

# ANNUAL FISHERIES REPORT 2020-21



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# SUMMARY OF THE SEASON



Nau mai, welcome to the 2020-21 Annual Fisheries Report for the Nelson Marlborough Fish & Game region.

In the following pages you will see what this region's staff have been up to over the season that was. As usual, we were kept busy with a myriad of work that only Fish & Game can provide. The job our staff do can be described as very diverse, one day in the outdoors drift diving or electric fishing to monitor the species we manage or have an interest in, the next day undertaking critical RMA work to try and ensure better environmental outcomes for the waterways we value, and the quality habitat that sportsfish and native fish, deserve and have a right to.

With R3 (Recruitment, Retention & Re-activation) a key focus for this region, of which the hatchery programme is crucial, there have been some interesting developments here, and staff had an important year in the scheme of things. The coming season too, will be a landmark one for the hatchery and release programme, with doubling the number of fish we will be growing (to 5000+ fish) to cater for the popular Lake Argyle and Waimea Park fisheries.

With a good deal of excitement, we will be opening the new family/adult pond at Waimea Park for the coming season, and we expect this to be very popular with locals, and provide us with a great way to grow and maintain local anglers.

This season, of course, was like no other in the past three or four decades. With international borders closed and non-resident angler use at basically nil, kiwi anglers generally had the rivers to themselves. But did kiwi's make the most of the international travel situation and do more

fishing? We surveyed our backcountry endorsement holders to find out and got some interesting results - see page 23 to find out more.

Of course, with a region that derives a quarter of our fishing income from non-resident anglers we took a substantial financial hit this season, more so than any other Fish & Game region. Despite this, we still grew our resident angler base by around 11%, as did nearly all other Fish & Game regions. This is very encouraging to have another year of resident angler growth, the fifth or sixth successive year of growth in a row. But, pleasingly, the kiwi angler base grew across the country, no doubt helped by the flush of returning kiwi's and home-stuck residents with no choice but to travel and recreate within our own country, but also from our R3 and marketing efforts nationally. This, in all honesty, came at a good time for Fish & Game New Zealand which has seen an disquieting trend of declining angler participation.

Tourist anglers will eventually return, there is little doubt about that. The key will be to try and retain and build on the growth we have experienced with resident anglers this season.

Finally, we thank our devoted Fish & Game Councillors for their untiring and diligent involvement in this Fish & Game region. With the Fish & Game review now out in the light, the future will be different for staff and governors alike, but hopefully once the dust settles, we will still be able to deliver on our key objectives for the environment and the fisheries, as well as our licence-holders.

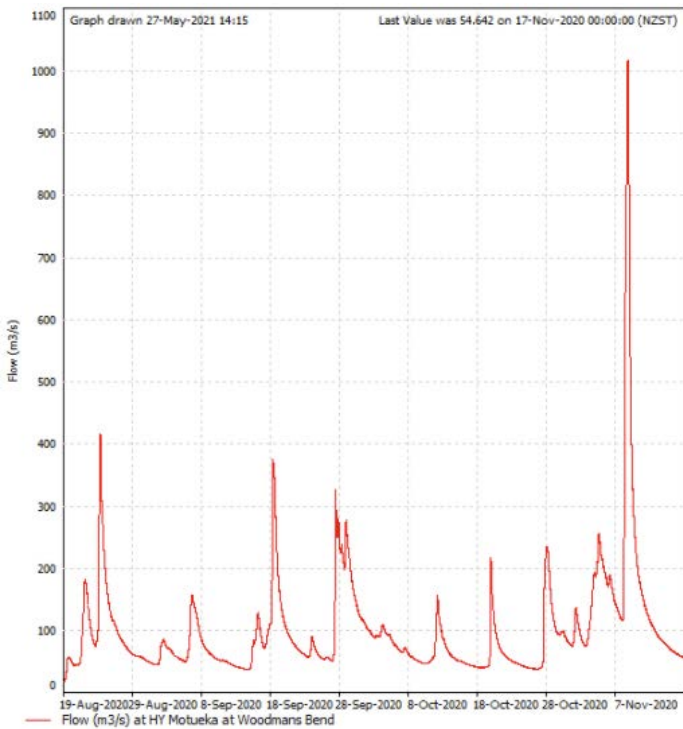
Noho ora mai, the Fish & Game team.

# SPECIES MONITORING

## MOTUEKA CATCHMENT

It's safe to say it was a strange year for anglers on the Motueka. Frequent reports from even the most experienced anglers suggested fish numbers were low and 'patchy', with large areas of dead water holding few fish. Occasionally anglers would bump into an area which held good numbers of obliging fish and a good session could be had, however it was the norm for anglers to work hard for modest returns.

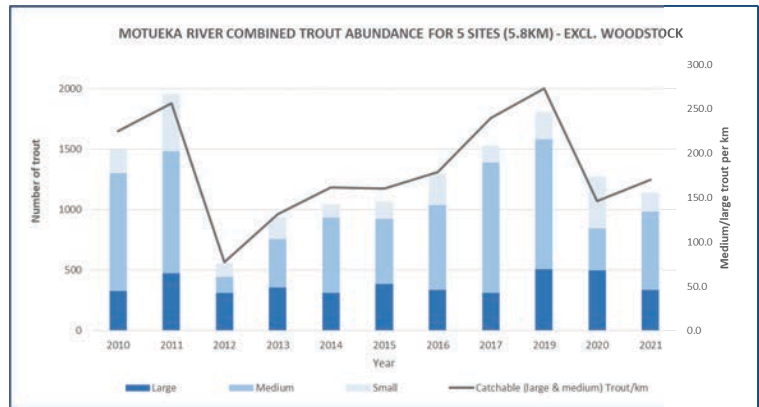
There was plenty of rain leading up to Christmas, though most of this fell in smaller lots and, while rivers remained high, there wasn't much in the way of high impact floods (though there was a 1000cu event which is less than an annual return flood). The exception of this was for the Motupiko which recorded a 5-year return flood event.



The results from the mainstem dive shows a reduction in large fish but a rise in medium fish which corresponds to an overall increase in 'catchable' (medium and large) fish. This was a surprising result considering the overwhelming negative feedback, though as most anglers catch large fish perhaps it could be ascertained the medium cohort are in areas where they are less catchable.

All told across five sites, 341 large and 647 medium fish were counted, which equates to 170 large/medium 'catchable' fish per kilometre.

> A euro nymph clinic run by Jonny Gummer and Tony Entwistle.



^ The number of large trout were down on average across the five Motueka main-stem sites.

The benefits of the lower fish numbers is, of course, larger fish, and it was very common for anglers to catch 5 pound plus fish this season, with some cracking fish up to 8 pounds recorded.

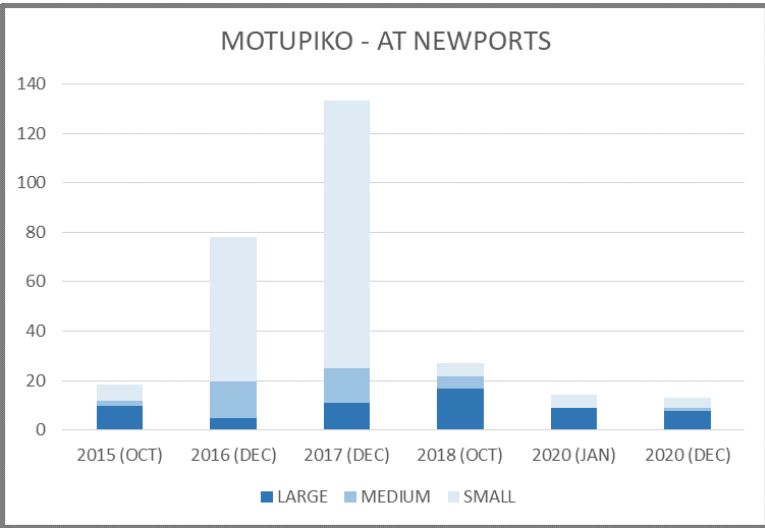


While angler pressure is never much of an issue on the Motueka, there was far less pressure on the Mot this season, even as it seemed from resident kiwi anglers. It was great to see plenty of action over a couple of days, though, with a euro 'kiwi' nymph clinic held on the Motueka which was run by Tony Entwistle and fly fishing guru Jonny Gummer.

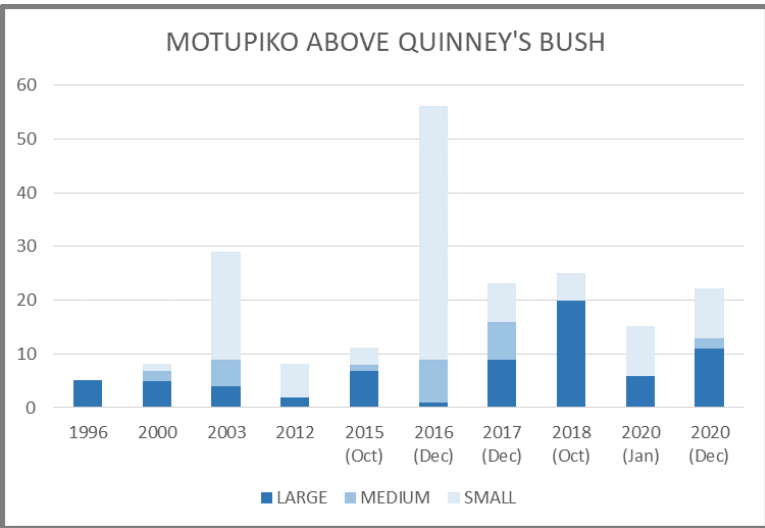
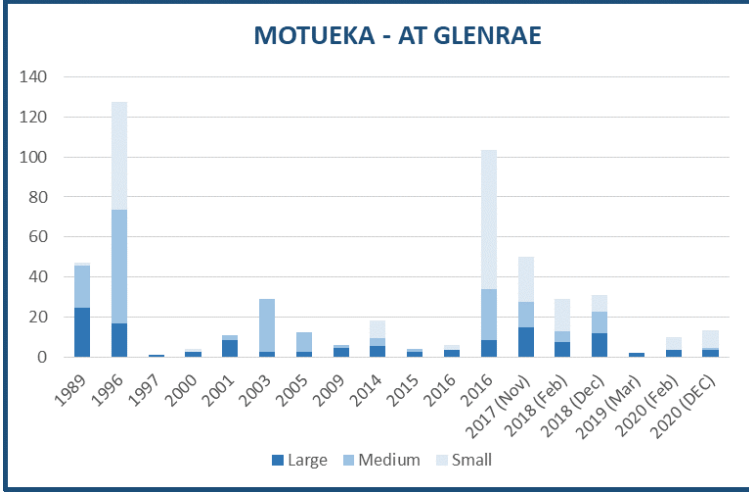


# UPPER MOTUEKA

The Upper Motueka at Glenrae was dived in December, with a fairly dismal number of four large trout counted, along with one medium and eight small fish. Considering flows had been good leading up to the dive, the result is disappointing. In the previous two years the dive was undertaken in late summer when flows were at their lowest and warmest and, not surprisingly, most fish had departed for cooler waters. In 2017 & 2018, dives were carried out here in November and December respectively and the population of fish was far greater with 15 large fish seen in 2017 and 12 in 2018. This year's result, however, is likely representative of the current state of the Motueka fishery, and we hope that we get successive stable late winter/early spring periods to drive a higher population in the coming years.



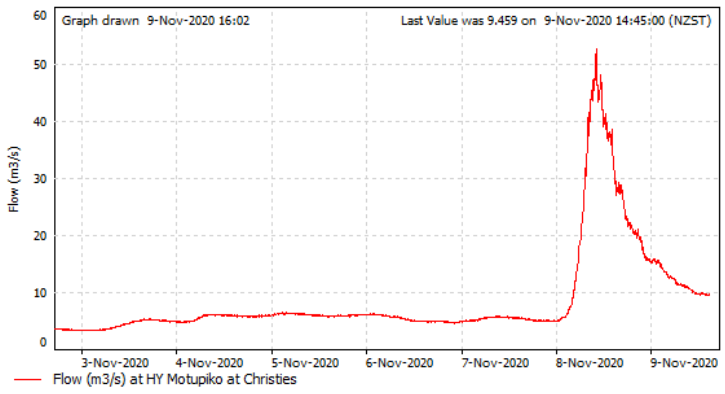
Again notable was the low number of juvenile browns compared to December 2016 & 2017 where successive successful recruitment years was responsible for a flush of larger fish in subsequent years and some of the best fishing on offer for decades..



# MOTUPIKO

The Motupiko was dived on December 8 at Newports (upper) and Quinneys Bush (lower).

The river experienced a 5-year return flood event in November.



^ Rock groynes on the Upper Motueka. These provide better habitat for fish than rip rap.

The upper site at Newports held similar numbers of fish to the January dive of the same year, though numbers overall were lower than previous years when the Motueka fishery was bouyant. At Quinneys Bush, four of the 11 large trout were found in pools created by rock groyne habitat - an occurrence which has become common in recent years.

# RIUWAKA RIVER

Angler reports suggest the Riuwaka was reasonably tough going this season despite trout numbers being reasonably stable.

Pleasingly the lower Riuwaka, below SH60, is really start to take shape now, thanks partly to plantings by Fish & Game a number of years ago, but, ironically and for the most part, due to TDC not really 'doing much at all'. In this area, weeping willows and other non-seeding willows planted by Fish & Game are growing well and providing good shading and cover areas, and occasional large boulders from existing rock rip rap are detaching from the wall and falling into the main channel, creating some deep water areas and hydraulic diversity which trout readily make use of.



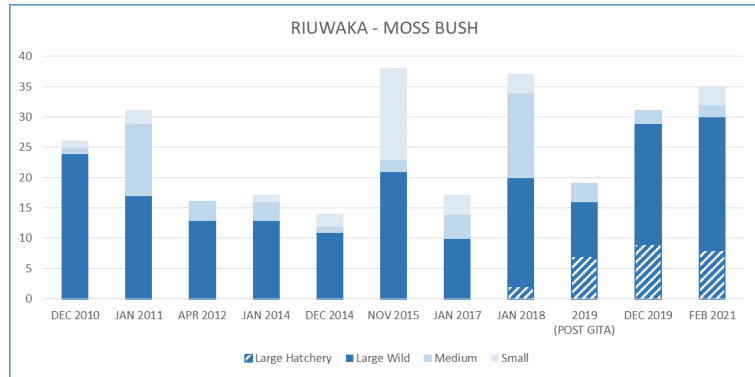
^ Weeping willows planted by Fish & Game are now providing cover and good feeding lanes for trout in the lower Riuwaka. (Insert: the same tree when planted)

> The scour effect from de-stabilised boulders creates depth and hydraulic diversity which trout make use of.

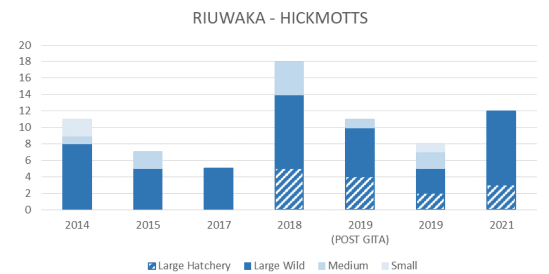
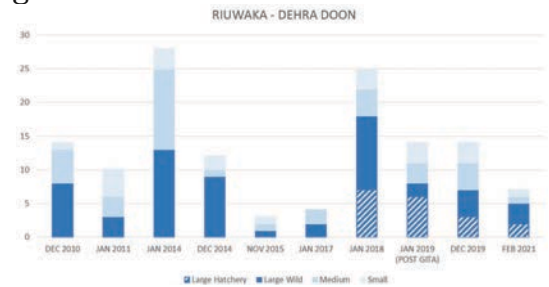


Fish & Game have been asking TDC enginners to undertake some remedial work in this part of the Riuwaka, in essence some strategically placed large boulders, however this appears to be occurring naturally now and, while more could be done, staff are reasonably happy with the way this lower part of the awa is transforming, not only providing good habitat for sportsfish, but also improved habitat for tuna and inanga. In time, as long as TDC river engineers don't spray the willows or put in more rip-rap, this all important section of the Riuwaka should improve.

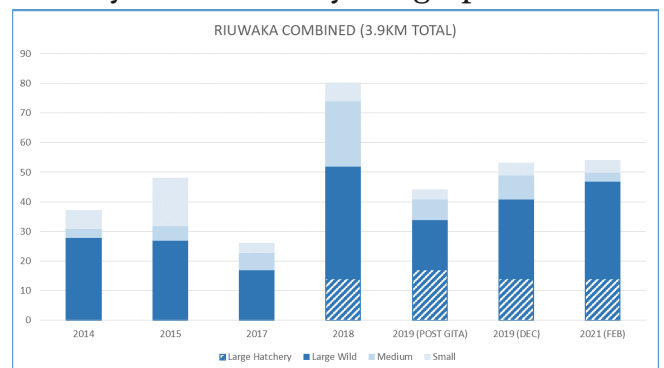
The Riuwaka was dived in February - a month or two later than normal. The count at Moss Bush - the longest running site which has been dived most years since 1985, was remarkably similar to the year prior with 30 large, 2 mediums and 3 smalls counted, of which 8 large fish were hatchery fish from the 2017 release.



The lower site at Hickmotts showed an improvement from last year with 12 large fish in residence over the 1km dive, with one heavy specimen pushing the double digit mark. The count at Dehra Doon has been poor in recent years, and this year was no exception with just five large fish seen of which two were fin clipped.



All told across the three sites within the Riuwaka River, 47 large fish were counted over 3.9kms of water, with 14 of these (~26%) from the 2017 release. The number of hatchery fish counted across all sites has been very consistent over the past four years as seen by the graph below.



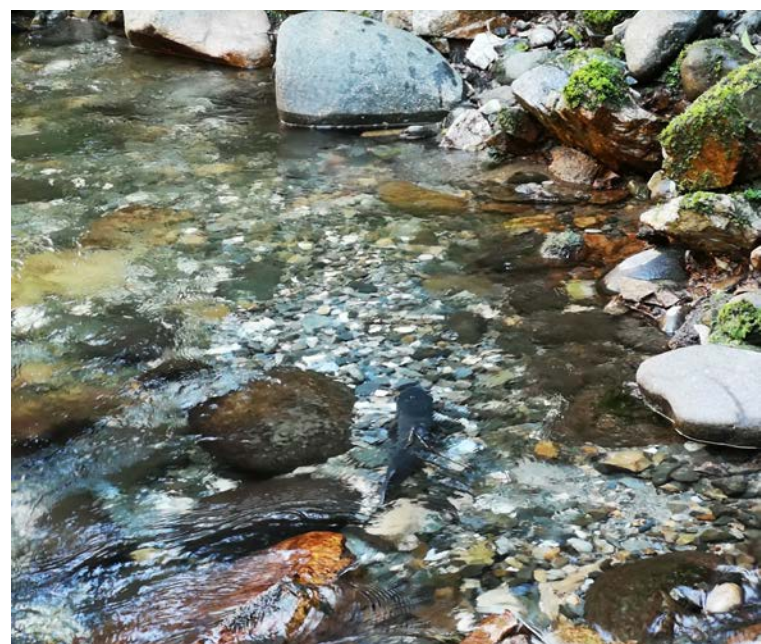
^ Combined fish totals for three Riuwaka River sites (3.9kms) from 2014-2021.

# E-FISH SURVEYS | WINTER SPAWNING FOOT COUNTS - TASMAN AREA

## RIUWAKA RIVER

The Riuwaka (North & South Branch) were surveyed on 27 July 2020. Recent forays over the past few years leads us to believe spawning in the Riuwaka is slightly later than elsewhere, typically in mid-late July. In fact, a pair of fish were seen on a redd in the South Branch in early October 2020.

A lack of abundant spawning gravels see's fish often utilising what little gravels there are, as indicated by the picture below where a trout is holding over a rather small area where it has managed to create a viable redd.

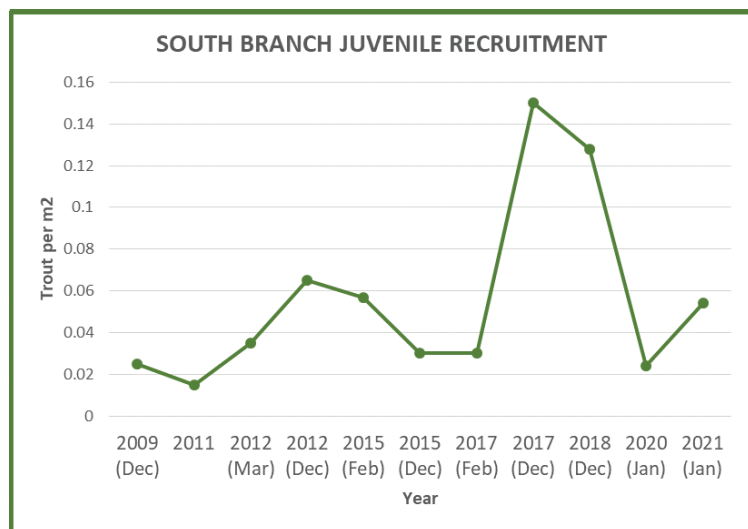


All told for the South Branch, 9 definite redds were seen over a 1.2 km length, and the North Branch had 2 redds throughout a 0.8 km length.



< Some other trout redds on the South Branch.

In January this year, three sites on the Riuwaka (two in the South Branch and one site in the North Branch) were electric fished to monitor juvenile trout recruitment success. At the same time, native fish abundance was recorded (see more information on page 15). Slightly higher recordings of young trout were found at all sites, with the South Branch ford site showing the biggest improvement - see graph below



## GRAHAM RIVER

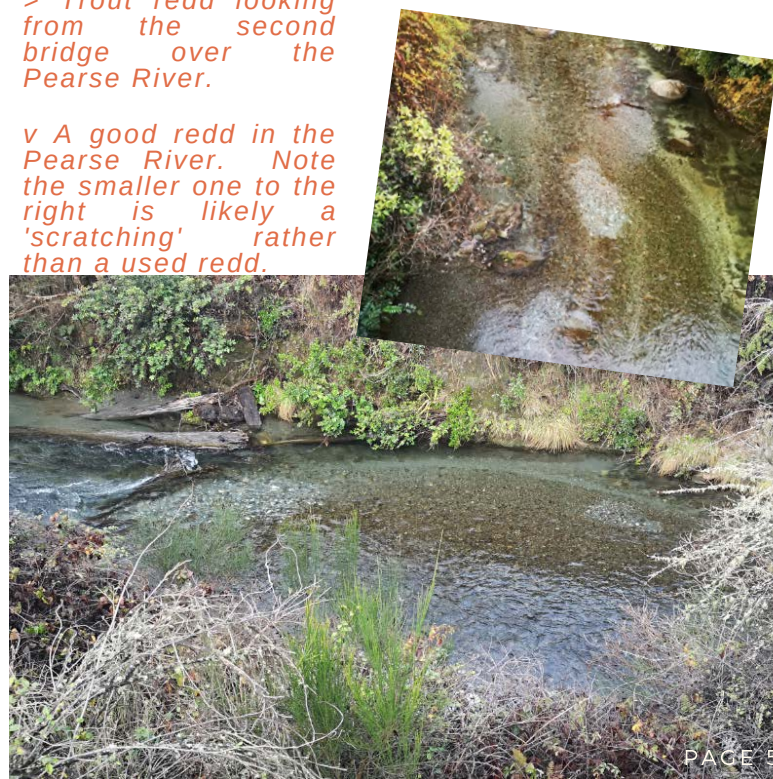
A short stretch from the Motueka confluence to the Graham Bridge was walked as some anglers had believed fish may congregate/spawn at confluence, however no fish were seen.

## PEARSE RIVER

The Pearse was surveyed on 13 June 2020. Only two definite redds were seen over a 2 km length, despite an abundance of excellent spawning gravels and a river that is relatively stable.

> Trout redd looking from the second bridge over the Pearse River.

v A good redd in the Pearse River. Note the smaller one to the right is likely a 'scratching' rather than a used redd.



## STANLEYBROOK RIVER

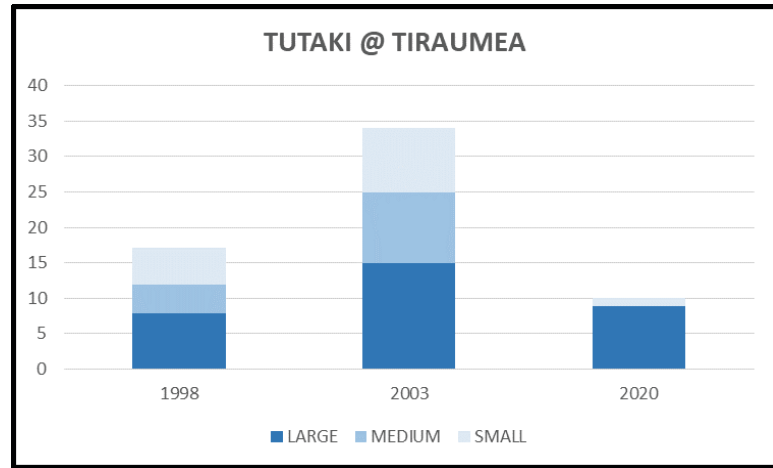
A short 0.8 km length of the lower Stanleybrook was surveyed, a repeat of the area surveyed the year prior where 7 definite redds were counted, which was when the Motueka had a very high trout population. For the 2020 spawning count, no redds were seen throughout the same run.

This gave some insight as to what the coming season would be like for anglers which was deemed to be fairly poor.

## TUTAKI RIVER

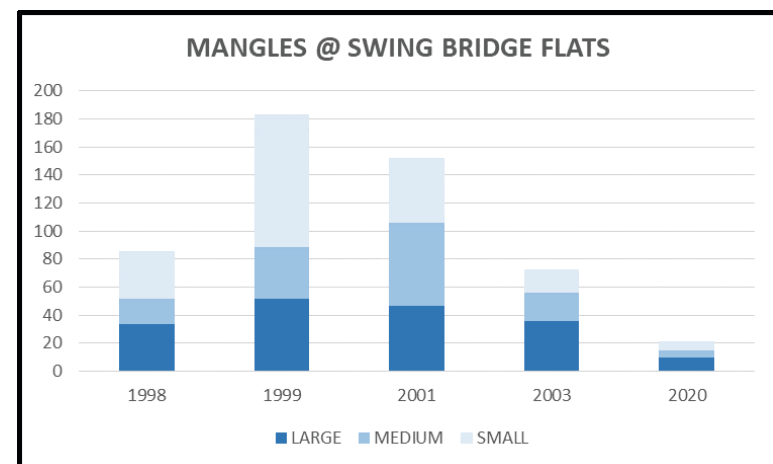
The Tutaki was last dived in 2003, and it had only been surveyed once before that in 1998, therefore has a small dataset to write about. The site commences at the Tiraumea confluence and concludes at the main road bridge - a 1km dive site.

While the 2003 dive had a healthy population of fish in all age classes, the December 2020 dive found only nine large browns and one small in residence.



## MANGLES RIVER

As with the Tutaki, it had been a while between dives for the Mangles, again last dived in 2003. This usually very productive trout stream has surely been better in terms of trout numbers in the past and the 2020 count was the worst of all five dives undertaken on this river.

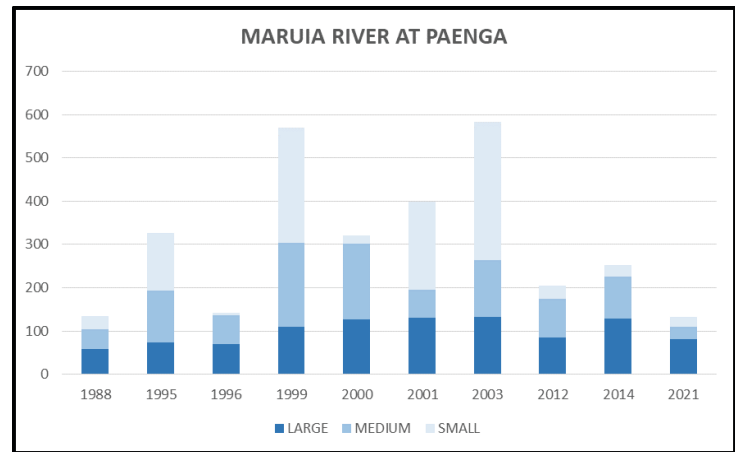


A total of 10 large, 5 medium and 6 small brown trout were seen, which is well under what the river should be supporting considering the great trout habitat on offer. Hopefully this is just a product of a poor recruitment period from natural flood events rather than anything worse, and it would be good to re-visit the Mangles in a few years to see if it bounces back.

## MARUIA RIVER

The Maruia is a very productive river, and an anglers dream in places. It was last surveyed in 2014 with the assistance of West Coast Fish & Game, and this season Nelson Marlborough also used the services of the West Coast staff to assist with the dive, which was undertaken in late March. The dive is 2km in length.

Overall, while deemed to still be in fairly good shape, in a historical sense this year's dive was one of the lowest of the ten dives that have been carried out, with 82 large, 28 medium and 21 small brown trout counted. While numbers of large fish were not unusual, the abundance of mediums, in particular, were well down. The four dives carried out between 1999-2003 may have coincided with a period of stability hence the population across all size cohorts was excellent.



## TRAVERS RIVER

The Travers was dived in September in order to collect a limited number of trout for 1080 residue analysis. The two reaches surveyed were not the same as historical sites, however it was worth recording fish numbers regardless.

In the 1.5km site from Hukere Stream to 'Corner Pool', 31 large and 2 medium fish were seen. There were several fish in the 5kg range indicating fish had had a good winter.

The site above the swing bridge was also 1.5kms, and held 17 large and 1 medium fish. Over both sites, 19 of the fish were removed for 1080 flesh analysis - see more information on page 25.

> A prime fish for the taking?



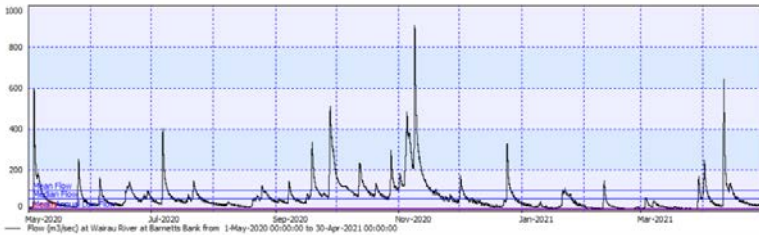


# WAIRAU CATCHMENT

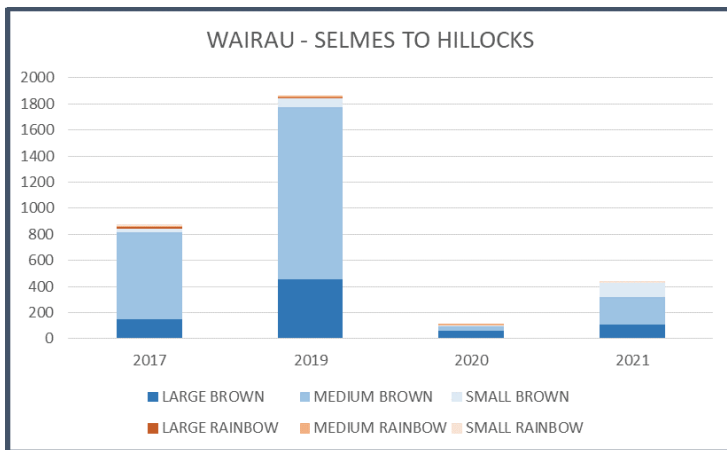
## WAIRAU RIVER

This season the lower Wairau at Selmes Road was dived along with the Branch and Leatham rivers during the month of February.

It had been a relatively stable season in terms of flood events in the Wairau with the largest flood event not even reaching 1000cu, a very timid year for this river. Angler reports suggest it was still relatively tough going despite the lack of flood water, with notably less fish in the river over the past few years as evidenced by drift dives, which staff believe was caused by successive drought/low flow years and the effect of this on the medium trout cohort.



The count at Selmes Road this year was much higher than the dismal readings from the previous years' dive, though still by no means good from an anglers point of view, with brown trout coming in at 111 large, 210 mediums and 107 smalls seen, and a light scattering of rainbows (1 small, 2 medium and 4 large of which one was fin clipped).

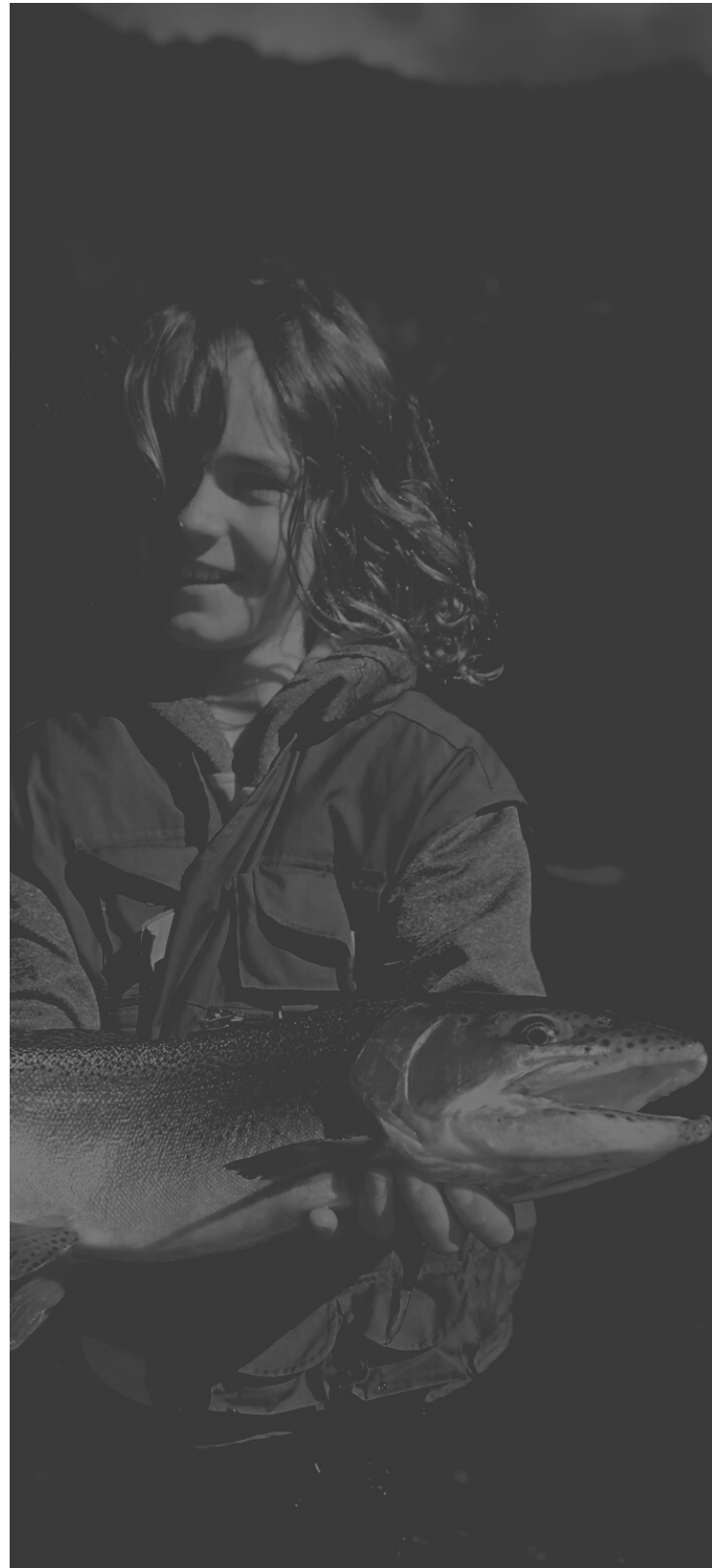
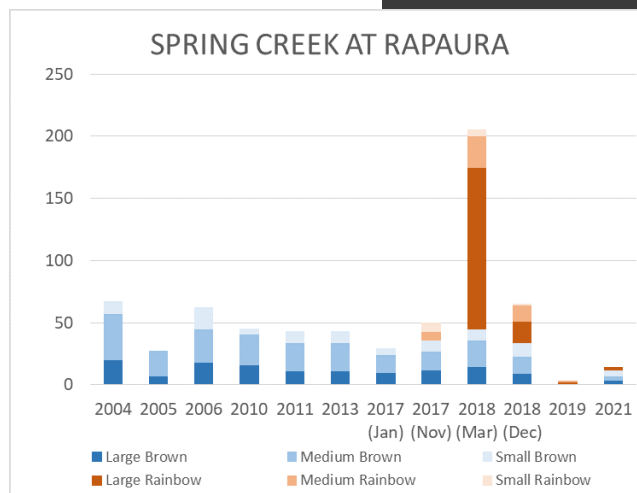


Salmon smolt numbers were higher than normal, and two large salmon were also counted.

## SPRING CREEK

After a seal had run rampant in Spring Creek, demolishing the trout population, it was good to see some recovery take place, though numbers are still well down.

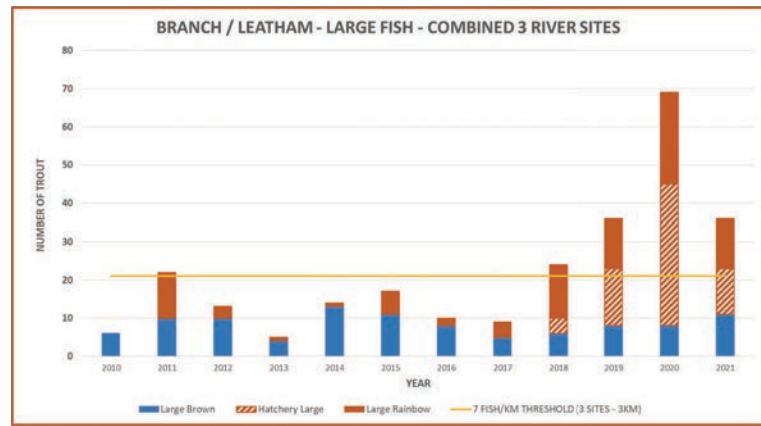
Brown trout consisted of 4 large, 3 mediums and 5 smalls, along with 2 large rainbows.



# BRANCH | LEATHAM

The Branch & Leatham rivers have been the focus of successful rainbow releases in recent years, however due to lack of fish available, only one release of 200 fish was undertaken into the Leatham this season (by vehicle). Anglers picked up on this too, with reports suggesting that while there were less fish than previous years, condition factor was very good and there were still decent numbers to keep interest levels high.

Our tag data is telling us that most of the fish released into the system either drop out or are taken by anglers over the course of 12-24 months, so going into the February dive we expected less fish than previous years, which turned out to be the case as seen by the graph below.



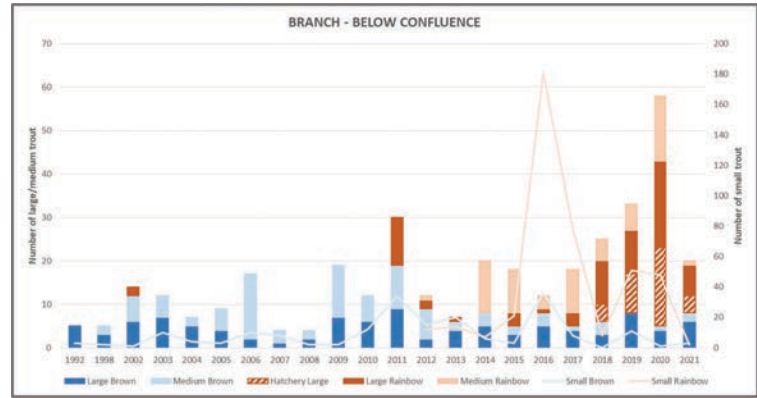
Despite this, Trustpower's target of 7 large fish/km was easily reached across three sites (3km), with 36 large fish (11 browns, 12 hatchery rainbows, 13 wild rainbows).

No tagged fish from the December release were seen in either the Leatham or Branch Confluence dive, however tagged fish from this release started to get caught in the latter part of the season lower down in the catchment.

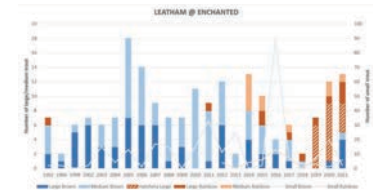
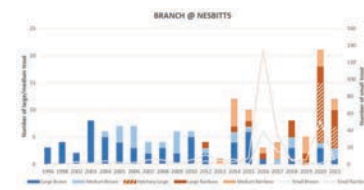


^ The Branch/Leatham is still one of our best places to introduce new anglers to fishing, as shown by Lincoln Randell with his first fish taken on the fly, all on his own.

The dive below the Branch/Leatham confluence had six large browns in residence and 11 rainbows, of which four were released fish. You can see the count of brown trout in this part of the river is reasonably consistent over the years.



Just one large brown was seen for the Nesbitts dive, along with seven rainbows (4 hatchery, 3 wild). This reach has had a good deal of pool infilling in recent years, and low numbers of brown trout have been evident which is perhaps partly attributed to the pool loss, but also the increasing rainbow trout population.



The Leatham dive yielded some of the best results for quite sometime, with four large brown trout and seven rainbows (4 hatchery, 3 wild). Angler feedback from the Leatham indicates decent numbers of well conditioned brown trout in the river.



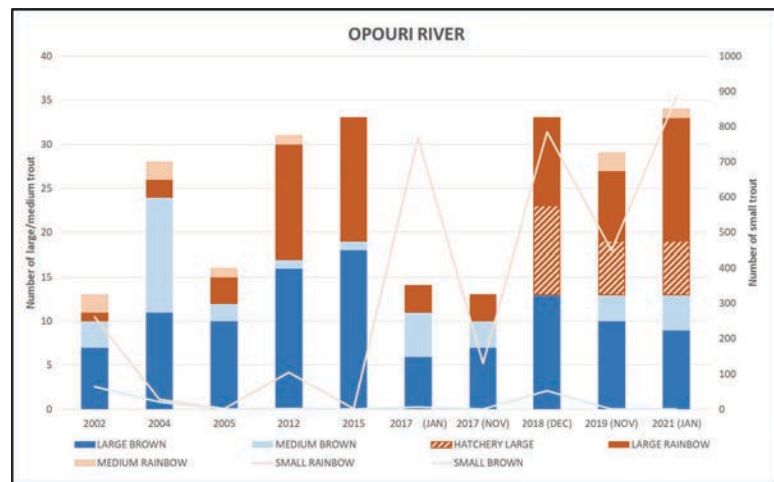
^ Nick Molyneux with a solid Leatham brown.

v > Fish numbers were down but condition was up in the Branch/Leatham this season.



## OPOURI RIVER

This Opouri was dived in mid-January and recorded a fairly respectable result over the 2km length of 9 large brown trout and 20 large rainbows, of which 6 were tagged or fin clipped.

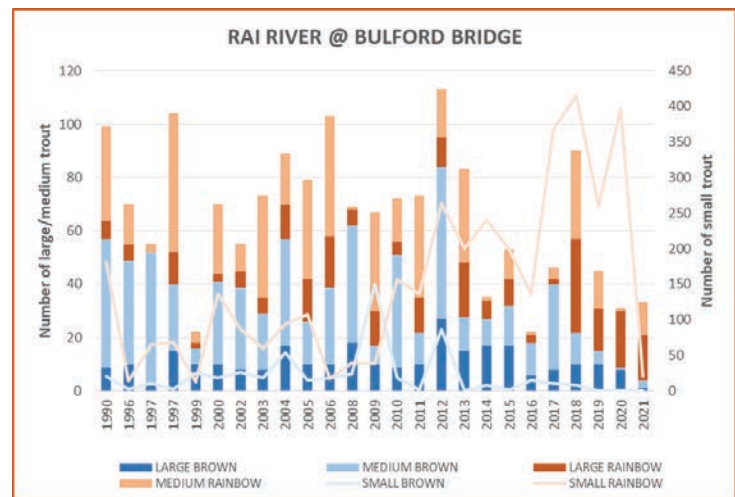


A very healthy number of juvenile rainbows were also in residence with 885 counted, although the actual number may be higher due to their liking for very shallow riffle substrate which is difficult to count.

The Opouri is underrated by anglers and does not receive a huge amount of attention, despite it offering a consistent population of decent sized browns and rainbows and good angling. It is clearly an important nursery area for the Rai and Pelorus fishery. Most of the juvenile fish from the Opouri and Rai appear to drop out into the Pelorus as evidenced by our Rai drift dive result, which was undertaken in late March, where few juveniles were seen. Normally this dive is undertaken in January, and in the past few years has seen juvenile fish numbering in the hundreds.

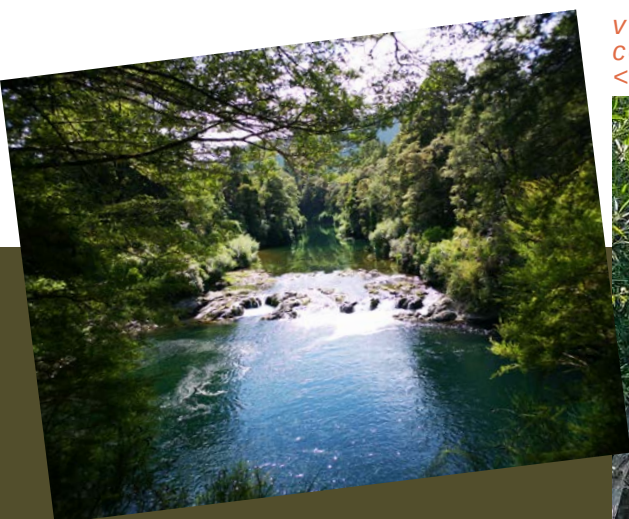
## RAI RIVER

The Rai was dived in late March, approximately two months later than when it is surveyed most years. It is hard to say whether the later date is the reason why only one large brown trout and far less juvenile rainbows were counted, though staff believe this has something to do with the low count. There were no flood events of scale that may have caused significant damage to the fishery, so perhaps with cooling Autumn the fish had their mind on other matters and were pushing further upstream.



17 large rainbows were counted on the 1km dive, with at least five of these fin clipped or tagged. As mentioned earlier, the number of juvenile rainbows was very low, though this is likely a case with the timing of the dive rather than a reduction of the catchment population.

As it turned out, good numbers of 'large' small rainbows were counted in the Pelorus which, for this year, was dived at a new location - see more information on this dive on the next page.



> The Opouri is a fantastic small river with a consistent population of rainbows and browns.  
 < The Rai River, above Rai Falls



# AWA TE HOIERE | PELORUS RIVER

This year staff decided to change tack for the Pelorus River and add a new data set - one which encapsulates data from the mid-lower part of the river. A site was chosen which has been labelled 'Riverdale' near a historical site which was last dived in 1997 (though the new site will have a separate data set).

Staff recall when the 1997 site at Hughes Creek was dived, it had much more deep water refuge than what was experienced with the new Riverdale site. It was clear that there had been significant gravel infilling over the past two or so decades and, as a result, the new Riverdale site is more suited to juvenile trout habitat, with plentiful shallow riffles and few deep areas around structure which larger fish are generally found in.

The Pelorus was dived in late March, and a total of just three large browns were counted, however there were 15 large rainbows within the reach. As mentioned, due to the ideal juvenile trout habitat, it was no surprise 300 small rainbows were counted. These fish were what would be termed a 'large' small, and add weight to the idea that many of these have migrated downstream from places like the Rai/Opouri.

### PELORUS AT RIVERDALE

Large Brown Trout	Medium Brown Trout	Small Brown Trout	Large Rainbow Trout	Medium Rainbow Trout	Small Rainbow Trout
3	2	2	15	22	300

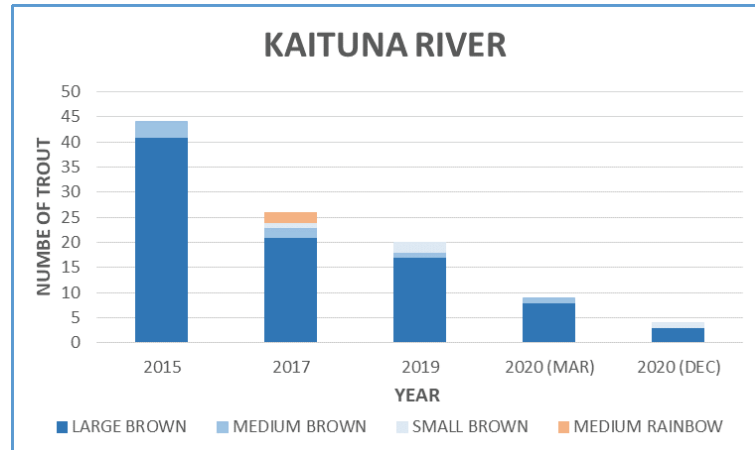
The reason why a new site was chosen in the Pelorus was that we felt we were not gaining any new information from the traditional Pelorus site. Low summer flows and high water temperature are also a factor at the traditional site in the 2kms above Pelorus bridge, and fish may be dropping out of this part of the river into the cooler waters below the Rai confluence and thus not accurately reflecting the fish population. The change to a downstream site also reflects where most of the angler effort occurs, and data gathered here would be of greater interest to those that fish there.

The Rai also brings with it a higher nutrient loading which, when mixed with the nutrient poor Pelorus water, likely increases river productivity and may be more suitable to trout. The low productivity waters of the Upper Pelorus may only be able to sustain a low population of fish.

> A large podocarp from an upstream area has fallen victim to erosion, a common occurrence in the Opouri. Fish & Game were working with the Te Hoiere Project group, and have proposed bank stabilisation here.

# KAITUNA RIVER

The Kaituna was dived in December and continues it's very rapid decline. Just three large browns were counted alongside one small brown trout.



While significant flood events do occur in this short river, they are generally low velocity, and they do not account for the rapid decline, therefore it is more likely seals have been the main factor at play. Trout which reside in the deep, slow water which is a feature of this river, provide an easy target, and it is not difficult to imagine seals doing some real damage to the fishery. There is little Fish & Game can do about seals given their protection under the Marine Mammals Act, we simply have to wait until the seals depart and the fishery rebuilds.



# WINTER SPAWNING FOOT COUNTS - MARLBOROUGH

## SIX MILE - WAIRAU

Six Mile stream runs through Rainbow Station flats and under the State Highway to enter into the Wairau River. It was surveyed in July 2020 and found to be a good sized and stable spawning stream, but possibly having too much sediment and a lack of clean gravels. On this visit, one redd and one fish were seen for the 1.2km length from the State Highway to the Wairau.

In 1993 it was surveyed for 1.5kms upstream of the State Highway and nine redds were seen. This site should be revisited again in the coming years, however there has been considerable farm development in this part of the stream since then.



*^ A single redd was seen in Six Miles Stream below the State Highway.*

## ARGYLE HEADRACE CANAL

Argyle headrace canal was inspected on 30 June 2020, with 16 fish and 8 redds seen. Fish were exhibiting spawning behaviour being paired up and/or sitting on redds, though visibility was marginal due to water clarity and shading so likely to be significantly more fish and redds than observed.



*< Spawning fish in the Argyle head race.*

## TINLINE TRIBUTARY

A tributary of the Tinline River was surveyed on 17 September and, despite a number of prior rainbow rainbow releases, no fish were observed.



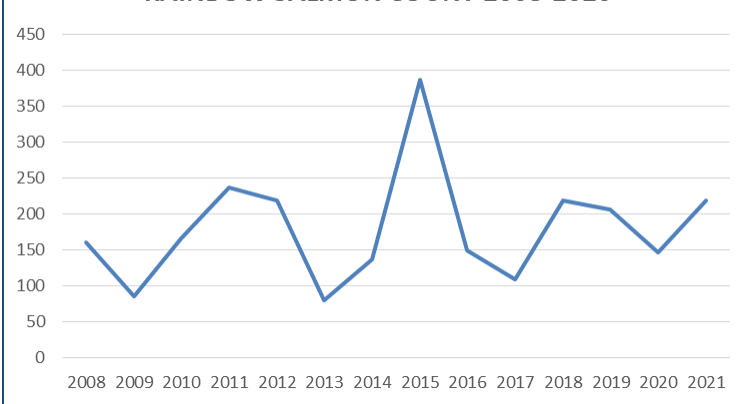
# SALMON MONITORING

The lower Rainbow and Rainbow side-stream were surveyed in early May for salmon. A total of 219 fish were counted along with 152 redds, which is higher than last year but still fairly typical of spawning salmon numbers in recent history. Most of the fish as usual were in the Rainbow side stream up to the fence. From the Wairau confluence to the side-stream, 21 live fish, one dead fish and 12 redds were seen.

**RAINBOW SALMON COUNT 2021**

	Live fish	Dead Fish	Total Fish	Total Redds
Rainbow River From Wairau to side stream	21	1	22	12
Rainbow side stream - Fence	124	1	125	83
Rainbow Side Stream - inside fenced section	70	2	72	57
<b>Totals</b>	<b>215</b>	<b>4</b>	<b>219</b>	<b>152</b>

**RAINBOW SALMON COUNT 2008-2020**



It could be deemed a fairly normal season in terms of harvest, however as this region does not survey anglers this claim is just anecdotal from angler reports.

Salmon fishing did feature in the news again when Alex Kole (pictured below) snared a decent salmon and his experience made local news headlines.

## Angler's alluring catch gives council salmon to talk about

Chloe Ranford Local Democracy Reporter - 05:00, Mar 17 2021



SUPPLIED

Unfortunately the renowned East Coast Salmon fisheries (Rakaia, Rangitata, Waimakariri, Waiarau & Waitaki) have been declining in recent years and reports are that this year has recorded the lowest returning Chinook Salmon spawning counts on record in many of the East Coast rivers. As a consequence, season bag limits are likely to be put in place this coming season.

In contrast to the renowned salmon fisheries further south, the Wairau River Salmon fishery has shown marked improvement in its returning spawning run in recent years. Historically the Chinook salmon spawning run in the Wairau could just about be counted on one hand. The past winter peak count of 219 returning spawning salmon in the Rainbow, now puts it on par with some of the renowned salmon fisheries further south.

Who knows what the coming season will bring, but long may the treasured salmon run in the Wairau continue to provide additional opportunities and excitement for those lucky enough to manage to hook one!



^ Non-resident angler, Ilias Sanhaji, with a small Wairau River salmon from this season.

# NATIVE FISH MONITORING

Electric fishing monitoring of both native fish and juvenile trout continued in a number of trout fisheries including the Branch/Leatham, Opouri, and Riuwaka Rivers. This monitoring work has two main purposes, firstly, to monitor any potential effects of the regional trout release program on native fish (relative to the impacts of flooding or other factors), and secondly to try and determine what are the specific salmonid population limiting factors within these fisheries. The Branch/Leatham catchment is the main area where riverine salmonid releases are still undertaken annually within this region.

## BRANCH/LEATHAM STUDY

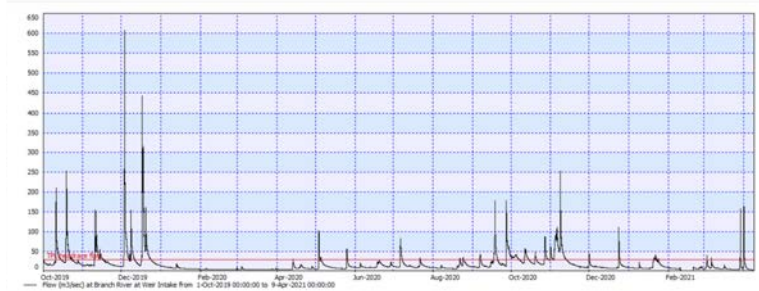
An intensive 3-day sampling trip utilising two electric fishing teams is undertaken within this fishery annually over 15 separate locations within the catchment, mainly utilizing historic sites originally surveyed prior to the Trust Power adult salmonid release program starting in 2010 as mitigation for the Branch hydro scheme weir salmonid fishery impacts. This work was set-up as a monitoring system to assess the health of both native fish and brown/rainbow trout recruitment following the commencement of the release program. This work has now been undertaken 5 times by Fish & Game and will be repeated annually for the lifetime of the current Trust Power hydro consent for as long as restocking continues.

Results of the April 2021 survey work were interesting, with good numbers of both native fish and juvenile trout present within nearly all the mainstem Branch/Leatham sites and many of the tributary sites, possibly due to no significant floods occurring over the preceding 13 months after the 2020 sampling trip when all fish species had low population levels. The only mainstem sites which had depressed fish numbers, were the two sites below the hydro weir within the residual flow area.

Trout are not released within this zone below the weir, however a significant amount of weir maintenance work was undertaken two months prior to sampling with generation shut down for a month or so. It is possible that either flow restoration down the residual channel during the maintenance period, or sediment generation from maintenance work, displaced most

species except upland bullies which appeared to instead have exploded in number during this period at these two sites (see righthand column of Table for Branch below SH63/Weir).

Branch flows at weir with no large floods over last 13 months (note by comparison the ~ 20-year return event in Dec 19 severely impacted fish numbers recorded at most sites during the March 2020 sampling).



As can be seen in the monitoring results table below (next page), some of the flood prone mainstem sites that usually hold a relatively low biomass of both juvenile trout and native fish, had experienced significant increases in both.

The Leatham mainstem site below Caves Bluffs was particularly impressive with 94 dwarf galaxiids being located over 200 m2!

Of interest, is a general historic pattern of high galaxiid numbers alongside high juvenile brown trout at some sites, presumably after a significant period of catchment flow stability (not too many large damaging floods). Given the well documented impact of high flow events on juvenile trout recruitment as shown by the Cawthron Institute's research on the impact of high spring flow events on subsequent years Motueka River adult trout drift dive counts, it is likely a similar mechanism operates for native fish population abundance, as indicated within Cawthron's 10 year research program within the Rainy River, part of which looked at key population drivers of the native fish species present, which were determined to mainly be flood size and frequency related.

*v A Branch River galaxiid*



Year	Location	Area Sampled (m <sup>2</sup> )	No. of juvenile trout	No. of dwarf galaxiids	No. of Northern galaxiids	Total No. Galaxiids (per m <sup>2</sup> )	Comments
2018	Branch below SH63	200	0	0	0	0	Nil fish caught
2019	Branch below SH63	200	2 Bt	4	0	0.02	7 upland bullies.
2020	Branch below SH63	200	0	1	0	0.005	9 upland bullies.
2021	Branch below SH63	200	0	0	0	0	84 upland bullies
1992	Branch below weir	80	occasional Bt	occasional	occasional	occasional	
1993	Branch below weir	372	11 Bt	1	11	0.032	3 upland bullies, 1 Ifeel
2018	Branch below weir	200	1 Bt, 1 Rt	1	0	0.005	4 upland bullies
2019	Branch below weir	200	0	0	1	0.005	6 upland bullies, 1 elver
2020	Branch below weir	200	0	0	1	0.005	1 upland bully
2021	Branch below weir	200	3 Bt	0	0	0	57 upland bullies
1999	Boulder stream above ford (*1.5km upstream of ford)	50	0	3	0	0.015	28 upland bullies
2018	Boulder stream (*first good riffle above ford)	200	2 Bt	0	0	0	2 upland bullies, flood damaged/sedimentation
2019	Boulder stream (*first good riffle above ford)	200	1 Rt	18	1	0.095	5 upland bullies
2020	Boulder stream (*first good riffle above ford)	200	0	1	2	0.015	3 upland bullies, 1 Ifeel
2021	Boulder stream (*first good riffle above ford)	200	0	0	3	0.015	14 upland bullies
2002	Leatham 150m below Caves swingbridge	400	4 Bt	common	0	?	31 upland bullies
2018	Leatham 150m below Caves swingbridge	200	0	0	0	0	Flood impacted from July 2018 flood 450 cumecs
2019	Leatham 150m below Caves swingbridge	200	2 Bt, 1 Rt	1	0	0.005	11 upland bullies also captured
2020	Leatham 150m below Caves swingbridge	200	0	0	0	0	1 upland bully, flood impacted Dec 2019 (20 yr return)
2021	Leatham 150m below Caves swingbridge	200	8 Bt	12	4	0.08	78 upland bullies
1978	Leatham mainstem below Caves bluffs	?	14 Bt	27	0	?	10 upland bullies, 5 Ifeels also caught
2018	Leatham mainstem below Caves bluffs	200	0	0	0	0	11 upland bullies
2019	Leatham mainstem below Caves bluffs	200	1Bt	12	5	0.085	10 upland bullies, 1 elver
2020	Leatham mainstem below Caves bluffs	200	1 Bt	9	1	0.05	1 Ifeel
2021	Leatham mainstem below Caves bluffs	200	5 Bt, 1 Rt	94	3	0.485	66 upland bullies
2002	Leatham trib. opposite Caves Bluffs	200	5Bt	14	9	0.115	DOC record
2018	Leatham trib. opposite Caves Bluffs	100	0	40	8	0.48	Forested -unaffected by July flood - stable
2019	Leatham trib. opposite Caves Bluffs	100	0	60	20	0.8	1 upland bully - very stable trib.
2020	Leatham trib. opposite Caves Bluffs	100	0	61	3	0.64	6 upland bullies
2021	Leatham trib. opposite Caves Bluffs	100	0	128	1	1.29	15 upland bullies - stream sampled higher up in 2019 - repeat this site next year - shading
1990	Bobs Stream (Leatham trib.)	30	0	14	88	1.02	5 upland bullies
2018	Bobs Stream (Leatham trib.)	100	1Bt	9	7	0.16	1 elver captured also
2019	Bobs Stream (Leatham trib.)	100	2Bt	0	2	0.02	Reamed out by flooding
2020	Bobs Stream (Leatham trib.)	100	0	0	6	0.06	7 upland bullies
2021	Bobs Stream (Leatham trib.)	100	17Bt, 1 Rt	4	0	0.04	5 upland bullies - sample higher up next year
1993	Branch below Leatham confl.	100	3Bt	4	2	0.06	34 upland bullies - NMFGC record
1993	Branch below Leatham confl.	110	3Bt	4	2	0.055	DOC record
2005	Branch below Leatham confl.	55	2Bt	3	0	0.055	34 upland bullies - NIWA record
2018	Branch below Leatham confl.	200	0	0	0	0	7 upland bullies - impacted by 450 cumec flood (9/2/18)
2019	Branch below Leatham confl.	200	4 Bt	0	1	0.005	10 upland bullies
2020	Branch below Leatham confl.	200	0	1	0	0.005	Flood reamed (20 yr return)
2021	Branch below Leatham confl.	200	0	2	5	0.035	24 upland bullies, 2 longfin eel
2003	Nesbits above confl. Branch	180	4 Bt	5	9	0.078	Upland bullies common
2018	Nesbits above confl. Branch	200	3Bt, 2Rt	31	3	0.17	4 upland bullies
2019	Nesbits above confl. Branch	140	8Bt, 1 Rt	1	1	0.014	4 upland bullies, 1 Ifeel. Flood reamed/all fine gravel now all interstitial space left
2020	Nesbits above confl. Branch	200	1Bt	1	0	0.005	Upland bully larvae, low inverts/flood reamed
2021	Nesbits above confl. Branch	100	2Rt	38	12	0.5	22 upland bullies
2002	Branch below Nesbits confl.	50	0	5	0	0.1	DOC record
2018	Branch below Nesbits confl.	200	1Bt, 2Rt	5	0	0.025	3 upland bullies, upstream/different habitat from 2002 site
2019	Branch below Nesbits confl.	200	1Bt	7	1	0.04	11 upland bullies
2020	Branch below Nesbits confl.	200	0	0	0	0	zero fish, flood reamed
2021	Branch below Nesbits confl.	200	10Rt	22	0	0.11	17 upland bullies, 2 of dwarfs likely alpine
2002	Branch below May Stm confl.	200	4Bt	14	0	0.07	7 upland bullies, DOC record
2018	Branch below May Stm confl.	200	1Bt	2	0	0.01	400 m downstream from 2002 site
2019	Branch below May Stm confl.	200	5Rt	0	1	0.005	3 upland bullies, 400 m downstream from 2002 site
2020	Branch below May Stm confl.	200	0	0	0	0	Flood reamed (20 yr return)
2021	Branch below May Stm confl.	200	13Rt	24	2	0.13	19 upland bullies
1990	Alan Stream above confl. Branch	25	1Bt	common	abundant	?	
2018	Alan Stream above confl. Branch	80	1Rt	1	23	0.3	3 upland bullies. Above/below ford sampled
2019	Alan Stream above confl. Branch	80	3Rt	54	10	0.08	4 upland bullies. Flood impacted
2020	Alan Stream above confl. Branch	80	0	1	0	0.005	Flood reamed (20 yr return)
2021	Alan Stream above confl. Branch	120	4rt	3	7	0.084	2 upland bullies. Still flood recovering
2003	Silverstream above confl. Branch	250	8Bt	2	3	0.02	Upland bullies common
2018	Silverstream above confl. Branch	200	0	2	0	0.01	Flood impacted from large July 2018 flood
2019	Silverstream above confl. Branch	100	1Rt	0	5	0.05	Flood impacted
2020	Silverstream above confl. Branch	100	0	0	1	0.005	3 upland bullies, flood reamed
2021	Silverstream above confl. Branch	100	8Rt	39	0	0.39	2 upland bullies. Small side braid sampled
1990	Greigs Stream above confl. Branch	100	1Bt	0	occ.	?	Unstable
2018	Greigs Stream above confl. Branch	100	1 Bt	0	1	0.01	1 eel. Flood reamed
2019	Greigs Stream above confl. Branch	100	6Bt	0	4	0.04	
2020	Greigs Stream above confl. Branch	100	0	0	3	0.03	Flood reamed
2021	Greigs Stream above confl. Branch	100	5Rt	10	0	0.1	One dwarf possibly an alpine
2018	Branch below Greig stm confl.	100	0	0	0	0	Flood reamed
2019	Branch above/below Greig stm confl.	200	8Rt	4	3	0.035	Galaxiids all in shallows (<10cm depth)
2020	Branch above/below Greig stm confl.	200	0	0	0	0	Low inverts/flood reamed
2021	Branch above/below Greig stm confl.	200	1Rt	9	0	0.045	1 dwarf possibly an alpine galaxiid?



The Branch/Leatham catchment is known to be prone to localized downpours which can severely impact individual tributary streams (Willy Sage, pers. comm.). One example of this is the tributary Alan Stream which lost almost its entire population of both species of galaxiids, along with the occasional juvenile trout between the 2019 and 2020 sampling visits. Half of this stream site is located above the road which has a small waterfall below it. Juvenile trout have never penetrated above this ford, nevertheless all native fish biomass above the ford had been decimated by the December 2019 flood. It was encouraging to see this tributary fish species assemblage on a partial road to recovery during the 2021 sampling visit.

Along with determining the relative role of flooding in determination of native fish and trout biomass within this catchment, this work will also give Fish & Game, DOC, and our Treaty Partners, a wider insight into the magnitude of challenges that future climate change may bring, with regards to the frequency and magnitude of future flood events and their likely influence on both native and trout fishery recruitment and overall population health of these fisheries into the future. While it appears that currently restocking is having negligible impact on the population health of native fish species present, the monitoring work will continue as it gives a useful index on relative impacts of flooding events on both native and salmonid trout fishery recruitment as we move into a changing future climate.

## OPOURI RIVER | DWARF GALAXIAS

A healthy abundant population of native fish continues to function within the Opouri River within the location of a small number of tagged adult rainbow trout releases undertaken occasionally for increasing angler participation/success.

OPOURI RIVER NATIVE FISH MONITORING RESULTS

Year	Location	Area Sampled (m <sup>2</sup> )	No. of juvenile trout	No. of trout (per m <sup>2</sup> )	No. of dwarf galaxiids	No. galaxiids (per m <sup>2</sup> )	Other fish
Dec-18	Opouri at Tunakino Bridge	75	5	0.07	68	0.91	5 upland bully
Nov-19	Opouri at Tunakino Bridge	100	4	0.04	100	1.00	28 upland bully; 1 SF eel
Jan-21	Opouri at Tunakino Bridge	130	0	0.00	142	1.09	150 upland bully; 1 LF eel
Dec-18	Opouri at Ronga Confluence	56	1	0.02	108	1.93	3 upland bully
Nov-19	Opouri at Ronga Confluence	100	4	0.04	144	1.44	66 upland bully
Jan-21	Opouri at Ronga Confluence	120	3	0.03	109	0.91	70 upland bully; 2 LF eel

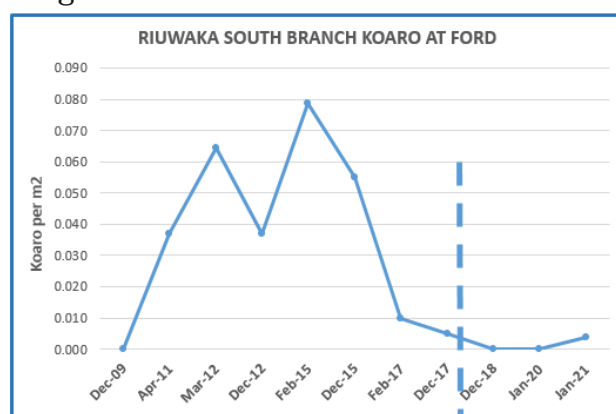
The Opouri River is E-fished at two riffle monitoring sites within a location that adult salmonids have occasionally been released historically to boost the existing fishery after summer drift dives reveal lowered numbers of adults following stream drying or major flood events.

In 2018, an abundant dwarf galaxiid population at the Ronga confluence site of close to 2 galaxiids/m<sup>2</sup> was observed, along with 0.9 galaxiids/m<sup>2</sup> at the Tunakino bridge site. Since this survey work was undertaken the lower Opouri dried up completely at the bottom monitoring site but retained a small low flow at the Tunakino Bridge. Monitoring undertaken in 2019 following this event, revealed the population at the Tunakino Bridge to have not reduced density wise unlike the Ronga confluence site, presumably due to the upper site not completely drying up. Since the 2019 monitoring however, the lower site above the Ronga confluence, dried up again in February 2020, and the January 2021 sampling showed dwarf galaxiid numbers to have dropped further, although the population is still considered relatively healthy. Fish & Game currently has an appeal lodged on the Marlborough Environment Plan hearing decisions around low flow management and water allocation volumes within this catchment, as prior to irrigation taking off in the catchment around the year 2000, the lower Opouri went dry less than once per decade on average.

## RIUWAKA RIVER

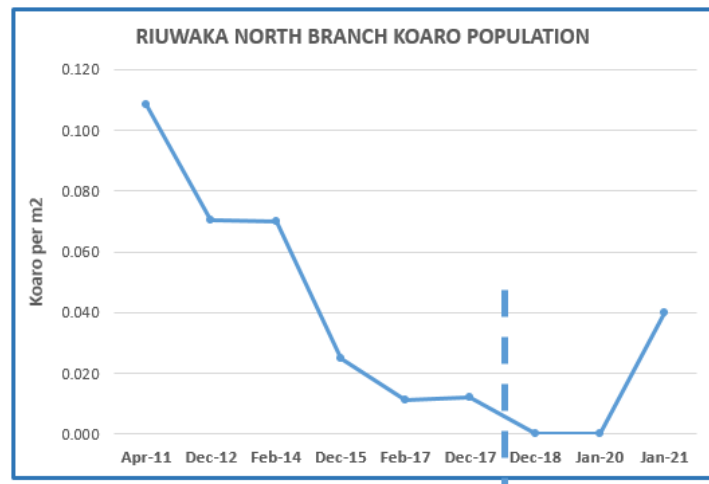
The Riuwaka River has long suffered from poor juvenile brown trout recruitment, possibly due to a lack of small stable side streams (all spawning occurs in the more flood prone mainstem of the North/South Branches). The river has been the subject of significant monitoring effort for over a decade, with annual electric fishing surveys in the North & South Branches to monitor recruitment of juvenile trout and along with this, native fish numbers - see table below for data on native fish.

It has also been the recipient of one brown adult trout release back in 2017. While this release was successful in boosting the adult fish population (some of these fin-clipped adult fish were still recorded over 4 years later in the 2021 drift dive), further Riuwaka releases have been discontinued due to Treaty Partner concerns expressed following the 2017 release.



**RIUWAKA KOARO MONITORING**

Year	Location	Area Sampled (m <sup>2</sup> )	No. of koaro	No. koaro (per m <sup>2</sup> )	Comments
Dec-09	South Branch	200	0	0.000	1 LF eel, 1 upland bully
Apr-11	South Branch	190	7	0.037	7 Koaro, 6 LF eel, 1 upland bully
Mar-12	South Branch	140	9	0.064	9 Koaro, 8 LF eel
Dec-12	South Branch	244	9	0.037	9 Koaro, 6 LF eel, 7 koura, 3 upland bully
Feb-15	South Branch	191	15	0.079	15 Koaro, 5 LF eel. Stable Spring
Dec-15	South Branch	200	11	0.055	11 Koaro, 10 LF eel.
Feb-17	South Branch	200	2	0.010	2 Koaro, 8 LF eel
Dec-17	South Branch	200	1	0.005	1 Koaro, 2 koura, 15+ LF eel
Dec-18	South Branch	266	0	0.000	0 Koaro, 6 LF eel, 2 koura - post Gita
Jan-20	South Branch	246	0	0.000	2 LF eel
Jan-21	South Branch	260	1	0.004	26 lf eel, 1 koaro, 2 koura
Dec-09	South Branch (Woolshed)	200	1	0.005	1 Koaro, 5 LF eel
Apr-11	South Branch (Woolshed)	180	3	0.017	3 koaro
Dec-12	South Branch (Woolshed)	200	3	0.015	3 Koaro, 2 LF eel
Feb-14	South Branch (Woolshed)	186	25	0.134	25 Koaro, 6 LF eel, 2 sjk possibly sighted?
Dec-17	South Branch (Woolshed)	200	6	0.030	6 Koaro, 8 LF eel
Dec-18	South Branch (Woolshed)	200	0	0.000	zero natives - Cyclone Gita?
Jan-20	South Branch (Woolshed)	80	0	0.000	zero natives - Cyclone Gita?
Jan-21	South Branch (Woolshed)	200	4	0.020	4 koaro, 8 lf eel
Apr-11	North Branch	230	25	0.109	25 Koaro, 1 LF eel
Dec-12	North Branch	184	13	0.071	13 Koaro, 3 koura
Feb-14	North Branch	157	11	0.070	11 Koaro, 16 LF eel, 10 year return flood
Dec-15	North Branch	120	3	0.025	3 Koaro, 1 SF eel, 1 LF eel,
Feb-17	North Branch	177	2	0.011	2 Koaro, 12 LF eel
Dec-17	North Branch	168	2	0.012	2 Koaro, 7 LF eel
Dec-18	North Branch	115	0	0.000	1 LF eel - post Gita
Jan-20	North Branch	80	0	0.000	5 LF eel, 1 koura
Jan-21	North Branch	100	4	0.040	4 koaro, 6 lf eel



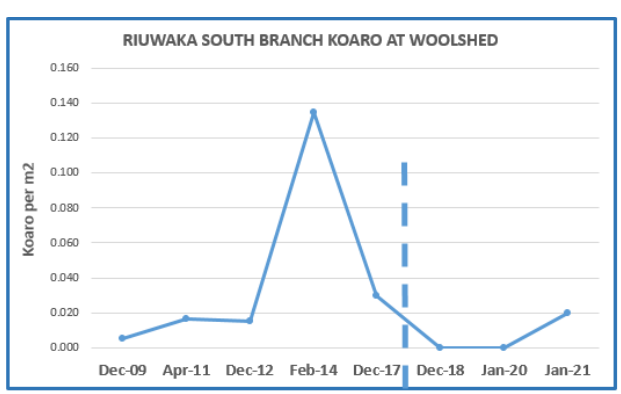
**Cyclone Gita**

Annual monitoring will continue within this Awa-Tapu waterway, which is of great cultural significance to Iwi. It is also unknown whether the occasional short jawed kokopu identified historically within the South Branch of the Riuwaka still remain within this system or are likely to even recolonize it following Cyclone Gita.

The South Branch of the Riuwaka potentially represents a great potential future threatened fish collaboration site between Fish & Game, Treaty Partners, and DOC, if organisational concerns around biological risk within the Department could be overcome.

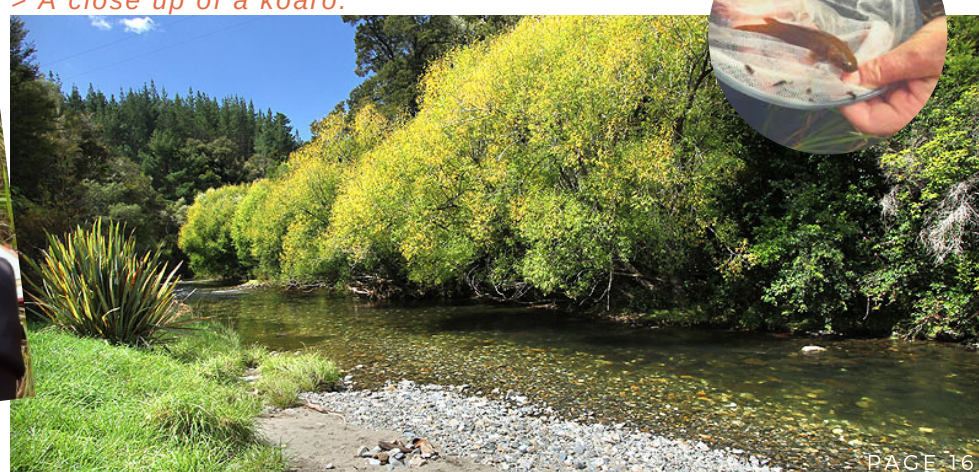
It would be relatively easy to on-grow short jawed kokopu whitebait at the Wairau hatchery, and subsequently transfer a number into the South Branch as adults, then monitor their long-term prognosis over time to determine whether recruitment failure has played a role in their disappearance (if in fact they were once more abundant in this system than they currently are).

Concerningly, the native fishery, particularly koaro, collapsed after Cyclone Gita and took over 3 years to start to recover from the impact of the Cyclone induced flood as illustrated in the graphs below.



**Cyclone Gita**

- < A North Branch koaro.
- > The Riuwaka in its mid reaches.
- > A close up of a koaro.



# HATCHERY

## RELEASE PROGRAMME

There were fewer fish available for release this season due to an escape at the hatchery when the fish were at fry stage. It is estimated over 1000 fry were lost, which put a dent in the R3 programme somewhat. Still, as the table below shows, 1528 fish were released into Lake Argyle and the Leatham River, of which 331 of these were salmon and the majority of trout rainbows. A number of large brown trout were included in some of the releases, some of these reaching up to 8 kgs.

Only 513 fish (a mix of rainbows, browns and salmon) were released into the Waimea Park junior fishery, which is much fewer than what is achieved most years, and the number of kids fish out events were lessened as a result of the fish shortage.

### SALMONID RELEASES

Date	Number	Species	Stage	Size (av)	Tag/Fin Clip	Location
30/06/2020	100	Rainbow trout	Adult	3.1kg	Fin clipped	Lake Argyle
1/07/2020	100	Rainbow trout	Adult	3.1kg	Fin clipped	Lake Argyle
7/08/2020	102	Rainbow trout	Adult	2.5kg	Fin clipped	Lake Argyle
4/09/2020	101	Rainbow trout	Adult	3.0kg	Fin clipped	Lake Argyle
24/09/2020	100	Rainbow trout	Adult	3.0kg	Fin clipped	Lake Argyle
29/09/2020	140	Rainbow trout	Adult	2.5kg	Fin clipped	Lake Argyle
1/10/2020	120	Rainbow trout	Adult	2.5kg	Fin clipped	Lake Argyle
15/12/2020	184	Rainbow trout	Adult	3.5kg	Tagged	Lake Argyle
16/12/2020	190	Rainbow trout	Adult	1.4kg	Tagged	Leatham River
17/12/2020	70	Salmon	Adult	1.0kg	Fin clipped	Lake Argyle
3/02/2021	1680	Rainbow trout	Fry	11.2g	Fin clipped	Mill Stream
2/03/2021	100	Salmon	Adult	1.5kg	Fin clipped	Lake Argyle
2/03/2021	20	Brown Trout	Adult	5.0kg	Fin clipped	Lake Argyle
15/03/2021	124	Salmon	Adult	1.7kg	Fin clipped	Lake Argyle
13/04/2021	150	Salmon	Adult	1.7kg	Fin clipped	Lake Argyle
30/04/2021	33	Brown Trout	Adult	7.0kg	Fin clipped	Lake Argyle
30/04/2021	7	Rainbow trout	Adult	5.0kg	Fin clipped	Lake Argyle
30/04/2021	11	Salmon	Adult	1.5kg	Fin clipped	Lake Argyle
6/11/2020	130	Rainbow trout	Adult	2.0kg	Fin clipped	Waimea Park
27/11/2020	120	Rainbow Trout	Adult	1.3kg	Fin clipped	Waimea Park
15/03/2021	59	Salmon	Adult	1.7kg	Fin clipped	Waimea Park
13/04/2021	142	Mixed	Adult	1.7kg	Fin clipped	Waimea Park
12/05/2021	62	Mixed	Adult	2 kg	Fin clipped	Waimea Park

TOTAL ADULT TROUT 1197  
 TOTAL SALMON 331  
 TOTAL (WAIMEA PARK) 513

TOTAL ALL FISHERIES 2041

For whatever reason, both at Lake Argyle and Waimea Park junior ponds, our released fish were reported by many anglers to be more challenging to catch this season than previous years, though our tagged fish competition show that 85% of tagged fish were reported, and there would have been some not reported also, so the catch rate would have been in excess of 90%.

For the coming season we have 5000 rainbows growing, which is nearly double the usual number. The new pond at Waimea Park will generate a good deal of interest, and will require a large number of fish to keep anglers happy.

We also plan to have Lake Argyle and the lower canal positively humming with fish throughout the season, as this fishery is our most important in terms of growing our resident angler base.

The Branch & Leatham rivers are also due for 800 fish over the season, which typically takes place using a helicopter. Angler effort here reflected the lower number of fish in the river, and it will be important to carry out another release in this system before Christmas.

## HATCHERY UPDATE

It's been a big year at the hatchery since new Manager, Bruce McKenzie, has taken the reins. Bruce has been instrumental in improving the facility, both in terms of equipment and maintenance, but also hatchery outputs.

It's fair to say the hatchery was in need of some work, with much of it developed with cost savings in mind. The improvements made by Bruce and Fish & Game has not only paved the way for a more efficient operation, but a safer work environment also.

Some of the improvements include:

- Burying the 'overland' cable that went from pump shed to races
- Sheds have been thoroughly cleaned out and excess content removed
- A thorough race cleaning programme
- Added a nitrate filter for the house water supply
- Paddle wheel stripped back and rebuilt
- New oven and hot water califont installed
- Alternative energy system battery bank replaced

*v One of the many trophy brown trout released into Lake Argyle this season.*



# R3 | RECRUITMENT, RETENTION, REACTIVATION

It was business as usual on the R3 front this season, with promotions much the same as previous years and still very popular with anglers.

The normal pre-season marketing was used to excite current licence-holders and also try and get new anglers interested in trout fishing. This was done via direct email, newspaper articles and social media

A small national Marketing team was formed (that Nelson Marlborough was part of), which looked to capitalise on the covid situation and 'turn the negative into a positive'. Essentially, with borders closed and no where to go, kiwi's traveled extensively throughout their own country, and the team ran media campaigns such as 'Every River You Cross' and 'Park & Cast' (the best places to park up with a caravan and throw a line out).

Added to the fact kiwi's couldn't travel abroad, there were also many kiwi's returning from overseas. All of these factors combined to see Fish & Game experience a 1.8% increase in total licence income compared to the year prior, even on top of the substantial income reduction from not having overseas anglers in the country.

## Waimoa Trout season begins tomorrow



This remarkable turn around came at a very good time for NZFG, which has over the years seen licence sales continually decline nationally (though some regions have experienced growth).

Hopefully Fish & Game has done enough to keep new and returning anglers on board for the next few years, and there is a huge amount of work to be done on the marketing front to maintain and further capitalise on our growth from this season.

Of chief importance to this, is the new 'Customer Management System' (CMS) which makes it much easier for F&G to identify various licence groups (i.e., new, lapsed, returning anglers, current, junior etc), and send specific information tailored to what they need, for example, providing a new angler with information on the best places to go and the best ways to catch fish.

On the local front, we ran some great initiatives which have been used in the past but are still popular with anglers. Some of these are listed below.

## TAGGED FISH COMP

Again a real winner with anglers, this is the fourth year we have held a summer tag fish competition. 200 rainbow trout were tagged, and we had 20 prizes to give away to the winners. Prizes included two \$500 vouchers, multiple rod/reel sets, free licences, and lure packs.

All told 85% of the tagged fish were reported, which is a very high percentage. There also would have been some fish not reported, so the number of tagged fish caught would have been over 90%.

Against all odds, both \$500 prizes were not reported, so a random draw for these and all other unclaimed prizes was done and some anglers received some great news at the end of the season.

## TROPHY FISH RELEASES

Intermixed with the frequent releases of fish were trophy brown and rainbow trout, up to 8 kgs. In previous years we released perhaps 50-60 trophy fish across the season, often with a social media post to generate excitement. This season, due to the fact we had to hold over more fish than normal from the previous season, we ended up releasing a larger number of double digit fish, much to the delight of anglers.

## STARTER PACKS

As we want our new or struggling anglers to catch fish, we again issued 'starter packs' to anyone that requested them. Many lure packs were also given out in the field by our team of dedicated rangers. The starter packs contained great information, as well as multiple lure packs (softbait, bubble/fly, artificial worm) and links to video's on how to use them.



## NEW POND AT CHALLIES ISLAND

The new family/adult pond has been created at Waimea Park and Fish & Game are gearing up for a big year at the ponds.

Approximately 80,000 cubic metres of gravel was taken to create the pond, the proceeds of which went to Tasman District Council to upgrade Challies Rd.

The new pond is around 1.2 hectares in size, and is approximately 180m long by 70m wide.



*^ View of the new pond looking towards the South  
v The pond looking North.*



There is a very good grass covering already, and it is expected this will be mowed regularly which, combined with a number of picnic tables, will be a great destination and a real community asset.

Fish & Game staff expect to have fish in the new pond by October 1, and we are of the belief this will be highly popular with families or new/older age anglers. There are great opportunities to use this pond to get new anglers into trout fishing, and also retain and reactivate anglers who may be at risk of dropping out due to age.

The new pond now allows families to fish together which will only benefit growing our resident angler base. Parents/Grandparents are the decision makers, and allowing them to be able to fish with their children/grandchildren will no doubt generate a greater level of interest and enjoyment.

In light of this we plan to implement a number of R3 initiatives, including having experienced anglers at the pond at scheduled times to assist anglers with anything they need (tying knots, casting etc) as well as run introductory fishing/casting days.

There is a huge potential to grow our older angler base, and staff are considering obtaining a number of rods which can be loaned out to anglers who purchase a day licence and simply wish to give fishing a go without having to purchase all the gear.

It is also expected there will be some compliance issues in the first year or two, and we will have to ensure we have a regular staff/voluntary ranger presence at Waimea Park checking fishing licences, but also undertaking R3 public relations work, e.g. Rangers as Ambassadors.

The key for the operation to run smoothly is have some clear and obvious signage at the ponds, indicating the bag limit and that a licence is required (outside of special junior fishing events). We also plan to have some educational material on the signs such as information about the ponds, how to handle fish if they are to be released, tying knots etc.



*^ Young gun, Hugh Wallis, is a regular at Lake Argyle and Waimea Park and is fanatical about fishing.*

# R3 PICS/FEEDBACK

"We had a super trip. We both managed to crack the 10lbs club. All fish were in really good nick. Also I just want to give you guys a big thanks for the job you guys do. In particular providing a superb fisheries around that pond."



"His name is Dusty Millar he caught it on a fly tied by his son. And was wearing his dad's jersey who taught him how to fish it was a special moment. My net scales only go to 14lb and they bottomed out so not sure of actual weight" >



YOUTUBE.COM  
Lake Argyle: fishing the canal

Reply · Commented on by Jacob Lucas · Remove Preview · 23h

William McMurray  
Nelson Marlborough Fish & Game cheers thanks for the great tips, i watched them all ill be heading up there after work now

Like · Reply · Message · 23h

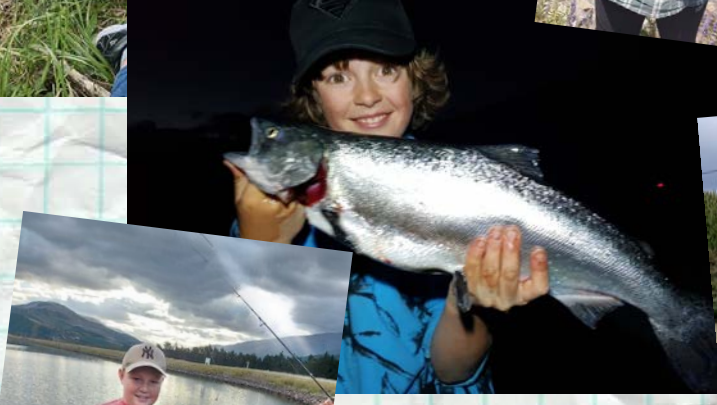
Adam Tavave  
Nelson Marlborough Fish & Game 9.2lb released (6.5lb caught and kept earlier).



"Yesterday at Argyle I met a couple from NI, fishing with Family Licence. Had been to Tekapo, now Argyle enroute back to NI. They had seen the Fishing Tips video we did and recognised me. The bloke was using the soft plastic I had recommended. On the eastern Lake edge he had caught a huge brown, 10 to 12 lb which he used perfect 'Keep em wet' technique for successful release. They had had a fantastic day on Argyle complementing the fish numbers and how accessible the fishing opportunity is." Bruce, NMFG Ranger



Vishal A Prasad  
Bloody caught one. 8lbs Rainbow. Thanks for releasing them. 🙌



"I caught this at Lake Argyle at the North end of the Lake. It weighed 5.8kg or 12.78 pounds It the first Trout I have caught so pretty pleased"

"Just had my best morning ever on Lake Argyle, finally got a trout in double digits, thanks Fish and Game! Jimmy" >

# JUNIOR FISHING DEVELOPMENT



## MARLBOROUGH KIDS POND UPDATE

Fish & Game continue to try and progress this project which will ultimately deliver a large fish out pond located within the Wairau berm lands near Renwick.

The proposal, a first of its kind in Marlborough, is to develop a small freshwater lake through gravel extraction in partnership with Fulton Hogan and Marlborough District Council. Fish & Game have so far commissioned a cultural impact assessment and also paid for survey design to quantify average water depths (from groundwater information collected to date), and likely aggregate volume yield.

The site is located within the Councils proposed Wairau River park, and the proposal has been viewed positively by Iwi through the cultural impact assessment. The next step is to seek high level support from Marlborough District Council, and then assist Fulton Hogan to apply for resource consent.

## YOUTH SPORTSFISHING TRUST

The Trust's ninth fishing season was a difficult season with disruptions caused by Covid, road works affecting the access to our ponds, and with difficulties in fish supply. That said there were still almost 300 children attended the guided fish out days. Although the Trust's numbers were down due to the season's difficulties it is notable that youth participation in fishing continued to increase. Fish and Game issued over 300 youth Licenses, a 10% increase on the previous year, enabling children 12 to 18 to attend the ponds at times other than fishout days. Also Nelson Marlborough Fish and Game had an increase in family licences sold from 698 in 2020 to 780 in 2021. The ponds were very

popular for family groups over the summer and on sunny winter days.

Unfortunately, covid 19 meant that the usual April and May 2020 fish out days for the special groups such as: police blue light, casting for recovery, Big Bros Big Sisters, and children in wheelchairs, could not occur. We were however able to offer these groups, and other special needs groups, guided fish out days in April and May 2021.

*Excerpt from Sports fishing for youth charitable trust annual report.*



# BACK COUNTRY FISHERIES

With international borders closed, our backcountry fisheries were going to be a good deal quieter this season, and this proved to be the case.

This year we installed cameras in the Travers to get an idea of the level of angling pressure without foreign anglers (see next page).

Unfortunately we had a fairly quiet year on the compliance front, and less effort was directed towards backcountry compliance compared to other years. As a result, some of the survey work that was undertaken by rangers last season was not done this year.

Anecdotal feedback from anglers suggest that angler pressure on our wilderness rivers was low, despite there being a large increase in the number of backcountry endorsements issued to resident anglers. It was certainly the case on the Travers as evidenced by our camera work, and also popular rivers like the Branch & Leatham. This season staff did not field any angler conflict feedback at all, however it appears that the trout didn't get the memo, and were still relatively tough to catch as a rule, despite less angler effort.

## BACKCOUNTRY ENDORSEMENTS

This season the number of resident backcountry endorsements (BCE) issued showed a considerable increase from 1260 BCE's from the season prior, to 2016 BCE's issued this season. Just 61 BCE's were issued to non-resident anglers.

NELSON MARLBOROUGH BACKCOUNTRY ENDORSEMENTS ISSUED

B/C endorsements issued	2016-17	2017-18	2018-19	2019-20	2020-21
Resident	738	1004	1145	1260	2017
Non-resident	796	1256	1284	1325	61
<b>Total</b>	<b>1534</b>	<b>2260</b>	<b>2429</b>	<b>2585</b>	<b>2078</b>

It appears the increase in the number of BCE's issued to resident anglers did not translate to an increase in angling effort as evidenced by our trail camera work as well as our post-season survey which looked into resident angler behaviour in light of the closed borders.

Generally, as evidenced by various West Coast F&G surveys, the actual use of backcountry fisheries once obtaining a BCE is very low. This is a frustration of our current PSF (backcountry fisheries) management system, which is currently being looked at nationally, i.e., whether a small nominal charge should be paid for anglers wishing to obtain a BCE.

## TAG DATA

It has been a much quieter year in regards to reported tagged fish, namely as we only carried out one small release of tagged fish into the Leatham River, and no release took place for the Rai River or Branch River (note this does not include Lake Argyle tagged fish).

It became apparent from fishing in the Branch River that tag loss is considerable, whether this takes place from anglers pulling out tags, or by natural attrition.

Just 55 tags were reported, with the majority of them coming from the Branch/Leatham and the Rai/Opouri. A similar number of fin clipped fish were also reported. These fin clipped fish would have at some stage had tags however they have since parted from the fish.

## PRESSURE SENSITIVE FISHERIES MANAGEMENT - NATIONAL FOCUS

All South Island regions met recently to discuss PSF management, and specifically management options for non-resident anglers. In general, all regions and NZC are fairly aligned in thinking, however the 'nuts and bolts' have to be worked through which could be the interesting part.

While most South Island regions have a need to better manage non-resident angler use, it needs to be realised that each region is unique, and we expect that a one size fits all approach won't necessarily work. Hopefully, a system is developed where regions can essentially opt in or opt out of some of the tools, using which ever works best for their region.

In light of this, New Zealand Fish & Game have engaged a consulting firm to undertake an angler displacement review, which includes providing a suite of management options to help steer Fish & Game towards better management of pressure sensitive fisheries and in particular non-resident angling use.

With the Fish & Game review currently providing some uncertainty, our future management options will likely have to be considered alongside the West Coast region also.



# TRAVERS CAMERA STUDY

Two cameras were installed on the Travers River (lower and middle) at the same places from previous years.

The middle Travers site is our best site on the river and has the most reliable data set as well as being the most representative site and an ideal location to capture angler use.

## MIDDLE TRAVERS SITE

2017-18	40% of days fished
2018-19	32% of days fished
2020-21	16% of days fished

## LOWER TRAVERS SITE

2017-18	50% of days fished
2018-19	45% of days fished
2020-21	20% of days fished

The table above shows there was considerably less angler use on the Travers this season, with 16% of days having anglers fish there (167 days operating time) - a significant decrease in use from previous years that angler use was monitored being 32% (2018-19) and 40% (2017-18).

The lower site has had camera issues for all three years, and as a result the camera was operating for slightly fewer days than the middle site. Still, for what it's worth, anglers fished this site on 20% of days the camera was in operation this year, compared to 45% (2018-19) and 50% (2017-18).



^ Middle Travers site  
v Lower Travers site



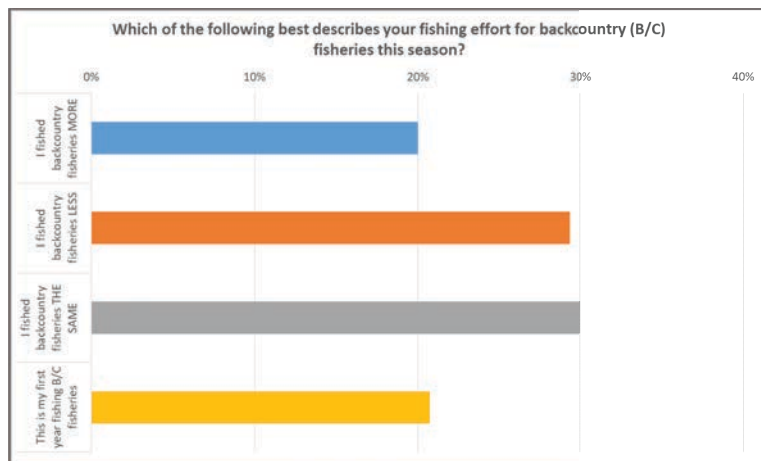
# BACKCOUNTRY FISHERIES SURVEY

With the international borders largely closed to foreign anglers last season, resident anglers in the Nelson Marlborough region had rivers more or less to themselves. While anecdotal reports suggest other areas of the South island still received plenty of attention from locals, it appeared not to be so much the case locally. So, did this new found freedom translate to an increase in resident angler fishing effort and better fish catchability?

Nelson Marlborough were part of a national survey which asked backcountry endorsement holders about their fishing behaviour and experiences this season, and whether or not their fishing effort changed in light of having few foreign anglers. The survey also looked into angler satisfaction and fish catchability.

This was an opportune time to get a national data set on angler behaviour, which will help inform future management decisions on 'pressure sensitive fisheries'.

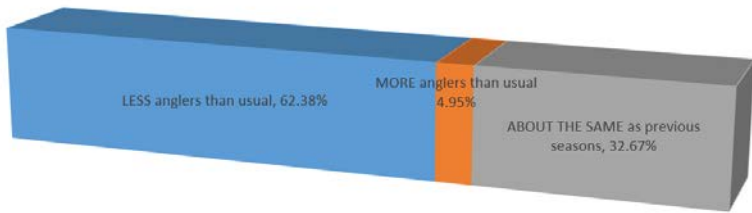
Over 1000 responses were recorded nationally, with around 150 of these identifying Nelson Marlborough region as where they did most of their fishing.



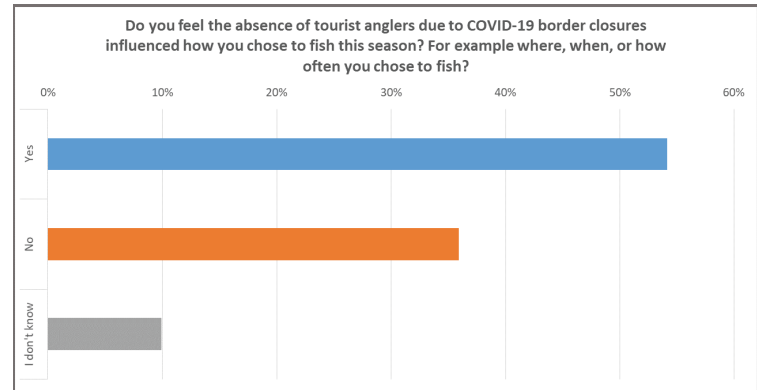
The first question about fishing effort revealed an unexpected result for this region where, despite the knowledge there would be less pressure, only 20% of anglers fished more, with 30% of anglers saying the in fact fished less. Approximately 30% fished the same as previous years and ~20% fished backcountry fisheries for the first time.

On angler encounter rates, it is not surprising that 62% of anglers reported less other anglers compared to previous years, though around 33% were of the belief angler encounter rates were similar to previous seasons and just 5% reported more anglers than previous seasons - see graph.

In general, how many other anglers did you encounter when fishing on backcountry rivers this season?

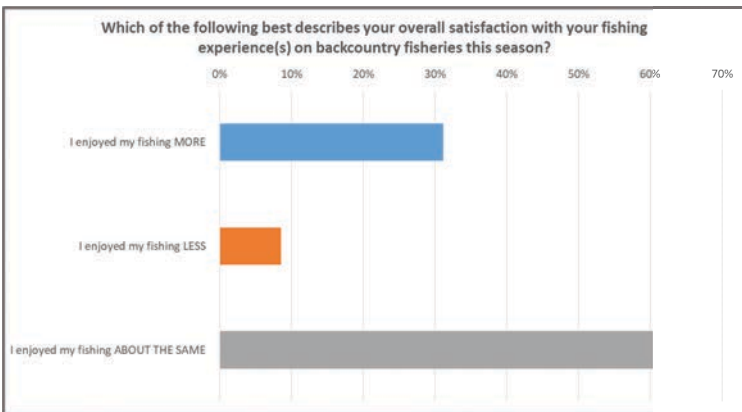
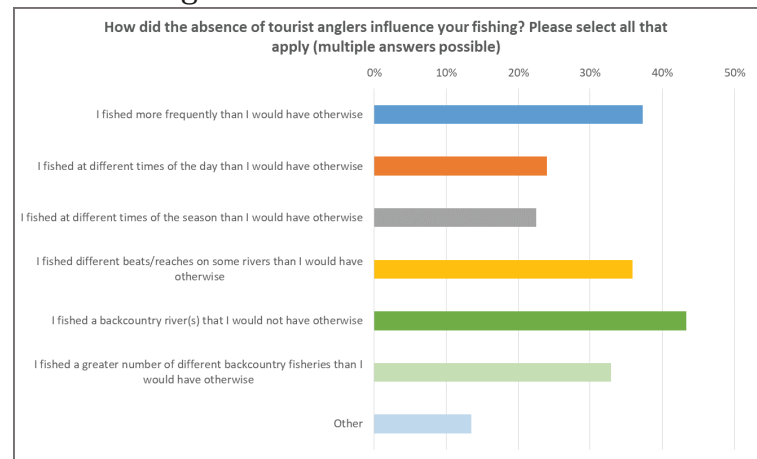


Were decisions on backcountry fishing effort influenced by covid-19 and the closed borders? 54% of anglers indicated this was a factor in their decision making, however 36% said this was not a factor, and 10% didn't know.



While it appeared the majority of backcountry anglers either fished less or the same as previous years, 31% of anglers had a better overall satisfaction this season and 8.5% of anglers said they had less satisfaction. Despite far fewer anglers on the rivers, 60% of anglers felt their overall satisfaction was about the same as previous years - see graph below.

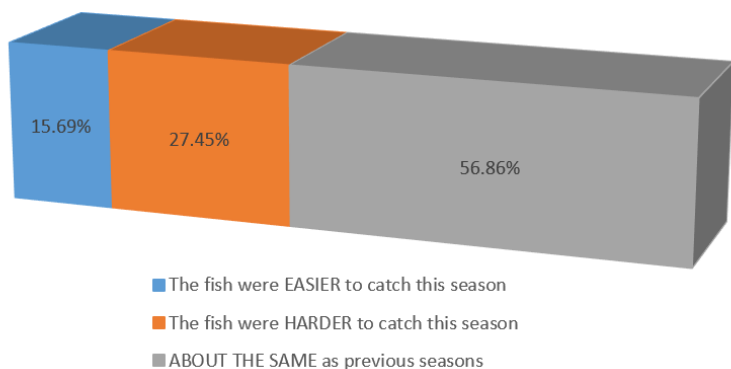
Finally, our endorsement holders were asked how did the absence of tourist anglers influence their fishing decisions?



So did fewer anglers on the rivers translate to better fish catchability? Survey results suggest not with only 16% reporting fish were easier to catch, with 57% of anglers thinking fish catchability was similar to previous seasons - see graph below. Surprisingly, 27% of anglers stated trout were in fact harder to catch than other seasons. Other factors may also be at play here, for example state of the fisheries which are commented on also in the survey (see appendix).

This question allowed for multiple answers, with the common agreement that anglers fished backcountry river(s) they would not have otherwise (43%); fished different beats/reaches on some rivers than they would have otherwise (36%); and they fished a greater number of different backcountry fisheries than they would have otherwise (33%).

In general, how would you describe the catchability of fish on backcountry rivers you fished this season?



Early indications suggest the national survey results mostly mirrored the Nelson Marlborough findings - see Appendix for comparisons.



## ACCESS UPDATE

### ACCESS TRACKS

Staff visited many of our ~200 formal fishing access points over the past 18 months, clearing tracks and replacing signage. Stickers have also been added to signs indicating if the access point is open all year (green) or closed 1 May-30 Sept (red).

Access to the 'double gates' beat on the Motueka has been changed with the gate now locked by the landowner and a stile has been constructed over the fence with walking access to river provided for.

An access point database has been created, with all Nelson Marlborough fishing access points on the table. The aim is the database to record when an access point has been visited, what needs to be done, and include any modified access information for future access pamphlets as this information can change over time.

The Buller River was visited again, this time maintaining access tracks and signage from Kawatiri to the Lake. A minor amount of access work was also completed in the Motueka catchment while carrying out compliance, including moving the Motueka/Wangapeka confluence access point to a place which is more user friendly.



< The new access arrangement at the "Double Gates" - a very popular fishing location on the mid-Motueka. Vehicle access to the river has now ceased at the request of the landowner.

### WALKING ACCESS COMMISSION

Staff have consulted with W.A.C on a number of access matters including for the Upper Wangapeka, Motueka at Pokororo (Swing Bridge), Riuwaka North Branch & lower Pelorus.

## TRAVERS 1080 RESIDUE

Staff visited the Travers Valley the day after the 1080 toxic application to get an idea of bait distribution into the waterway and locate the most suitable reach to collect 20-30 fish for 1080 sampling. Baits could be seen on the ground as well as in the river, particularly evident in low velocity areas (edges, backwaters, slow water).

Staff then flew into the Travers six days after the drop and collected 11 fish out of one reach (below Hukere confluence) and a further 8 fish above the swing bridge. Under half of the fish seen for the Hukere dive were caught (as one pool had around 10 fish and were difficult to catch after the initial two fish were netted), however a higher percentage of the fish seen for the swing bridge dive were caught. Size ranged from around 3-8 pounds.

Fish were transported to the laboratory after collection, and two weeks later we received preliminary results that no 1080 had been detected from the analysis of the 19 fish.

Staff are of the view that this should be part of a longitudinal study, and more testing would be beneficial with the aim of collecting 100 samples over the next few years from a range of catchments. Ideally, it would be beneficial to time at least one fish collection with a mast event to try and answer the potential rodent pathway question, as well as direct ingestion of 1080 baits.



## LOWER MOTUEKA CATCHMENT COLLECTIVE

a Lower Motueka Catchment Collective has been formed to generate community ground up conservation actions that benefit the ecology and the community. The geographical area encompasses the Motueka Valley and its tributaries from Woodstock to the sea.

An upper Motueka catchment group has already been formed and will no doubt compliment the future efforts of the lower catchment group.

### *The Sub-Catchment approach*

In a catchment the size of the Motueka, building a catchment-wide collective requires baby steps. This is a generational project. Forming sub-catchment groups is integral to ensuring actions are relevant to the local situation. Whether communities organise tree planting, water quality testing, land use surveys, weed control working bees, field trips, meetings with guest speakers or bbqs and beers – is up to them. A convenor from each sub-catchment can then report back to the larger collective to inform bigger picture decision making, especially in regard to fund sourcing.

### Ideas for Future Actions and Next Steps

- Springtime workshops on how to use SHMAK kits for water quality testing
- Planting working bees
- Weeding working bees
- Meetings to engage forestry companies, iwi, Crown entities, freshwater ecologists and hydrology experts.
- Trapping workshops
- Freshwater fish surveys
- How to integrate the entire catchment including the township of Motueka and the Riwaka Catchment
- The river is a being which flows to the sea. How do we respect this?

## UPPER MOTUEKA CATCHMENT GROUP

An Upper Motueka catchment group has been formed for the upper Motueka catchment. The aim of the group is, from an impartial standpoint, to facilitate weaving the communities of the Motueka catchment together to ensure the wellbeing of the freshwater system and connected environment, and to:

- Act to protect and enhance the Motueka catchment as a vital resource for the future;
- Develop a community that is inclusive of all;
- Encourage interest and build understanding of freshwater ecosystems;
- Weave Mātauranga Māori knowledge and wisdom together with an evidencebased conventional science approach to promote Kaitiakitanga (guardianship);
- Emphasise the involvement and engagement of young people in catchment guardianship;
- Enhance the health of the river and landscape environs through making sound choices based on good science and knowledgeable expertise;
- Establish a robust, transparent monitoring framework that is accessible to all whilst respecting the privacy rights of individuals' information input;
- Obtain funding and guidance for relevant initiatives identified and collectively agreed upon.

So far the group has had some interesting speakers from the likes of TDC Environmental staff, Forestry representatives, Landcare and Cawthron.

Exotic forestry is a fairly hot topic in this area, as well as the lower Motueka catchment, so it is important to have the perspectives from forestry management.



# RMA ADVOCACY

Resource Management advocacy, while not valued or understood well by many licence holders, remains one of our key avenues to achieve improved Local Authority management and retention of the 'natural capital' that supports the fish and gamebird resources.

Much Resource Management work within the Nelson Marlborough Region often focuses on water quality and quantity issues, which tend to affect salmonids more than gamebirds, however this is appropriate given 80% of our regional income is derived from fish licence sales. Unfortunately, it is often an adversarial process costing licence holders considerable time and funding resources for legal assistance and the like.

## MARLBOROUGH PLAN

Following the release of Marlborough Environment Plan decisions, Fish & Game had to lodge a formal appeal to the Environment Court as our concerns around low flow and water allocation management were not addressed by the plan hearing decision panel.

The largest issue of concern within the present plan decisions relate to the provision for allocation of a lot more water out of trout fisheries of interest to Fish & Game, with inadequate assessment or provision for flows to protect instream values. Related to this allocation of new water, are the likely flow-on effects of more intensive land-use arising from new water, and likely increased nitrate leaching rates in catchments such as the Rai and Kaituna Rivers, which are already above levels deemed to be optimum for aquatic ecosystem health.

Ironically, at the time of writing, Marlborough District Council is engaged regionally on the Te Hoiere landscape scale conservation project for improvement of biodiversity, water quality, and ecosystem health within the Pelorus catchment, somewhat at odds with the proposed allocation of more water within this catchment through the draft Marlborough Environment Plan. Fish & Game were participating in this project as a member of the steering group but have recently had to resign from the project due to our stance on proposed new water allocation, which we believe is contrary to Government direction requiring Councils to avoid over allocation of freshwater through the National Policy Statement for Freshwater Management.

## MARLBOROUGH RESOURCE CONSENTS

To maintain our appeal position on water allocation and minimum flows within the Marlborough Environment Plan, we continue to submit in opposition to a significant number of Marlborough resource consents, mainly renewals of existing water permits. To date we have managed to resolve most of these through agreement of appropriate conditions with the applicants, however at the time of writing the first application for new water within the Kaituna catchment has been applied for. Fish & Game have opposed this and may need to resource an environment court hearing for it, as we believe it opens the door for significant over-allocation within both this catchment and the Rai catchment.

## TASMAN DISTRICT COUNCIL PLANNING AND CONSENTS

Hop orchard development continues apace within the Motupiko and Upper Motueka catchments, including conversion of several dairy farm units to hops. Currently, due to ongoing concerns being expressed by Fish & Game, Tasman District Council continue to undertake hydrological monitoring work to inform the upcoming TRMP review scheduled to occur in 2024. While allocation volumes within these waterways are reasonable, the current rationing and cease take flow triggers imposed by the seasonal dry weather taskforce, are far lower than what most other NZ Councils impose, and in Fish & Games view do not give adequate effect to the Governments National Policy Statement for Freshwater Management.

The most recent hop farm development included a large on farm water storage dam and agreement to only take water above median flow within the Motupiko, an approach supported by Fish & Game.



## TDC RIVERWORKS UPDATE

Progress continues to be made towards improved practice within the TDC River Engineering Department, with different approaches now being employed within the Motupiko and other rivers (use of groynes and proactive willow planting, in the place of rock riprap). We are now starting to see improved channel roughness and increases in deeper salmonid holding water as a direct result of these changes.

## PROACTIVE

The manager has been participating on the steering committee for the Pelorus catchment project, a recent recipient of significant Government funding. The project involves collaboration between Iwi, DOC, NGOs, landowners, and Local and Central Government agencies. As discussed above however, Fish & Game have unfortunately had to resign from this project due to the looming conflict with some catchment landowners over proposed new water allocation under the Marlborough Environment Plan.

The manager and staff have also attempted to engage with the myriad of other community catchment enhancement groups and processes now occurring with the Nelson/Tasman Region (Waimea Inlet forum, Nelson Biodiversity forum, Tasman biodiversity forum, Motueka catchment group etc). This region, along with New Zealand Fish & Game Council and one or two other Fish and Game regions, also provided an informed submission to the Governments recent draft National Policy statement for biodiversity. The focus of this submission was to recognise that some non-indigenous biodiversity, also contributes significantly to preservation of habitat utilised by indigenous species - for example, the restoration of Para Wetland for native AND introduced waterfowl.



# COMPLIANCE

This season was an unusual one compared to previous seasons, and for whatever reason, both staff and voluntary rangers undertook less compliance than other years.

Unfortunately our goal to check 10% of licence holders was not achieved this season, even though licence sales were well down without non-resident anglers in the country.

All told this region sold 3450 LEQ's (full licence equivalents) for the 2020-21 season, which is 500+ less than than a normal year. Even with a lower target, we only checked 266 anglers which equates to 7.7% of LEQ's.

Pleasingly however, non-compliance was very low with few issues detected. This has been a feature of this region for quite some years now and reflects a positive attitude our anglers have for obtaining a licence and seeing value in the purchase.

Total licence checks	266	
Total on backcountry designated rivers	18	7%
Total on other fisheries (except Argyle)	91	34%
Total for Lake Argyle	157	59%
Total non-resident anglers	4	2%

All told, only four non-resident anglers were checked over the season which was not surprising considering only 62 whole season non-resident licences were sold. Some of these

may well have been from overseas anglers who had no intention of fishing here and essentially made a donation to Fish & Game via a prompt from the NZC Marketing team.

Seven percent of licence checks took place on backcountry designated fisheries, and Lake Argyle was the scene of over half of the licence checks being a popular fishing destination and a place that staff and voluntary rangers can easily swing by.

Several trips were made into backcountry fisheries such as the Travers (for trail camera work) and the Branch/Leatham, without an angler being sighted.

In fact, angler pressure across the region was very light, and numerous comments were made about rivers such as the Motueka which was barely fished, though, interestingly, the Mot received plenty of attention on the lower part of the river after the regular season concluded.

## *Non-compliance*

Non-compliance was again very low with zero offence notifications issued, however several warnings were given to anglers at Lake Argyle for either fishing with two rods, or fishing while in possession with the daily limit of two fish.



# LICENCE INFORMATION

It became apparent this season how important non-resident fishing income is to this region. Generally, around 25% of our fish income is derived from non-resident licence sales, the highest percentage in the country. Of course, with the borders closed, we had very few non-resident licence sales, and as a result, the Nelson Marlborough region showed a 13.9% loss on fishing income.

The good news is that this region again grew resident licence sales by 11% - a sixth straight year of growth for resident licence sales - see table below. Most of the resident growth occurred in the Family, Whole Season Adult, Loyal Senior, Day, Short Break and Winter licence categories.

Further good news is that nationally, income from fishing licences was actually higher than the previous year as resident licence sales has grown to such a degree that it absorbed the expected income loss from non-residents (around 12%) and showed a 1.8% increase on the previous year.

With non-resident licence sales taken out of the equation, resident licence sales were up 13.2% nationally. West Coast region, for example, achieved a staggering 35% resident growth compared with the year prior, and all other South Island regions showed an increase in resident sales also (Otago 13.1%, Southland 13.3%, CSI 14.1%, North Canterbury 8.6%).

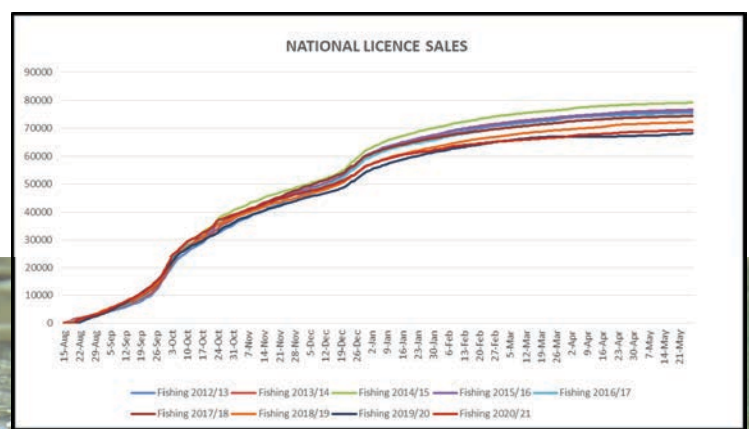
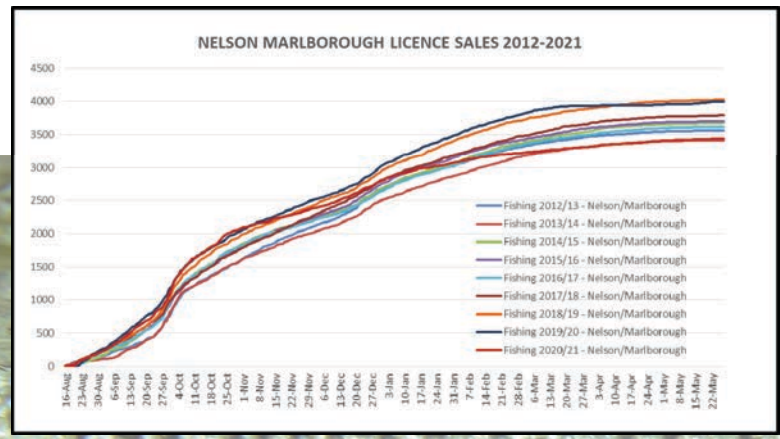
	Resident									Non-Resident				Total LEQ	
	Family	Whole Season Adult	Loyal Senior	Local Area	Day Adult	Short Break	Long Break	Winter	Whole Season Junior	Day Junior	Whole Season Adult	Day Adult	Whole Season Junior		Day Junior
2017-2018	641	1,434	193	131	406	116	22	55	185	64	847	1,272	16	22	3,792
2018-2019	699	1,511	218	188	600	117	23	105	243	61	872	726	27	24	4,029
2019-2020	705	1,526	245	207	560	94	17	87	271	101	838	650	15	14	4,022
2020-2021	781	1,659	313	173	773	156	13	130	225	88	62	22	2	0	3,453

You can see in the graph below when the wheels fell off the bus last season when the country went into lockdown and borders were closed. At that point this region was on track to achieve the best licence sales in the past decade at least.

This year as shown by the red line, sales were strong early in the season from resident anglers then started dropping away when non-resident anglers would usually start turning up. This was followed by a boost in December from resident holiday licence sales, then a marked plateau as the obvious effects of no tourism can be seen.

The graph below shows there was an increase on licences sold this year compared to last year, though still well down on previous years.

It will be interesting to see if Fish & Game nationally can maintain and grow the resident licence growth experienced this year when the borders reopen. If this is the case, we should hopefully see a trajectory upwards in terms of angler participation and licence sales growth.





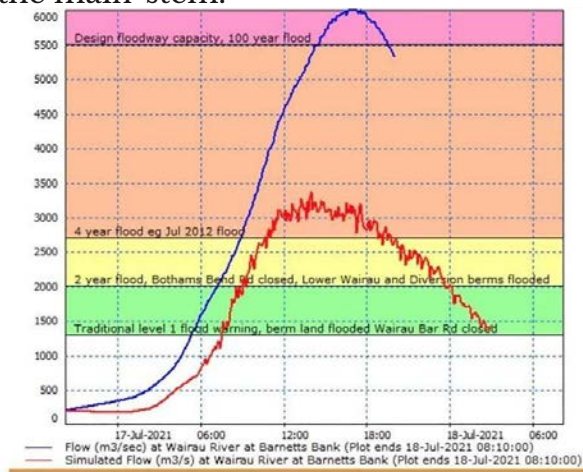
# POSTSCRIPT - JULY 2021 FLOOD

On Saturday 17 July, 2021, a weather bomb hit the northern end of the South Island and caused widespread severe flooding to most of the Nelson Marlborough region, as well as the Northern West Coast.

Notably, there was an unprecedented flood event in the Wairau River, reaching over 6000cu, which was deemed to be a 100+ year return flood.

In the opinion of staff, there has not been an event that has caused such widespread damage across the entire region in at least a generation. From Golden Bay to the Pelorus, from the Buller District to the East Coast, few rivers escaped the significant flood and subsequent fisheries impacting damage.

The big talking points were the Wairau and Motueka Rivers, our two most important lowland fisheries. The Wairau, as seen by the graph below, reached over 6000 cumecs. The widespread nature of the rain meant both north and south bank tributaries were significantly hit meaning large quantities of water was pouring into the main-stem.



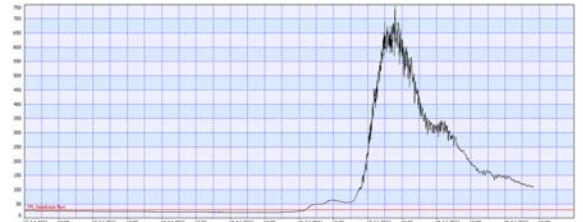
It goes without saying this flood event will be catastrophic to the Wairau catchment trout fishery, and time will tell the extent of this from future drift dives and angler reports.



^ The Wairau River at State Highway 1.

Pleasingly the stop banks did a good job holding floodwaters which the river engineers will be pleased about.

The Branch reached 750cu, a 10 year return (Q10) event; Waihopai (750cu, Q10); Goulter (430cu, Q10); Wairau @ Dip Flat (530cu, Q10). The Upper Waihopai Bridge washed away as did Bartletts Creek Bridge on the North Bank.



^ The Branch River reached 750cu.

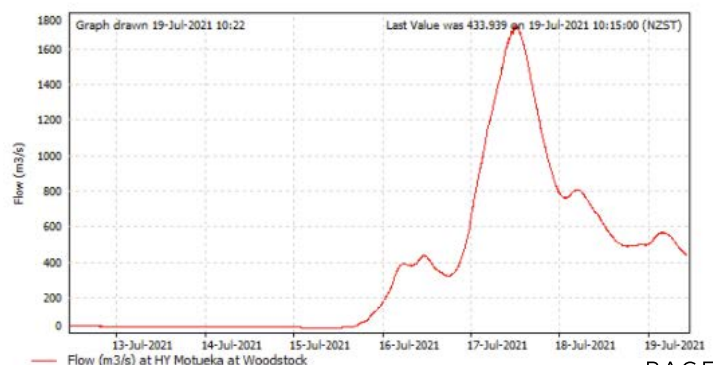
The Pelorus catchment was pumped also, but perhaps to a slightly lesser degree, with the Rai and Pelorus rivers having Q4 flood events (the Pelorus reaching 1350cu and the Rai 425cu).

State Highway 6 from Nelson through to Havelock was closed for some time due to flooding.



^ State Highway 6 near Canvastown.

In Tasman the main-stem Motueka was badly hit receiving an estimated 30 year return flood event, flooding many farms. With global warming, intense rain events such as this will become more common in the future as higher moisture laden air will provide more fuel leading to an increased in magnitude and frequency of flood events.



^ The Motueka at Woodstock.



^ The Motueka at Peninsula

The Motupiko was likely the worst affected tributary with a Q30 event, while the Wangapeka had an estimated Q7 event reaching around 730cu and, surprisingly, the Baton got off lighter with a 1-2 year flood event. There was widespread flooding across the plains, with this especially felt around Peach Island where the river found its old channel near Westbank Road and washed out the Peach Island bridge and did significant damage to the road in places.



^ Damage to Westbank Road.

v The Motueka was well contained by stop banks. Note dotted line indicates normal channel.



The Buller River at Longford received an estimated 50 year return flood, which of course grew in magnitude as it headed towards the coast, flooding Westport. The jetty at Lake Rotoiti was completely submerged indicating the Travers River was very high.



^ Lake Rotoiti with jetty mostly submerged (pic taken two days after flooding on Monday)

Golden Bay is a high rainfall area and periodic flood events generally suppress most of the trout fisheries here. For this rain event a staggering 725mm fell over three days at the Anatoki (Paradise) recorder, with 350mm falling on one day and the Anatoki showed a Q5 flood event.

Site Name	Total	12Jul21	13Jul21	14Jul21	15Jul21	16Jul21	17Jul21	18Jul21
Lake Rotoiti (FENZ)	159.4	0	0.2	0.4	26.6	55	63.6	13.6
Buller at Longford	230	0	0	3	47	78	81.5	20.5
Murchison (FENZ)	193.6	0	0	0.2	44.4	70.8	64.4	13.8
Matakitiki at Horse Tce	263	0	0	0	52.5	110.5	87.5	12.5
Wangapeka at Biggs Tops	493.5	0	0	1	115.5	154.5	175.5	47
Cobb at Trilobite	246	0	0	0	35	92.5	100.5	18
Aorere at Perry Saddle	632	0	0	1.4	103.1	250.6	234.8	42.1
Aorere at Salisbury Br	510.5	0	0	0	88.7	201.9	195.6	24.3
Aorere at Devils Boots	242.4	0	0	0	31.5	88.7	103.3	18.9
Collingwood at Repeater	152	0	0	0	15	48.5	65.5	23
Anatoki at Paradise	757.5	0	0	0	103	273.5	349.4	31.6
Waingaro at Little Devil	485	0	0	0	52.6	185.1	229.8	17.5
Anatoki at Happy Sams	454	0	0	0	55.3	184.3	198.3	16
Waingaro at Hanging Rk	352	0	0	0	52.5	119.5	148.5	31.5
Takaka at Harwoods	367.5	0	0	0	34.9	151.2	161.4	20
Takaka Aerodrome (FENZ)	176	0	0	0	24.8	56.4	81.4	13.4
Motupipi at Reillys Bridge	130.5	0	0	0	16	39.8	62.2	12.5
Takaka at Kotinga	179	0	0	0	18.5	56.7	92.8	11
Takaka at Canaan	358	0	0	0	32.5	136.1	174.4	15
Riwaka at Takaka Hill	291.5	0	0	0	19.6	102.4	147.5	22
Riwaka Sth at Moss Bush	179.5	0	0	0	14.3	56.6	91.1	17.5
Riwaka North at Littles	204	0	0.5	0	15	67.6	103	18
Motueka at Woodmans	118	0	0	0	9.1	33.1	63.4	12.5

If there is to be any good from this rain event, perhaps it may be through potential reversing of pool infilling which has taken place over the past decade or more in Nelson Lakes and other rivers within this region, and have contributed to a notable reduction in trout habitat.

Note this flood event occurred after the main fisheries report had been written, in which river flows during 2020 were referred to.

# APPENDIX

