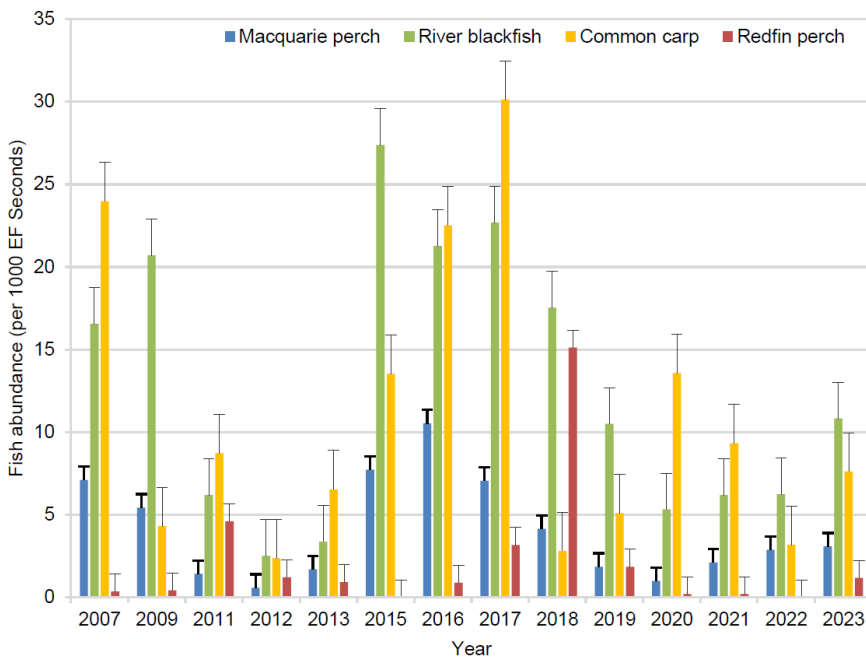
In February 2023, 21 sites were surveyed, including 17 control sites and five habitat restoration (works) sites. The same single pass backpack electrofishing techniques were applied as the previous year, with no fyke netting undertaken. In 2021 and 2022, the Hughes Creek experienced a particularly large pulse (high flow event) and an extreme flood event, respectively, during the Macquarie perch breeding period in Spring, which likely impacted recruitment success by displacing recruits and reduce egg survival.

## 2023 results

Macquarie perch abundance was slightly higher in 2023 (n=50) than 2022 (n=45). Similar Macquarie perch numbers were detected from the Gorge sites this year (n=29), which suggests the species is recovering from the 2019 drought which resulted in extremely low water levels and loss of key deep refuges. One young-of-year (YOY) (<100mm TL) was detected in 2023, making this the second consecutive year poor Macquarie perch recruitment has been reported in the creek. This is likely due to the high flow pulse experienced during the spawning period and the ongoing shifting of sand that impacts valuable spawning habitat.

Despite this, the number of river blackfish at these sites rose by 74% from 2022 to 2023, driven largely by high numbers captured from the Gorge sites (G18a-i; 2022 n=70 vs 2023=106). This year, YOY river blackfish represented 26% of total catch, reflecting a similar trend in recruitment success from the two years prior.

Southern pygmy perch numbers (n=10) have dropped considerably from recent years likely due to the extreme rainfall, subsequent flooding and discharge throughout the system, negatively impacting important fringing vegetative habitat favoured by this small fish. For likely similar reasons, flathead gudgeon numbers decreased by 84% from 2022 to 2023.



**Figure 2. The relative abundance (number of fish per 1000 electrofishing seconds) (+ SE) of Macquarie perch, river blackfish, common carp and redfin perch per site in the Hughes Creek between 2007 and 2023 (long-term monitoring sites only).**

Redfin perch abundance was the highest recorded since 2019 (n=19), but still well below numbers recorded in 2018, which triggered a targeted removal of introduced fish in both autumn and spring of 2018 and 2019. Common carp abundance has increased by 80% in the past year, likely due to floodwaters assisting carp movement into the system via connectivity and flow.



**Image 1: YOY River blackfish**

## Recommendations

- Continue monitoring fish and key habitat attributes across both control and rehabilitation sites to track outcomes of the significant investment in restoration within the Hughes Creek.
- Repeat translocations of Macquarie perch from Hughes Creek to King Parrot Creek, making sure to collect fin tissue from new recruits in future years to determine if these fish are contributing to the population and indeed, enhancing genetic diversity.

Follow [this link](#) to the interactive story map of the Hughes Creek to explore fish surveys from 2006.

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.