

Inland Fisheries Service

Wild Rainbow Trout Management 2021



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Title:	Inland Fisheries Service Wild rainbow trout management 2021
Prepared by:	J. Wisniewski, Fisheries Field Officer
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Approved by:	John Diggle, Director, Inland Fisheries Service

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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. We only stock waters when wild populations are not adequately maintained by natural recruitment and we use wild fish whenever possible. Stockings are guided by the *Tasmanian Inland Recreational Fishery Management Plan 2018-28* and risk assessments for each water.

Wild rainbow trout trapping

We use fish traps at yingina / Great Lake and Lake King William to monitor and enhance the wild rainbow trout fishery.

Table 1. Total captures of rainbow trout, Liawenee and River Derwent traps 2015-21.

Trap	2021	2020	2019	2018	2017	2016	2015
Liawenee Canal – yingina / Great Lake Est. 2006	2,310	923	988	1,093	349	587	540
River Derwent – Lake King William Est. 2016	15	0	0	0	0	-	-

Background

At Liawenee Canal, rainbow trout captured in the fish trap are counted, sorted by sex and moved into purpose built spawning channels away from the brown trout. This enhances spawning success and increases recruitment to the yingina / Great Lake fishery. A fry trap on the spawning channel allows the counting of fry and monitoring of recruitment. The trap also provides access to rainbow trout fry for stocking wild rainbow trout fisheries if required.

The Sandbanks Creek fish trap can be used to monitor rainbow trout spawning runs in yingina / Great Lake. This fish trap is however, restricted by inconsistent flows relating to rainfall in the catchment. Rainbow trout caught in the Sandbanks Creek trap, are given access to the upstream spawning grounds.

The River Derwent fish trap at Lake King William, is used during the rainbow trout spawning run when conditions are favorable. The lake level at Lake King William often floods the River Derwent fish trap during spring. This year was the first year since the trap was built in 2016, that lake levels allowed the trap to operate for part of the spawning run. Adult rainbow trout captured in the River Derwent fish trap will be used to stock wild rainbow trout into assisted fisheries.

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Wild rainbow trout caught in traps

yingina / Great Lake – Liawenee Canal

Since 2015, all rainbow trout entering the Liawenee Canal trap have been counted. During 2021, a total of 2,310 fish were counted. This is the most fish since monitoring commenced (see Table 1).

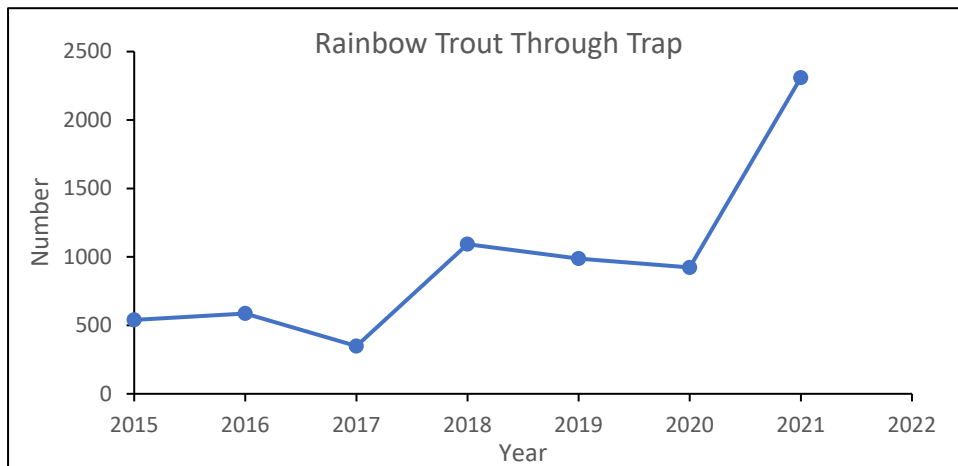


Figure 1. Total counts of rainbow trout, Liawenee trap 2015-21.

The Liawenee Canal trap was opened on 30 August. Liawenee Canal had high flows for the entirety of the rainbow trout spawning run. The trap was closed on 4 November. Liawenee received 102.8 mm of rain for September. This is on par with the long-term average of 107.7mm. A total of 163.8mm of rain was received in October, which is more than double the long-term monthly average (see figure 2). A total of 2,310 rainbow trout were captured over the entire run, consisting of 932 males and 1,378 females.

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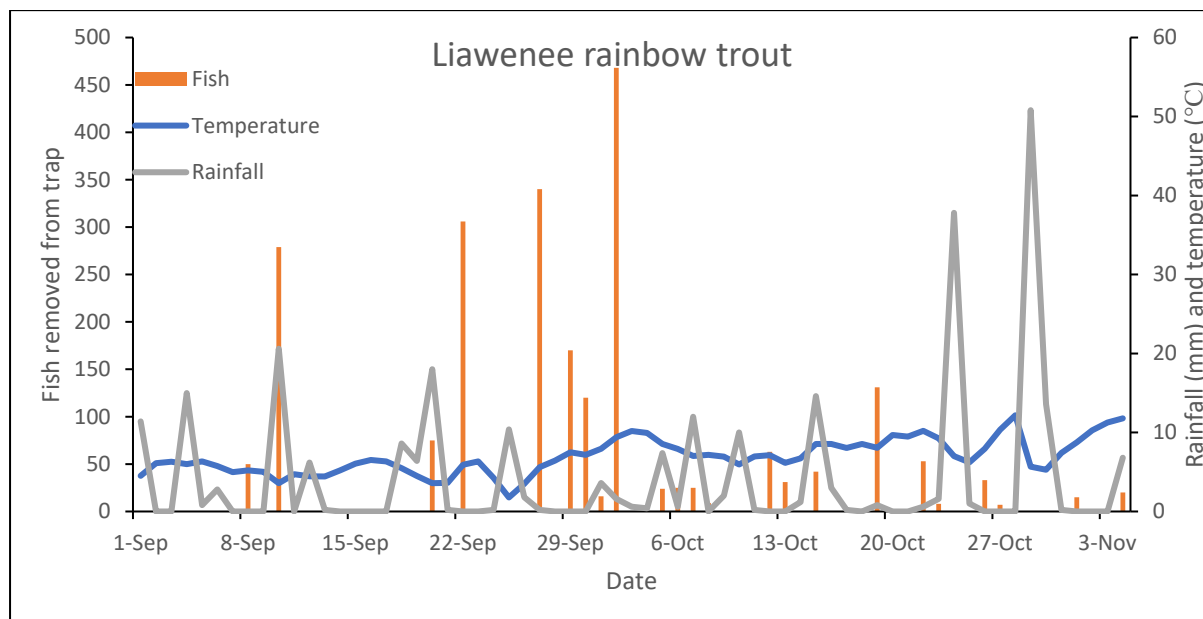


Figure 2. Number of rainbow trout captured in the Liawenee Canal trap (counted when they were removed from the trap), the daily rainfall totals measured at the Liawenee weather station and water temperature measured from within the trap in 2021.

River Derwent trap - Lake King William

The River Derwent trap was opened on 27 August and closed on the 14 of September, when the lake level flooded the trap. The trap caught a total of 15 rainbow trout, which were weighed and measured. Most were smaller males and all were released into the River Derwent above the trap. This is the first year that rainbow trout have been successfully captured since the trap was built in 2016.

Liawenee spawning rainbow trout channels

Rainbow trout were moved from the Liawenee Canal trap and placed into the purpose-built spawning channels at Liawenee.

Table 2. Summary of Liawenee Canal spawning channel stocking densities in 2021.

Location	Number	Sub-total Males	Sub-total Females
Bottom long channel	1,250	442	808
Bottom zigzag	260	120	140
Middle zigzag	260	120	140
Stripping display	30	15	15
Top long channel	320	145	175
Top zigzag	140	65	75
Total	2,260	907	1,353

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yingina / Great Lake – Liawenee Canal weigh and measures

Table 3. Summary of measurements for rainbow trout from the Liawenee trap in 2021.

Grouping	Measurement	Mean	Minimum	Maximum
	Length (mm)	456	383	575
All Trout n=200	Weight (g)	1,072	710	2,530
	Condition Factor	1.13	0.85	1.44
	Length (mm)	457	383	539
Male n=100	Weight (g)	1,018	710	1,330
	Condition Factor	1.07	0.85	1.30
	Length (mm)	456	409	575
Female n=100	Weight (g)	1,127	830	2,530
	Condition Factor	1.19	0.86	1.44

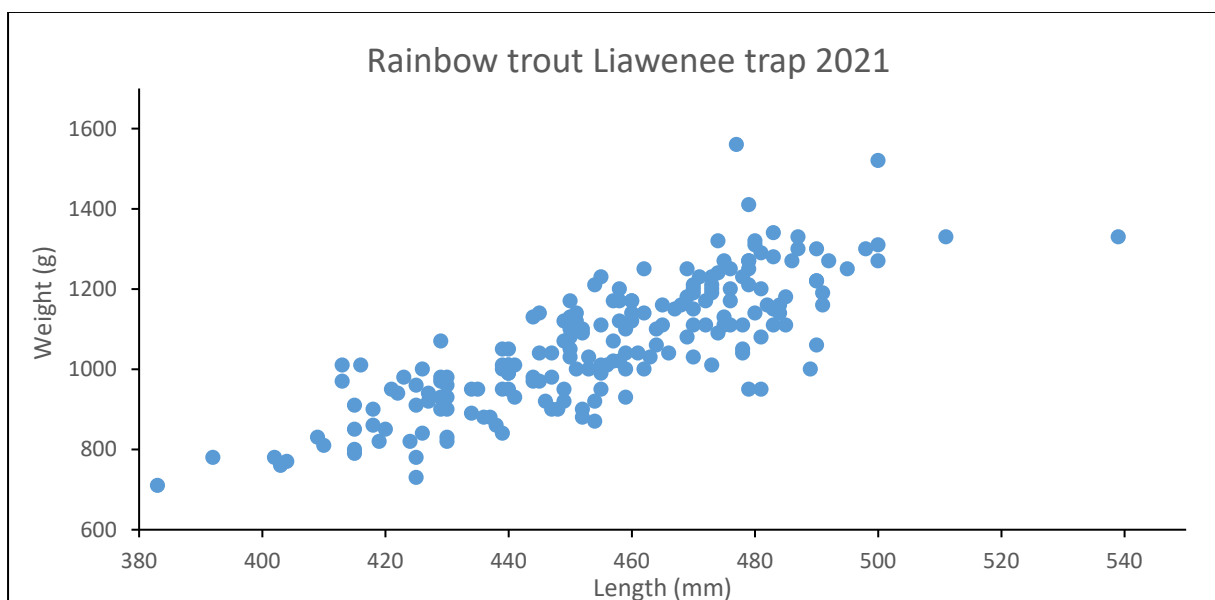


Figure 3. Length vs weight plot for rainbow trout from Liawenee Canal trap in 2021.

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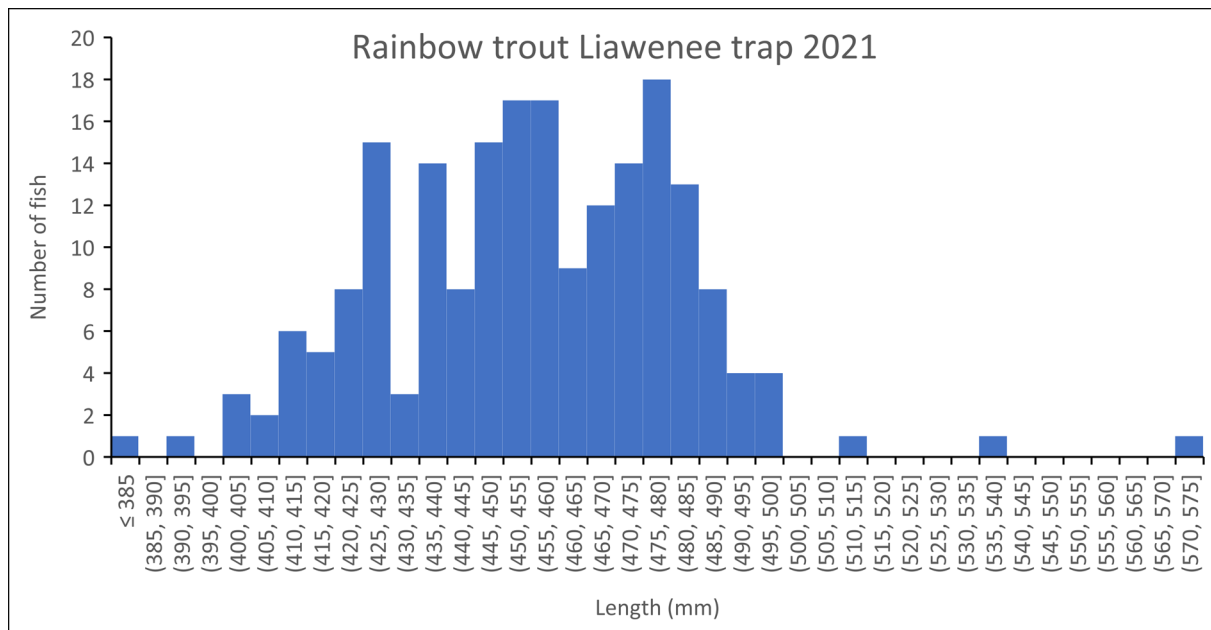


Figure 4. Length frequency histogram for rainbow trout measured from the Liawenee Canal trap in 2021.

River Derwent - Lake King William weigh and measure

Table 4. Summary of measurements for rainbow trout from River Derwent trap (note: all fish were males) in 2021.

Grouping	Measurement	Mean	Minimum	Maximum
	Length (mm)	304	0	426
All Trout n=15	Weight (g)	312	0	710
	Condition Factor	1.00	0.70	1.47

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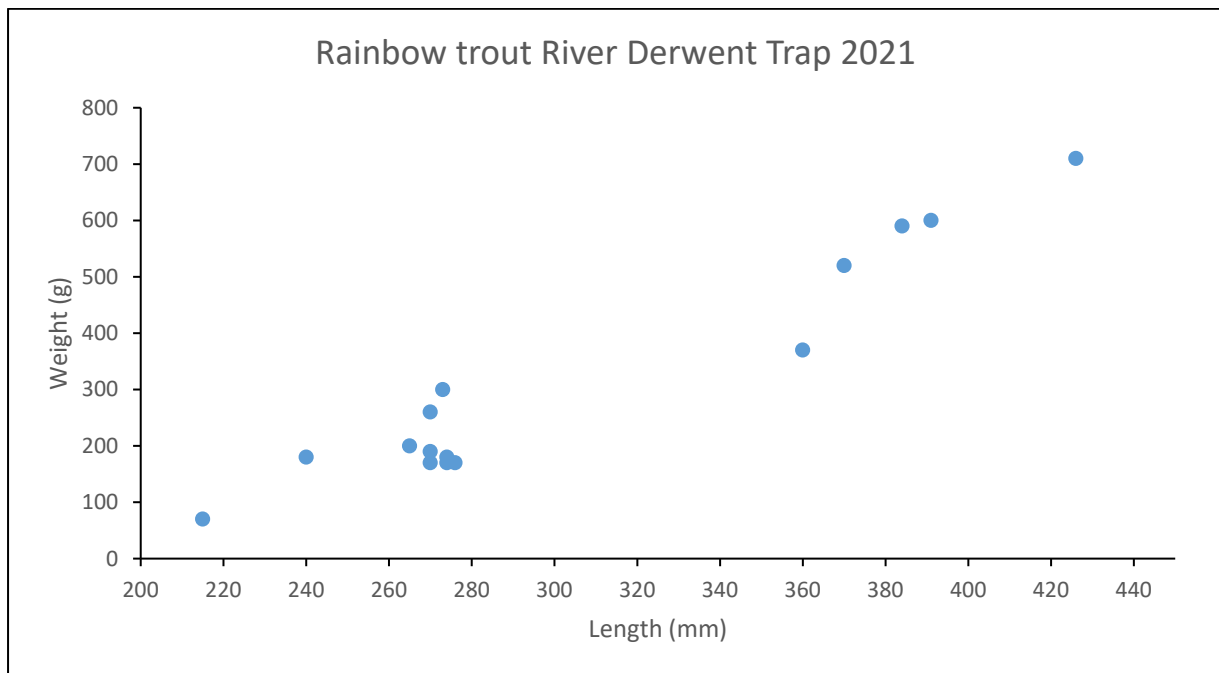


Figure 5. Length vs weight plot for rainbow trout measured in the River Derwent trap in 2021.

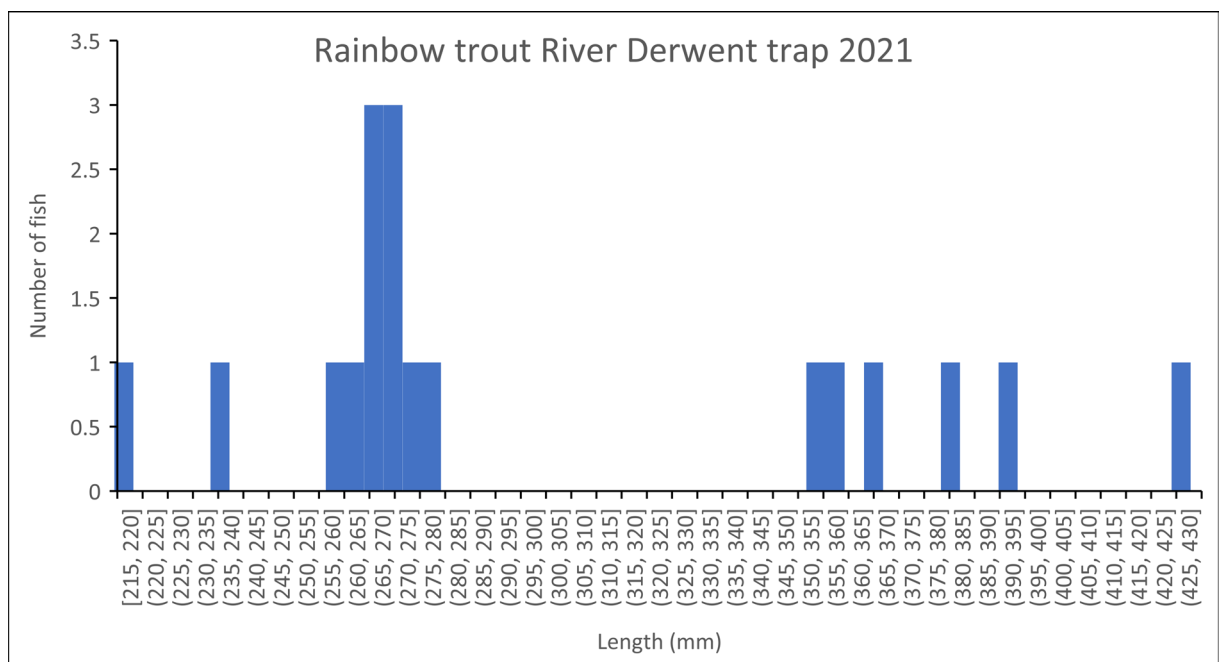


Figure 6. Length frequency histogram for rainbow trout measured in the River Derwent trap in 2021

Fry trapping in the Liawenee southern Zigzag Channel

During 2021 a fry trap was installed at the bottom of the southern Zigzag channel at Liawenee. The fry trap was operated for a 24-hour period about once a week, from 23 November until 20 January. After each 24-hour sample period, 100 fry were weighed. A total number of fry was then calculated by weighing all the fish in the sample and dividing by the average weight.

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Fry captured in November were still absorbing their yolk sac. Fry started to grow substantially beyond their birth weight by mid-December. Growth rates from this point were generally linear until the final sample on 20 January 2021, where the fry weight 1 gram (see Figure 7 and Table 5).

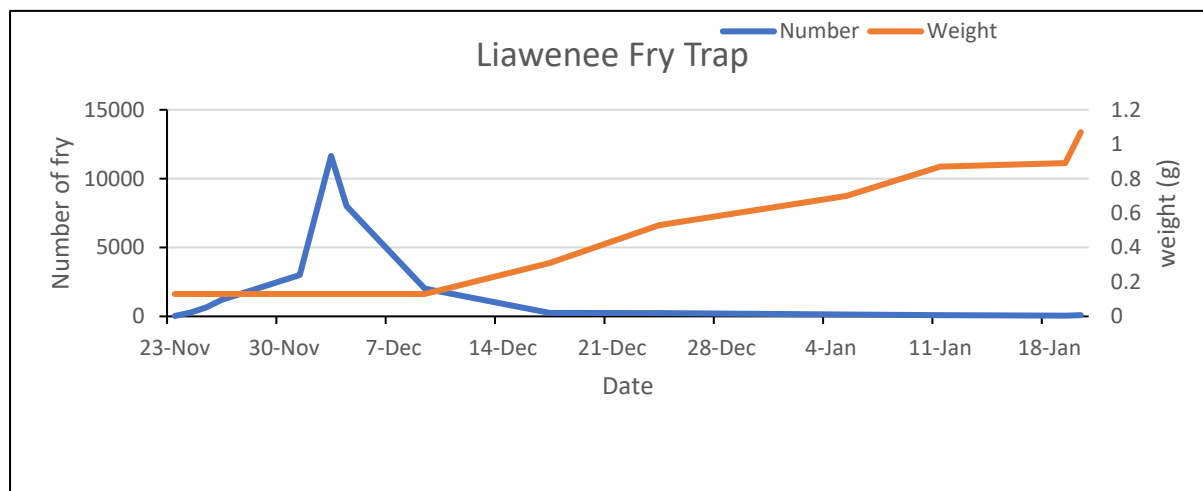


Figure 7. Number of fry counted in a 24-hour period and the average weight of the fry in the sample.

Table 5. Number of fry counted in a 24-hour period and the average weight of the fry in the sample.

Date	Number of Rainbow Trout Fry	Average Weight (g)
23-Nov	31	0.13
24-Nov	275	0.13
25-Nov	650	0.13
26-Nov	1,200	0.13
1-Dec	3,000	0.13
3-Dec	11,653	0.13
4-Dec	8,000	0.13
9-Dec	2,015	0.13
17-Dec	248	0.31
24-Dec	237	0.53
5-Jan	140	0.7
11-Jan	87	0.87
19-Jan	56	0.89
20-Jan	86	1.07

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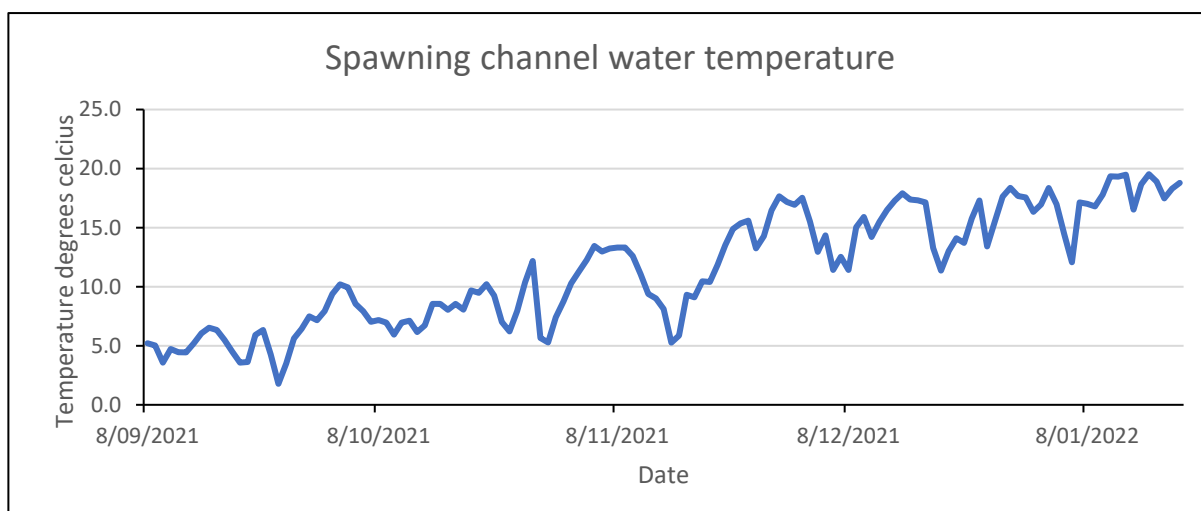


Figure 8. Water temperature recorded in the Liawenee spawning channel throughout the development of rainbow trout fry.

Operational details

- Higher numbers of small rainbow trout fry are available for stocking from the last week of November until the end of the first week in December.
- Larger fry that have grown to half a gram, are available for stocking after the 20 December.
- During the transport of fry for stocking, 100 grams of fry should be carried with 3 litres of water within a fry bag.

Recommendations

- To gain a more accurate count of how many fry are being produced in the Zigzag channel, it is recommended the fry trapping sampling frequency during the period 20 November and 15 December should be increased to three times per week in 2022.
- To ensure a higher number of rainbow trout fry are produced at Liawenee, it is recommended the Northern zig zag channels are made operational, and commissioned during the 2022 rainbow trout spawning run.
- A works program to maintain and enhance rainbow trout spawning channels, at Liawenee, is developed for the 2022/23 period.
- A review of the rainbow trout fishery of yingina/Great Lake is undertaken during 2022/23.

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Appendix

Appendix 1. Date and location of adult rainbow trout movements from the Liawenee trap 2021

Date Out	Total Number	Males	Females	Destination
8-Sep	50	25	25	Huntsman Lake
10-Sep	114	60	54	Bottom Zigzag
10-Sep	60	60	0	Middle Zigzag
10-Sep	35	35	0	Top Zigzag
10-Sep	70	70	0	Top long Channel
20-Sep	75	75	0	Bottom long Channel
22-Sep	46	20	26	Bottom Zigzag
22-Sep	100	20	80	Middle Zigzag
22-Sep	55	10	45	Top Zigzag
22-Sep	85	25	60	Top long Channel
22-Sep	20	20	0	Bottom long Channel
27-Sep	85	50	35	Top long Channel
27-Sep	145	50	95	Bottom long Channel
27-Sep	40	40	0	Bottom Zigzag
27-Sep	40	40	0	Middle Zigzag
27-Sep	30	15	15	Stripping Display
29-Sep	60	0	60	Bottom Zigzag
29-Sep	60	0	60	Middle Zigzag
29-Sep	50	20	30	Top Zigzag
30-Sep	80	0	80	Top long Channel
30-Sep	40	0	40	Bottom long Channel
1-Oct	16	0	16	Bottom long Channel
4-Oct	468	202	266	Bottom long Channel
5-Oct	24	6	18	Bottom long Channel
6-Oct	25	2	23	Bottom long Channel
7-Oct	25	0	25	Bottom long Channel
8-Oct	9	0	9	Bottom long Channel
12-Oct	63	17	46	Bottom long Channel
13-Oct	31	4	27	Bottom long Channel
15-Oct	42	6	36	Bottom long Channel

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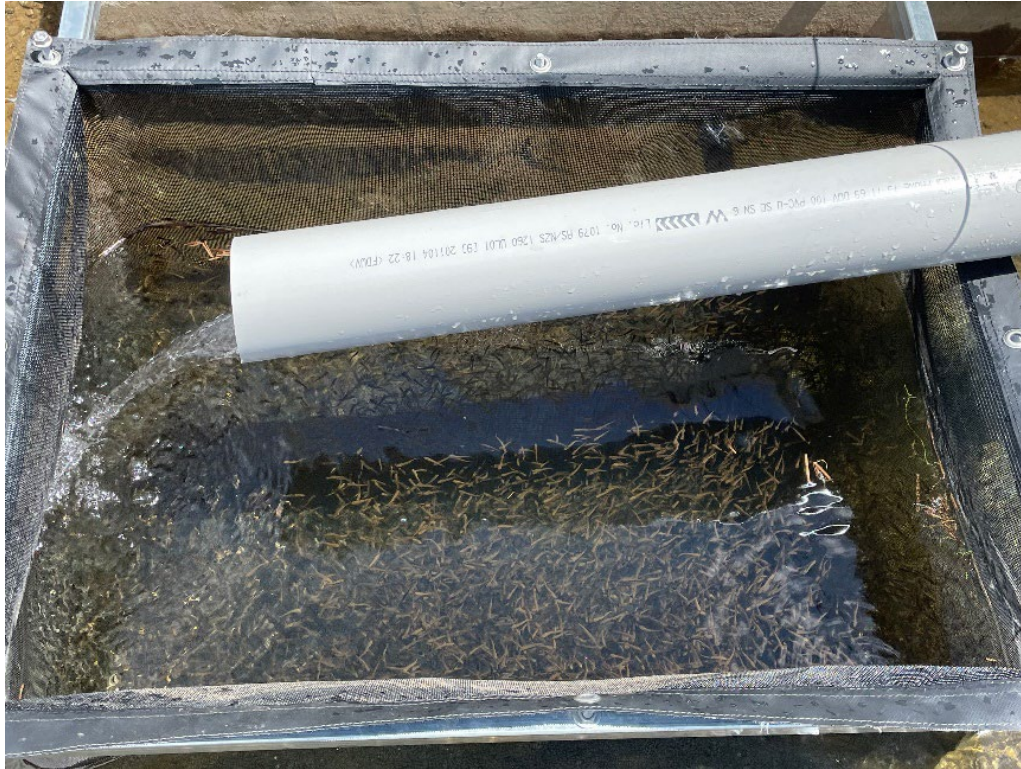
19-Oct	131	20	111	Bottom long Channel
22-Oct	53	13	40	Bottom long Channel
23-Oct	8	2	6	Bottom Long Channel
26-Oct	33	10	23	Bottom Long Channel
27-Oct	7	4	3	Bottom Long Channel
1-Nov	15	4	11	Bottom Long Channel
4-Nov	20	7	13	Bottom Long Channel
Total	2,310	932	1,378	

Appendix 2. Fry captured in the fry trap on 3 December 2021



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Appendix 3. The Liawenee fry trap filled with rainbow trout fry on 3 December 2021



Appendix 4. Fry caught in the Liawenee fry trap on 5 December 2022



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Appendix 5. 2020 recruitment of rainbow trout electro fished out of the Liawenee spawning channels on 8 September 2021

