

# Inland Fisheries Service

## *Central Highlands Fish Trap Report – Brown Trout 2021*



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## Central Highlands Fish Trap Report – Brown Trout 2021

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<b>Prepared by:</b>	J. Wisniewski, Fisheries Field Officer
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<b>Approved by:</b>	Tim Farrell, Senior Fisheries Management Officer

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## Central Highlands Fish Trap Report – Brown Trout 2021

### 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 with the remainder counted through to 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.

### Brown trout spawning run 2021

Trapping of the 2021 brown trout spawning run commenced on 29 March and finished on 30 July (see table 1). A total of 18,958 adult brown trout were transferred to waters across the state, a further 14,563 were released upstream of the traps to spawn.

Table 1. Wild adult brown trout caught in Central Highland fish traps in 2021.

Trap	Number transferred	Number released above trap
Liawenee Canal – yingina / Great Lake	10,240	0
Sandbanks Creek – yingina / Great Lake	2,077	0
Tumbledown Creek – Arthurs Lake	376	8,474
Scotch Bobs Creek – Arthurs Lake	0	3,438
Hydro Creek – Arthurs Lake	0	2,651
River Derwent – Lake King William	6,265	0
Total	18,958	14,563

Table 2. Total number of wild adult brown trout caught in Central Highland fish traps since 2014.

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Trap	2021	2020	2019	2018	2017	2016	2015	2014
Liawenee Canal -yingina / Great Lake Est. 2006	10,240	9,510	11,747	13,619	11,509	6,163	11,080	9,615
Sandbanks Creek – yingina / Great Lake Est. 2015	2,077	1,105	1,718	1,671	2,060	3,812	9,235	-
Tumbledown Creek – Arthurs Lake Est. 2014	8,850	6,243	3,098	4,128	7,060	485	4,015	14,580
Scotch Bobs Creek – Arthurs Lake Est. 2014	3,438	1,703	798	753	728	275	1,095	2,370
Hydro Creek – Arthurs Lake Est. 2017	2,651	2,135	826	1,280	0	0	235	1,680
Derwent River - Lake King William Est. 2016	6,265	0	10,663	9,102	3,128	0	-	-
TOTAL	33,521	20,696	17,115	30,553	24,485	10,735	26,190	28,245

### Liawenee Canal – yingina / Great Lake

The trap was opened from 31 March and closed on 30 July. High water levels in Lake Augusta, due to maintenance work in Liawenee Canal, saw a large release water at the end of March. This triggered the early run of brown trout. The number of fish trapped declined in late June. The trap caught 10,240 brown trout between 31 March and 7 July 2021. The trap was used to hold fish for the Tasmanian Tagged Trout Promotion until 30 July.

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### Liawenee Canal spawning run 2021

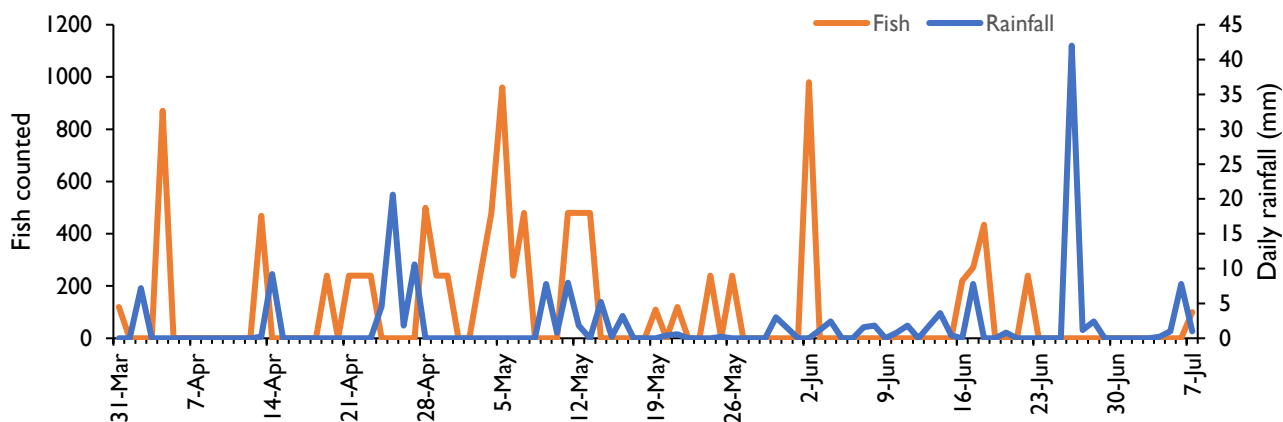


Figure 1. Number of brown trout captured in the trap (counted when they are removed from the trap) and daily rainfall totals measured at the Liawenee weather station.

### Sandbanks Creek – yingina / Great Lake

The Sandbanks Creek trap was opened on 14 May and closed 8 July. Fish steadily entered the trap until the middle of June when the run slowed. The trap caught 2,077 brown trout.

Upgrades were made to the Sandbanks Creek trap over summer 2020-21. These included raising the height of the weir by 100 mm using steel angle, earthworks to the trap entrance and below the weir. Raising the weir enables more water to pass through the trap at low flows.

### Sandbanks Creek spawning run 2021

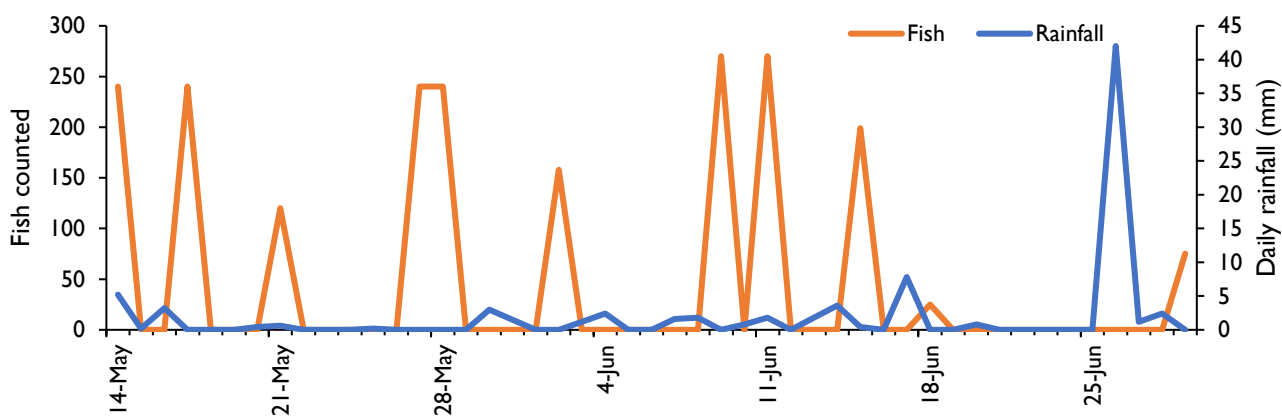


Figure 2. Number of brown trout captured in the trap (counted when they are removed from the trap) and daily rainfall totals measured at the Poatina weather station in 2021.

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### Hydro Creek – Arthurs Lake

The Hydro Creek trap was opened on 19 May and closed on 27 July. A water height gauge was installed in the creek to better understand the relationship between flow and spawning fish number (see Figure 4).

The run peaked later than Scotch Bobs and Tumbledown creeks with 590 fish being trapped on 14 June. A water height of 300 mm or greater, saw more fish move into the trap. The trap caught a total of 2,651 brown trout.

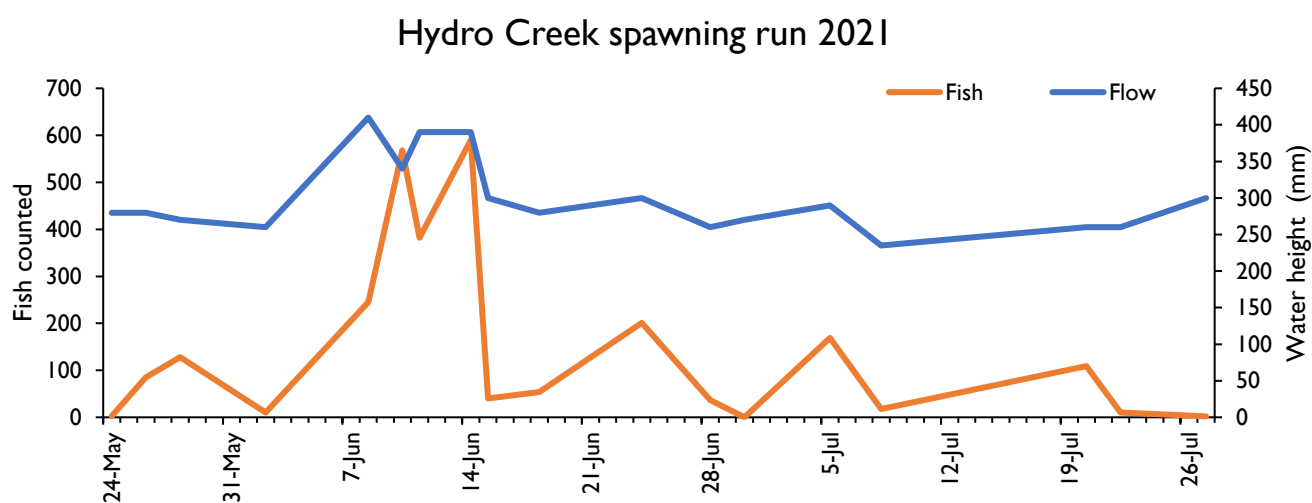


Figure 3. Number of brown trout captured in the trap (counted when they are removed from the trap) and water height measured in Hydro Creek in 2021.

### Scotch Bobs Creek – Arthurs Lake

The Scotch Bobs Creek trap was opened on 19 May and closed on 27 July. A water height gauge was installed in the creek to better understand the relationship between flow and spawning fish number (see Figure 5).

The run peaked on 14 June with 631 fish caught. The trap caught 3,438 brown trout. The trap flooded overnight on 8 June with an estimate of 800 fish passing through uncounted.

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### Scotch Bobs Creek spawning run 2021

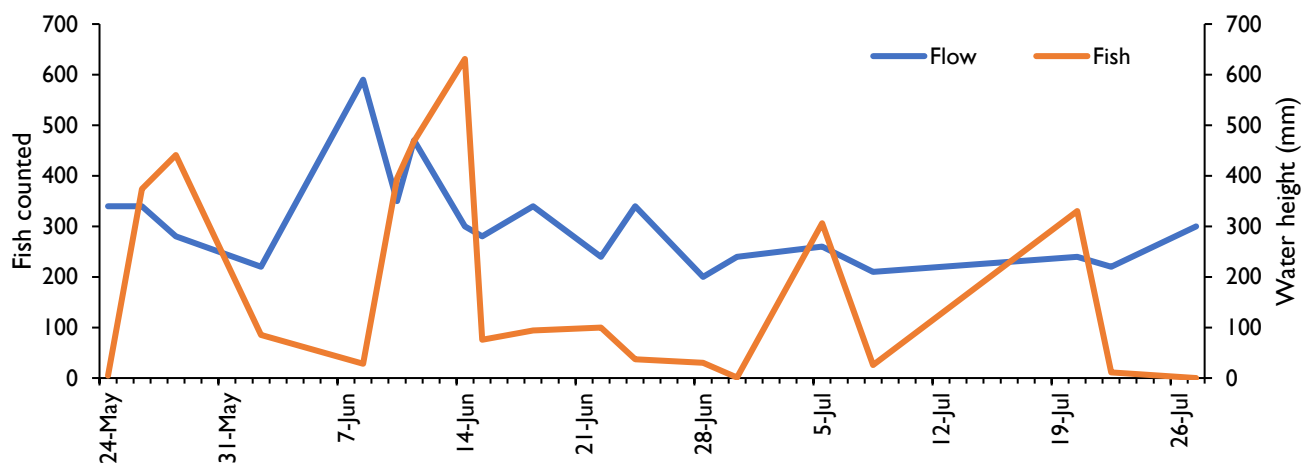


Figure 4. Number of brown trout captured in the trap (counted when they are removed from the trap) and water height measured in Scotch Bobs Creek in 2021.

### Tumbledown Creek – Arthurs Lake

The Tumbledown Creek trap was opened from 19 May and closed on 27 July. The trap caught 8,850 brown trout. The peak of the run occurred on 10 June with 1,831 fish captured.

### Tumbledown Creek spawning run 2021

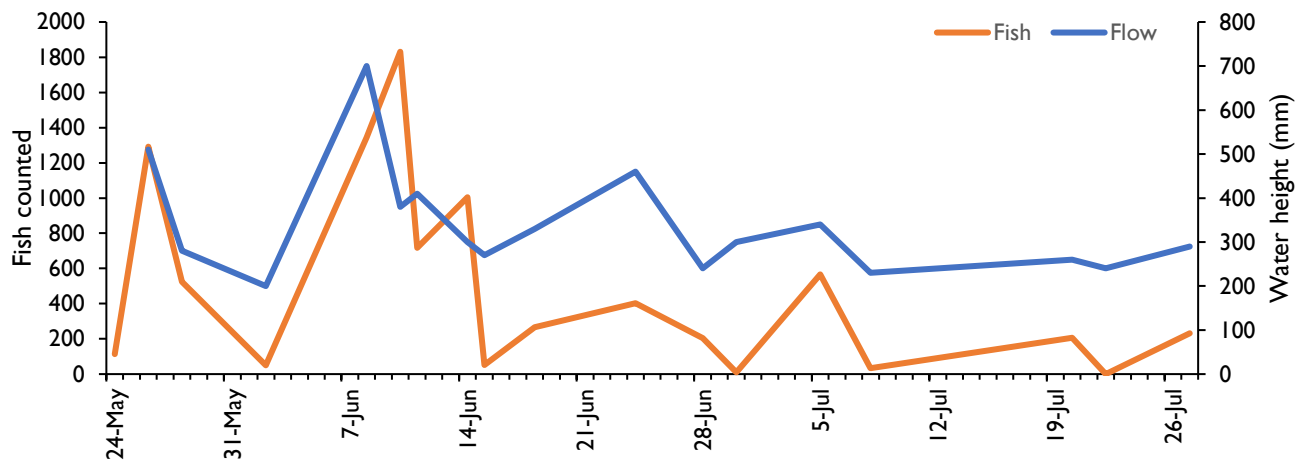


Figure 5. Number of brown trout captured in the trap (counted when they are removed from the trap) and water height measured in Tumbledown Creek in 2021.

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### River Derwent – Lake King William

The River Derwent trap was opened on 6 April and closed on 28 July. Lake King William was around nine metres below full supply for the entire brown trout spawning run. The trap caught 6,265 brown trout. The peak of the run occurred in mid-June with 2,290 fish caught over a seven-day period.

### River Derwent spawning run 2021

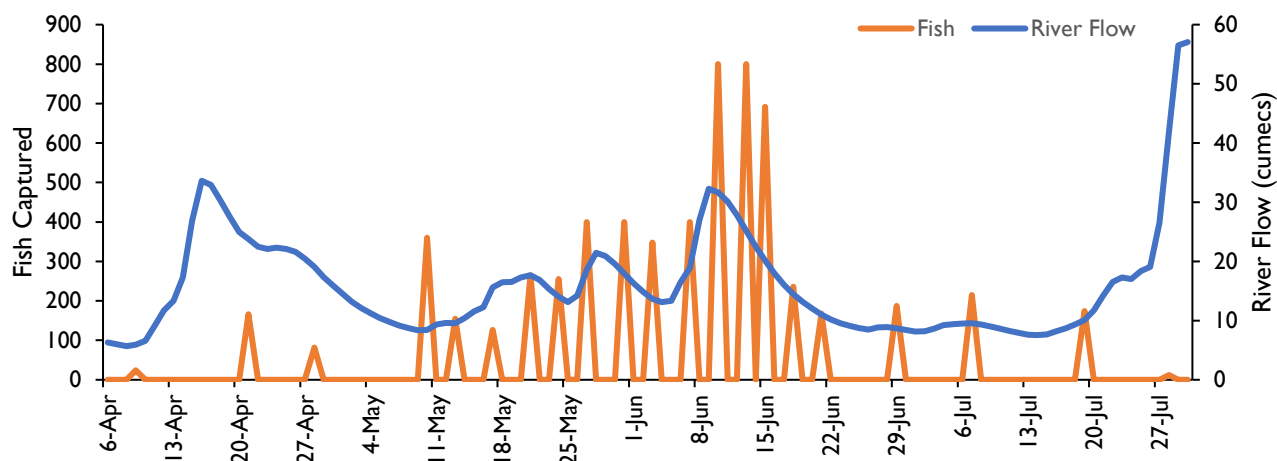


Figure 6. Number of brown trout captured in the trap (counted when they are removed from the trap) compared to river flows measured from River Derwent in 2021.

### Weigh and measure – brown trout

At least 100 males and 100 females were weighed and measured from each trap. Often, the weigh and measure took place over several days to achieve the sample of 200 fish.



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### Spawning fish sizes 2021

Table 3. Overview of weigh and measure results from each trap in 2021.

Trap	Weight Range	Average Weight (g)	Length Range (mm)	Average Length
Liawenee Canal – yingina / Great Lake	180 - 1,550	852	248 - 535	419
Sandbanks Creek – yingina / Great Lake	180 - 1,240	734	251 - 490	395
Tumbledown Creek – Arthurs Lake	110 - 1,280	617	212 - 525	379
Scotch Bobs Creek – Arthurs Lake	220 - 1,260	678	268 - 480	389
Hydro Creek – Arthurs Lake	150 - 1,370	586	224 - 496	369
Derwent River – Lake King William	110 - 990	472	201 - 456	348

### Liawenee Canal – yingina / Great Lake weigh and measure results

Table 4. Summary of measurements taken during the weigh and measure at Liawenee Canal in 2021.

Grouping	Measurement	Mean	Minimum	Maximum
	Length (mm)	419	248	535
All trout n=500	Weight (g)	852	180	1550
	Condition Factor	1.145	0.627	1.441
	Length (mm)	433	248	535
Male n=266	Weight (g)	902	180	1550
	Condition Factor	1.089	0.746	1.402
	Length (mm)	403	330	495
Female n=234	Weight (g)	795	440	1370
	Condition Factor	1.209	0.627	1.441

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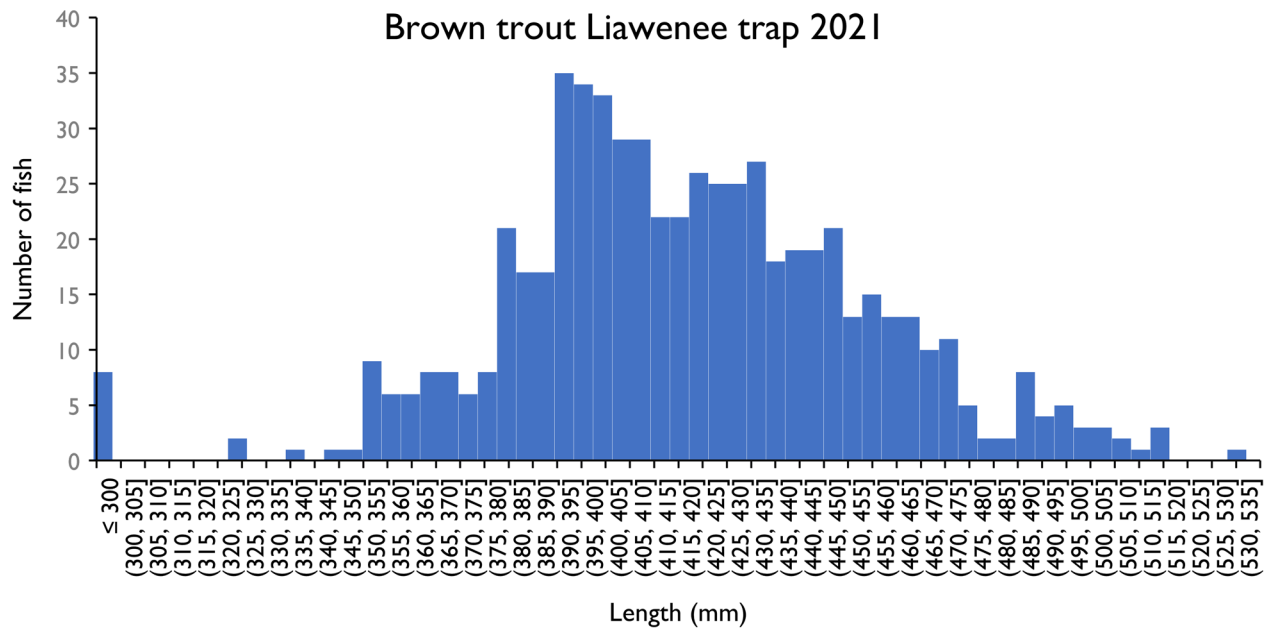


Figure 7. Length frequency histogram of fish measured at Liawenee Canal in 2021.

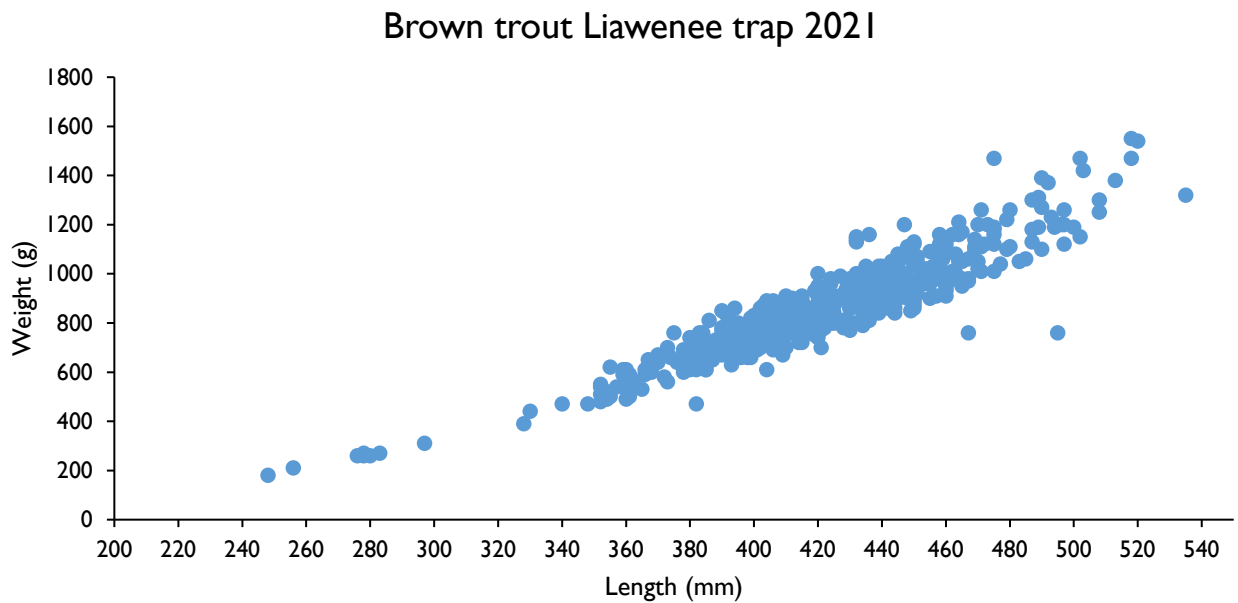


Figure 8. Length vs weight plot of fish measured at Liawenee Canal in 2021.

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### Sandbanks Creek – yingina / Great Lake weigh and measure results

Table 5. Summary of weigh and measure results at Sandbanks Creek in 2021.

Grouping	Measurement	Mean	Minimum	Maximum
	Length (mm)	395	251	490
All Trout n=200	Weight (g)	734	180	1240
	Condition Factor	1.164	0.692	1.399
	Length (mm)	397	251	490
Male n=100	Weight (g)	721	180	1180
	Condition Factor	1.118	0.809	1.399
	Length (mm)	394	295	481
Female n=100	Weight (g)	747	310	1240
	Condition Factor	1.210	0.692	1.389

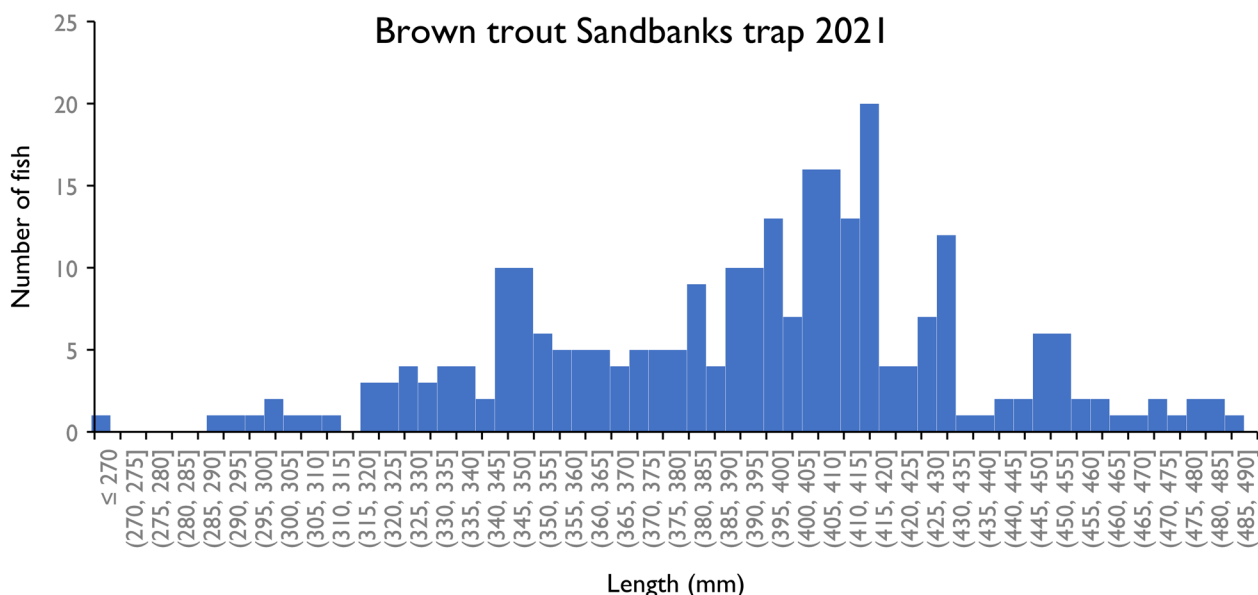


Figure 9. Length frequency histogram of fish measured at the Sandbanks Creek in 2021.

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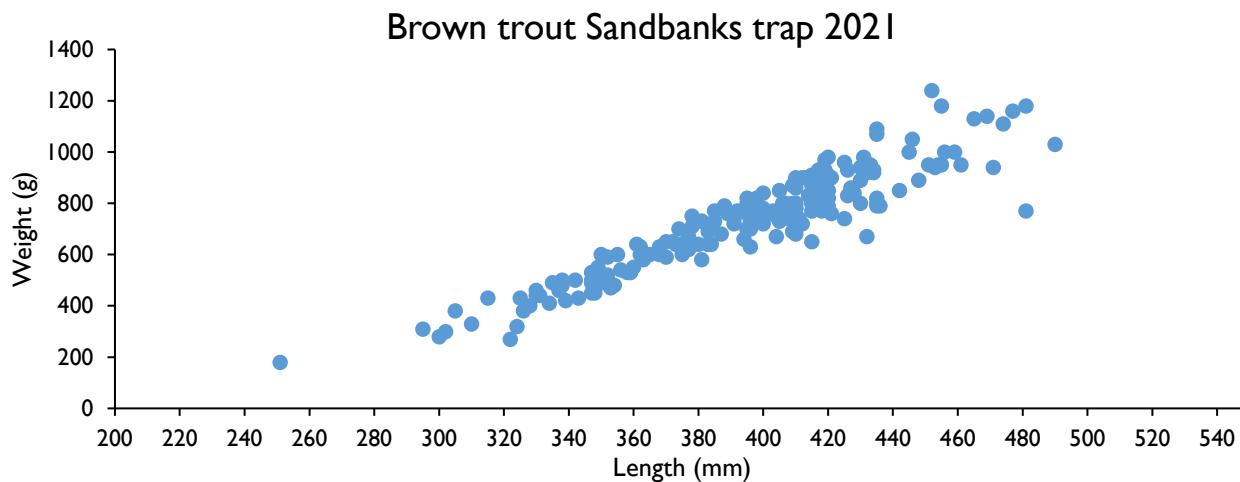


Figure 10. Length vs weight plot of fish measured at Sandbanks Creek in 2021.

### Tumbledown Creek – Arthurs Lake weigh and measure results

Table 6. Summary of measurements taken during the weigh and measure at Tumbledown Creek 2021.

Grouping	Measurement	Mean	Minimum	Maximum
	Length (mm)	379	212	525
All Trout n=200	Weight (g)	617	110	1280
	Condition Factor	1.098	0.824	1.489
	Length (mm)	388	212	525
Male n=100	Weight (g)	642	110	1280
	Condition Factor	1.048	0.824	1.197
	Length (mm)	370	320	472
Female n=100	Weight (g)	593	360	1260
	Condition Factor	1.148	0.916	1.489

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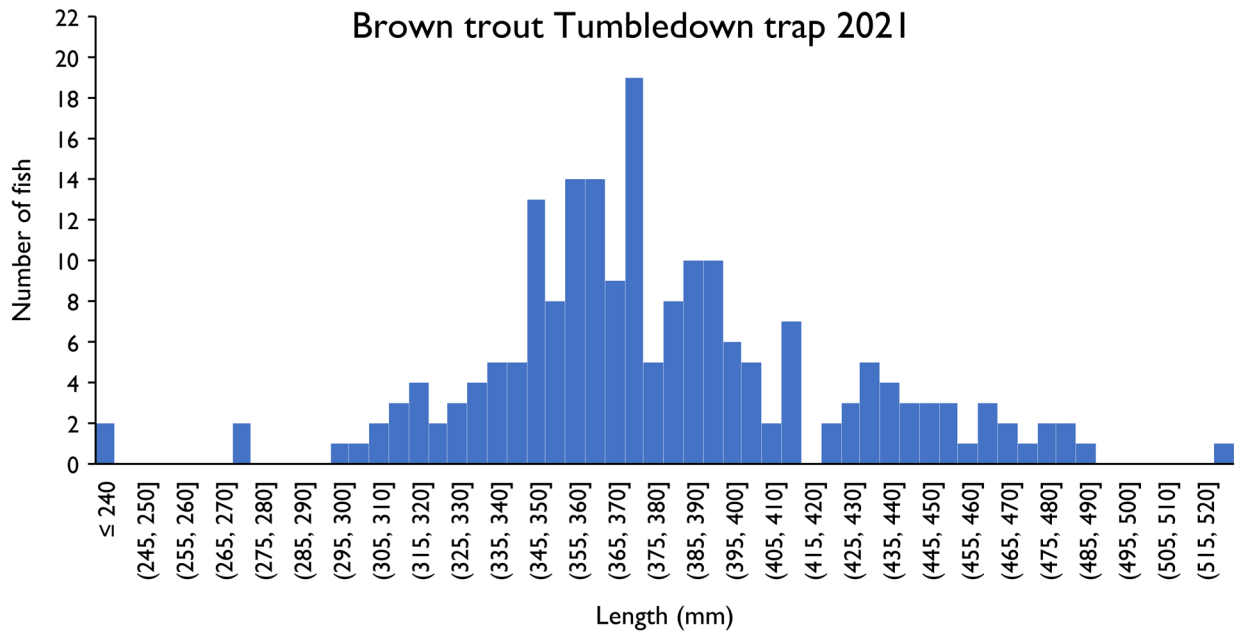


Figure 11. Length frequency histogram of fish measured at Tumbledown Creek in 2021.

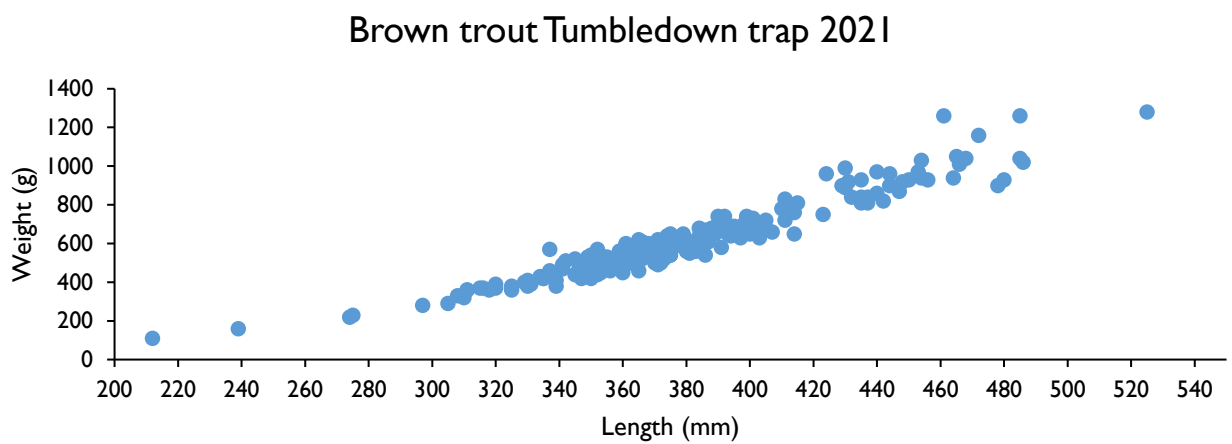


Figure 12. Length vs weight plot of fish measured at Tumbledown Creek in 2021.

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### Scotch Bobs Creek - Arthurs Lake weigh and measure results

Table 7. Summary of measurements taken during the weigh and measure at Scotch Bobs Creek 2021.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n=200	Length (mm)	389	268	480
	Weight (g)	678	220	1260
	Condition Factor	1.123	0.916	1.302
Male n=100	Length (mm)	398	268	480
	Weight (g)	710	220	1110
	Condition Factor	1.090	0.916	1.247
Female n=100	Length (mm)	380	305	463
	Weight (g)	646	350	1260
	Condition Factor	1.157	0.918	1.302

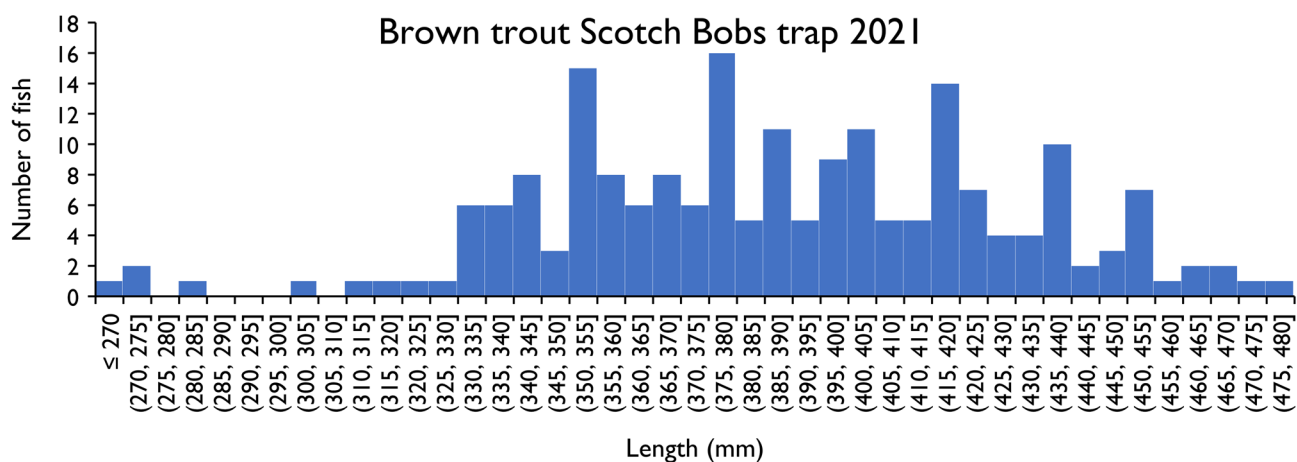


Figure 13. Length frequency histogram of fish measured at Scotch Bobs Creek in 2021.

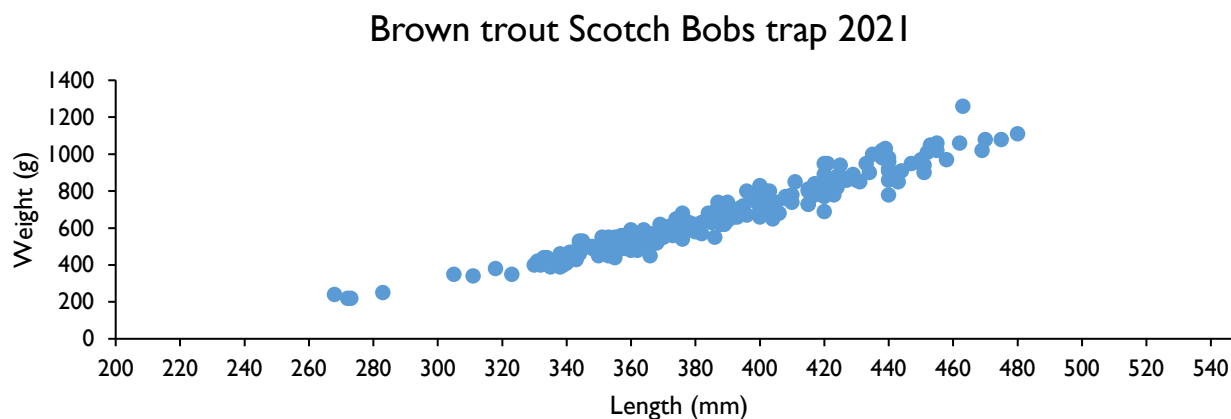


Figure 14. Length vs weight plot of fish measured at Scotch Bobs Creek in 2021.

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### Hydro Creek - Arthurs Lake weigh and measure results

Table 8. Summary of measurements taken during the weigh and measure at Hydro Creek in 2021.

Grouping	Measurement	Mean	Minimum	Maximum
	Length (mm)	369	244	496
All Trout n=200	Weight (g)	586	150	1370
	Condition Factor	1.125	0.938	1.360
	Length (mm)	365	244	496
Male n=100	Weight (g)	557	150	1370
	Condition Factor	1.084	0.941	1.339
	Length (mm)	372	304	475
Female n=100	Weight (g)	615	330	1300
	Condition Factor	1.167	0.938	1.360

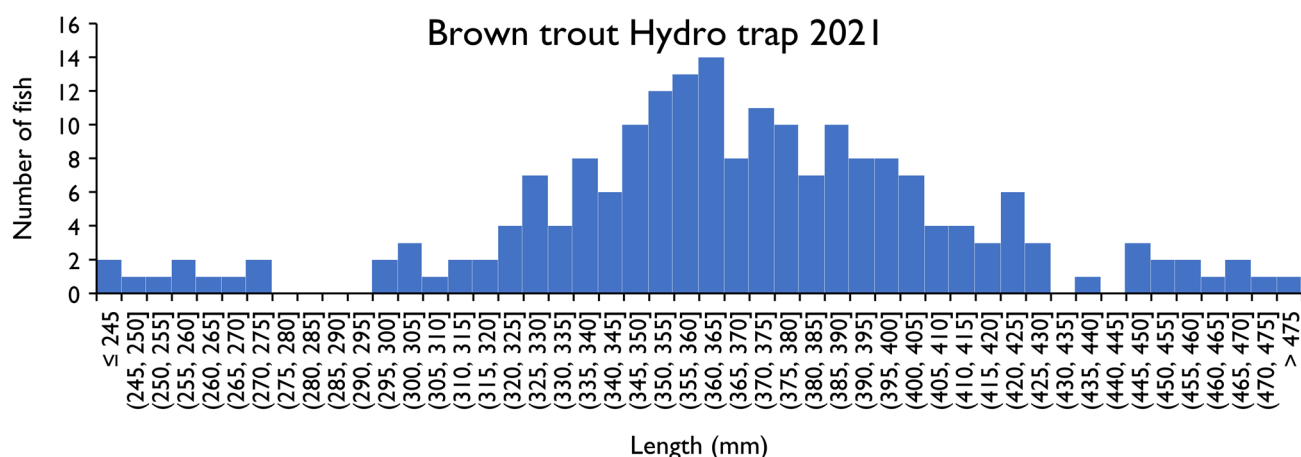


Figure 15. Length frequency histogram of fish measured at Hydro Creek in 2021.

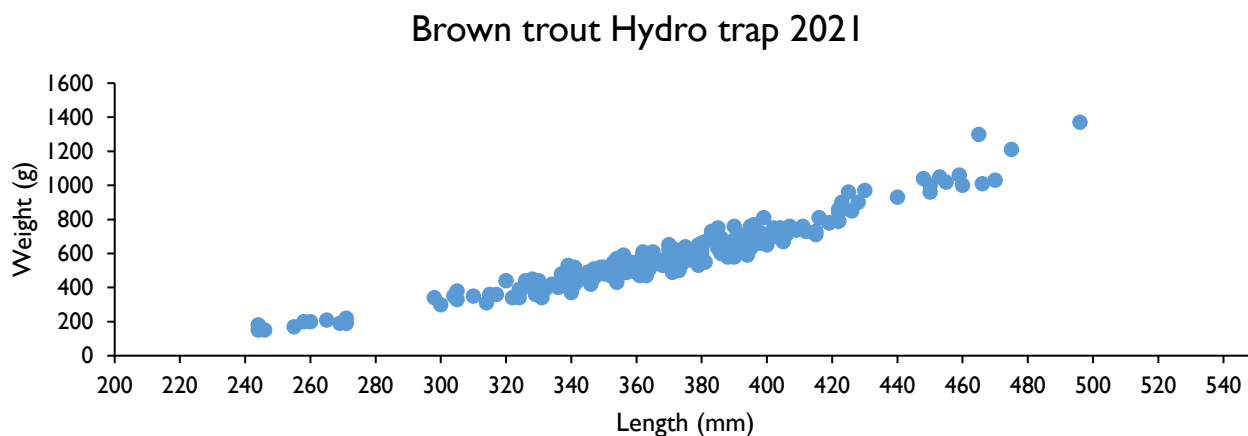


Figure 16. Length vs weight plot of fish measured at Hydro Creek in 2021.

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### Derwent River – Lake King William weigh and measure results

Table 9. Summary of measurements taken during the weigh and measure at River Derwent in 2021.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n=750	Length (mm)	348	201	456
	Weight (g)	472	110	990
	Condition Factor (K)	1.110	0.507	5.665
Male n=207	Length (mm)	364	220	456
	Weight (g)	526	110	990
	Condition Factor (K)	1.074	0.854	2.460
Female n=543	Length (mm)	342	201	424
	Weight (g)	452	270	760
	Condition Factor (K)	1.124	0.50	5.665

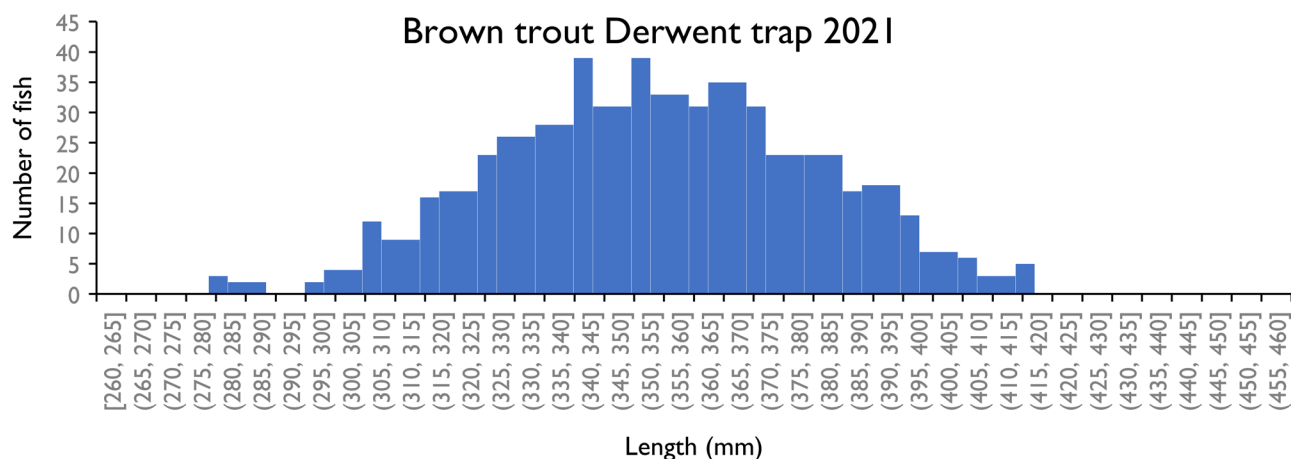


Figure 17. Length frequency histogram of fish measured at River Derwent in 2021.

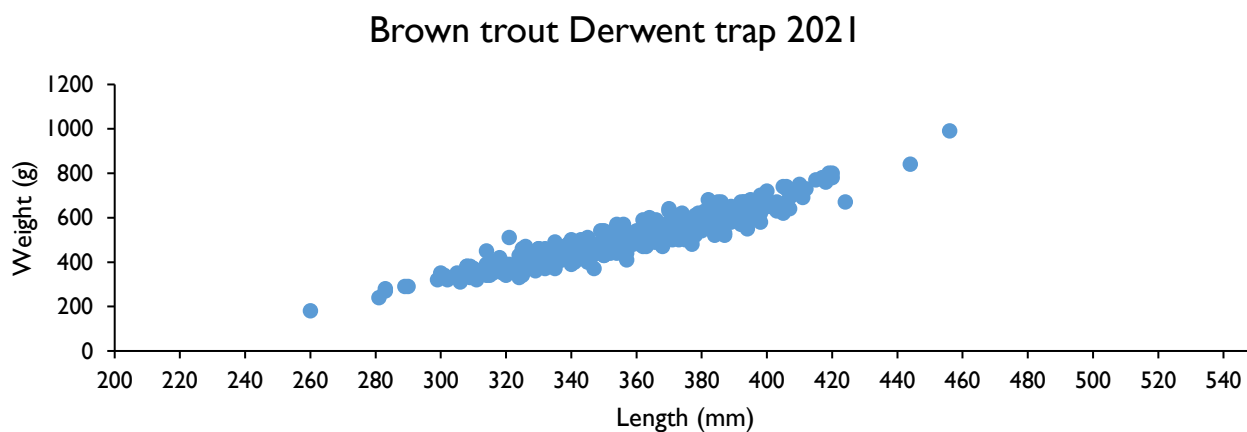


Figure 18. Length vs weight plot of fish measured at River Derwent in 2021.



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### Ova collection and hatchery production

200,000 ova were stripped from brown trout trapped at Liawenee Canal yingina / Great Lake. These were incubated at the New Norfolk hatchery. Once at eyed stage, the ova were transferred into troughs at the Salmon Ponds for hatching and rearing. From these ova 110,200 brown trout fry were stocked into public waters and 25,950 used to stock private fisheries.

A further 50,000 ova stripped from brown trout trapped at Liawenee Canal yingina / Great Lake were to be sold to the South Australian Fly Fishers Association. These ova were unviable and were not shipped.

### Trap history

Average size of Arthurs Lake spawning trout 1976 - 2021

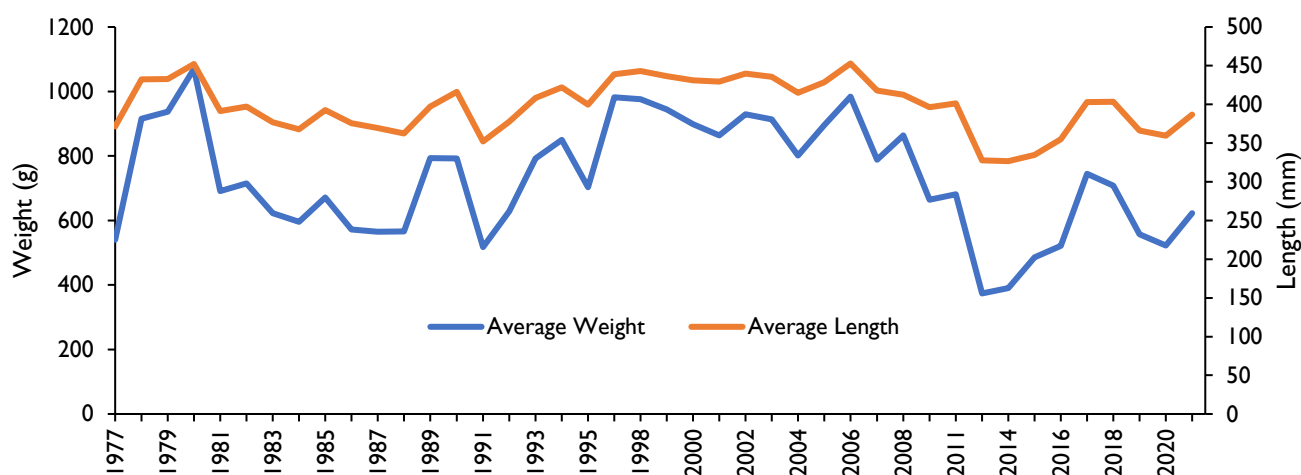


Figure 19. Average length and weight of spawning brown trout from Hydro Creek trap at Arthurs Lake since 1977. Note the data includes the three Arthurs Lakes traps combined from 2020.

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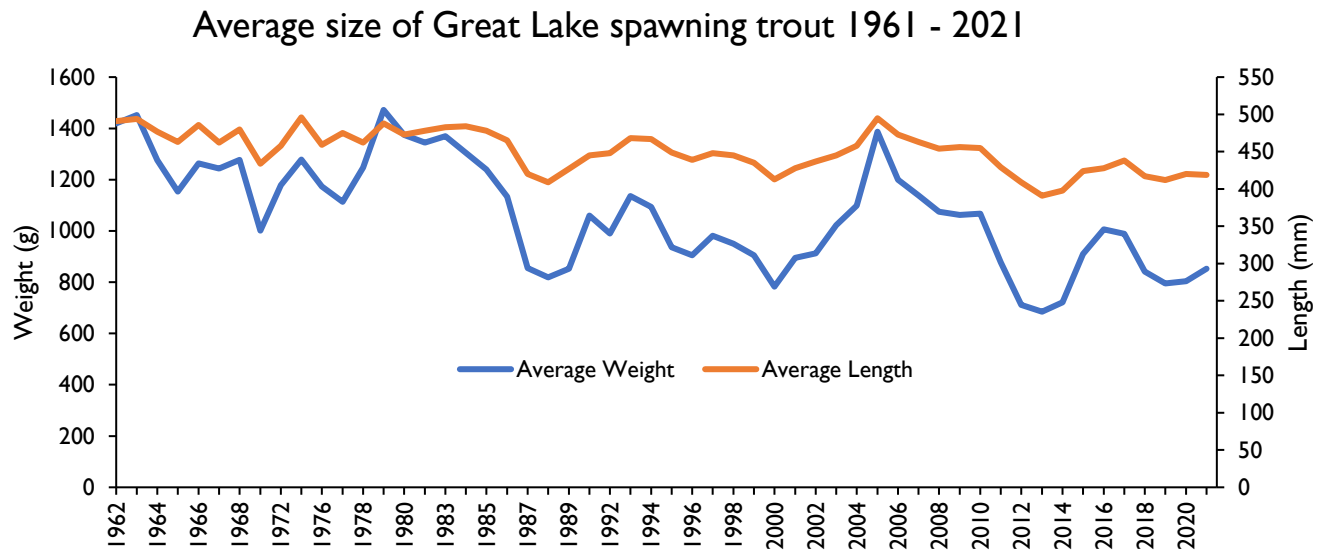


Figure 20. Average fish length and weight from Great Lake spawning run since 1962