Inland Fisheries Service

Wild Rainbow Trout Fishery Management 2025



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Introduction

Tasmania has several fisheries managed exclusively as wild rainbow trout fisheries, as well as others where rainbow trout coexist with brown trout. Where possible, the Inland Fisheries Service (IFS) seeks to promote natural recruitment of both species through the provision and protection of suitable spawning habitat. However, in some waters, rainbow trout stocking is used to supplement natural recruitment and maintain fishery performance.

Natural recruitment is largely dependent on the availability and quality of spawning habitat. To support recruitment in key wild rainbow trout fisheries, the IFS undertakes active management through the operation and maintenance of artificial spawning infrastructure and fish traps. These facilities enable the monitoring of spawning activity and recruitment and, where required, provide a source of fish for stocking programs.

At Liawenee Canal, rainbow trout captured in the fish trap are counted, sexed, and transferred to purpose-built spawning channels. This strategy is designed to enhance spawning habitat and increase the likelihood of successful recruitment to the Yingina / Great Lake fishery. A fry trap located within the spawning channel enables the monitoring and enumeration of fry, providing an important measure of recruitment success. The fry trap also provides a source of rainbow trout fry for stocking other wild rainbow trout fisheries when required.

The Sandbanks Creek fish trap can be used to monitor rainbow trout spawning migrations within the Yingina / Great Lake catchment. However, the effectiveness of the trap is dependent on adequate stream flows, which are influenced by rainfall within the catchment. The trap was not operated in 2025 due to insufficient flows.

The River Derwent fish trap at Lake King William can be operated during the rainbow trout spawning migration when lake levels are favourable. In 2025, elevated lake levels inundated the trap during the spawning period, rendering it inoperable.

Liawenee Canal spawning run

Rainbow trout spawning runs remained relatively modest between 2014 and 2020, ranging from 195 to 1,093 fish annually (Figure 1). Since 2019, however, the IFS has actively managed wild rainbow trout captured at the Liawenee Canal trap by transferring them to purpose-built spawning channels designed to enhance reproductive success (Figure 2). These channels contain suitable spawning gravels, enable water flows to be managed throughout spawning and egg incubation, and provide newly hatched fry with refuge from predation by brown trout.

The increased spawning run numbers observed from 2021 onwards may reflect the benefits of these enhanced spawning channels. Improved spawning and incubation conditions are likely to have increased egg and fry survival, resulting in greater recruitment of juvenile rainbow trout into the adult population. As these fish matured and returned to spawn, they may have contributed to the stronger spawning runs recorded in 2021, 2022 and 2023, potentially creating a positive feedback effect that further increased spawning numbers.

Despite the higher spawning run numbers observed between 2021 and 2023, only 625 rainbow trout were recorded in 2024. This decline likely reflected a combination of factors, particularly the unusually high abundance of cormorants observed throughout Tasmania during this period. Spawning rainbow trout are especially vulnerable to predation as they congregate in relatively shallow water within the Liawenee Canal during their upstream migration.

The Liawenee Canal trap operated from 14 August 2025 to 11 November 2025. Rainbow trout began arriving in early August, earlier than is typically observed, the trap remaining operational between the brown trout and rainbow trout spawning periods. The spawning run commenced strongly, with 418 rainbow trout entering the trap during August. However, a cooler-than-average spring appeared to slow migration activity. Average maximum air temperatures recorded at Liawenee were 1.5°C below average in September and 1.2°C below average in October (Figure 3). Despite generally favourable canal water levels, the cooler spring temperatures likely reduced migration activity during September and October, limiting the overall size of the spawning run. As a result, the run stagnated during what is normally the peak migration period, with only a further 946 fish entering the trap across September and October. Cumulative migration data indicated that approximately 50 per cent of the annual run had occurred by mid-September, with more than 80 per cent of fish having migrated by early October (Figure 4). The migration was largely complete by early November. Throughout the spawning season, river flows were generally maintained at approximately 20 to 22 cumecs, although notable reductions occurred in mid-August and late October (Figure 4). Several migration pulses occurred following rainfall events, suggesting that rainfall and associated changes in flow conditions may have acted as cues for movement (Figure 4). In contrast, no clear relationship was evident between daily fish counts and atmospheric pressure (Figure 4).

Overall, the observed migration pattern suggests that adult rainbow trout movements were influenced by a combination of seasonal temperature cues and favourable flow conditions, with spawning migrations concentrated during periods of cool water temperatures and adequate river discharge.

In total, 1,364 rainbow trout were captured during the 2025 spawning run, comprising 510 males and 854 females. While this represented a substantial increase from the

625 fish recorded in 2024, numbers remained below the exceptionally strong spawning runs observed between 2021 and 2023. The lower abundance in 2025 was likely influenced by the combination of cooler spring temperatures and above-average predation pressure, which together reduced migration activity and limited the overall size of the spawning run.

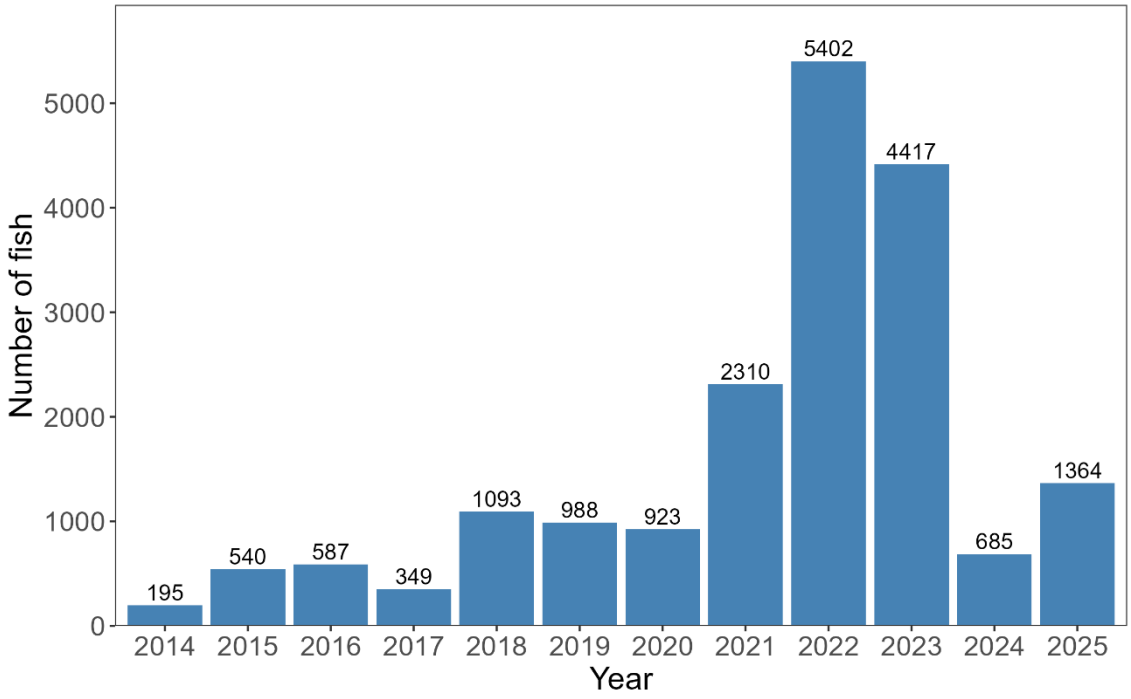


Figure 1. Total rainbow trout counts recorded at the Liawenee Trap, 2014-2025.

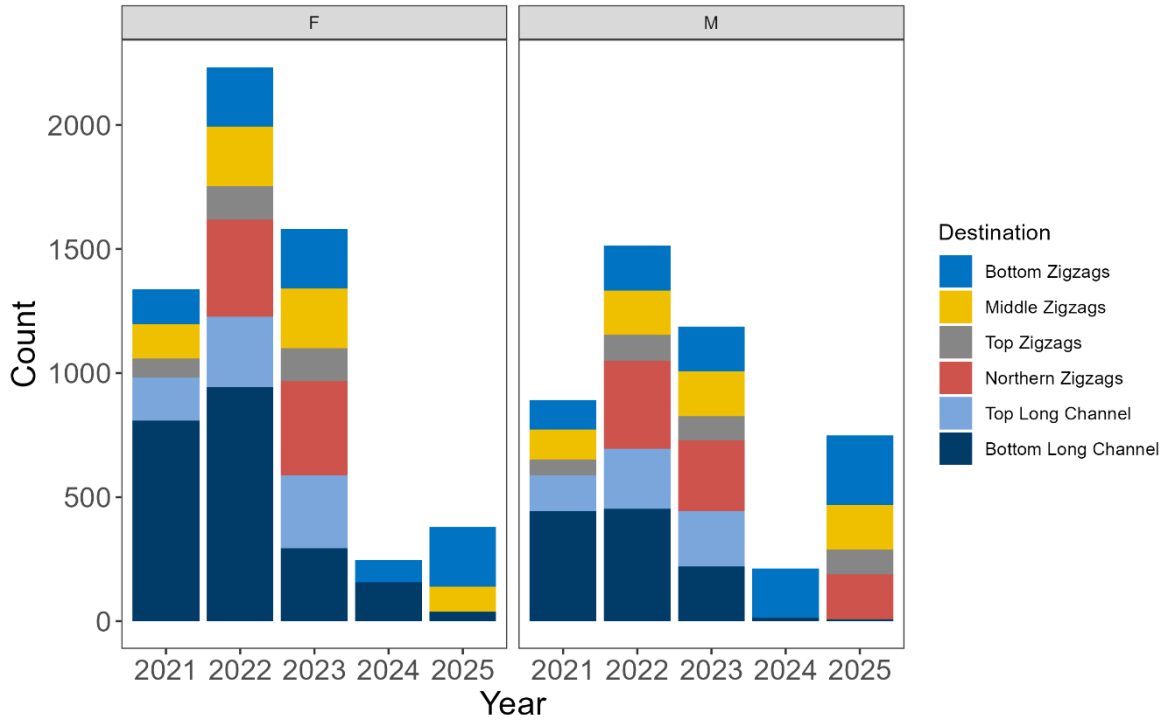


Figure 2. Distribution of male and female rainbow trout captured at the Liawenee Fish Trap among spawning channels as part of the active management and monitoring program for rainbow trout, 2021 to 2025.

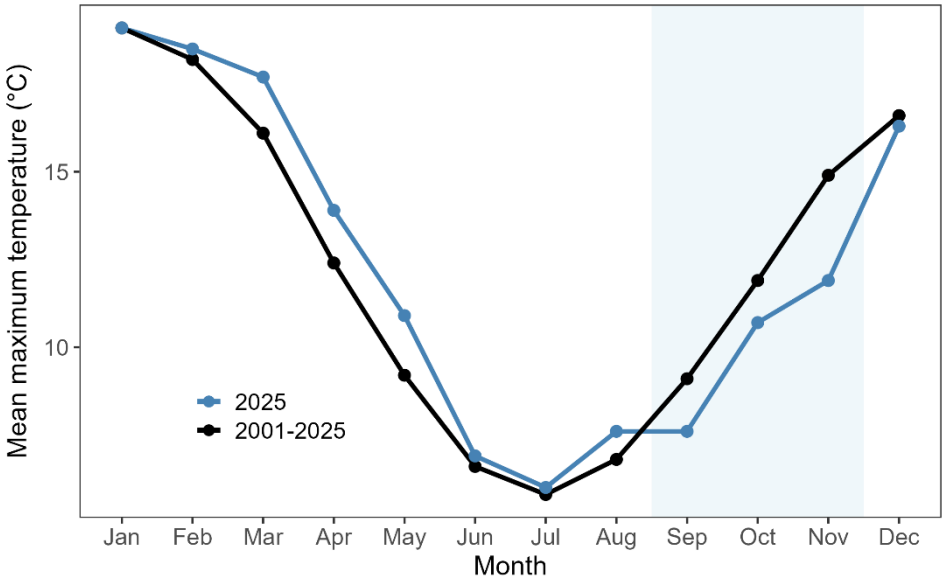


Figure 3. Mean monthly maximum air temperature (°C) recorded at Liawenee between 2001 and 2025 (black line), compared with the mean monthly maximum air temperature observed during 2025 (blue line). The shaded blue area indicates the spring period (September to November), corresponding approximately to the duration of the 2025 rainbow trout spawning season.

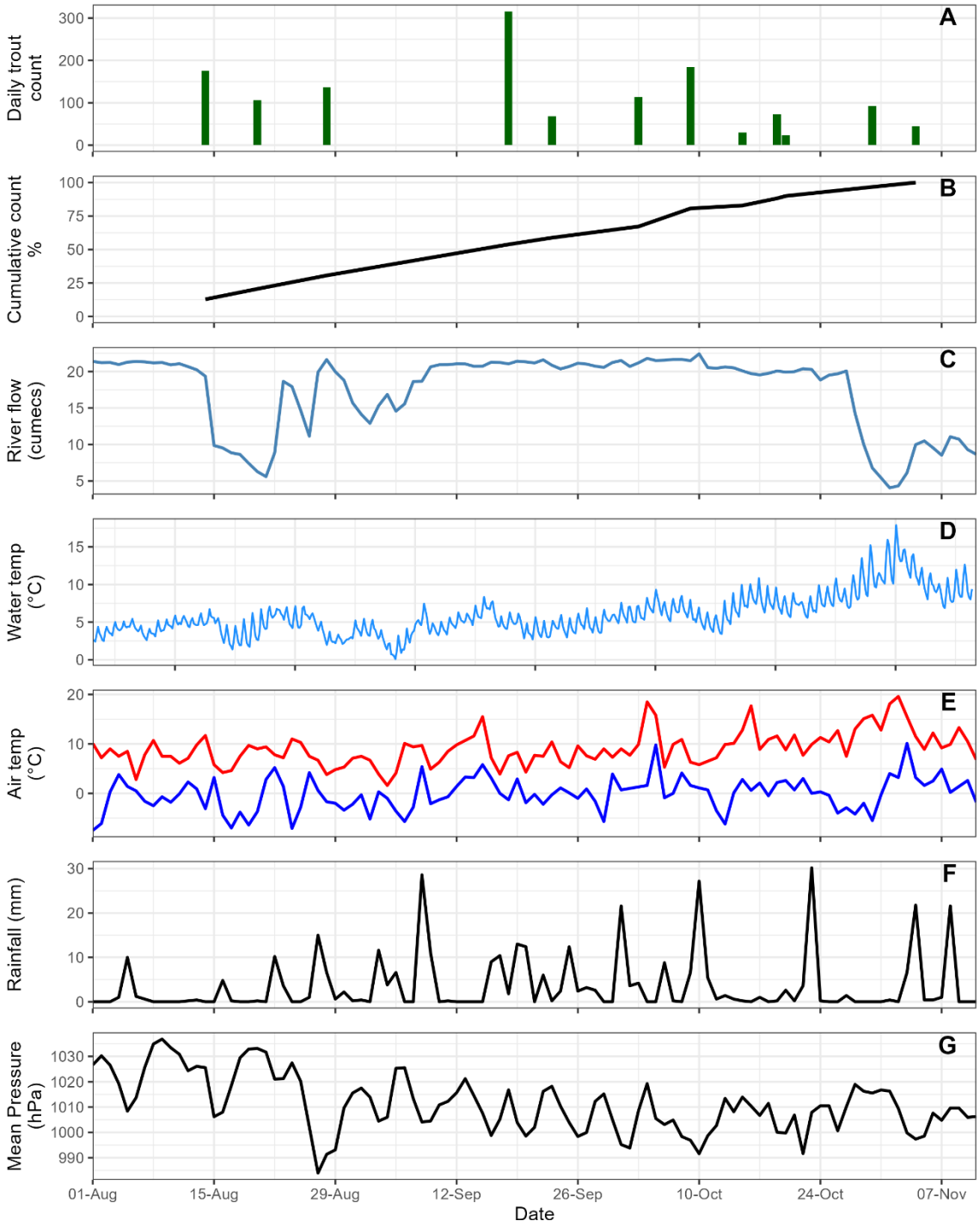


Figure 4. Number of Rainbow Trout captured in the fish trap (counted upon removal from the trap) from August to November 2025 (A), and the cumulative percentage of the total trout run captured over the same period (B). Corresponding environmental conditions are shown for canal flow, measured at the Hydro Tasmania gauging station (C); water temperature recorded within the fish trap (D); mean daily maximum (red) and minimum (blue) air temperatures recorded at the Bureau of Meteorology (BoM) Liawenee weather station (E); daily rainfall totals recorded at the BoM Liawenee weather station (F); and mean daily atmospheric pressure recorded at the BoM Liawenee weather station (G).

Liawenee Canal weigh and measure information

A total of 200 rainbow trout, comprising 100 males and 100 females, were weighed and measured at the Liawenee Canal fish trap during the annual sampling program (Table 1 and Figure 5 and Figure 6). The sampled fish had a mean fork length of 432 mm and a mean weight of 905 g, with lengths ranging from 362 to 525 mm and weights ranging from 560 to 1,530 g. Males were slightly longer on average than females (436 mm and 427 mm, respectively), whereas females exhibited a higher mean condition factor (1.17) than males (1.07) (Table 1 and Figure 7). Overall, rainbow trout sampled at the trap were in good condition, with a mean condition factor of 1.12 (Figure 7).

Length frequency distributions of rainbow trout sampled from the Liawenee Canal spawning run between 2020 and 2025 showed relatively consistent size structures among years. Fork lengths were generally centred between 430 and 470 mm, with most fish falling within the 400 to 500 mm size range (Figure 8). Fish sampled during the record spawning runs of 2021 to 2023 were slightly larger than those captured in other years, with modal lengths generally between 450 and 470 mm. In contrast, the 2024 and 2025 runs exhibited a noticeable shift towards smaller fish, with modal lengths occurring between 410 and 430 mm.

Males and females exhibited broadly similar length distributions in all years. However, males were generally represented across a broader size range and were more common among the largest fish in the samples. Females were more concentrated around the modal size classes.

Overall, the size distribution of spawning rainbow trout has progressively shifted towards smaller individuals since the exceptionally large spawning runs of 2021 to 2023, with the 2025 spawning run containing a greater proportion of smaller fish than observed during that period.

The observed shift towards smaller fish suggests that the spawning population is currently dominated by younger age classes, reflecting strong recruitment from the large spawning runs recorded between 2021 and 2023. The high abundance of smaller fish recorded in 2024 and 2025 is consistent with the maturation of these cohorts and indicates the potential for continued growth of the spawning population as they contribute increasingly to future spawning runs.

Table 1. Summary of length, weight and condition factor measurements for Rainbow Trout captured at the Liawenee Trap between 18 August and 9 October 2025.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n = 200	Length (mm)	432	362	525
	Weight (g)	905	560	1530
	Condition Factor	1.12	0.81	1.38
Female n = 100	Length (mm)	427	362	500
	Weight (g)	913	610	1530
	Condition Factor	1.17	0.89	1.38
Male n = 100	Length (mm)	436	362	525
	Weight (g)	898	560	1510
	Condition Factor	1.07	0.81	1.28

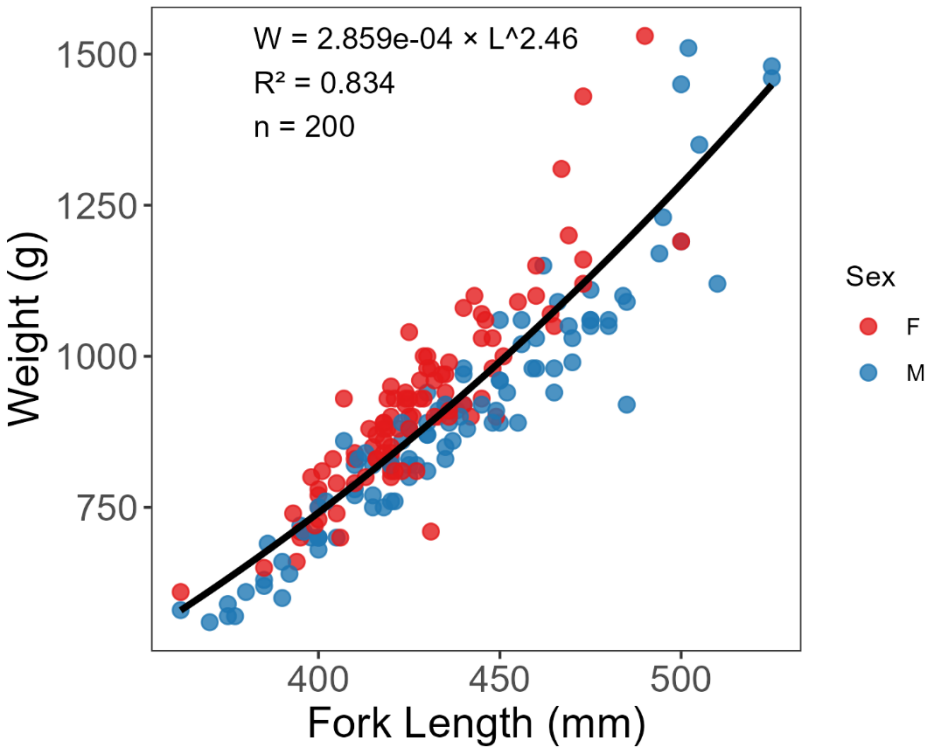


Figure 5. Length-weight relationship of Rainbow Trout captured at the Liawenee Canal Trap between 18 August and 9 October 2025.

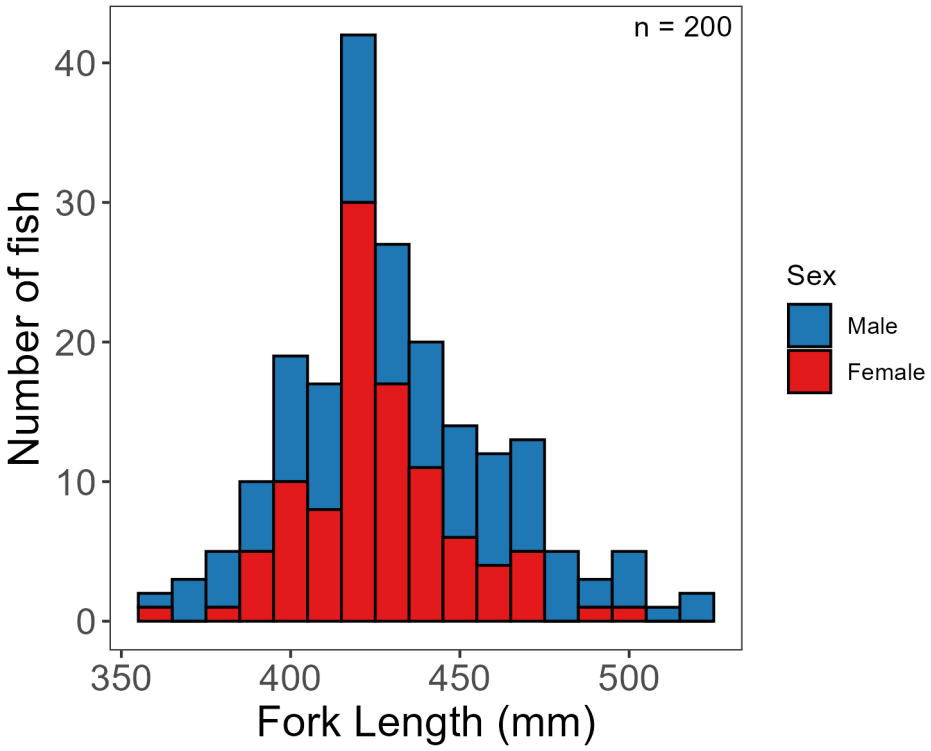


Figure 6. Length-frequency histogram of Rainbow Trout measured at the Liawenee Canal Trap between 18 August and 9 October 2025. Blue bars represent males and red bars represent females (n = 200).

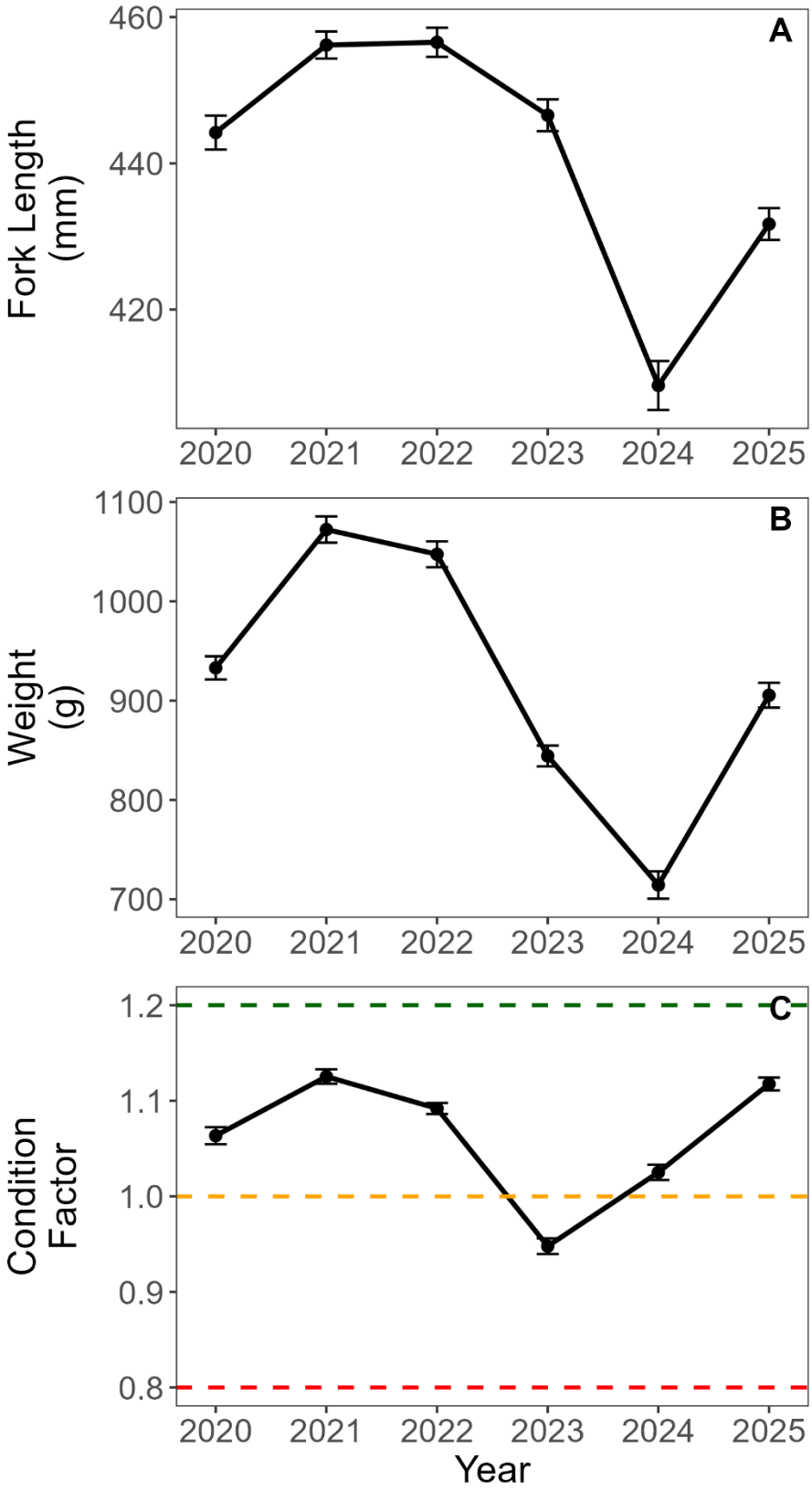


Figure 7. Mean fork length (A), weight (B), and condition factor (C) of Rainbow Trout sampled at the Liawenee Canal Trap from 2020 to 2025. Dashed horizontal lines in panel C indicate condition factor thresholds corresponding to poor (red), good (orange), and excellent (green) fish condition. Error bars represent ± 1 standard error of the mean.

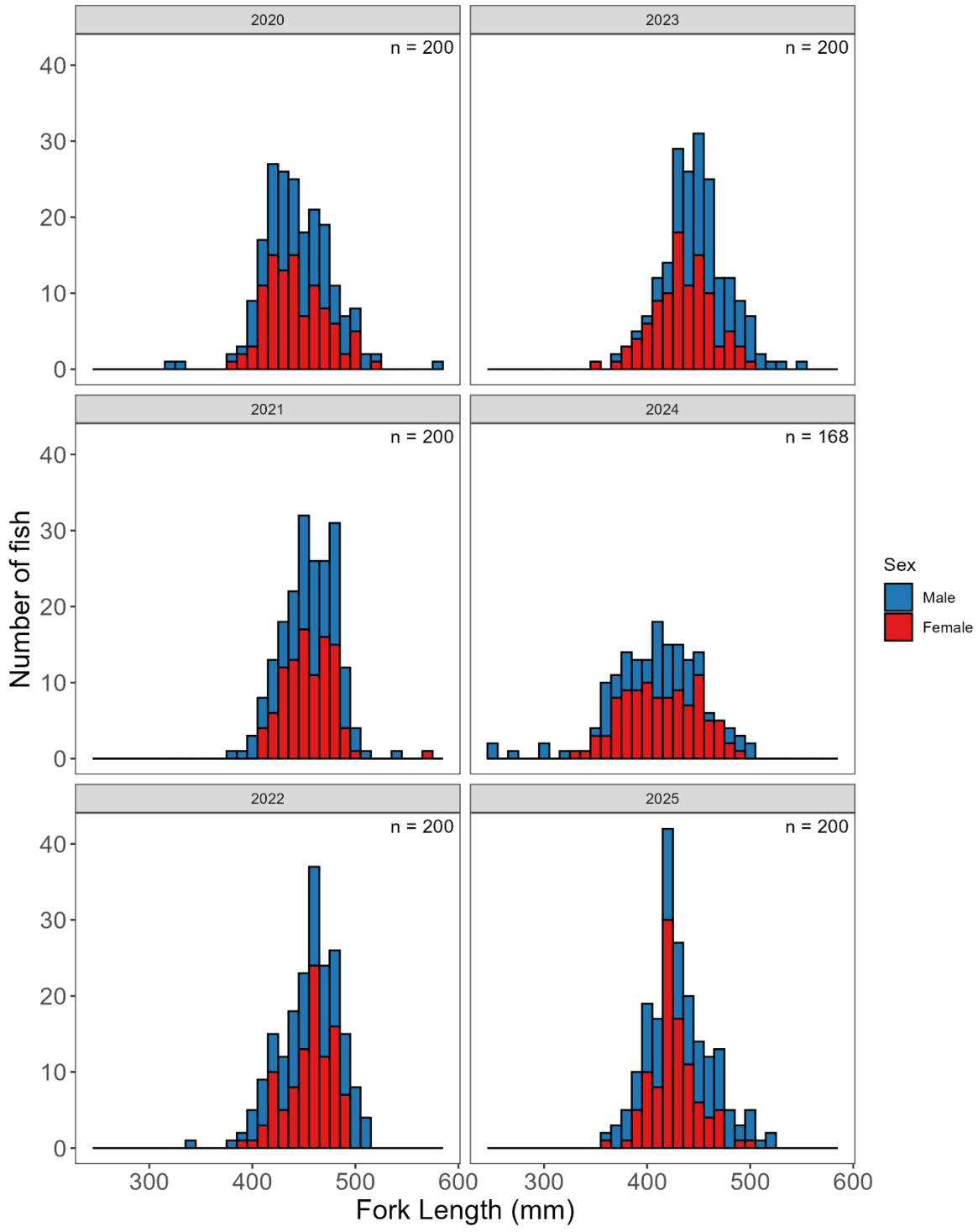


Figure 8. Interannual length-frequency distributions of Rainbow Trout sampled at the Liawenee Canal Trap between 2020 and 2025. Blue bars represent males and red bars represent females. Sample sizes (n) are shown for each year.

Fry trapping

The fry trap was operated on 10 and 11 December 2025, with trapping limited to two nights during the monitoring period. Approximately 11,200 fry were captured during this time. A subsample of 100 fry was weighed, yielding a mean individual weight of 0.32 g. The catch was comparable to numbers recorded during the peak fry emigration period in 2022, which also occurred within the first two weeks of December. Despite cooler spring temperatures, the timing of fry movement from the Zig Zag Channel was consistent with that observed in previous years, suggesting little variation in the seasonal timing of fry dispersal.

Of the fry captured during this period, approximately 1,200 were used to stock Little Blue Lagoon (Figure 9). The remainder were released back into the Liawenee Canal to continue their migration towards Yingina / Great Lake.

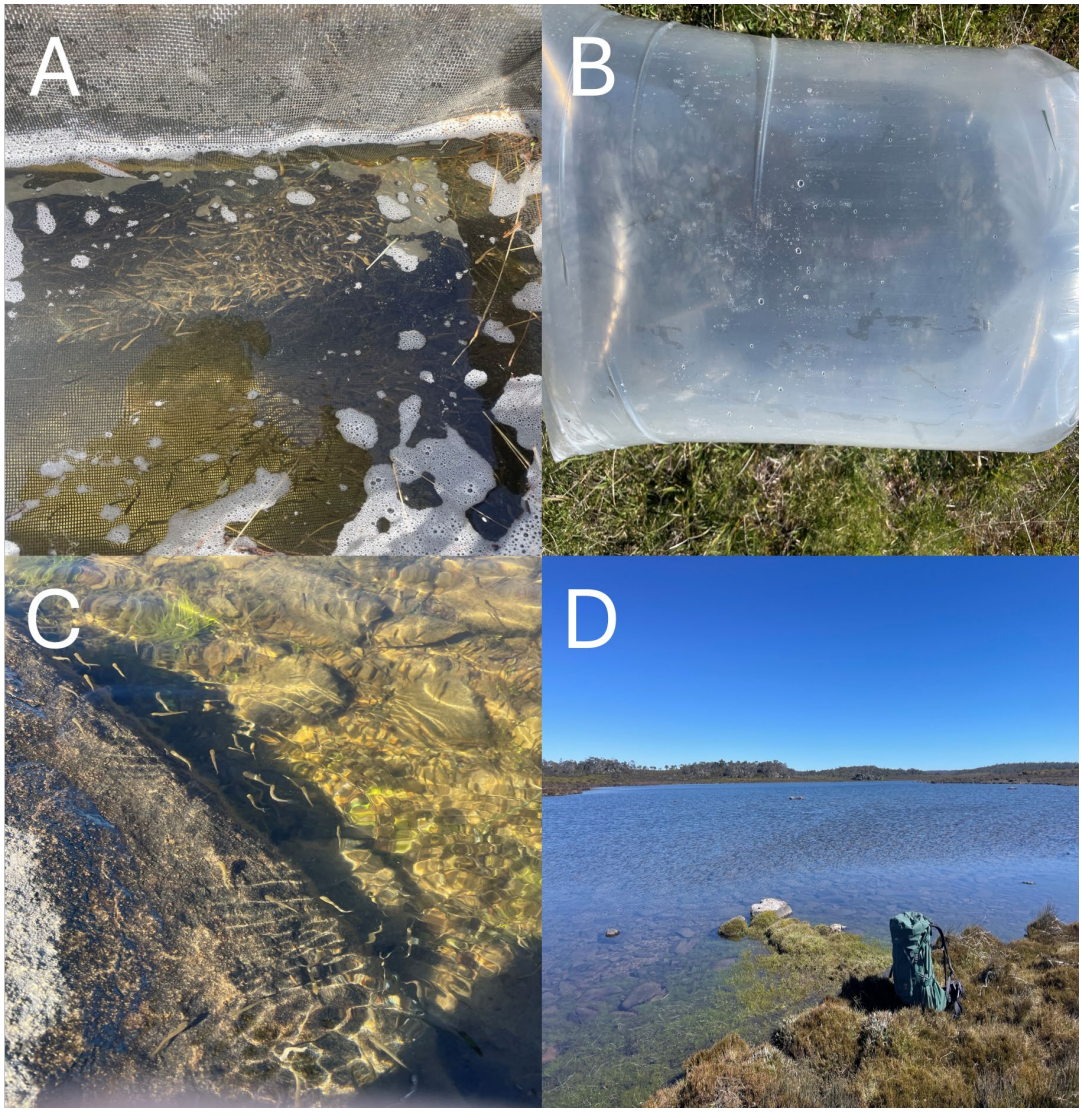


Figure 9. Stages of rainbow trout fry trapping, transport, and stocking at Little Blue Lagoon on 11 December 2025. (A) Rainbow trout fry captured in the fry trap. (B) Approximately 1,200 rainbow trout fry packaged for transport to Little Blue Lagoon. (C) Release of rainbow trout fry into Little Blue Lagoon. (D) Little Blue Lagoon, the stocking location.

Discussion

The 2025 rainbow trout spawning run at Liawenee Canal was higher than that recorded in 2024, increasing from 685 fish to 1,364 fish. Despite the improvement, the run remains well below the strong spawning runs between 2021 and 2023. Canal water flows were generally favourable throughout the spawning period, however, fish movement did not increase during September and October which are typically the peak months of migration. Cooler than average spring conditions may have contributed to the reduced migratory response.

The higher spawning numbers relative to 2024 likely reflects reduced cormorant predation which was considered a major contributor to last year's poor spawning run. Anecdotal observations indicated that cormorant abundance was substantially lower than in 2024, resulting in less predation pressure on spawning fish congregating in the shallow waters of the canal. However, cormorant numbers were still believed to above long-term average levels and likely continued to influence the spawning population to some extent. Overall, the apparent reduction in predation pressure is considered to have contributed to the partial recovery in spawning numbers observed during 2025.

The relatively low number of spawning fish available for allocation to the enhanced spawning channels is likely to have constrained recruitment during 2025. Although sufficient fish were available to stock some channel sections, female numbers were inadequate to fully populate both the Top Zigzags and Northern Zigzags. As a result, males allocated to these sections were later released back into Yingina / Great Lake without the opportunity to spawn within the protected channel environment. Consequently, spawning participation in the enhancement channels was lower than intended, reducing potential recruitment benefits compared with years when all channel sections were fully stocked and operational.

Length frequency data indicate that the size structure of the spawning population has continued to shift towards smaller fish. Whereas the strong spawning runs between 2021 to 2023 were dominated by fish measuring 450 to 470 mm, the 2024 and 2025 runs were characterised by modal length of 410 to 430 mm. Mean length and weight in 2025 were 432 mm and 905 g respectively, both lower than those typically associated with the larger spawning runs earlier in the decade. These trends indicate that the current spawning population is increasingly dominated by younger age classes, with relatively few older fish present. The abundance of younger fish likely reflects the strong recruitment produced during the exceptionally large spawning runs between 2021 and 2023.

The current age structure is encouraging and suggests the spawning population is well positioned for future growth. The dominance of younger cohorts indicates that many fish have not yet reached their peak reproductive potential and are likely to contribute more substantially to future spawning runs as they mature. The strong representation of these younger age classes, combined with the prospect of continued recruitment from subsequent cohorts, provides a solid foundation for further population expansion in coming years. Although annual spawning run size will continue to be influenced by environmental conditions and predation pressure, the underlying population structure appears robust and is indicative of a healthy and resilient fishery.

Recommendations

- Continue to monitor flows in Liawenee Canal throughout the rainbow trout spawning period and liaise with Hydro Tasmania to ensure flow requirements specified under the Memorandum of Understanding – Water Level Arrangement 2023-28 are maintained.
- Monitor canal flows during the fry hatching and dispersal period and, where appropriate, undertake fry collection in mid to late December to support future stocking programs.
- Conduct fry surveys in December 2025 at Mountain Creek and Lake Sorell, using electrofishing equipment to confirm the presence of rainbow trout fry and evaluate the success of previous stocking efforts.

Operational details

- The highest availability of rainbow trout fry for stocking typically occurs from the final week of November through to the end of the first week of December, when large numbers of newly emerged fry are present. Larger fry, having reached approximately 0.5 g in weight, are generally available for stocking from late December onwards, typically after 20 December.
- During transport for stocking, fry should be packed at a density of no more than 100 g of fry per bag, with approximately three litres of well-oxygenated water to maximise survival and minimise transport stress.
- Monitoring water levels in Lake Augusta remains an important management consideration, particularly during low rainfall years. Adequate water flows through Liawenee Canal are required to support rainbow trout migration during the spawning run and to maintain suitable conditions during fry hatching and dispersal. Under the Hydro Tasmania and Inland Fisheries Service Memorandum of Understanding – Water Level Arrangement 2023-28 a minimum flow of 0.5 cumec is provided in Liawenee Canal to support rainbow trout spawning, with compliance reviewed each season in consultation with Hydro Tasmania. While this minimum flow supports spawning and early recruitment processes, higher flows are generally preferred during the adult migration period as they enhance attraction of fish to the Liawenee fish trap and improve management efficiency. Accordingly, a target flow of at least 1.5 cumec should be maintained during the adult spawning run where practicable, followed by a minimum of 0.5 cumec during fry hatching and dispersal. Flow management should aim to balance releases from Lake Augusta with inflows while retaining water in the canal for as long as possible into summer.

Appendix

Table 2. Total allocation of adult spawning rainbow trout among the Liawenee spawning channels, 2025.

Location	Number	Female	Male
Bottom Zigzags	520	240	280
Middle Zigzags	283	101	182
Top Zigzags	99	0	99
Northern Zigzags	181	0	181
Top Long Channel	0	0	0
Bottom Long Channel	45	38	7
McShanes Dam	172	79	93
Returned to lake	64	52	12
Total	1,364	510	854

Table 3. Adult rainbow trout movements from the Liawenee trap by date and destination, 2025.

Destination	Number	Sex	Date
Bottom Zigzags	87	M	2025-08-14
Bottom Zigzags	8	F	2025-08-14
Den Dam	80	M	2025-08-14
Bottom Zigzags	93	M	2025-08-20
Bottom Zigzags	6	F	2025-08-20
Middle Zigzags	7	M	2025-08-20
Middle Zigzags	129	M	2025-08-28
Middle Zigzags	8	F	2025-08-28
Bottom Zigzags	100	M	2025-09-18
Bottom Zigzags	31	F	2025-09-18
Middle Zigzags	46	M	2025-09-18
Returned to lake	40	F	2025-09-18
Top Zigzags	99	M	2025-09-18
Bottom Zigzags	9	F	2025-09-23
Northern Zigzags	59	M	2025-09-23
Bottom Zigzags	57	F	2025-10-03
Northern Zigzags	57	M	2025-10-03
Bottom Long Channel	38	F	2025-10-04
Bottom Long Channel	7	M	2025-10-04
Bottom Zigzags	127	F	2025-10-09
Northern Zigzags	57	M	2025-10-09
Bottom Zigzags	2	F	2025-10-15
Middle Zigzags	20	F	2025-10-15
Northern Zigzags	8	M	2025-10-15
Middle Zigzags	73	F	2025-10-19
Returned to lake	12	M	2025-10-20
Returned to lake	12	F	2025-10-20
Den Dam	79	F	2025-10-30
Den Dam	13	M	2025-10-30

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