



Hollands Creek

Fish survey results 2023



Survey sites

Annual surveys have been undertaken since 2008 at eight long-term monitoring sites along Hollands Creek. In 2023 sites were surveyed in autumn and spring due to widespread flooding in the region. The surveys used fyke nets and a backpack electrofishing unit as per standardized Sustainable Rivers Audit (SRA) protocols. Hollands Creek is unique as it sustains populations of two nationally endangered fish species: Macquarie perch, *Macquaria australasica*, and Two-spined Blackfish *Gadopsis bispinosis*, both are target fish species for this summary report.

Through the 16-year study, Macquarie perch was only sampled from the five most downstream sites, due to a waterfall acting as a barrier restricting upstream movement of adult fish. This highlights the importance of these sites to the continued survival of the species within the reach.

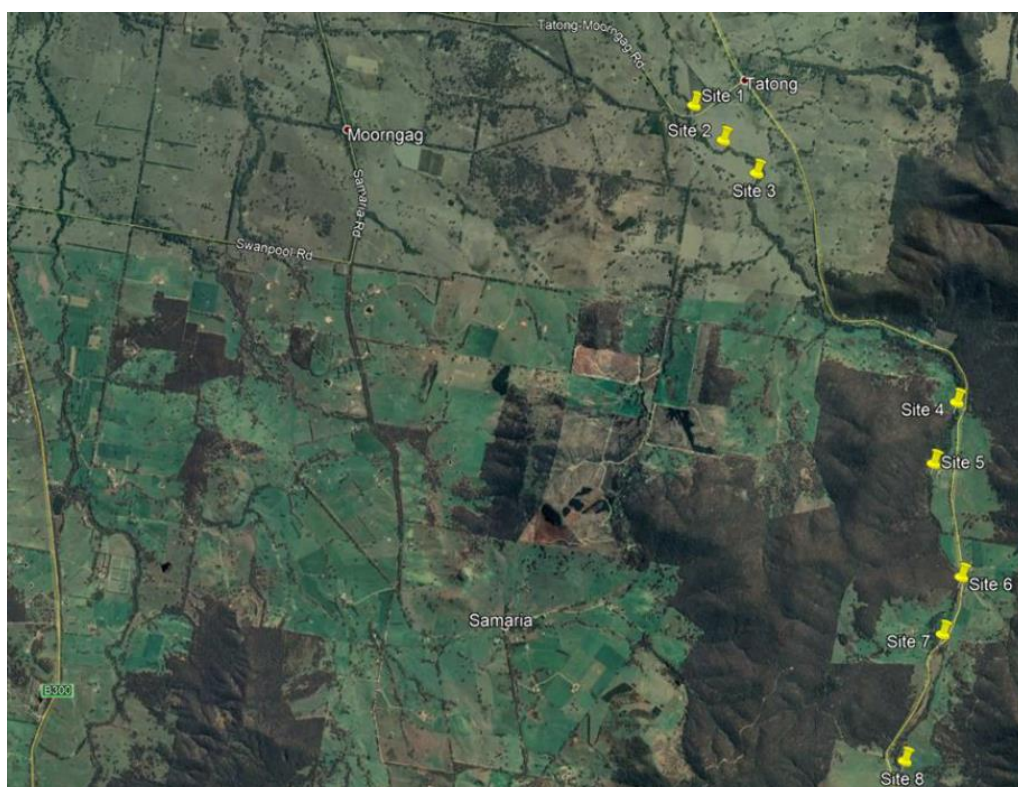


Figure 1. Hollands Creek Demonstration Reach survey sites (pinned and numbered). The creek flows downstream from site 8 to site 1.

2023 results

A total of 294 fish were captured from Hollands Creek, which included four native (68% of total fish catch) and four introduced fish species (33% of total fish catch).

Macquarie perch (n=81) and River blackfish (n=81), *Gadopsis marmoratus*, were the most abundant native species captured.

The size structure of the Macquarie perch population consisted of young-of-year, 1+, 2+ and 3+ aged fish, contrasting the previous three years where populations were dominated by young-of-year and sub-adult fish.

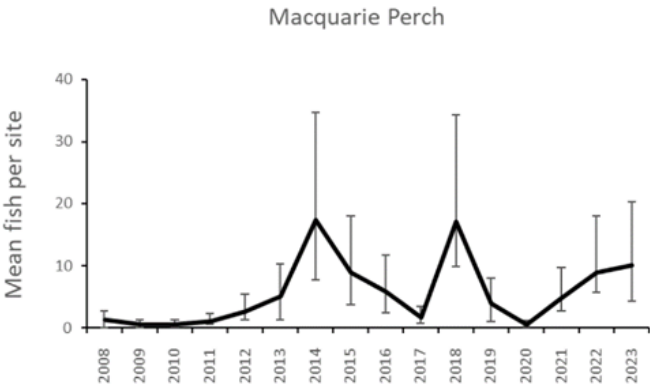


Figure 2. Mean (+/- S.E.) abundance (fish per site) of *M. australasica* sampled across study years (2008-2023).

Two-spined blackfish was the least abundant medium-sized native species captured (n=14).

The Two-spined blackfish population consisted of young-of-year, sub-adult, and adult fish. This contrasts with 2022 where the population was restricted to adult fish (> 250mm total length).

In 2011, the Two-spined blackfish population was restricted to adult fish, likely due to this size class dispersing into the reach from an upstream source population.

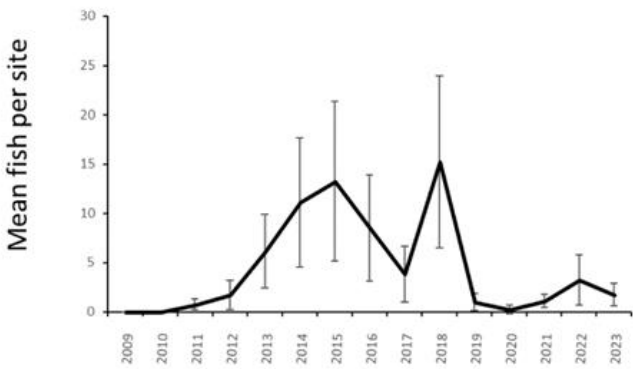


Figure 3. Mean (+/- S.E.) abundance (fish per site) of *G. bispinosus* sampled across study years (2008-2023).

Recommendations

- Continue monitoring the long-term trends of the Holland’s Creek Demonstration Reach fish community to provide a means to assess the potential impact on fish through potential environmental changes over time (e.g., climate change, drought).
- Consider the translocation and stocking of adult and juvenile Macquarie perch into Benalla Lake (habitat dependent) to act as a source population for both Hollands Creek and the Broken River populations.
- Investigate River blackfish and Two-spined blackfish egg/larvae thermal tolerances to improve ecological knowledge of the species.
- Actively remove *P. fluviatilis* and *S. trutta* from the system to ameliorate the threat of predation on eggs/larvae/juvenile threatened native fishes.
- Undertake range extension surveys upstream of site 8 to determine the extent of the Two-spined blackfish population.

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.