Inland Fisheries Service

Central Highlands Fish Trap Report
Brown Trout 2024

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Tasmanian Government

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Central Highlands Fish Trap Report – Brown Trout 2024

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Contents

Introduction

The Inland Fisheries Service (IFS) recognises the value of maintaining wild fisheries as they are best suited to our environment and provide a much sought-after angling experience.

The wild brown trout fisheries of Yingina / Great Lake, Arthurs Lake and Lake King William have traps to capture trout as they migrate upstream to spawn during late autumn and winter. Traps are used to monitor brown trout populations from these lakes. Some of the trapped fish are transferred to Assisted Fisheries (i.e. fisheries with no, or very little, natural recruitment) with the remainder counted through and allowed to spawn upstream. The management of adult spawning fish is guided by the *Tasmanian Inland Recreational Fishery Management Plan 2018-28*.

Trapping has occurred at Liawenee Canal, Yingina / Great Lake since the 1960's and has been the primary source of wild adult brown trout for stocking Assisted Fisheries. A trap at Sandbanks Creek, Yingina / Great Lake became operational in 2015. At Arthurs Lake, a trap has been operating on Hydro Creek since the 1970's. In 2014 traps were built on Scotch Bobs and Tumbledown creeks for monitoring of the brown trout at Arthurs Lake. The trap on the River Derwent above Lake King William, built in 2016, became operational in 2017, has been an important source of additional adult brown trout for stocking.

Several environmental variables impact on the effectiveness of the fish traps, and in turn the number of fish that are caught each season. 2024 was a particularly challenging year given the below average rainfall received across the season.

Brown trout spawning run 2024

Trapping of the 2024 brown trout spawning run commenced on 3 April 2024 and finished on 31 July 2024. A total of 8,454 adult brown trout were transferred to waters across the state, with 1,275 released upstream of the traps to spawn (Table 1).

Table 1. Wild adult brown trout caught in Central Highland fish traps in 2024

Trap	Number transferred	Number released above trap
Liawenee Canal – Yingina / Great Lake	2,056	0
Sandbanks Creek – Yingina / Great Lake	1,815	0
Tumbledown Creek – Arthurs Lake	2,370	373
Scotch Bobs Creek – Arthurs Lake	823	251
Hydro Creek – Arthurs Lake	1,336	639
River Derwent – Lake King William	54	12
Total	**8,454**	**1,275**

Table 2. Total number of wild adult brown trout caught in Central Highland fish traps in the past five years.

Trap	2024	2023	2022	2021	2020
Liawenee Canal - Yingina / Great Lake Est. 2006	2,056	7,590	4,746	10,240	9,510
Sandbanks Creek – Yingina / Great Lake Est. 2015	1,815	1,532	1,265	2,077	1,105
Tumbledown Creek – Arthurs Lake Est. 2014	2,743	3,173	10,676	8,850	6,243
Scotch Bobs Creek – Arthurs Lake Est. 2014	1,074	996	2,223	3,438	1,703
Hydro Creek – Arthurs Lake Est. 2017	1,975	4,049	2,850	2,651	2,135
Derwent River - Lake King William Est. 2016	66	831	2,787	6,265	0
Total	**9,729**	**18,171**	**24,547**	**33,521**	**20,696**

Liawenee Canal – Yingina / Great Lake

The trap was opened 3 April 2024 and closed 8 July 2024. Low water levels in Lake Augusta and unseasonal dry weather saw a limited flow in the Liawenee Canal until 24 May onwards, providing good spawning opportunity in the canal below the trap. This meant the fish trap was not effective when most fish were looking to spawn (Figure 1a and 1b). The IFS liaised with Hydro Tasmania to ensure that water was not released from Lake Augusta into the Liawenee canal before the flow could be sustained on an ongoing basis. This prevented small pulses of water with each rain event which would attract groups of spawning into the canal. Without the continuation of higher canal flows these trout would not make it to the fish trap. Unfortunately, this year the significant rains didn't arrive until early in June, after the typical peak of the brown trout spawning run. As a result, the trap captured the lowest number of fish on record, a total of 2,056 brown trout.

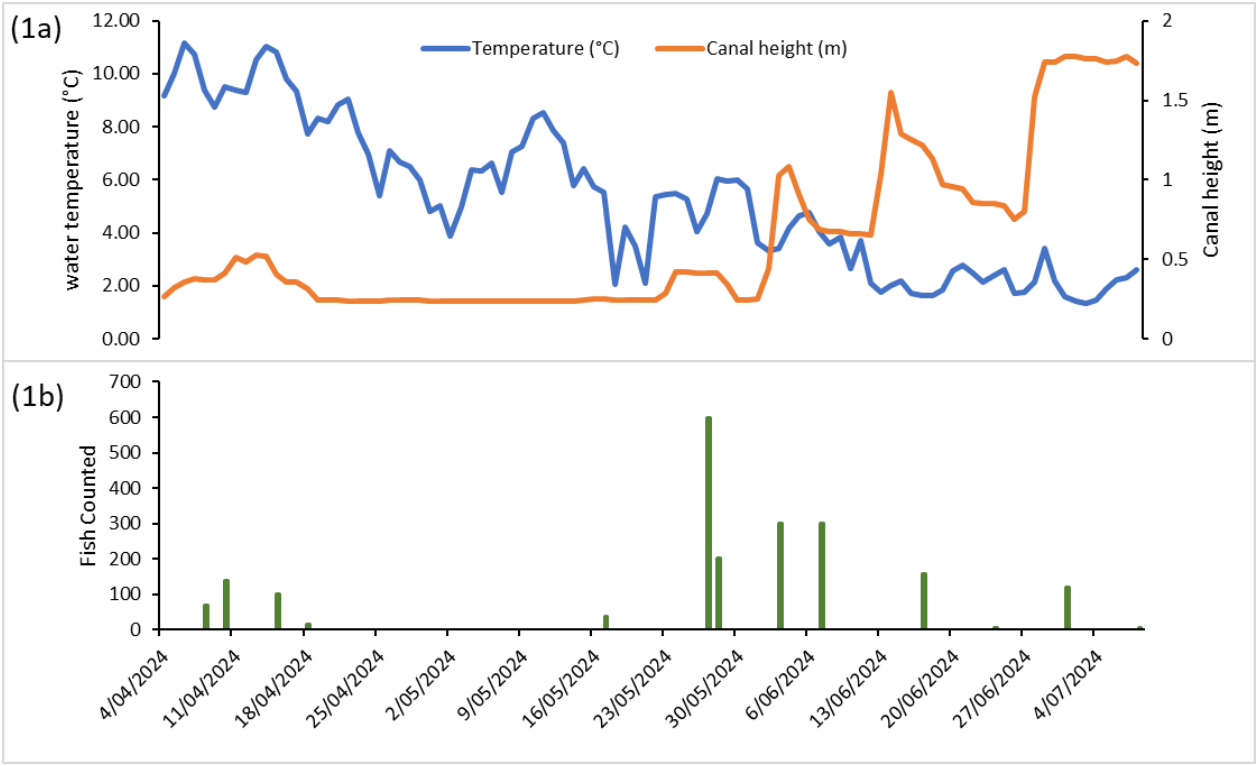

Figure 1a. Water temperature (measured within the fish trap) and water height (measured from Hydro Tasmania's gauging station) for Liawenee Canal fish trap, April to July 2024.

Figure 1b. Number of brown trout captured in the trap (counted when they are removed from the trap), April to July 2024.

Sandbanks Creek – Yingina / Great Lake

The Sandbanks Creek trap was opened 3 April 2024 and closed 11 July 2024. Throughout this period the trap was shut from 8 April until 30 May due to unseasonally dry conditions. During this time Sandbanks Creek was very low and it is unlikely that many fish spawned in the river below the trap due to the lack of water. When flows increased at the end of May nearly 1,500 fish moved into the trap within the first week (Figure 2). Fish steadily entered the trap until the end of June when the water temperature dropped, and the run slowed (Figure 2). The trap caught 1,815 brown trout in 2024. This total is slightly higher than the 5-year average catch from this trap (1,559).

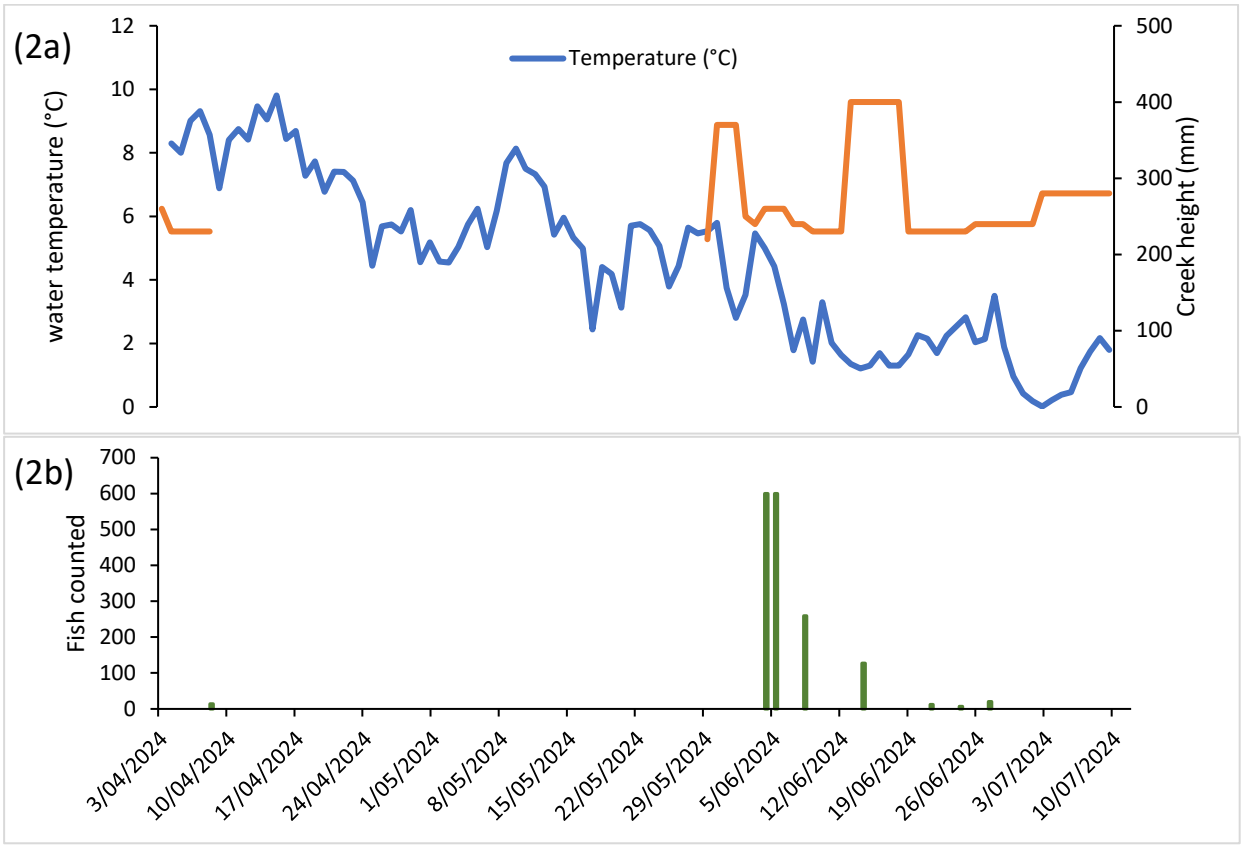

Figure 2a. Water temperature and water height (measured from within the fish trap) for Sandbanks Creek fish trap, April to July 2024.

Figure 2b. Number of brown trout captured (counted when they are removed from the trap), April to July 2024.

Hydro Creek – Arthurs Lake

The Hydro Creek trap was opened on 30 May 2024 and closed on 31 July 2024. Due to low rainfall, Hydro Creek was not flowing during May which is usually the first month of the Arthurs Lake spawning run. When the rain arrived, fish consistently moved into the trap with peaks in the run coinciding with rain events (Figure 3). The trap caught 1,975 brown trout. This was the lowest number of fish caught from this trap in the last five years.

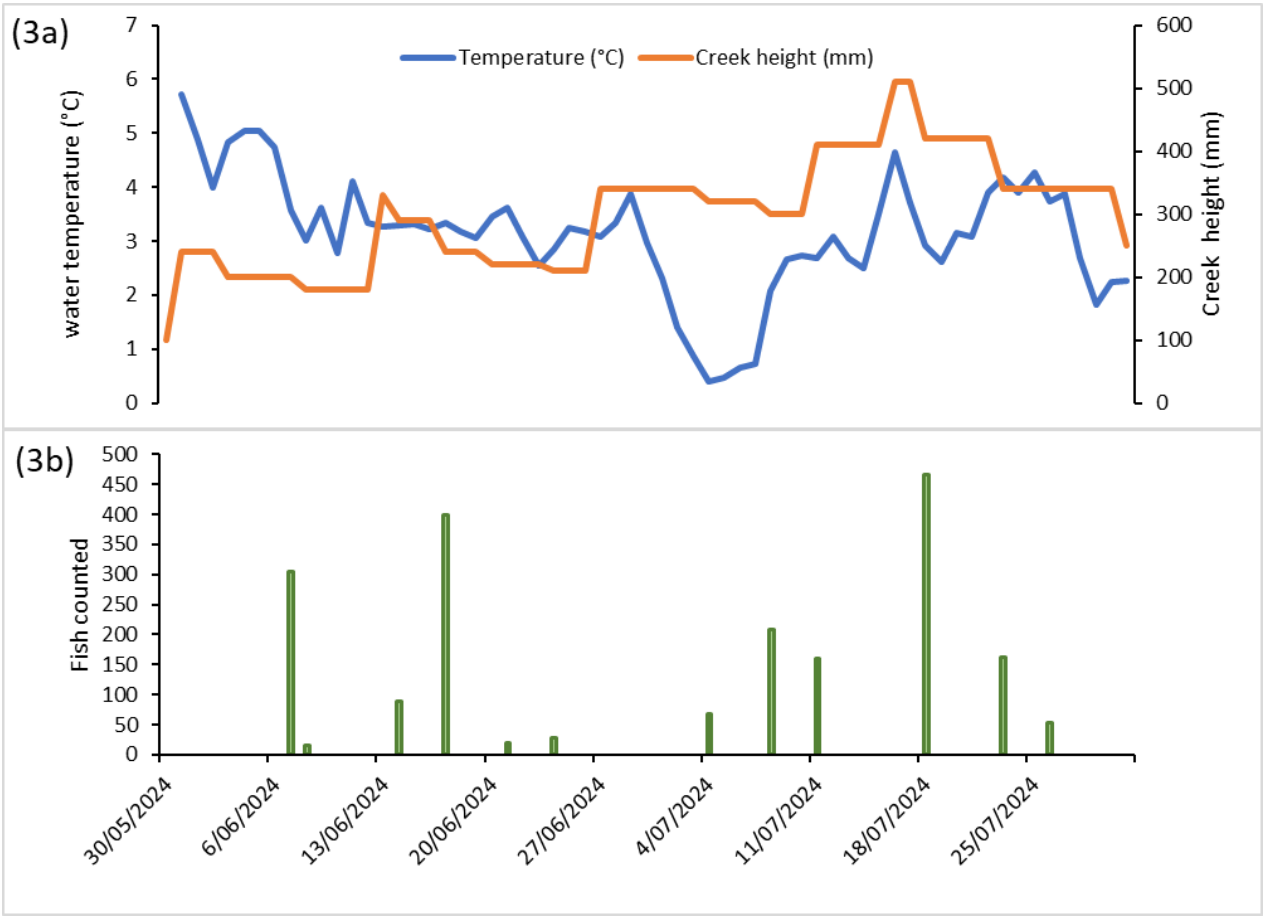

Figure 3a. Water temperature and water height (measured from within the trap) for Hydro Creek fish trap, May to July 2024.

Figure 3b. Number of brown trout captured (counted when they are removed from the trap) for Hydro Creek fish trap, May to July 2024.

Scotch Bobs Creek – Arthurs Lake

The Scotch Bobs Creek trap was opened on 30 May 2024 and closed on 31 July 2024. During the run there were two periods where the trap caught over 300 fish, on 7 June and on 4 July (Figure 4). The trap caught 1,074 brown trout in total. This catch was the second lowest number of fish caught in the last five years.

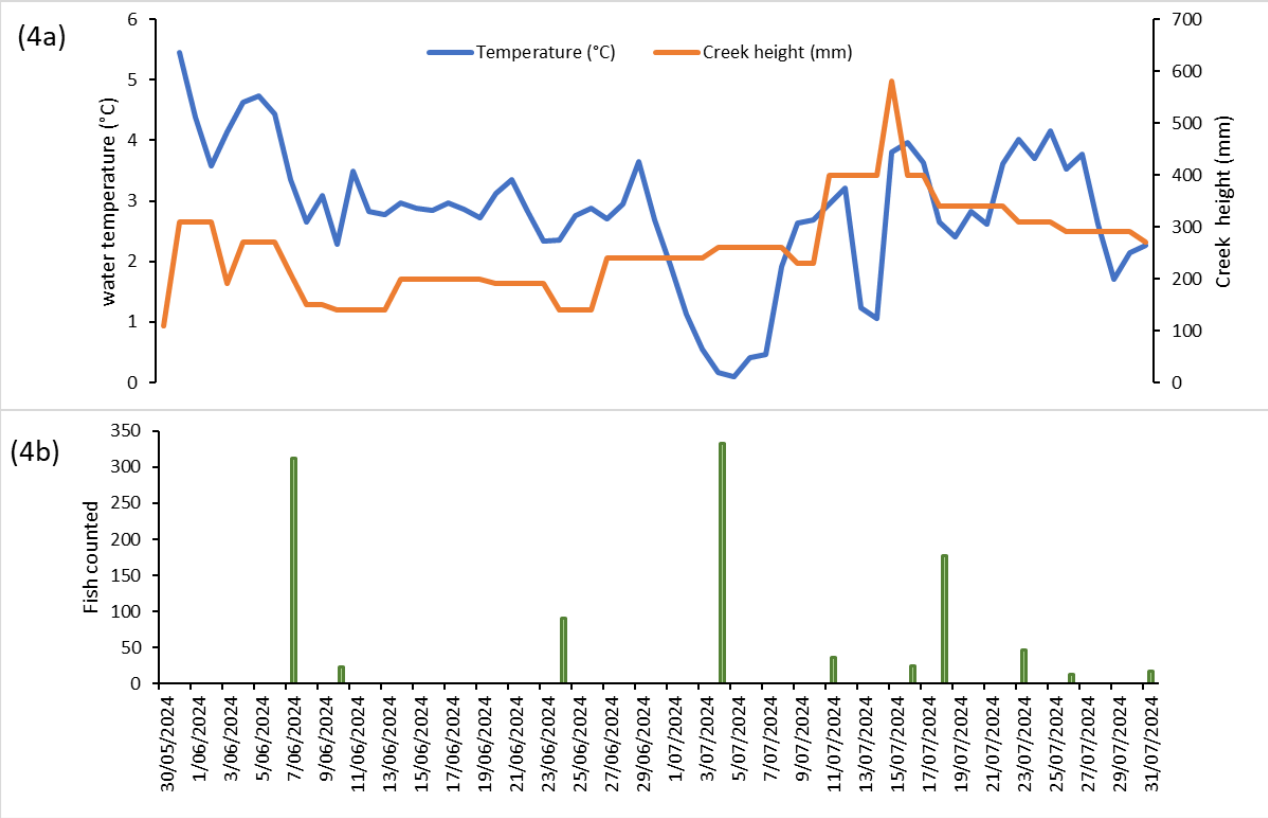

Figure 4a. Water temperature and water height (measured from within the trap) for Scotch Bobs Creek fish trap, May to July 2024.

Figure 4b. Number of brown trout captured (counted when they are removed from the trap) for Tumbledown Creek fish trap, May to July 2024.

Tumbledown Creek – Arthurs Lake

The Tumbledown Creek trap was opened 30 May 2024 and closed 31 July 2024. The peak of the run occurred on 1 July with 631 fish captured (Figure 5). The trap caught 2,743 brown trout. This was the lowest number of fish caught in the last five years.

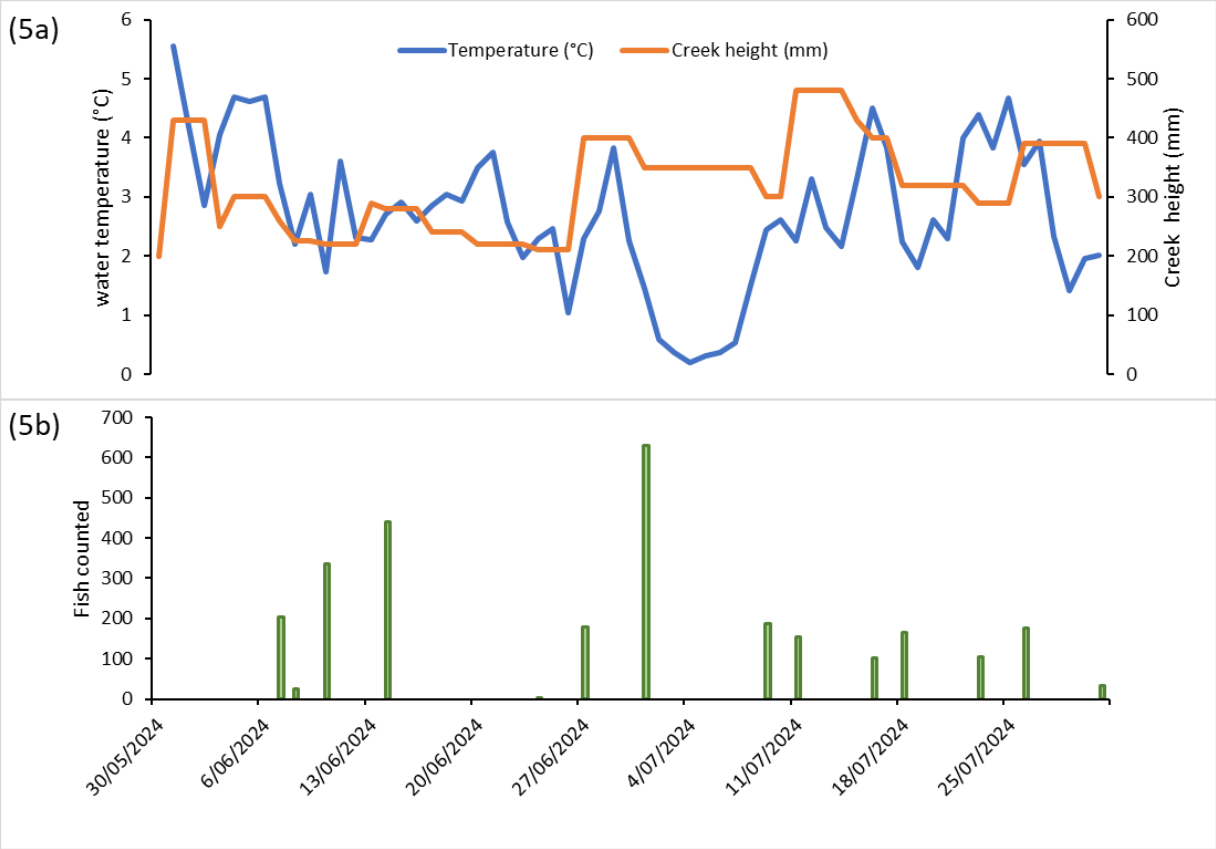

Figure 5a. Water temperature and water height (measured from within the trap) for Tumbledown Creek fish trap, May to July 2024.

Figure 5b. Number of brown trout captured (counted when they are removed from the trap), May to July 2024.

River Derwent – Lake King William

The River Derwent trap was not commissioned during May because the lake level was 11 m below full supply (BFS) and falling. This level creates a long stretch of river between the trap and the lake. These conditions provide ample spawning opportunity below the trap, reducing effective trapping.

The trap was opened on 20 July 2024 and closed on 8 August 2024. During this period the trap was between 13 and 11 m BFS (Figure 11). On 26 July, 54 brown trout were captured and removed from the trap. On 8 August 2024 a total of 12 fish were counted through the trap before its closure due to low catch.

Shortly after the trap was shut, a large rain event inundated the trap. The trap caught a total of 66 brown trout for the year.

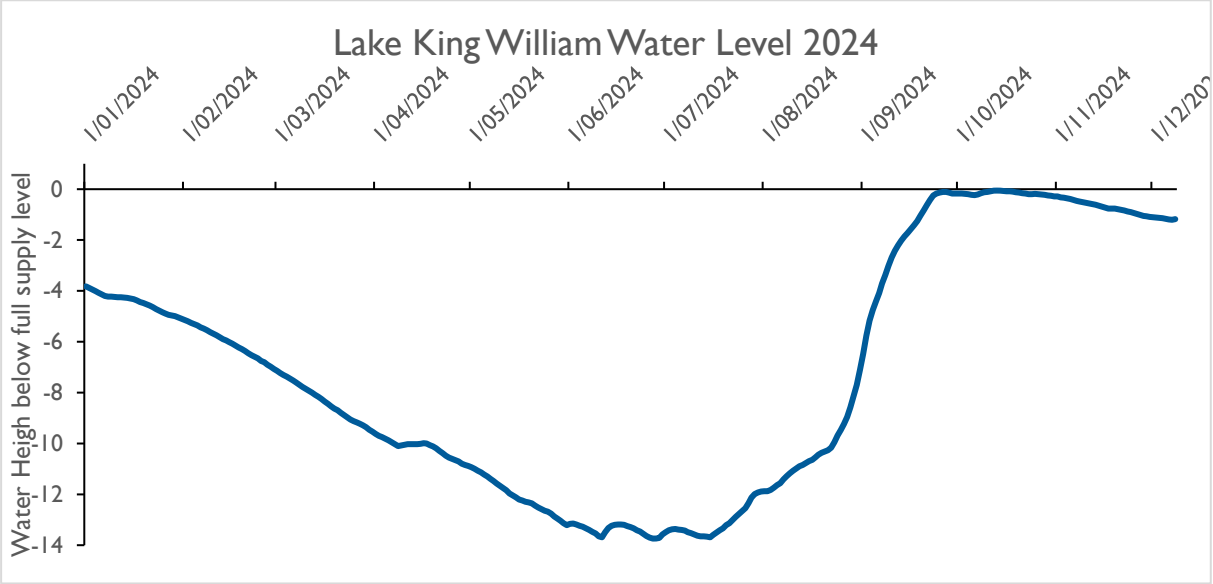

Figure 11. Lake King William water level for 2024 measured in meters below full supply.

Weigh and measure – brown trout

One hundred males and 100 females were weighed and measured from both the Liawenee Canal trap and Tumbledown Creek trap. Usually, a sample is also taken from the River Derwent trap, however, due to a low catch, it was not completed.

Spawning fish sizes 2024

Table 3. Summary of weigh and measure sample results for each trap in 2024.

Trap	Weight Range (g)	Average Weight (g)	Length Range (mm)	Average Length (mm)
Liawenee Canal – Yingina / Great Lake	140 - 1,050	638	232 - 480	381
Tumbledown Creek – Arthurs Lake	150 – 1,620	463	255 - 554	357
Derwent River – Lake King William	-	-	-	-

Liawenee Canal – Yingina / Great Lake weigh and measure results

Table 4. Summary of weigh and measure sample at Liawenee Canal in 2024.

Grouping	Measurement	Mean	Minimum	Maximum
All fish n=200	Length (mm)	381	232	480
	Weight (g)	638	140	1050
	Condition factor	1.12	0.83	1.32
Male n=100	Length (mm)	383	232	480
	Weight (g)	631	140	1050
	Condition factor	1.08	0.83	1.30
Female n=100	Length (mm)	380	297	439
	Weight (g)	645	270	970
	Condition factor	1.17	0.92	1.32

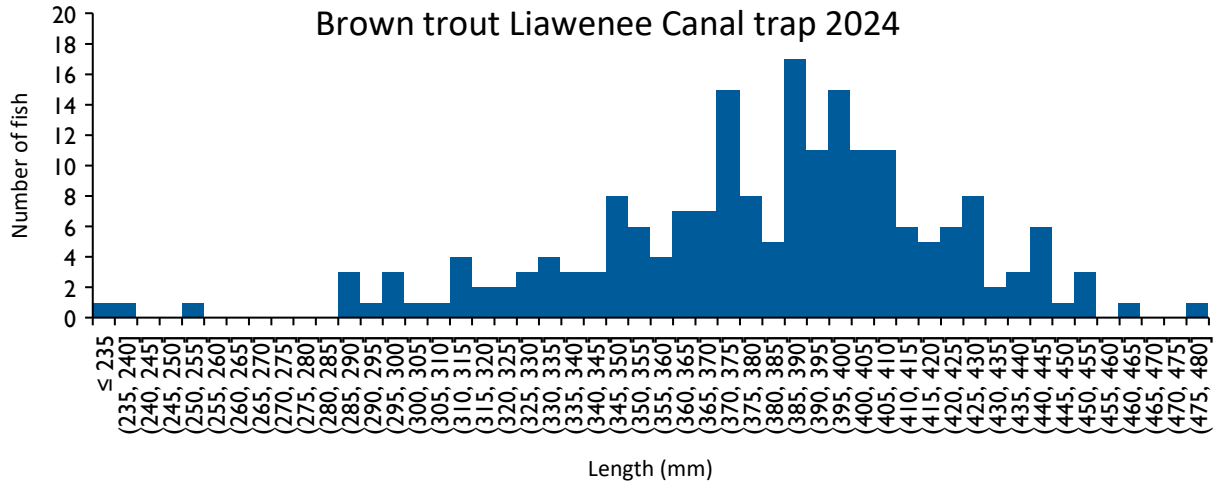

Figure 12. Length frequency histogram of fish sampled at Liawenee Canal in 2024.

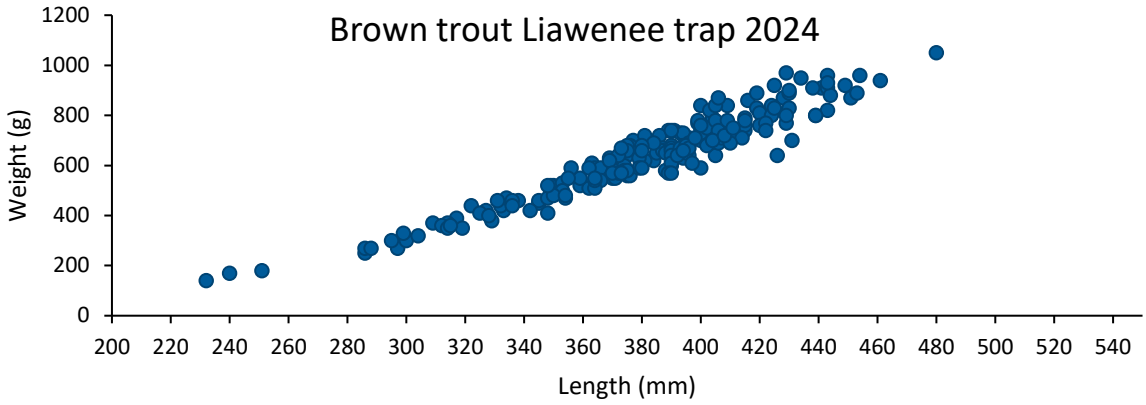

Figure 13. Length vs weight of fish sampled at Liawenee Canal in 2024.

Tumbledown Creek – Arthurs Lake weigh and measure results

Table 5. Summary of weigh and measure sample at Tumbledown Creek 2024.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n=200	Length (mm)	357	255	554
	Weight (g)	463	150	1620
	Condition factor	0.97	0.72	1.25
Male n=100	Length (mm)	372	255	554
	Weight (g)	529	170	1620
	Condition factor	0.96	0.75	1.25
Female n=100	Length (mm)	342	255	450
	Weight (g)	397	150	860
	Condition factor	0.98	0.72	1.22

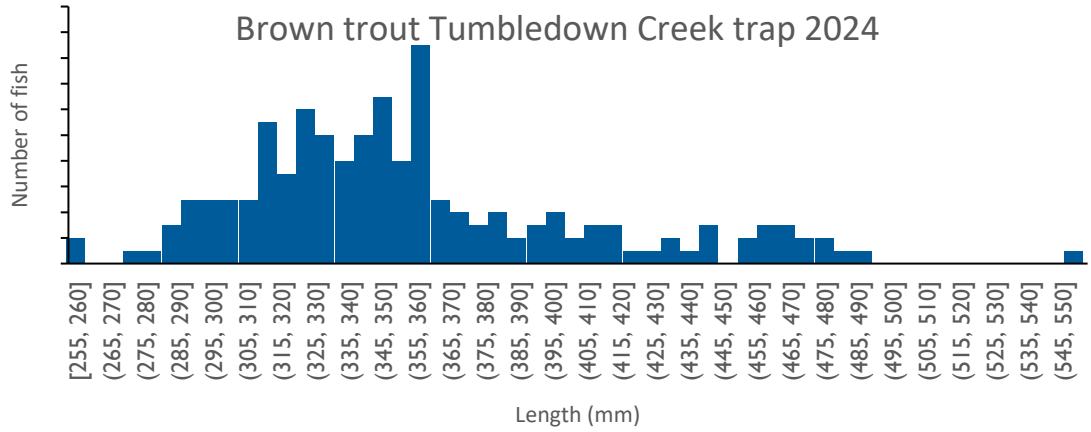

Figure 14. Length frequency histogram of fish sample at Tumbledown Creek in 2024.

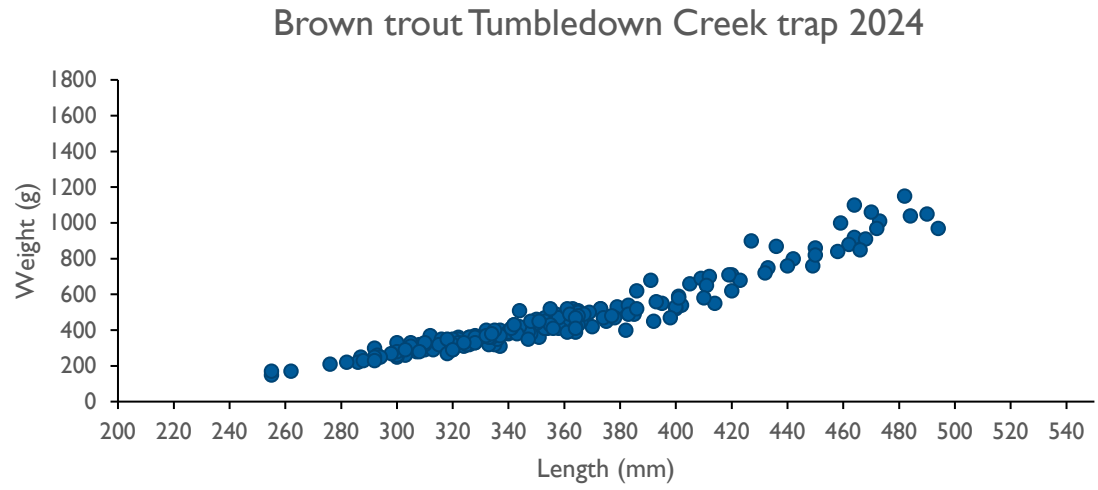

Figure 15. Length vs weight of fish sample at Tumbledown Creek in 2024.

Ova collection and hatchery production

One hundred and fifty thousand ova were stripped from brown trout trapped at Liawenee Canal, Yingina / Great Lake. These were incubated and reared at the New Norfolk hatchery. A total of 75,000 were sold to the South Australian Fly Fishers Association. The rest were used for the stocking of public and private waters in Tasmania with fry.

Trap history

A weigh and measure of spawning fish has been conducted in Yingina / Great Lake since 1962 and Arthurs Lake 1977. Figures 16 and 17 highlight the trends in length and weight of spawning from these two lakes.

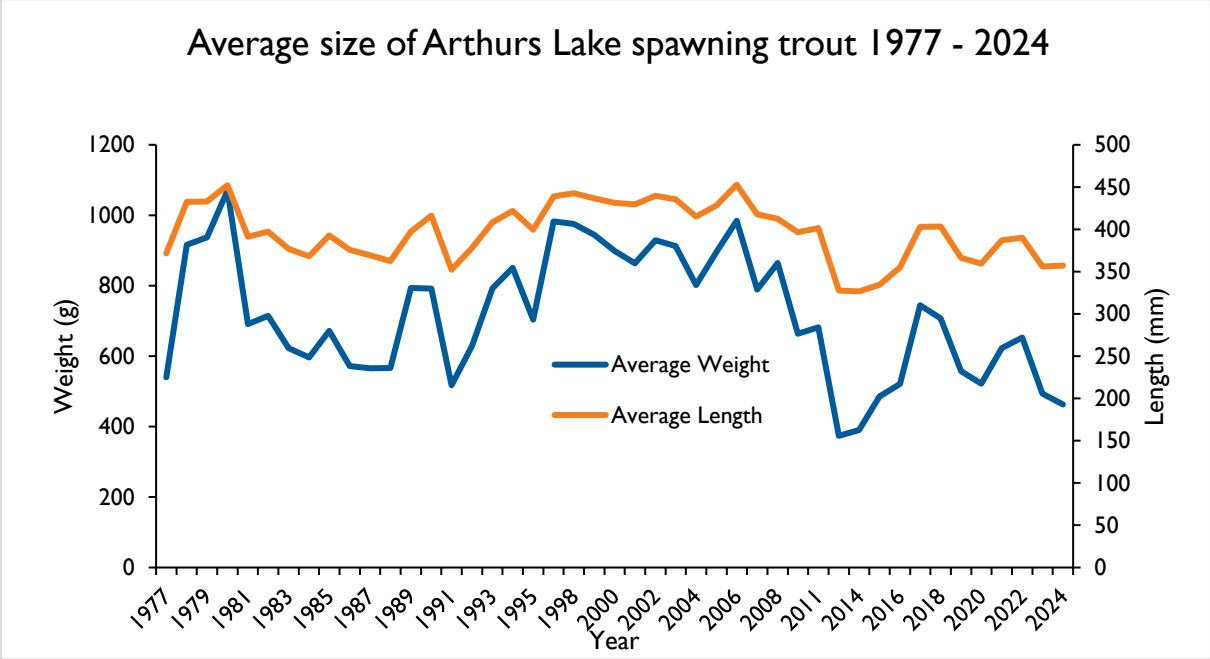

Figure 16. Average length and weight of spawning brown trout from Hydro Creek trap at Arthurs Lake since 1977. Note the data includes the three Arthurs Lakes traps combined from 2020 – 2023 and Tumbledown trap from 2024.

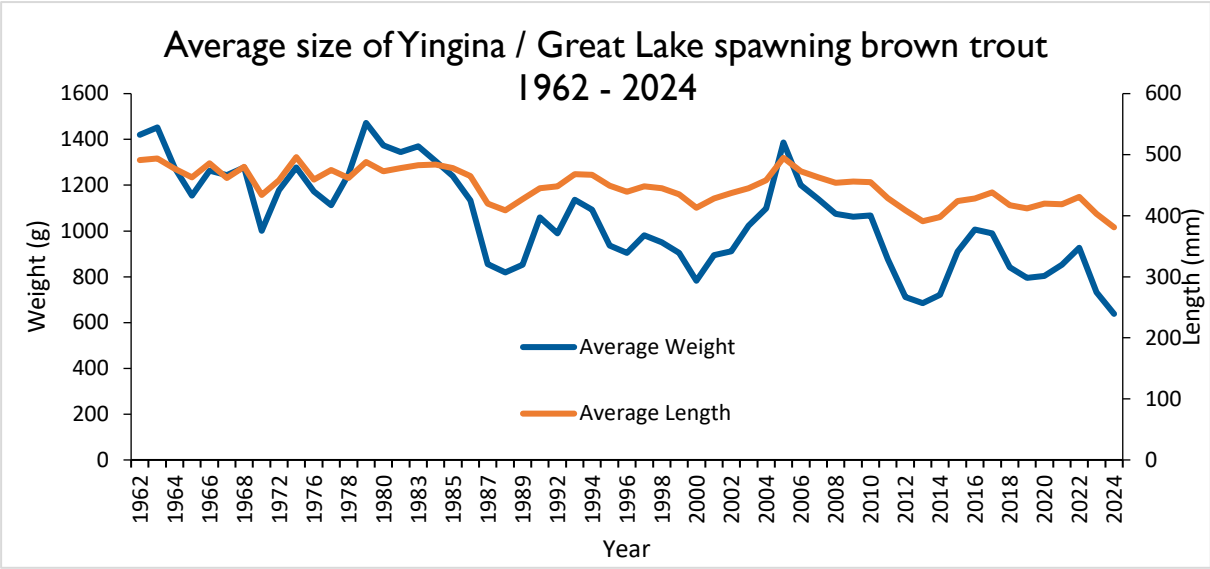

Figure 17. Average length and weight of spawning brown trout from the Liawenee Canal trap at Great Lake since 1962.

Conclusion / Discussion

Low rainfalls in April and May resulted in water flows significantly lower than usual for this period. The reduced water flow coincided with the usual peak of the spawning run in Yingina / Great Lake. As a result, the Liawenee trap recorded its lowest total since reliable records began in 2014. The total of 2,056 brown trout is significantly less than the ten-year average of 9,582 fish.

Because the water flows were extremely low at Sandbanks Creek, it prevented fish from accessing the creek to spawn until the rain came at the end of May. The rain resulted in many fish that had been waiting to spawn entering the Sandbanks trap. This year's total of 1,815 is slightly higher than the five year average catch from this trap (1,559).

Total catches were reduced across all three Arthurs Lake traps when compared to historical averages. This is likely due to the run being delayed by a month due to low water flows in the spawning creeks. It is likely that many fish spawned in the rivers below the fish traps while river levels were low.

A combination of low lake levels and low flows provided spawning opportunities downstream of the River Derwent trap above Lake King William, which reduced its catch.

Fish size was down across all traps. This is likely due to of successful recruitment during the 2020 – 2023 La Niña conditions, which are wet years where spawning creeks have good continual flow. The influx of large cohorts of young fish results in a decrease in the average size of fish in the spawning runs.

The size of fish at Liawenee have reduced in size over the last three years and the fish are now the smallest that have been recorded since records began in 1962.

At Arthurs Lake the average size has also reduced to the third lowest since records began in 1977. The size has decreased over the past three years in line with the drop in size of the Yi8ngina / Great Lake fish. The average size of the fish has only been smaller in Arthurs Lake during 2013 and 2014.

As with 2014, 2024 is the second winter after three successive La Niña years. Many of the fish, particularly females, were part of the spawning population for the first time in 2024. These fish were likely to have originated from the 2020 and 2021 spawning seasons, the first two of three wet winters.

Recommendations

- Continue to liaise with Hydro Tasmania to ensure that water releases from Lake Augusta after 1 April can be maintained for the duration of the brown trout spawning run.
- Collect fertilised ova at the first available opportunity. This enables brown trout fry to be stocked out in Spring.

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