Investigation of the Mawheraiti River Brown Trout Fishery 2025

Results from sports fish spawning surveys, electric fishing, drift dives and environmental data collected between May 2024 - April 2025 from the Mawheraiti River Brown Trout Fishery

West Coast Fish & Game Region

Baylee Kersten, Fish & Game Officer, June 2025

Trout captured electric fishing Rough and Creek, Mawheraiti Catchment in January 2023.

Interim report for: 1115 Sports Fishery Research

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Summary

Fish & Game is carrying out research on the Mawheraiti River brown trout fishery in attempt to better understand the fluctuations observed in the fishery. From six years of data collection, greater understanding of the roles different streams play on the fishery and the influence of flooding is being obtained. Lastly environmental data collected has reiterated findings of previous work, with the Mawheraiti River temperature often exceeding desirable levels in summer. Looking at data collected over the last six years in the Mawheraiti catchment, 2024-25 recruitment year productivity was below average. Staff recommendations are that: The council receives this report. The Mawheraiti trout recruitment research programme continues. Continue to work closely with WCRC and encourage them to proactively protect the Mawheraiti River trout habitat considering their duty to do so under Section 7(h) of the Resource Management Act 1991.

Introduction

The Mawheraiti River has been identified as a location requiring research. The Mawheraiti River is a river that requires attention as the brown trout population has undergone significant decreases and increases over the years showed by drift diving and angler reports. To ensure the fishery is correctly managed and protected it is essential we understand these fluctuations and try to mitigate the significant drops in the brown trout population.

The Mawheraiti or Little Grey River is a tributary of the Grey River. Its catchment incorporates tributaries from the inland mountainous flanks of the Paparoa Ranges and from the rolling hills of the Reefton and Ikamatua areas. The Mawheraiti River joins the Grey River near the township of Ikamatua.

The Mawheraiti River fishery is identified as 'regionally significant' in its rural reaches (FGWC, 2024) and receives between 50 & 480 angling days each season (Stoffels, Unwin M, 2023). The Mawheraiti River has long been regarded by anglers as a nursery for the greater Grey River fishery and this is confirmed by the large number of small and medium size brown trout that have been observed in drift dive surveys.

This report is intended to provide an overview on the information gathered and reviewed for the work plan project 1115 – Sports Fishery Research in the past year and build on former reports where relevant. The information gathered is also intended to inform resource consent processing.

Methods

In 2019, Mawheraiti River tributaries were identified as potential spawning streams and spawning counts were carried out when possible, during the spawning season. Three suitable streams following conformation of significant spawning activity from the counts were chosen to be research streams. The three streams represented a mixture of land uses and stream types. Electric fishing is carried out on the research streams three times between November and May. Temperature loggers were installed into two of the study streams. West Coast Regional Council (WCRC) has aided in the collection of additional environmental data to allow potential identification of correlations between spawning/recruitment success and environmental impacts. Lastly annual drift dives were completed on the Mawheraiti as done so intermittently since 1993.

Results

Spawning Surveys

During the 2024 spawning season, surveys across the three Mawheraiti research streams recorded some of the lowest brown trout counts in the dataset. While Rough and Tumble and O'Malley creeks showed slight increases from the previous year's exceptionally low numbers, both remained well below their historical averages. Adamstown Creek continued to exhibit minimal spawning activity, with numbers unchanged from 2023. Spawning activity peaked in mid-July at Adamstown Creek, while earlier peaks were observed at the other two sites — in early June for Rough and Tumble Creek and late May for O'Malley Creek. Overall, the results indicate continued low spawning returns across all sites in 2024.

Table 1: Highest spawning survey count in the Mawheraiti Research streams between 2019 - 2024.

Date	Research Site	Brown Trout	Length surveyed (km)	Trout/km
19/06/24	Rough & Tumble Creek	12	1.6	7.50
09/06/23	Rough & Tumble Creek	1	1.6	0.63
22/06/22	Rough & Tumble Creek	7	1.6	4.38
26/05/21	Rough & Tumble Creek	17	1.6	10.63
09/06/20	Rough & Tumble Creek	10	1.6	6.25
20/05/19	Rough & Tumble Creek	25	6	4.17
30/05/24	O'Malley Creek	7	1.7	4.12
11/07/23	O'Malley Creek	1	1.7	0.59
27/05/22	O'Malley Creek	12	1.7	7.06
26/05/21	O'Malley Creek	4	1.7	2.35
09/06/20	O'Malley Creek	22	1.7	12.94
04/06/19	O'Malley Creek	10	1	10.00
11/07/24	Adamstown Creek	1	1.6	0.63
11/07/23	Adamstown Creek	1	1.6	0.63
27/05/22	Adamstown Creek	15	1.6	9.38
17/06/21	Adamstown Creek	7	1.6	4.38
09/06/20	Adamstown Creek	7	1.6	4.38
04/06/19	Adamstown Creek	4	1.6	2.50

Electric Fishing

Electric fishing surveys during the 2025 recruitment season showed below-average juvenile trout numbers across the three research streams, consistent with the low adult spawning counts observed in winter 2024. O'Malley Creek began with a below-average juvenile count in November and declined further by April/May, reflecting both low initial recruitment and poor over-summer survival. Adamstown Creek also had low early counts but increased to near-average levels by April/May. This may be linked to the very low number of spawners observed, which likely resulted in reduced intraspecific competition, limiting downstream migration and allowing a higher portion of juveniles to be retained. Rough and Tumble Creek had the highest spawning count of the three streams, which was reflected in strong early recruitment. However, a sharp decline by April/May suggests substantial downstream movement or reduced survival over summer. These results highlight how both spawning abundance and in-stream dynamics influence juvenile trout numbers through the season.

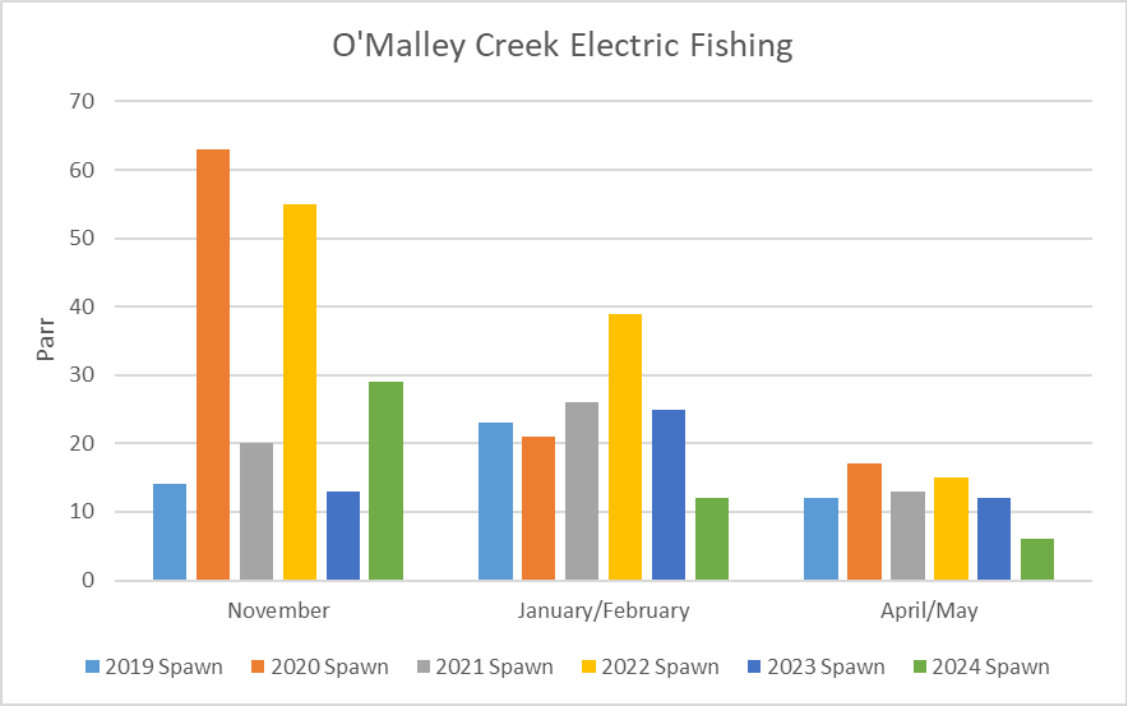

Figure 1: The number of brown trout parr captured from that season's spawn electric fishing in O'Malley Creek 2019-2025.

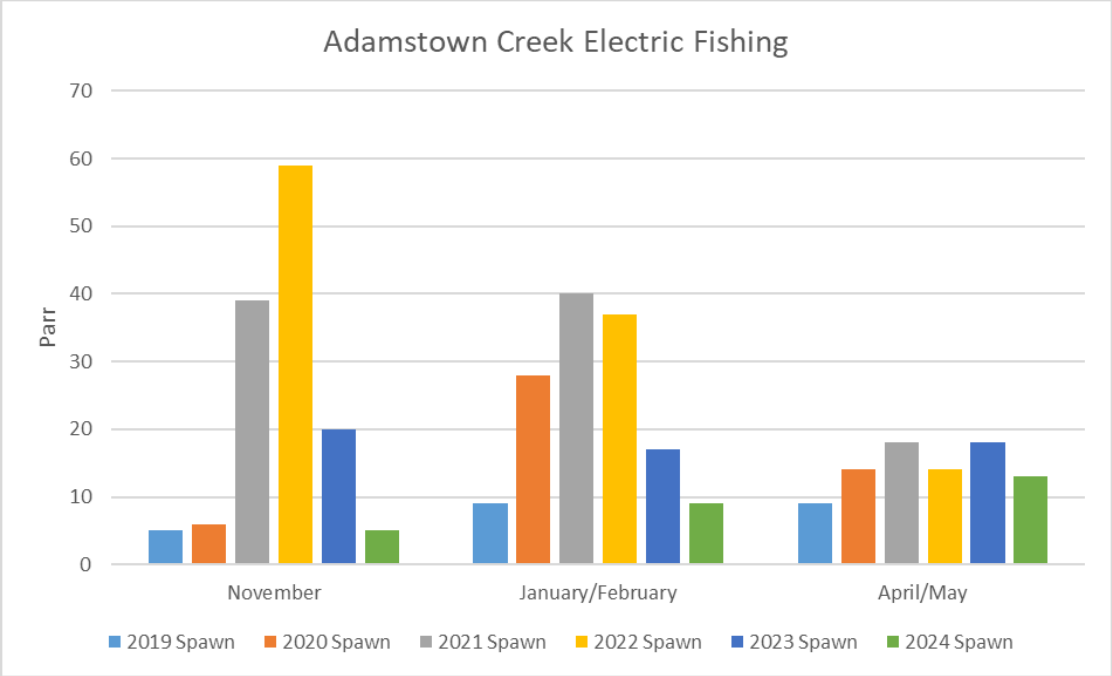

Figure 2: The number of brown trout parr captured from that season's spawn electric fishing in Adamstown Creek 2019-2025.

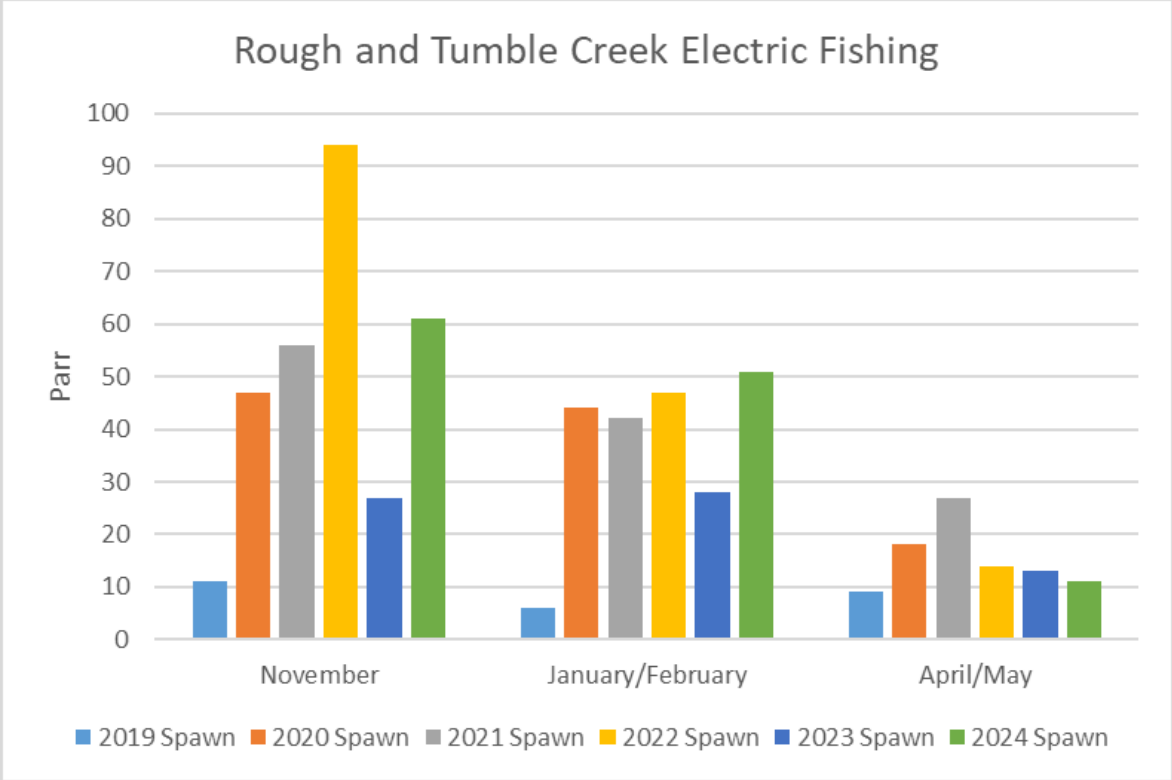

Figure 3: The number of brown trout parr captured from that season's spawn electric fishing in Rough and Tumble Creek 2019-2025.

Trout Dive Surveys

Trout dive surveys on the Mawheraiti River were completed on 3 December 2024. At Mirfin's Bridge, densities recorded were 41 small/km, 25 medium/km, and 15 large/km (Figure 4). This represented a below-average total, driven by a low number of medium-sized trout, while small and large trout numbers were near average. At the SH7 Bridge, counts were 75 small/km, 48 medium/km, and 10 large/km (Figure 5). Medium and large trout numbers were below average, whereas small trout were consistent with long-term averages.

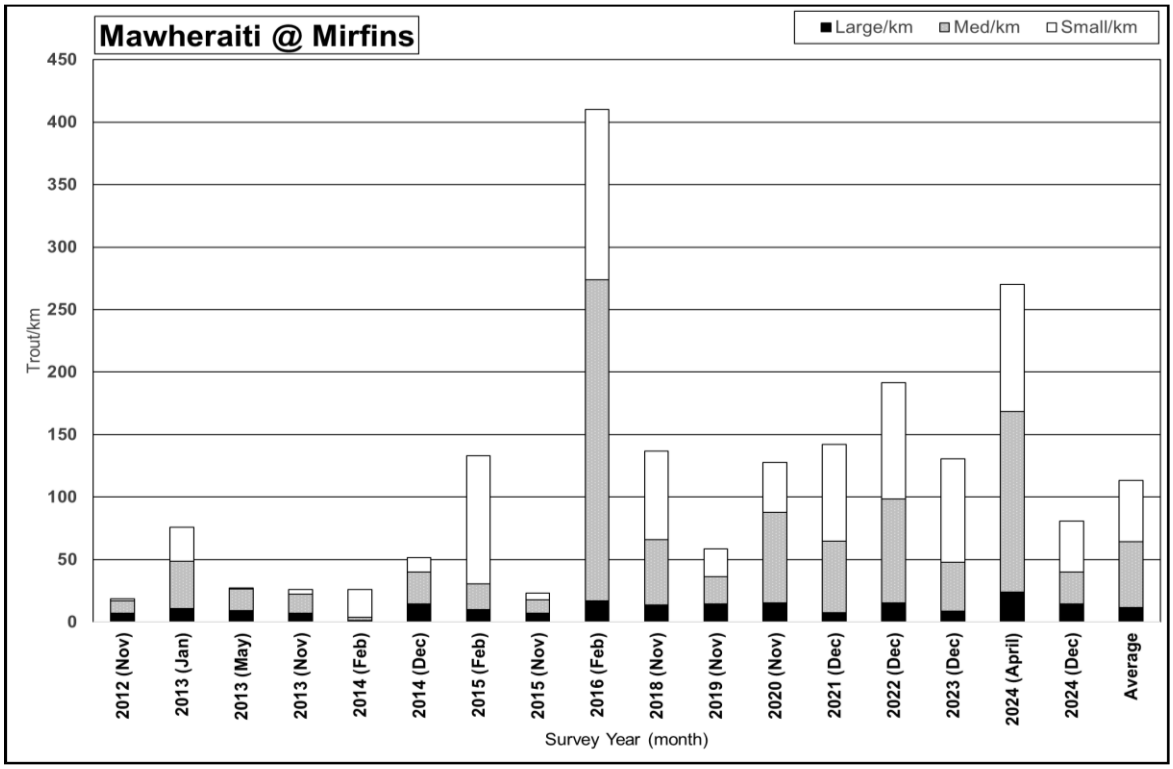

Figure 4: Number of Brown Trout recorded during trout dive surveys at the Mawheraiti River Mirfins Bridge site 2012-2024.

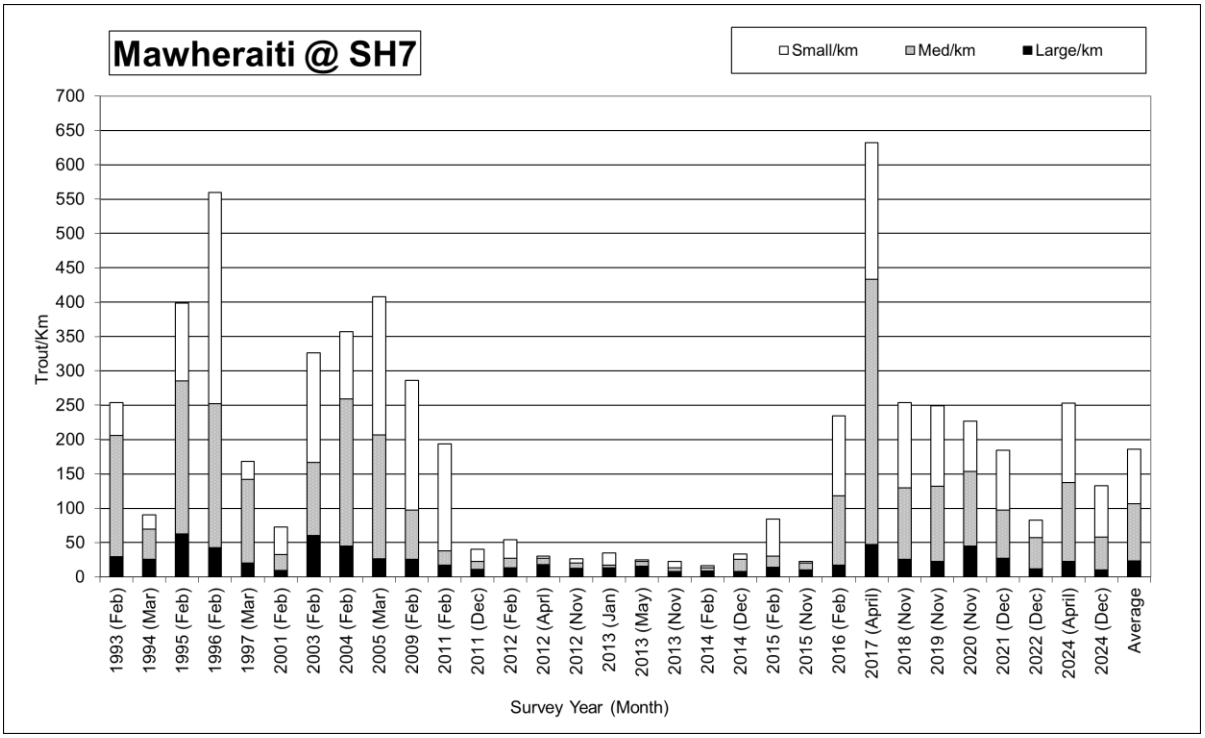

Figure 5: Number of Brown Trout recorded during trout dive surveys at the Mawheraiti River SH7 Bridge site 1993-2024.

Environmental Data

According to *Water Quality Guidelines to Protect Trout Fishery Values* (Hay, Hayes, & Young, 2006), water temperatures exceeding 19 °C can cause behavioural disturbances in brown trout. At Maimai on the Mawheraiti River, temperatures exceeded 19 °C on 89 days, with a peak of 24.5 °C (Figure 6). Downstream at Atarau, data collection was cut short due to sonde failure reported by WCRC. However, available readings show temperatures exceeded 19 °C on 73 days prior to 18 February, with a maximum of 25.8 °C recorded on 22 January.

Temperatures in the research streams were recorded directly or by proxy from nearby streams with similar catchment characteristics. Rough and Tumble Creek (using data from Stoney Creek) peaked at 22.7 °C. Adamstown Creek recorded the highest temperature among tributaries at 25.2 °C, exceeding 19 °C on 104 occasions over summer, with daily fluctuations up to 10 °C. O'Malley Creek remained below 19 °C throughout the season, likely due to dense riparian shading (Figure 7).

From May 2024 to April 2025, the Mawheraiti River exceeded ten times the median daily flow on 27 days, 25 of which occurred during winter and spring, the critical recruitment period for trout (Figure 8). Flood frequency was near the five-year average, with winter/spring events the highest recorded over six years. The largest flood occurred on 26 October 2024, reaching 536 m^3/s, above the average maximum annual flood and the highest since the 2017 event of 593 m^3/s. Flows exceeding ten times the median can disturb substrate and displace or kill trout, especially juveniles (Holmes, Gabrielsson, Matthaei, & Closs, 2017).

Sediment levels have risen markedly. Median turbidity at Atarau Bridge during 2024–2025 was 3.1 NTU, up from 1.2 NTU in 2023 and 1.0 NTU in 2022. This is over six times the recommended threshold of 0.5 NTU for trout habitat protection (Hay, Hayes, & Young, 2006), indicating a significant decline in water clarity.

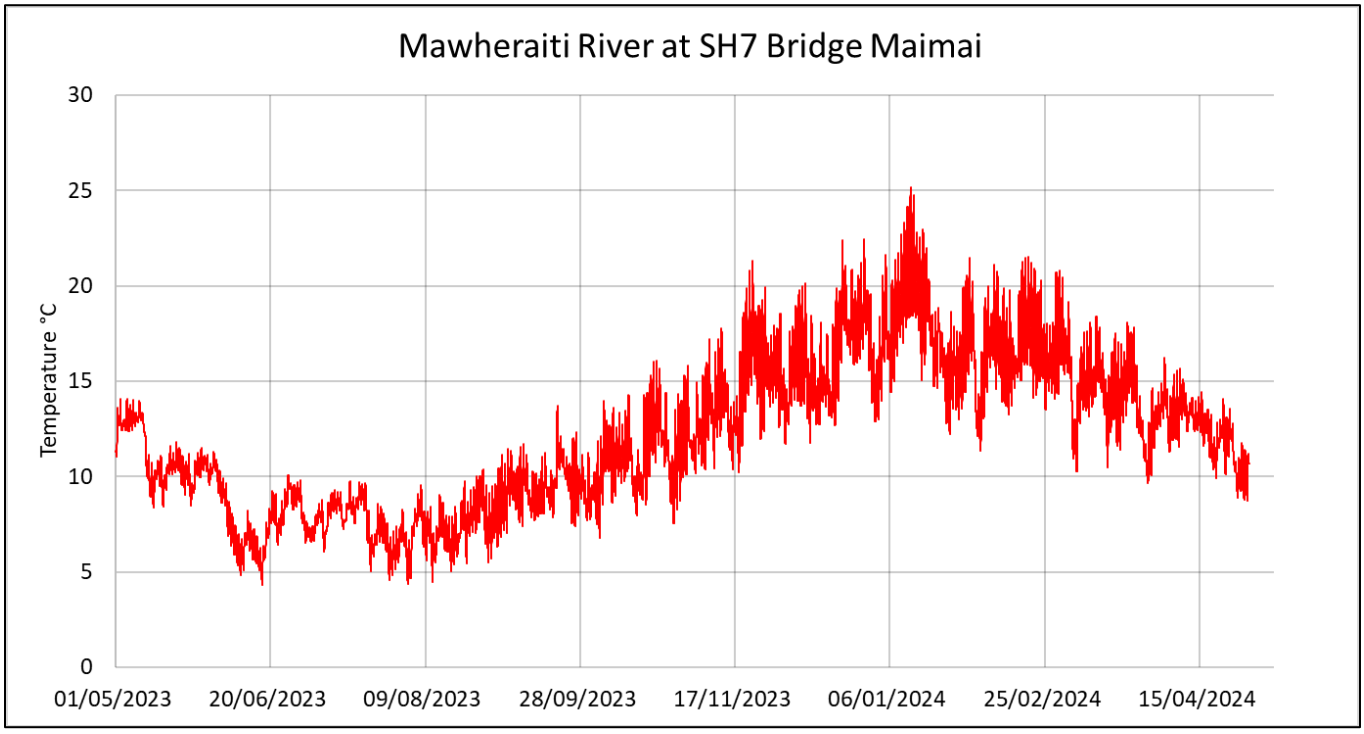

Figure 6: Temperature of Mawheraiti River at SH7 Bridge Maimai May 2024 - April 2025.

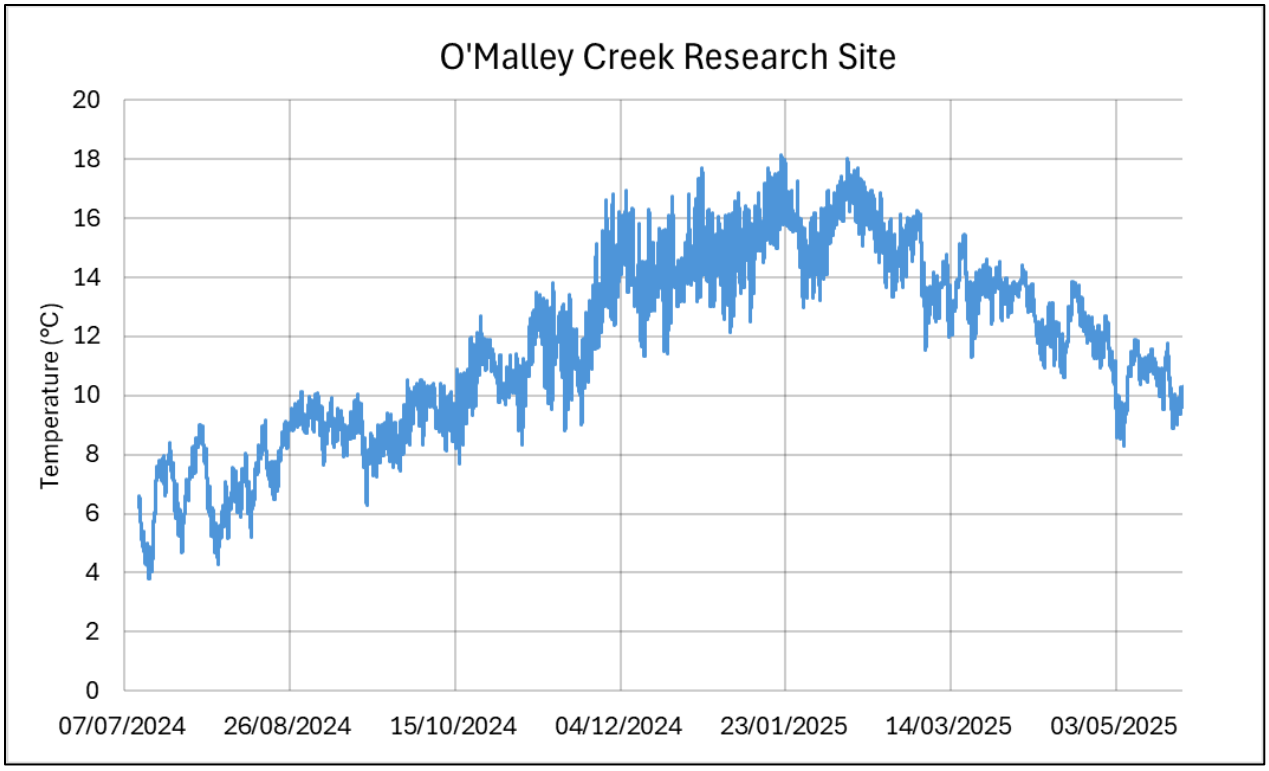

Figure 7: Temperature of O'Malley Creek at the research site between July 2024 - April 2025.

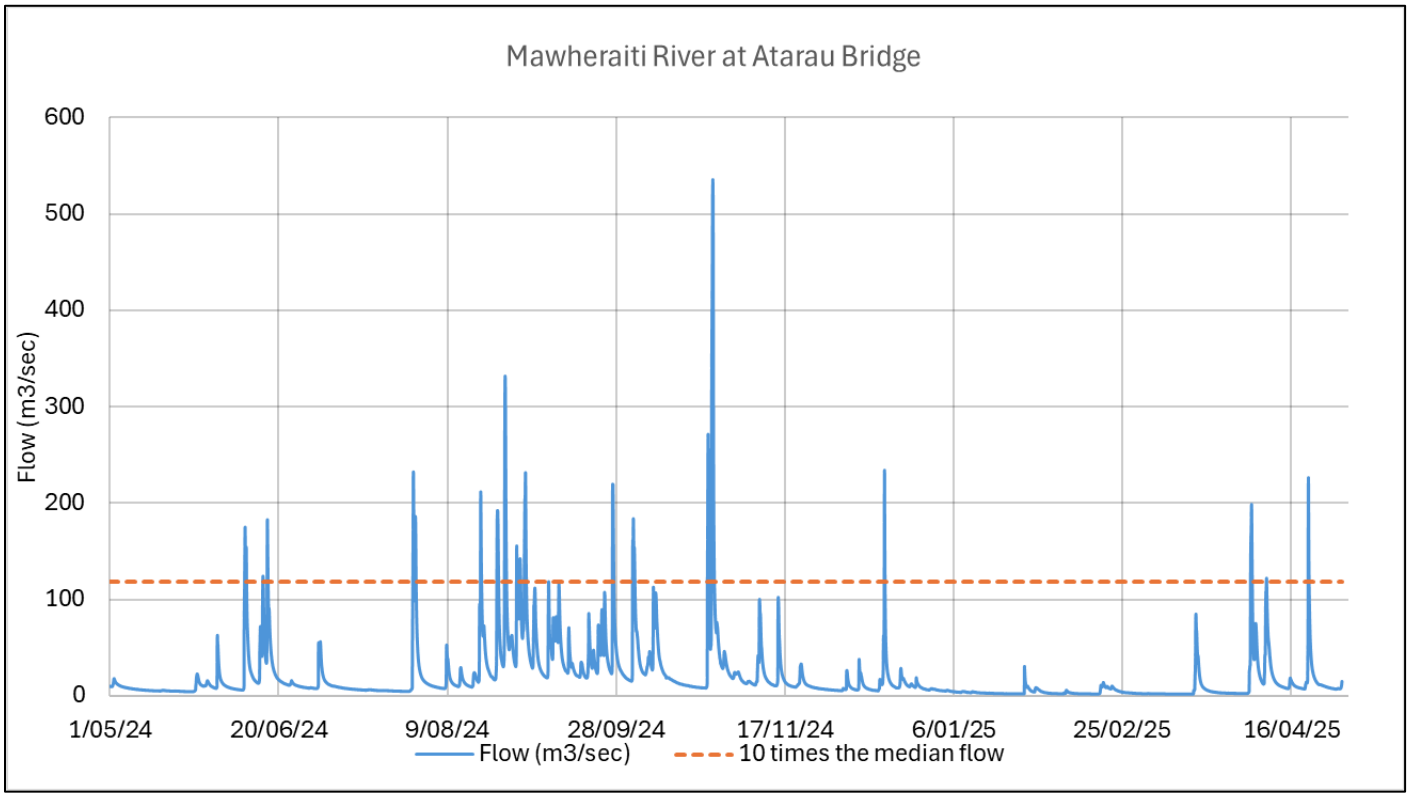

Figure 8: Flow of the Mawheraiti River at Atarau Bridge May 2024 - April 2025.

Discussion

The 2024–2025 monitoring year presented a challenging set of conditions for trout recruitment in the Mawheraiti catchment. Spring brought frequent high-flow events, with 25 days exceeding ten times the median flow, disrupting fry emergence and contributing to low juvenile counts across the research streams. Despite these spring floods, the summer was dry with prolonged fine weather and low flows, conditions that can stress trout and limit available habitat.

Electric fishing surveys in November 2024 recorded below-average juvenile densities. While some sites showed improved counts by April, particularly Adamstown Creek, overall recruitment remained low. The improved retention in spawning creeks may be linked to reduced intraspecific competition and fewer fish being displaced downstream. However, the weak early recruitment is expected to result in below-average small trout numbers during the 2025/26 drift dives.

Thermal stress also played a role. Water temperatures at Maimai exceeded 19 °C on 89 days, with Atarau recording 73 days before equipment failure in mid-February. Trout reduce feeding above 19 °C (Hay, Hayes, & Young, 2006), so for much of the summer, fish were likely under thermal stress and unable to build condition ahead of the next spawning cycle. This further compounds recruitment challenges.

Of particular concern this year is the continued rise in turbidity. The median turbidity at Atarau Bridge was 3.1 NTU, over six times the recommended threshold of 0.5 NTU (Hay, Hayes, & Young, 2006). This represents a significant deterioration in water clarity and poses a direct threat to trout habitat. Given the dry summer with prolonged fine weather and low flows, the rise in turbidity is especially troubling as these conditions likely heightened stress on the trout population.

While high flows and thermal stress remain key stressors, the turbidity trend stands out as the most pressing long-term concern. If unaddressed, it may continue to limit recruitment and suppress trout population resilience in the catchment.

Recommendations

- The council receives this report.
- The Mawheraiti trout recruitment research programme continues.
- Continue to work closely with WCRC and encourage them to proactively protect the Mawheraiti River trout habitat considering their duty to do so under Section 7(h) of the Resource Management Act 1991.

References

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Appendix 1: Location of research sites in the Mawheraiti Catchment.