# 2026 Two-spined Blackfish (Wagar) Monitoring

Report to Icon Water.

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This project was undertaken by Office of Nature Conservation, City and Environment Directorate ACT Government for Icon Water on Ngunnawal country.

*Ngunnawal language and species names in this report provided by the Winanggaay Ngunnawal Language Group*

## Background

Two-spined Blackfish (*Gadopsis bispinosa*), Wagar in the Ngunnawal language (hereafter referred to as *Blackfish*), are listed as Vulnerable in the ACT under the *Nature Conservation Act 2014*. They grow to approximately 30 cm total length and occur in upland regions of the southern Murray–Darling Basin (Lintermans 2023). Within the ACT, they are restricted to the Cotter River above Cotter Reservoir (ACT Gov 2018).

Blackfish require cool, clean, clear streams with cobble substrates for shelter, breeding and foraging. The primary threat to the species is sedimentation, which fills the interstitial spaces between cobbles that Blackfish rely upon for refuge, spawning and feeding (ACT Gov 2018). Other threats include predation by introduced trout, inappropriate fire and flow regimes, habitat degradation, loss of riparian vegetation, and climate change (ACT Gov 2018).

Appropriate environmental flows can assist in maintaining Blackfish populations by sustaining habitat during dry periods and flushing fine sediment from cobble substrates. Icon Water provides environmental flows to support the aquatic ecosystem, including Blackfish populations below Corin Dam and Bendora Dam. For most of the period since the previous survey, standard environmental flows, comprising base flows and small flush or riffle-maintenance flows, were released from Bendora Dam (Figure *1*). However, a riffle-maintenance flow does not appear to have been delivered during summer 2026.

Moderate overtopping of Bendora Dam during late spring 2025 provided a prolonged period of elevated flow. In the unregulated Above Corin Reach, several flow peaks between 150 and 450 ML/day were recorded. These flows were substantially lower than the natural high flow events experienced during the previous reporting period, which were associated with poor recruitment between 2020 and 2024, particularly in the Bendora to Corin Reach. Flow volumes during the natural events in the current reporting period were within the range expected to assist with sediment removal from riffles (ACT Gov 2026). No high (>550 ML/day) environmental or natural flow events were recorded.

Vegetation recovery and moderate flow events have contributed to improvements in cobble habitat within the Above Corin Reach. However, substantial quantities of sand and fine sediment remain within the Cotter River upstream of Corin Reservoir and between Corin and Bendora reservoirs following the 2020 bushfires. Sedimentation remains a significant threat to Blackfish as it smothers the spaces beneath cobbles that are required for breeding, shelter and feeding.

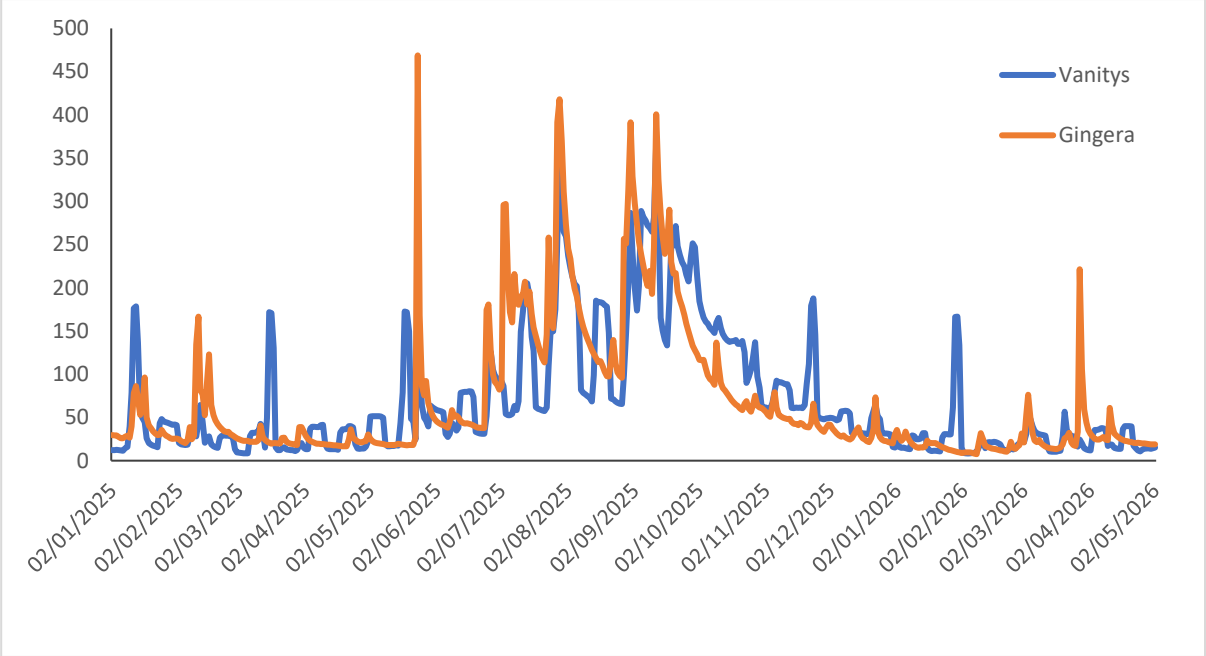

Figure 1. Flow January 2025 to May 2026. Data from Icon water gauges (Gingera 410730; Vanitys 410725)

## Methods

In 2026, Blackfish monitoring was undertaken at 11 river sites within the Cotter River catchment:

- Five sites in the unregulated Above Corin Reach;
- Five sites in the environmental flow reach (Bendora to Cotter Reach); and
- One site in the Corin to Bendora Reach.

At each site, five 30 m transects were sampled using backpack electrofishing following the standard ACT Government monitoring methodology (ACT Government 2010).

Bendora Reservoir and Corin Reservoir were also surveyed. At each reservoir, ten single-wing fyke nets were deployed overnight. Nets were secured to the shoreline and fitted with a 15 cm float within the cod end to prevent mortality of air-breathing fauna.

All captured fish were identified to species and measured (total length or fork length, depending on tail morphology). All native fish were returned alive to the water following processing.

## Indicators

Icon Water's Environmental Management Plan includes the following performance indicators for maintaining sustainable Blackfish populations in environmental flow reaches, based on the ACT Environmental Flow Guidelines (ACT Gov 2026):

- More than two Blackfish per transect ("shot") are recorded in at least 60% of survey transects within a reach in at least one year over the previous two years.
- Juvenile Blackfish (<120 mm total length; age 0+ and 1+) comprise at least 30% of the total catch within a reach.

A separate performance indicator applies to Bendora Reservoir:

- An average catch rate of at least two Blackfish per net-night.

## Overall Catch

A total of 499 fish were recorded during the 2026 survey. Of these, 452 were Two-spined Blackfish, comprising:

- 152 individuals from the Above Corin Reach (5 sites);
- 16 individuals from the Corin to Bendora Reach (1 site);
- 255 individuals from the Bendora to Cotter Reach (5 sites); and
- 29 individuals from Corin Reservoir.

No Blackfish were captured in fyke nets set within Bendora Reservoir, although four endangered Trout Cod (*Maccullochella macquariensis*), Gudu in the Ngunnawal language, were recorded.

Four endangered Macquarie Perch (*Macquaria australasica*), Gubay in the Ngunnawal language, were captured in the Bendora to Cotter Reach.

The second most abundant species was Rainbow Trout (*Oncorhynchus mykiss*), with 39 individuals recorded, the majority occurring in the Above Corin Reach. Three Oriental Weatherloach (*Misgurnus anguillicaudatus*) were captured at Vanitys Crossing in the Bendora to Cotter Reach. This introduced pest species has been present within the Cotter Reservoir for several decades and was likely introduced through the use of illegal live bait. This species is easily detected in electrofishing sampling but is assumed to be restricted to the lower sections of the Bendora to Cotter Reach and Cotter Dam. A single Brown Trout (*Salmo trutta*) was also recorded within this reach.

*Table 1. Fish captured during the 2026 Cotter environmental flow survey across three river reaches and two reservoirs. (* indicates introduced species)*

| | Above Corin | Corin - Bendora | Bendora - Cotter | Bendora | Corin | Total |
|---|---|---|---|---|---|---|
| Brown Trout* | 0 | 0 | 1 | 0 | 0 | **1** |
| Macquarie Perch | 0 | 0 | 4 | 0 | 0 | **4** |
| Trout Cod | 0 | 0 | 0 | 4 | 0 | **4** |
| Oriental Weatherloach* | 0 | 0 | 3 | 0 | 0 | **3** |
| Rainbow Trout* | 24 | 2 | 10 | 0 | 3 | **39** |
| Two-Spined Blackfish | 152 | 16 | 255 | 0 | 29 | **452** |

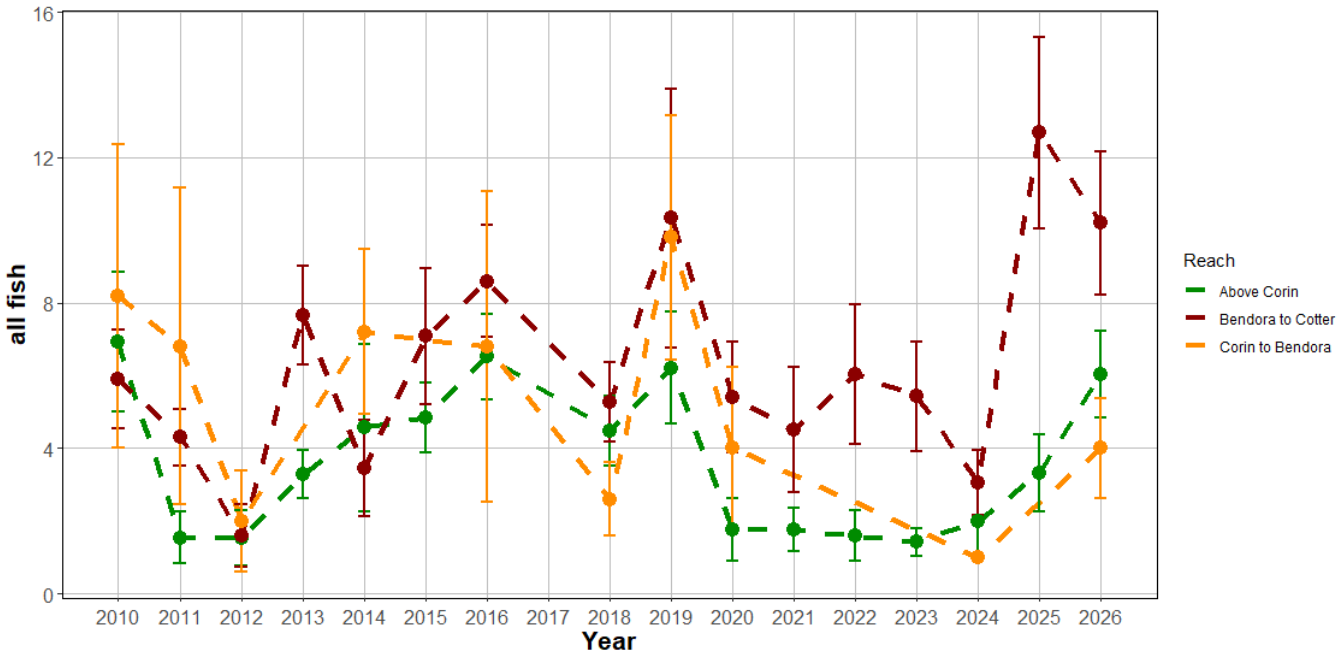


*Figure 2. Mean number of Blackfish per electrofishing transect by reach, 2010–2026 (95% confidence intervals).*

Compared with recent years, the Above Corin Reach showed a strong increase in Blackfish abundance following several years of depressed numbers after the 2020 bushfires (Figure 2). The Bendora to Cotter Reach recorded an average abundance exceeding 10 fish per transect, which is very high compared to previous years. Although this reach experienced several years of poor recruitment, exceptionally high spawning success in 2025 continues to support the population in 2026 (Figure 3).

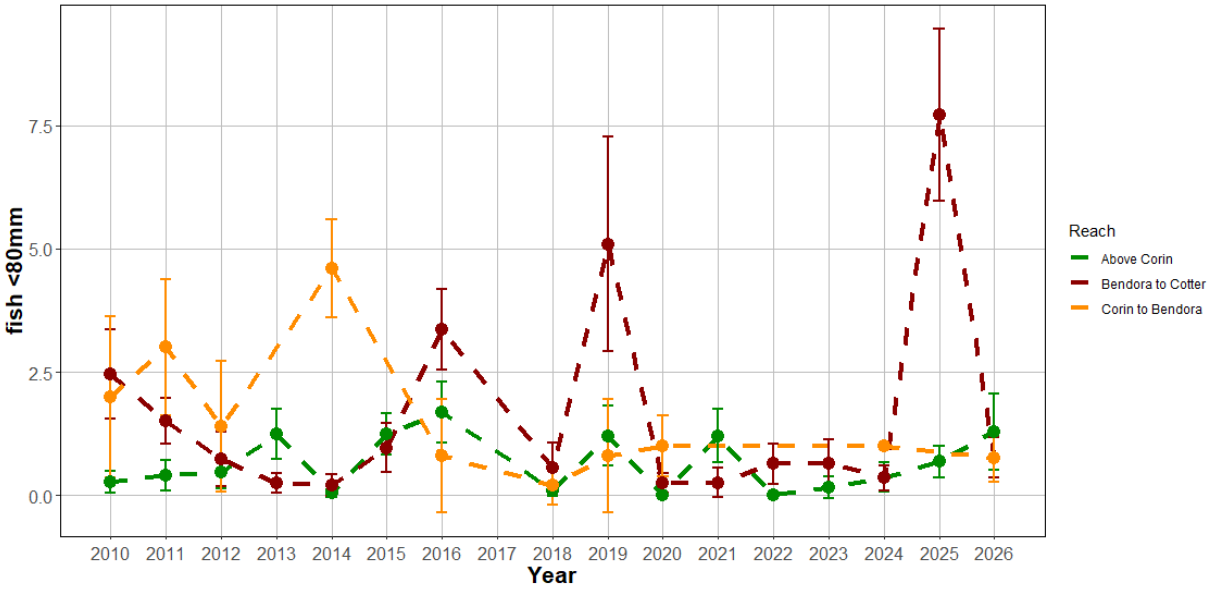


*Figure 3. Mean Blackfish under 80mm length (Young of Year) for each reach from 2010-2026 (95% confidence intervals).*

All river reaches met the indicator threshold requiring more than 60% of transects to contain at least two Blackfish. All transects in the Bendora to Cotter Reach and the Above Corin Reach recorded at least two Blackfish. In Figure 4, blue points represent the 2026 results, and the green dashed line indicates the performance threshold.

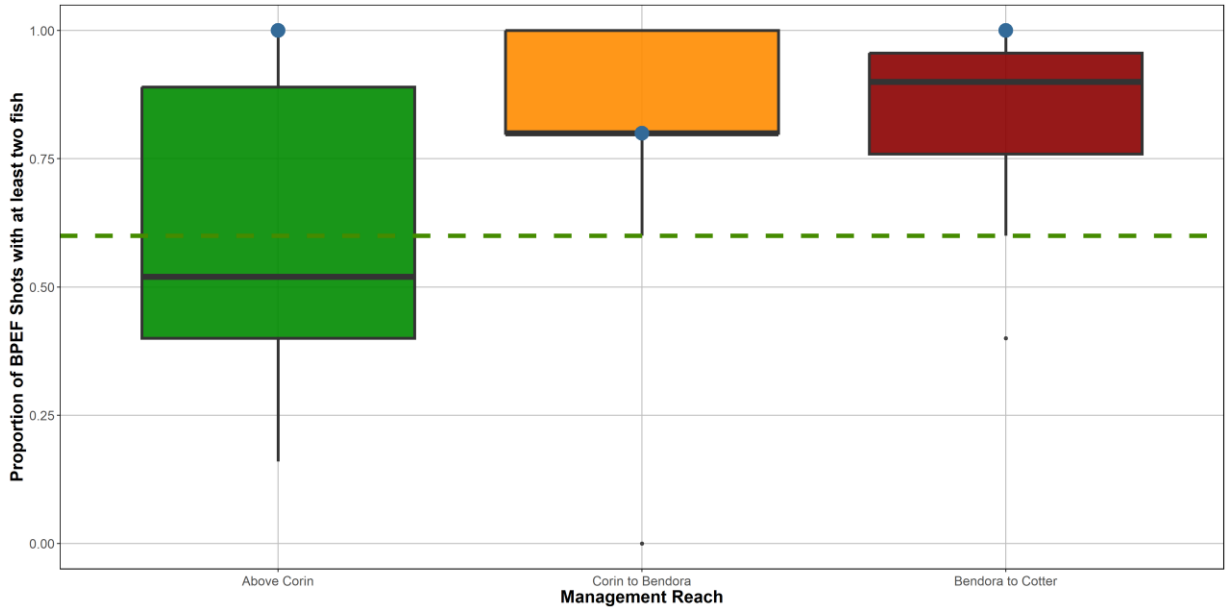


*Figure 4 Boxplot showing the proportion of transects within each reach containing at least two Blackfish. Blue points represent 2026 results superimposed on annual results from 2010–2026. The solid black line indicates the reaches overall mean and the green dashed line indicates the 60% threshold.*

For the first time since 2019, the Above Corin Reach substantially exceeded the performance indicator, with every transect recording at least two Blackfish. This reach was slow to recover following the 2020 bushfires but has shown a strong response since 2025.

The Corin to Bendora Reach also exceeded the threshold, with four of five transects recording at least two Blackfish. Owing to difficult access, only a single site is monitored in this reach, resulting in a smaller sample size than other reaches.

No Blackfish were recorded in Bendora Reservoir in 2026. Consequently, the reservoir failed to meet the indicator of two Blackfish per net-night and continues a trend of very low detectability observed in recent years. Although no formal performance indicator exists for Corin Reservoir, the survey recorded an average catch rate of 2.9 Blackfish per net.

## Juvenile Catch

All reaches exceeded the performance threshold of 30% juvenile Blackfish (<120 mm total length). The Bendora to Cotter Reach recorded the highest juvenile proportion, with nearly 70% of the catch comprising fish under 120 mm (Figure 5).

Results from the Bendora to Cotter Reach indicate strong survival of juvenile fish produced during the 2025 spawning season. Recruitment success was substantially lower between 2021 and 2024. This coincided with significant late spring flows overtopping all of the dams in the Cotter. High flow in the breeding season have previously been observed to impact spawning success. Juvenile abundance increased markedly during both 2025 and 2026. Most juveniles observed in 2026 appear to represent survivors from the 2025 cohort, while young-of-year fish were comparatively scarce (Figure 3). Juvenile Blackfish (<120 mm) were recorded at all survey sites within this reach. However, fewer than 8% of fish were smaller than 80 mm, indicating that most juveniles originated from the previous year's spawning season rather than the current year (Figure 3).

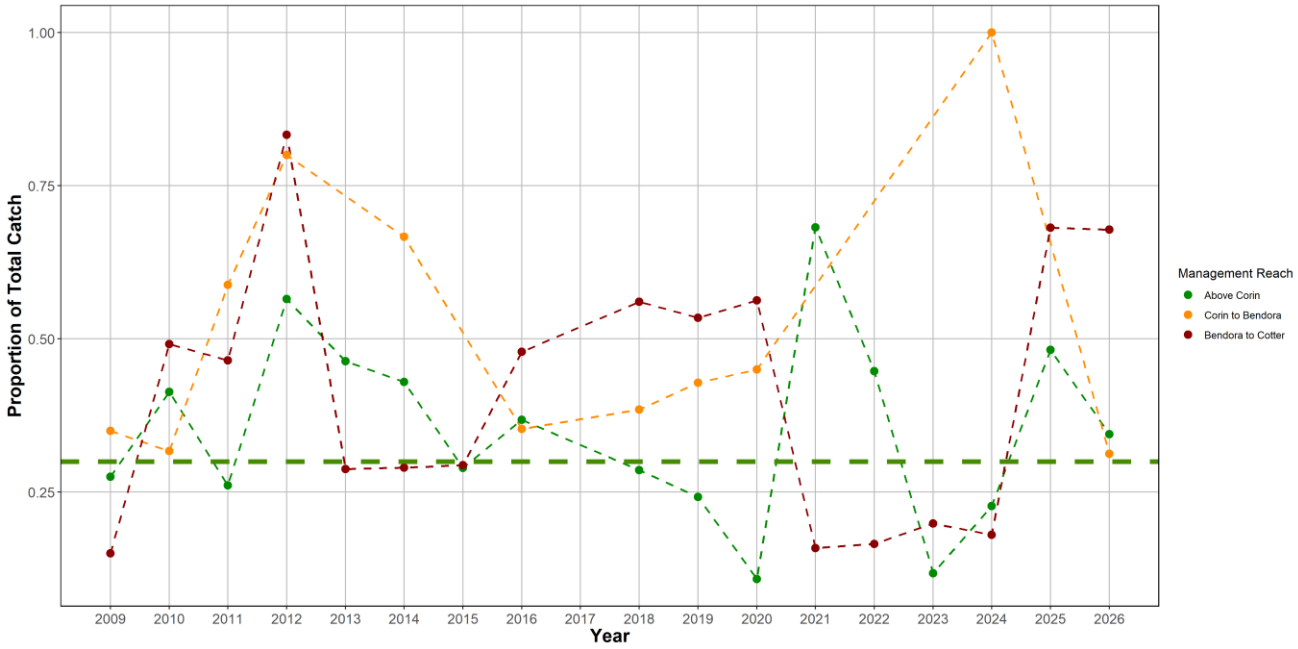


*Figure 5 Proportion of the catch comprising Blackfish under 120 mm total length (young-of-year and one-year-old fish), 2009–2026. The green dashed line indicates the performance threshold.*

Approximately 70% of the current population in the lower Cotter River is estimated to comprise one- to two-year-old fish (Figure 5). Continued survival of this cohort into adulthood, combined with ongoing successful recruitment, will be important for maintaining population sustainability over the next three to five years.

## Corin and Bendora Reservoir

No Blackfish were captured in Bendora Reservoir and, consequently, the reservoir failed to meet its performance indicator. This result is consistent with recent surveys, which have found Blackfish to be rare or absent from the reservoir.

Corin Reservoir was surveyed for the first time in 2026. This additional sampling was undertaken in response to previous reports highlighting persistently low Blackfish abundance within Bendora Reservoir and population declines in the Above Corin Reach following the 2020 bushfires (ACT Gov 2024).

A relatively high abundance of Blackfish was recorded in Corin Reservoir, with an average catch rate of 2.9 fish per net. The fish captured covered several age classes and a large adult exceeding 300 mm total length (Figure 6 and Figure 7). This result indicates the presence of a healthy reservoir population. Several Rainbow Trout were also recorded during fyke-net sampling. This introduced species is common in the river and reservoirs of the Cotter Catchment. While numbers fluctuate over time, additional sampling of Corin Reservoir will be needed to understand how the population of Blackfish and Trout relate to the broader catchment.

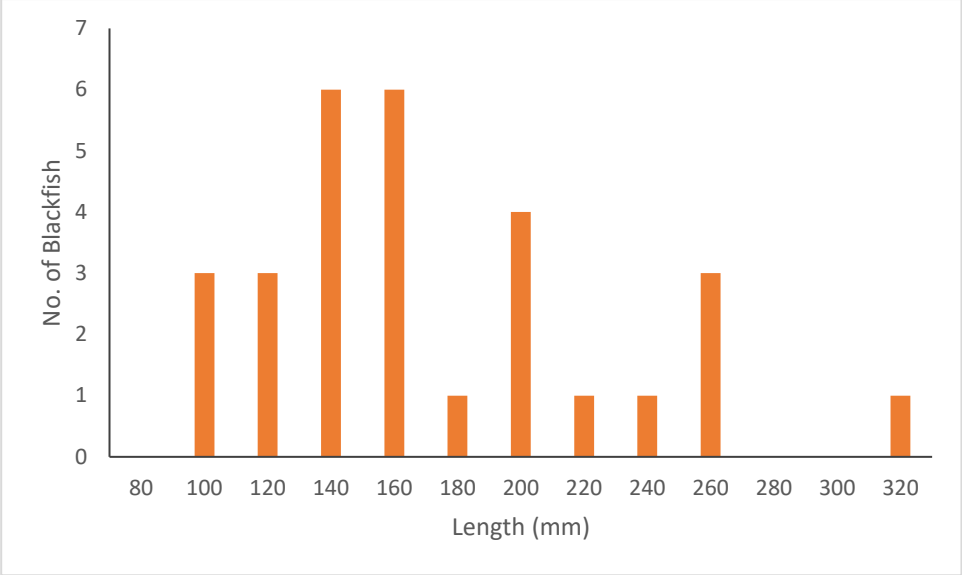


*Figure 6. Length frequency graph of the Blackfish captured in fyke nets in Corin Reservoir 2026.*

*Figure 7. A large >300mm Blackfish caught in a fyke net in Corin Reservoir.*

The apparent contrast between the relatively high abundance of Blackfish in Corin Reservoir and their low abundance in Bendora Reservoir and the enlarged Cotter Reservoir is notable, given that the species was historically present in all three waterbodies. Potential explanations include reservoir ageing and ongoing sediment accumulation, which may reduce suitable habitat by infilling the cobble and rocky substrates preferred by Blackfish. Predation by Rainbow Trout and the established Trout Cod population within Bendora Reservoir has also been suggested as a possible contributing factor to the species' decline.

## Summary

Blackfish populations in the Cotter catchment continued to show signs of recovery in 2026. All river reaches met environmental flow performance indicators for abundance and juvenile recruitment, with

particularly strong results observed in the Bendora to Cotter Reach. However, the proportion of juvenile in the Bendora to Cotter Reach was dominated by fish from the previous season. The Above Corin Reach demonstrated substantial recovery from 4 years of decline following impacts of the 2020 bushfires. 2026 extended the recovery commenced in 2025 in sites with artificial habitats, more broadly across the reach. Hopefully this will continue and the impact of sediment, which limited the population following the 2020 fires, is reducing.

Bendora Reservoir did not meet the indicators and is has not done so for over 10 years. The inclusion of Corin Reservoir in this year's sampling showed that this reservoir supports a reasonably population of Blackfish. Ongoing sampling is required to further understand the Corin population

These findings suggest that Blackfish populations within the riverine reaches are currently stable or recovering; however, the long-term persistence of reservoir populations, particularly in Bendora Reservoir, warrants ongoing monitoring and investigation.

The next scheduled environmental flow monitoring for Blackfish is in 2028, it is recommend that Corin is sampled in addition to the other standard sites and Bendora.

## References

ACT Gov 2010; Fish Monitoring Program to Assess the Effectiveness of Environmental Flows in the ACT in 2008 and 2009. ACT Government Canberra

ACT Gov 2018; Two-spined Blackfish *Gadopsis bispinosus* Action Plan ACT Government Canberra.

ACT Gov 2024; 2024 Two-spined Blackfish (Wagar) Monitoring. Report to Icon Water; ACT Government Canberra

ACT Gov 2026; ACT Water Resources Environmental Flow Guidelines – 2026 (2026), ACT Government Canberra.

Lintermans, M. 2023; Fishes of the Murray Darling Basin. Australian Rivers Institute

*We acknowledge the Ngunnawal people as traditional custodians of the ACT and recognise any other people or families with connection to the lands of the ACT and region. We acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.*

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