NELSON MARLBOROUGH
FISH & GAME

# ANNUAL FISHERIES REPORT 2021-22

# TITLE PAGE

# SUMMARY OF THE SEASON

Nau mai, welcome to the 2021-22 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 2021-22 fishing season.

The season was again very different from what would be considered the norm, with international borders still largely closed and nearly all angling by resident anglers alone. Reports from our staff and rangers, as well as anecdotal reports from anglers, reveal that fishing pressure on many rivers was low, and kiwi anglers, again, did not maximise their opportunities on wilderness rivers. Even favoured lowland rivers received minimal attention, meaning our compliance efforts were often met with few angler contacts.

Unfortunately, due to a very wet December and February, our species monitoring efforts were hindered to a certain extent, and staff did not undertake as many drift dives as normal. Still, 16 rivers were dived both here and while assisting West Coast region, and you can read about these in this report. The standout river, both from drift dive results and angler feedback, was without doubt the Wangapeka River, which showed its resilience in the face of big flood events.

Speaking of floods, the 2020-21 Annual Fisheries Report had some detail on the huge July flood that battered most of this region. So, it was with some uncertainty that anglers entered into the new season and, while it is no doubt the flood had an impact, it was perhaps not as catastrophic as what many of us thought it would be, and some reasonable fishing was experienced considering. The Wairau River is perhaps showing the effects of flood/drought events over the past few years, and had a very poor dive result.

On a positive note, the new Waimea Park adult/family pond has been very well received, and gets plenty of attention by local anglers. In fact, nearly every occasion that staff have visited, there will be at least one group of anglers there. The Youth Sports Fishing Trust junior ponds have provided excellent opportunities for young anglers with good success rates. Fish & Game undertook a number of releases here, which allowed for plenty of use despite most kids fishing events being cancelled for covid reasons.

Lake Argyle continues to be highly popular, and staff are sure this is likely now our most popular fishery. The National Angler Survey, that was carried out this season, will likely prove this, showing also that the Motueka and Wairau rivers are our most important lowland fisheries. Compliance at Argyle has been very good despite the high usage, we believe that anglers feel they are getting good value for their money here and are happy to buy a licence.

On the RMA front, the manager has been active trying to get better results for water through the Wairau Plan. Elsewhere, staff have been reasonably active on local catchment groups, which will be important for Fish & Game to stay active in going forward.

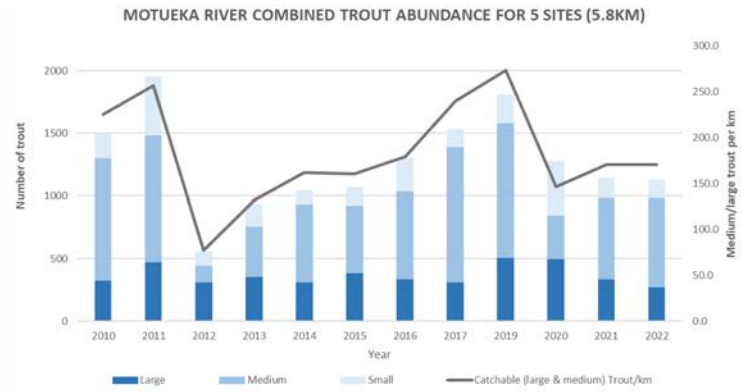
With societal changes apace, one of the biggest challenges for Fish & Game, both nationally and regionally, is to stay relevant in today's society. With the current trajectory we are on, we are simply running the risk of fading into obscurity. The more the public see's the positive advocacy outcomes we achieve, the better. Added to this, the organisation and our licence-holders need to be seen in a positive light in order to maintain (and enhance) our social licence to continue to do what we love doing. Considerable effort will be put into making this happen in the future by staff, to encourage anglers and hunters to get involved in positive community projects. We have already commenced some of this, such as the 'Anglers Help Farmers' (page 20), and 'Kai Rescue' food donations (game bird hunters), however there are huge possibilities ahead to further develop this.

Noho ora mai, the Fish & Game team.

# SPECIES MONITORING

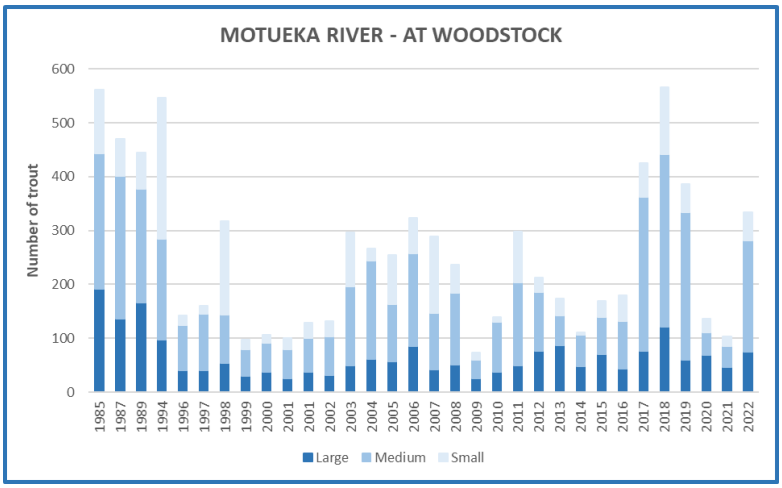
## MOTUEKA RIVER

The 1800 cumec flood (at Woodstock) that tore through the Motueka was a once in a generation event and certainly had everyone talking for a while. So it was with some reservation that anglers entered the 2021-22 season and it was expected the trout population would be significantly affected. As it turned out, numbers were very similar to last year when combined with all five drift dive sites.

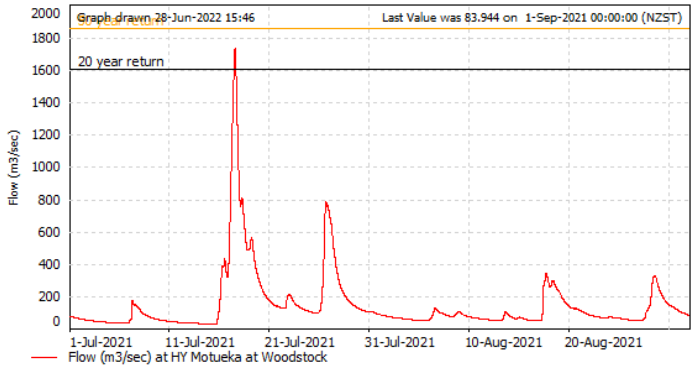



As it can be seen from the graph above, numbers of large fish were slightly down from the average, however what is surprising was the reasonably abundant population of the medium sized fish, which was most evident in the upper drift dive site at MacLeans.

The Woodstock is the site with the longest monitoring history, and is in fact made up of a section of the MacLeans dive site and another section of the Dove site. By looking at the below graph, it can be seen that, historically, the trout count at this particular site was fairly strong in the large and medium cohorts.




> Jacob Lucas out fishing with Griff Lucas.




^ The July flood, at Woodstock.

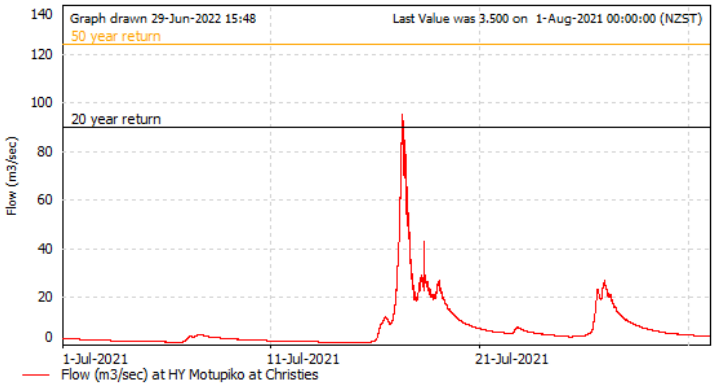
Fishing wise, the Motueka had more favourable reports compared to last season, however fish were still somewhat patchy as they were the season prior. This is an occurrence that we have not seen on the Motueka before, in recent history at least.

^ Kaiva Paaka with her first fish caught by herself on the fly rod.

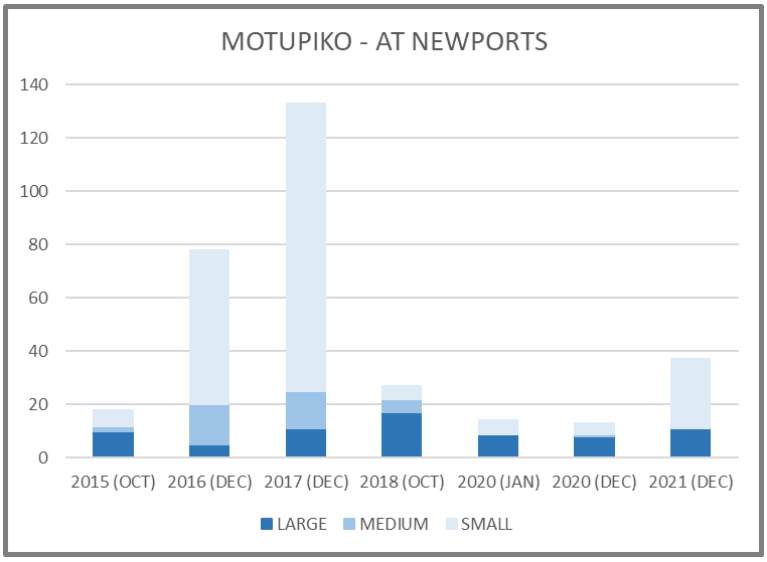
Fish condition was again excellent as was the case last season, and if anglers hit a good patch of fish they could be in for a great session indeed. Again, it paid to be mobile, not be tempted to continually return to your favourite beats - and find the fish.

# MOTUPIKO

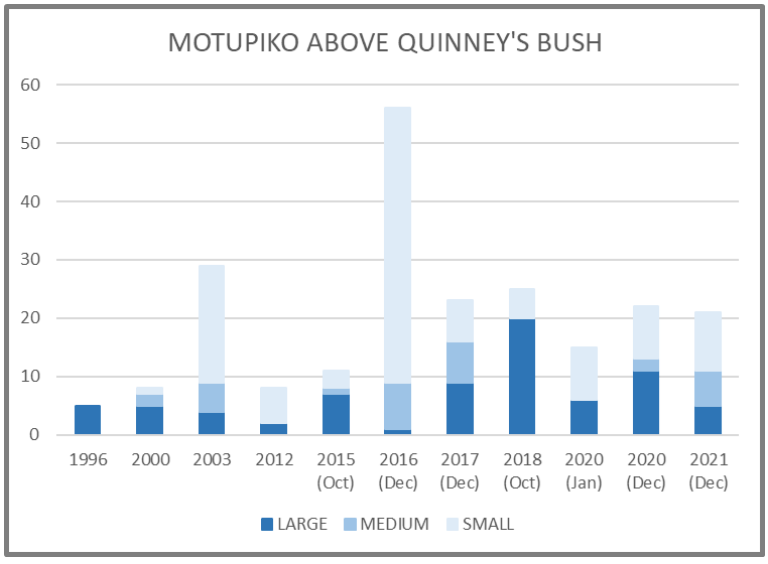
The Motupiko was dived on December 29 at Newports (upper) and Quinneys Bush (lower). The river experienced a 20+ year return flood event in July.




The upper site at Newports held better than expected numbers of fish, with more small sized fish than anticipated considering the flood event.




At the site above Quinney's Bush, a mixed bag of 5 large, 6 medium and 10 small brown trout were counted. Again, deep water refuge created by utilisation of rock groynes was favoured habitat for the large brown trout.




It must be said, however, that this entire reach from the Motueka confluence to the Korere Bridge is fairly unattractive water to fish, owing to it's highly modified environment, loss of pool habitat and excessive use of shrub willow, which, while helping with bank stabilisation, do not make it an aesthetically pleasing environment to fish.

Fish & Game was contacted by Taylors (TDC river works contractor) about a dozen or so stranded fish near a historical rock groyne with some standing water surrounding it. The contractors were about to spread gravel around the groyne which would have buried the fish. Staff went and visited the site and tried unsuccessfully to catch and relocate the fish, however at the request of Fish & Game, Taylors dug a trench linking the isolated groyne to the main channel and it was hoped that, overnight, trout would find their way into the main Motupiko - see picture below.

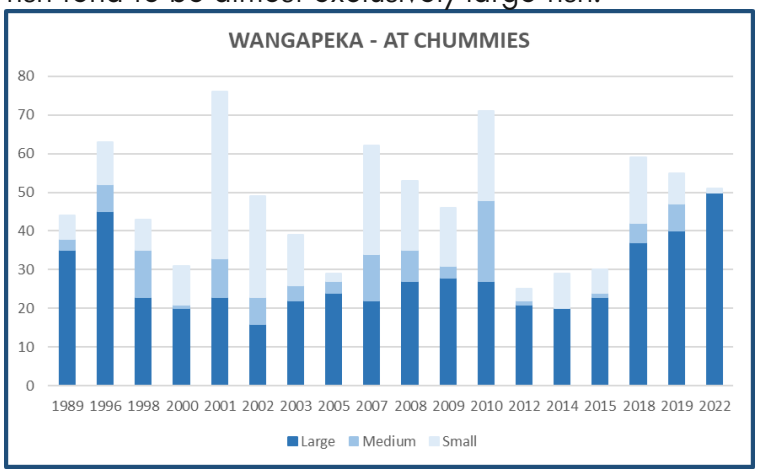
*v A trench was dug from the main Motupiko to the stranded fish to encourage the trout to return to the main river.*

# WANGAPEKA

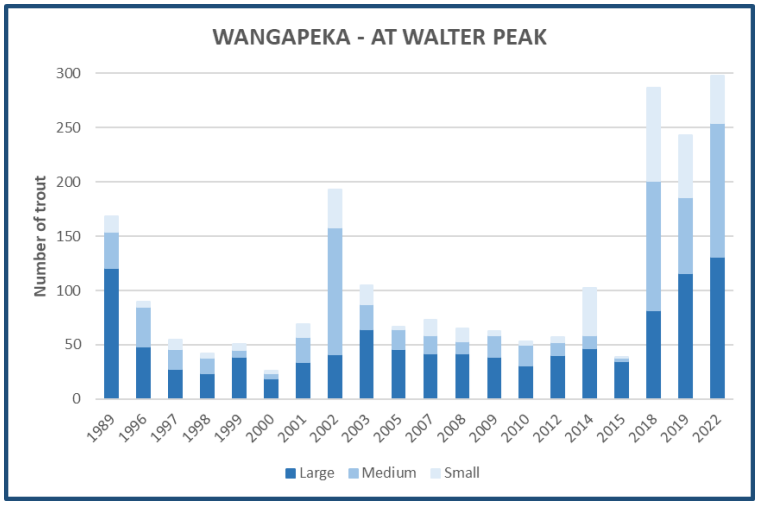
The Wangapeka largely escaped the full brunt of the July 2021 flood. The flood event still brought a huge amount of water down, but the Wangapeka is a river that seems to be able to withstand regular flood events more than other rivers perhaps.

There is little doubt the Wangapeka was one of the standout fisheries for last season (as well as the season prior), and those anglers who tapped into this were rewarded with some stunning fishing at times. Our drift dives mirrored what anglers were telling us – there were good numbers of fish in the river.

The upper dive site at Chummies Creek has a predominately native catchment above and has excellent water quality. For this dive, which was undertaken later than usual in April, 50 large fish were seen (see graph below), beating the previous highest number of 45 large fish in 1996. Zero medium fish and one small were seen in the 2022 dive, which is fairly typical for this part of the river – the higher you go the fish tend to be almost exclusively large fish.




The lower site at Walter Peak revealed the population was good throughout the river, with 131 large, 123 mediums and 44 small fish in residence over the 1.2km dive – see graph below. This count was very high with a record number of large and medium fish, however similar to the two years prior.



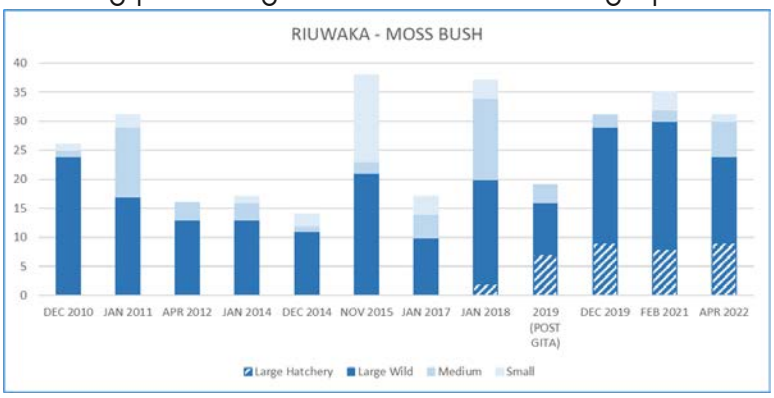

Hop orchard development continues apace within the Wangapeka plains area, and it is understood most of the dairy farm on the true left is going into hops, with plenty of hops already present across the river around Hewitt Road.

As mentioned, fishing was great this season, and the opening of the season heralded sunny conditions and reasonably normal flows. Some anglers tasted dry fly action on October 1, and plenty more succumbed to the dry as the season progressed.

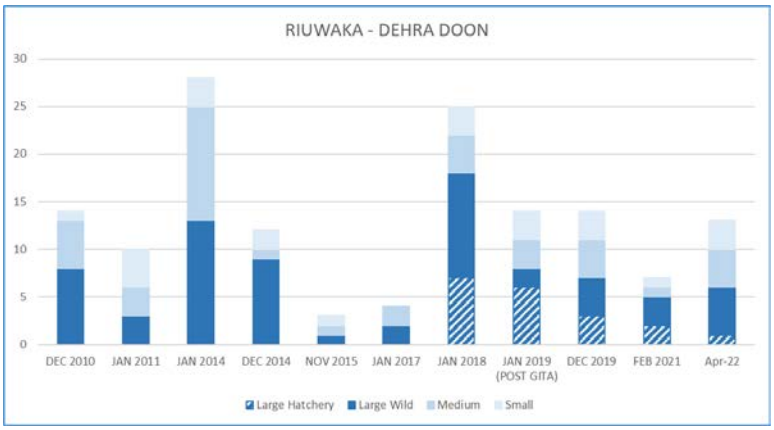
*^ Smiles all round on the Wangapeka, in order from top: jake Scranney; Cam Reid; Jacob Lucas; Weesang Paaka & Shannon Aram*

# RIUWAKA RIVER

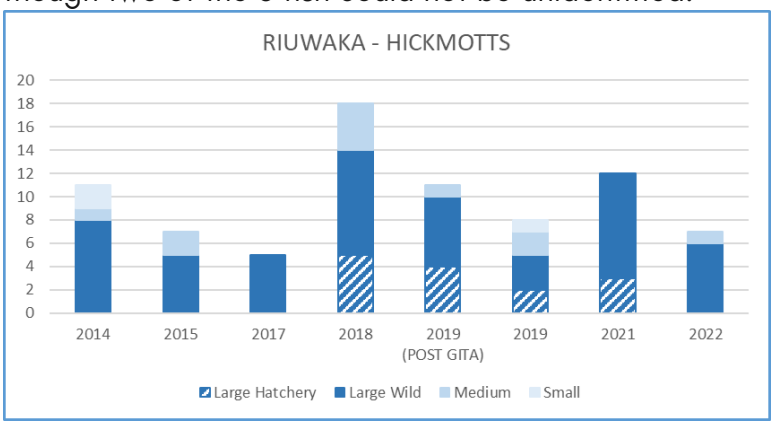
The Riuwaka dive was completed later than usual, in April as opposed to the usual December/January period. The count at Moss Bush – the site with the longest dataset (goes back to 1985 though only shown from 2010 onward here), has been very consistent for the past three years in terms of large trout seen, including percentage of fish released – see graph.




The Moss Bush site has the best habitat of all three dive sites – the lower two having issues with sedimentation (Dehra Doon) and lack of suitable habitat (Hickmotts). Only six large trout were counted in the Dehra Doon site (1km of water above the main road bridge). In times gone past this number would have been seen in the first pool above the bridge alone, however for a number of years now this part of the river has been characterised by an abundance of fine, fluffy, sediment which is no doubt having an effect on the fish habitat.




The graph below shows that no clipped fish were seen, though two of the 6 fish could not be unidentified.



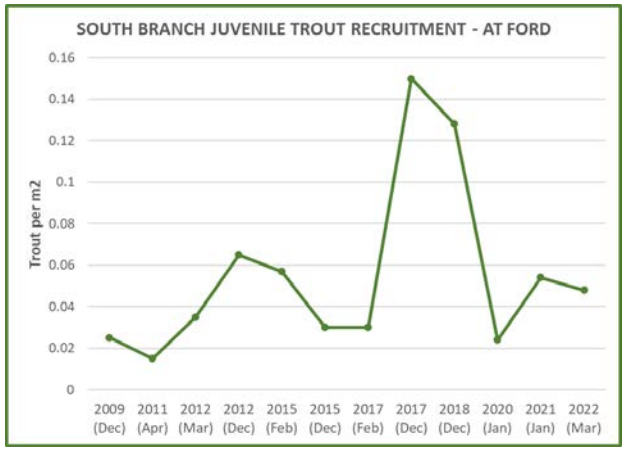

It was pleasing to see that the lower site at Hickmotts looks to be visually improving each year as more willows establish and structure is re-instated (with occasional rocks from rip-rap coming loose and falling into the thalweg (main current of river). In fact, though only six large trout were seen, three of them were directly under overhanging weeping willows that Fish & Game staff planted a number of years ago.

Fishing-wise, the Riuwaka was again a mixed bag. We heard of days where there were good numbers around and others when, despite perfect conditions, fish were largely absent. The South Branch is generally the consistent performer within this catchment, and has some of the best water quality in the region shown by a prolific abundance of stoneflies and mayflies. It shows in the fish too, with decent numbers of great fish in residence, and is probably the most important reach for spawning fish.

# E-FISH - RIUWAKA RIVER

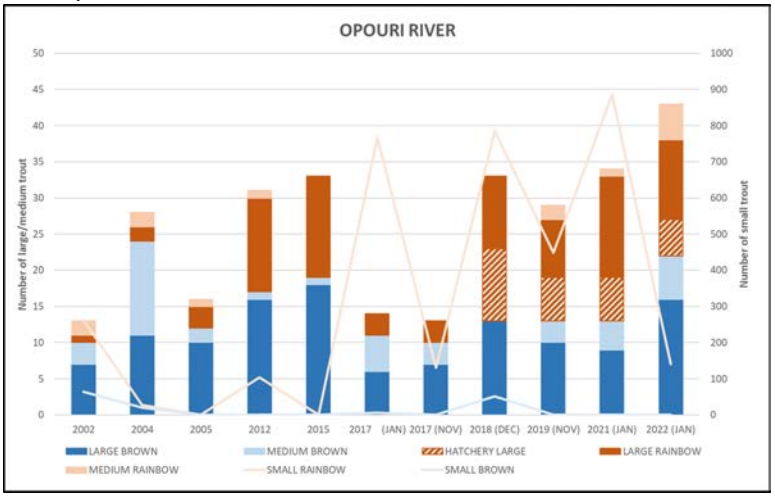
The Riuwaka was electric fished at three sites in March – one in the North Branch, and two in the South Branch. Electric fish data here commenced in 2009 and has been undertaken most years since. As can be seen from the graph below, just four juvenile trout were seen at the 100 square metre North Branch site, equating to 0.040 juvenile trout per metre, though a whopping 29 koaro were counted – see page 16


At the South Branch, 12 juvenile trout were counted over 250 m2 at the ford site, equating to 0.048 trout per square metre – see graph below.



## OPOURI RIVER

The Opouri River is one of the most consistent fisheries in the Pelorus catchment, both in drift dive results and feedback on fishing there. The Opouri was dived on January 7, and the graph below shows a reasonably high count of large fish, with 16 large brown trout and 16 large rainbows. Of the 16 large rainbows, 5 had tags from previous releases.

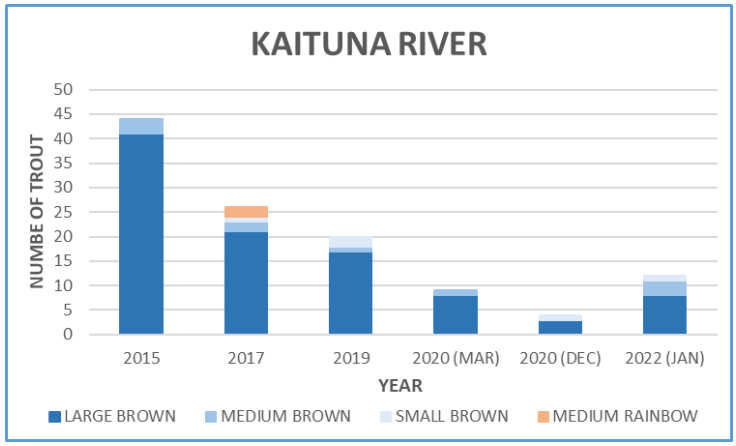



Of note, is the low count of young of the year rainbows. Most years, the ripples and pool tail outs are liberally stocked with small rainbows, however this year a very low count was observed. We don't read too much into this as it has occurred in the past, with the last low count being in 2017.

We still receive fairly regular tag returns from historical Rai/Opouri releases. One recent return was this 5 pound hen, caught below Rai Falls from a release in February 2018. The fish had been in the river for over 4 years, had roughly doubled in size, and quite rightly ended up as dinner.

## KAITUNA RIVER

The Kaituna is showing a partial recovery this year, however is still just a speck of its former self. Once a great fishery that received little attention by anglers, the probable impact of seals has certainly taken its toll.




The Kaituna was dived on January 7 when eight large, three medium and one small trout were counted.

Unfortunately staff ran out of time to dive the Rai and Pelorus this season.

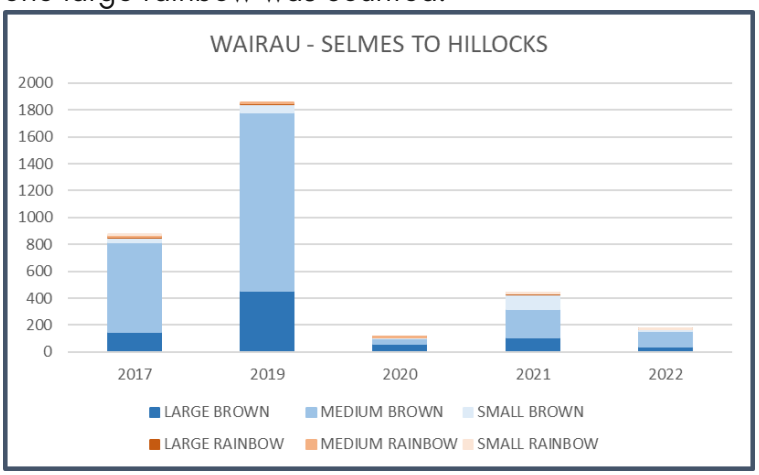
^ *Andrew Burden with a solid Opouri rainbow..*

# WAIRAU RIVER

The Wairau River is going through a rebuilding stage after experiencing the effects of a huge flood as well as droughts.

The relatively new site at Selmes Road only has limited years of data, and unfortunately though not surprising, the 2022 dive was the worst in it's short five-year history.

As the graph below shows, 40 large, 133 medium and 13 small fish were counted over the 2.8km site. Only one large rainbow was counted.




Angler feedback, more or less, mirrored the dive results with little positive comments about the fishing across the entirety of the river, including the Upper Wairau.

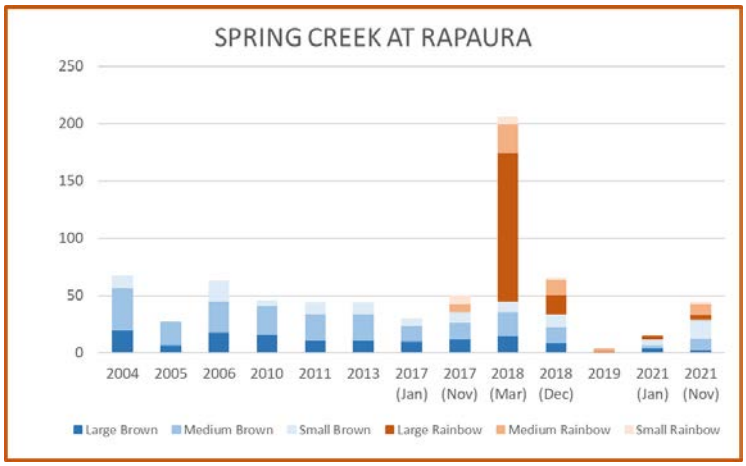
The Goulter River had extremely poor feedback, probably the worst fishing year it has had. Some thought must be had to future angler management of the Goulter, especially with a new 'designated waters' regime likely coming to effect for the 2023-24 season, and whether the Goulter should be included as a designated water (with specific controls) until such point where trout numbers improve. The angler experience here, once affected by the presence of too many anglers, is now suffering from too few trout.

It does appear that rainbow trout numbers are on the rise in some parts of the Wairau, and we do receive more regular reports of rainbows getting caught.

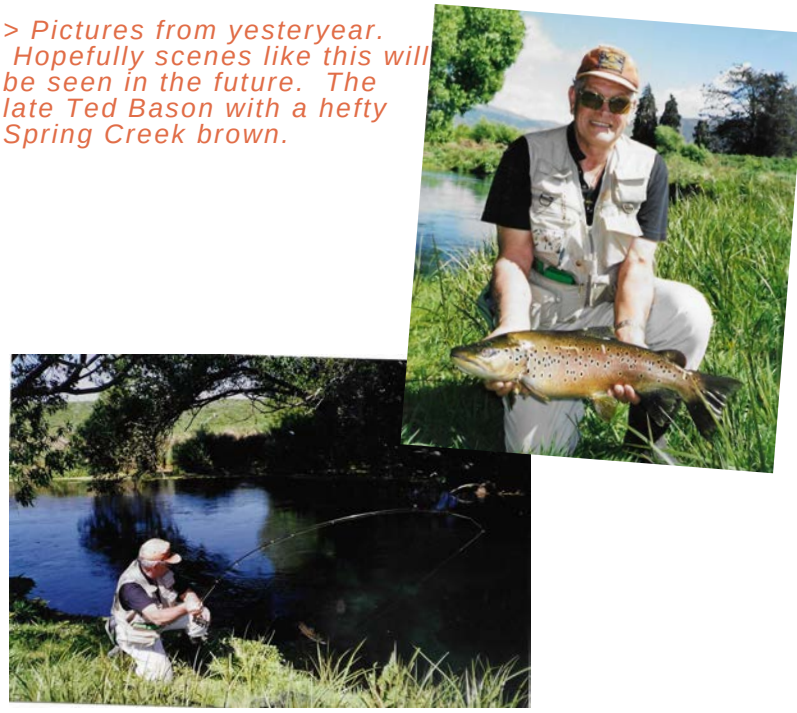
Of note was a great 8lb wild rainbow caught by Mark Hubbard on the mid-Wairau.

# SPRING CREEK

Low numbers of brown and rainbow trout is still the case in Spring Creek, however numbers are slightly higher than the previous two years. There is little doubt the effect of seals in this river has been felt, and hopefully the fishery recovers over the next few years.



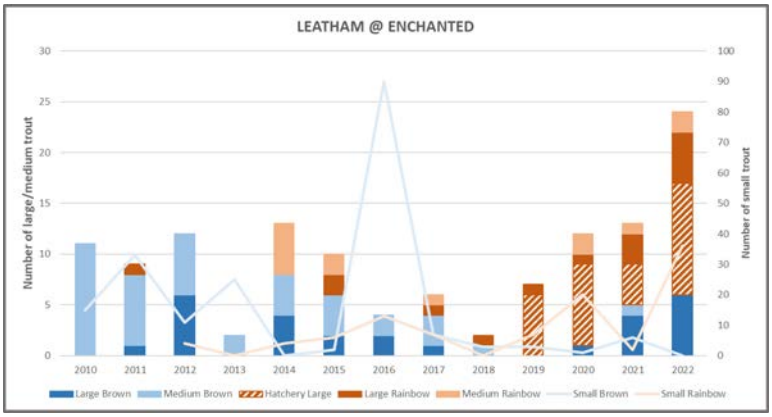

*> Pictures from yesteryear. Hopefully scenes like this will be seen in the future. The late Ted Bason with a hefty Spring Creek brown.*



*> Mark hubbard with an 8lb wild rainbow from the Wairau River.*

# BRANCH | LEATHAM

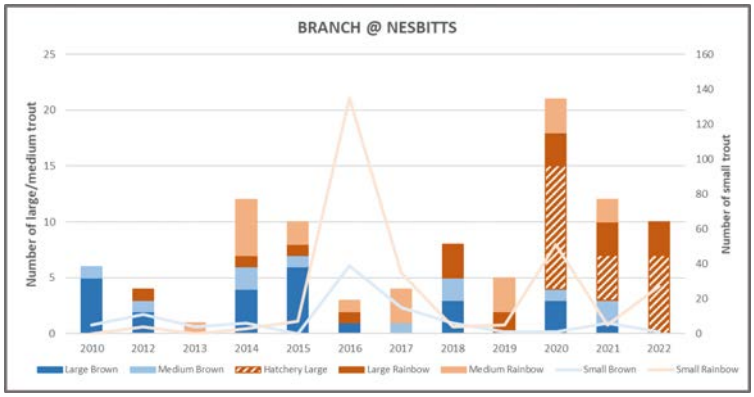
The Branch & Leatham rivers were dived on 21st March. Commencing the day diving the Leatham at Enchanted, a record overall count was observed with 6 large browns and 16 large rainbows seen. Of the 16 rainbows, five were wild, eight were clipped and three had tags. The most brown trout that have been counted at this site was 7 fish in 2005, so this result was a pleasing one with the number of brown trout plus wild/hatchery rainbows (note graph below is 2010-present, however records date back to 1992).



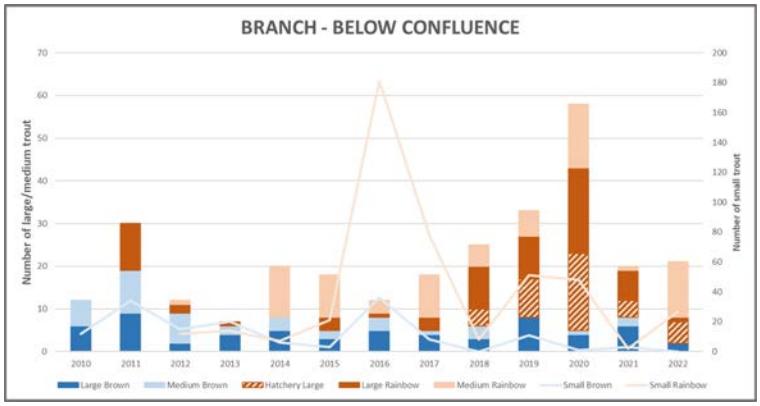

36 small rainbows were also seen, the highest count so far - however the science of counting small fish is far less accurate than large fish owing to the shallow habitat they occupy.

^ FG voluntary ranger, Steve Ngatai, with his first fish on the fly rod in the Leatham

The Branch was dived at two sites, with the upper site at Nesbitts Stream showing a reasonably poor count of 10 large rainbows, with three wild fish, two tagged and five fin clipped (most likely from December heli-release). As mentioned in previous years, much habitat has been lost here due to pool infilling, and this site is bordering on being a 1km long ripple, with few pools, in other words, poor large fish habitat, but good for juveniles.

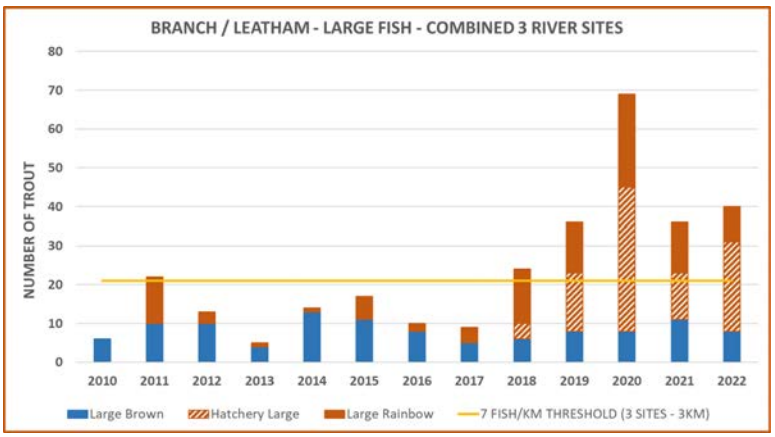



The lower site below the Branch/Leatham confluence is usually productive and holds good numbers of rainbows and brown trout. This year was different, however, and very few brown trout were in residence and a reasonably low count of rainbows too. It is possible that some of the brown and rainbow trout had moved up into the lower Leatham, as the dive was undertaken in March (rather than the usual January-February when the lower Leatham is quite warm), and when we believe trout drop down to the cooler waters below the Branch confluence.




# BRANCH CONT....

Overall, it can be seen from the graph below that the large fish count over all three sites combined was strong, easily meeting the 7 large fish/km threshold as per the historical agreement with Trustpower, no doubt aided by recent releases in November and December.




The below pictures are the same fish caught a few months apart. The top picture shows a trout caught by Jacob Lucas (below the Branch weir), and was a hatchery fish over 10lbs that had been released into Lake Argyle and made its way up the canal, over the grills, then flushed out into the Branch below the weir. It is a rather unattractive football-like fish, which is a common feature of some large hatchery rainbows. The fish shown underneath is the same fish, caught a few months later by Cam Reid near this point, and is a far better looking specimen already, having lost much of it's fat, and looking more river fit.

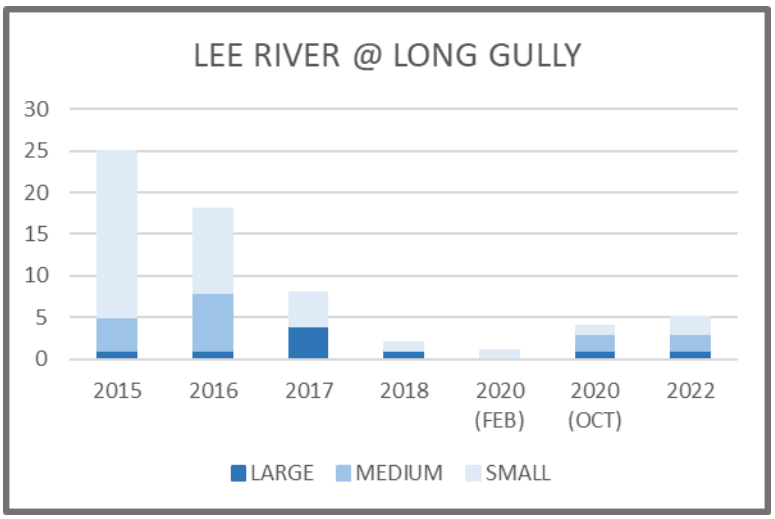
^ *The same fish, caught a few months apart*

The Branch & Leatham receive plenty of attention from anglers, and we still get a good deal of positive feedback from anglers. It will be interesting to see what the National Angler Survey results reveal as far as usage here. It was pleasing to see anglers making good use of the May season extension, as evidenced by a staff member who was fishing in the upper Branch in May.

^ *Pictured from top: Steve Silcock; Jack Kingsborough; Weesang Paaka; Steve Ngatai*

# LEE RIVER

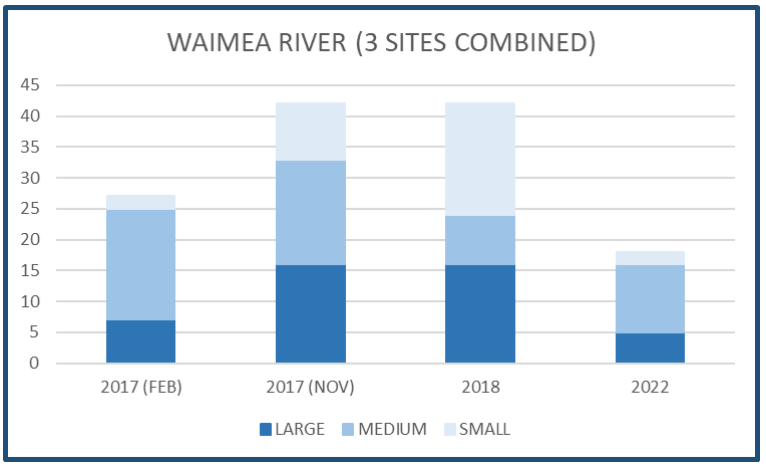
The Lee River was dived in April,again later than when it would usually be undertaken. Never making for great reading, this year was no exception with a total of five trout seen (1 large, 2 medium, 2 small) - see graph below. Next time this is dived the river may be under the control of the Lee Valley dam




# WAIMEA RIVER

The Waimea is dived at three separate smaller sites (essentially pools). It was last dived in 2018, and was undertaken this year in early January.

As seen in the graph below, there was a fairly poor showing of only 5 large, 11 mediums and 2 smalls.




# SPAWNING COUNTS

## RIUWAKA

The Riuwaka (North & South Branch) were surveyed in July. Five definite redds were seen in each of the 1km reaches for both streams, and an additional redd was seen further up the North Branch adjacent to the rip rap wall - the identical place to previous years.

Spotting redds was fairly easy with relatively stable flows meaning the contrast between algae covered stones and clean stones was very evident, unlike many other streams in the region. In the South Branch fish make pretty good use of the limited gravels that are available, and redds can be found in quite small pockets on the edges of the stream.

*^ South Branch redd (left) and North Branch redd (adjacent to rip rap) - right.*

## 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 2022 spawning count, no redds were seen throughout the same run, though the river had been in flood recently and all gravels were clean, making redd identification difficult.

## BLUEGLEN - UPPER MOTUEKA

The Blue Glen used to be an important spawning tributary of the Motueka. In fact, in 2000, the short stretch between the confluence and the bridge yielded a staggering 39 redds over the 0.9 km length. In 2022 it couldn't be more different, with just 1 redd seen over the same reach. Access was very difficult with the dense riparian and fallen trees, however the 2000 survey and, indeed most of the surveys prior to this too, noted the same difficulty with access , downstream blockages and fallen trees.

## GORDONS STREAM

Gordons Stream in the Upper Motueka was visited on 22 June. The short stretch below the road bridge to the Motueka River was surveyed, as well as 400m above the bridge. The quantity and quality of the gravel was excellent, and it was thought there should have been more redds than what was seen, though sometimes it is difficult to time peak spawning runs. In July 2015, 10 redds were seen.

*^ A Gordons Stream redd. The quantity of good spawning gravel was excellent.*

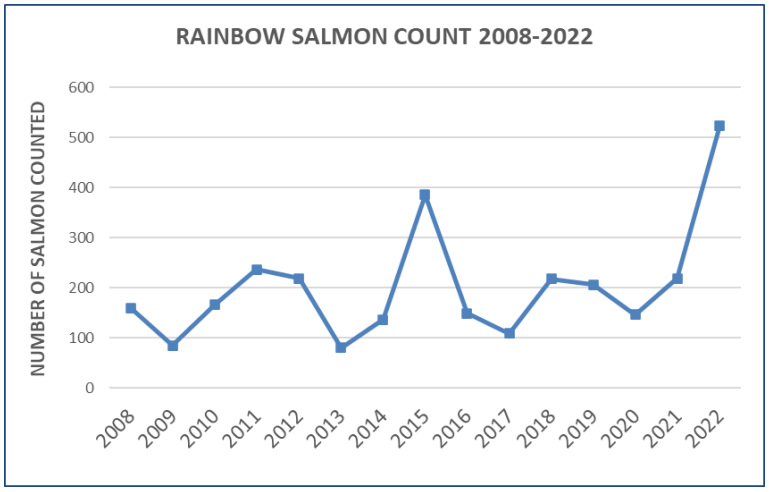
## SIX MILE - WAIRAU

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 2021 with low numbers found, however we surveyed it again in June 2022, this time further upstream. The water here was deemed to be more suitable, so we will make a return visit here next year.

# SALMON MONITORING

The record counts recorded by Fish & Game within the Upper Wairau this year will be very welcome news for salmon anglers concerned about the future of the South Islands East Coast salmon fishery. After nearly a decade of diminishing runs, this year's East Coast salmon fishing and subsequent spawning counts are reported to be the best they have been in many rivers for over a decade. This was certainly the case with the Wairau River's main spawning location – as can be seen below, a record count was achieved this year.

Staff visited the Rainbow in May to undertake a foot count, noting the record number of fish and affirming murmurings of some great salmon fishing in the Wairau last season. In total, 524 salmon were seen within the Rainbow side stream alone, which for those that know the relatively short stretch of water, would understand what a spectacle this would be. Added to this, it was appraised to be the largest average weight/sized fish observed on a count, with the average size being estimated at 6kg, and many specimens exceeding 9kg.




The Clarence catchment was surveyed by air by North Canterbury Fish & Game staff, with a solid count of 408 salmon seen.

^ A stunning day for counting salmon in the Rainbow for Vaughan Lynn and Carey Cudby.

While Fish & Game staff received some positive feedback on fishing conditions within the Wairau this year, a February 2022 flood event meant a large proportion of salmon probably traveled quickly up the Wairau and were therefore not necessarily available to anglers.

Whether this record spawning count will result in a high return in 3 years is anyone's guess however, as oceanic conditions are considered to be one of the most critical factors in the size and number of salmon returning to our rivers each summer.

The larger average size and increased number of returning salmon in the Wairau and many other rivers further south this year is likely reflective of better oceanic conditions offshore over the last 2 summers.

Commercial fishermen around Akaroa reported higher than normal krill abundance, along with harvest of commercial fish species that feed on krill over the 2021-22 summer. Interestingly, the Clarence counts were only mid-range numbers wise unlike the Wairau counts.

Providing we have reasonable summer conditions within the Wairau and a fresh at the right time in late Feb-March, there should at least be high numbers of juvenile smolt heading out to the ocean. After that it is anyone's guess as to what oceanic conditions will be like over the next few summers – if favourable conditions prevail we may see another good salmon return in 3 years time.

> Aidan Gane with a solid Wairau fish.

As already mentioned, from all accounts, most of the Canterbury East Coast fisheries had good seasons, with higher numbers of returning fish and larger average size.

Further South, the introduction of a salmon card for the major East Coast salmon fisheries (restricting anglers to no more than two fish for the season), was reasonably well received with 9400 cards issued, though there were sure some learnings to be taken for NCFG/CSIFG about the card going forward.

A bit like our Backcountry Endorsement system, around 2/3 of those who obtained a card did not go salmon fishing (bearing on mind the cost to print and send the cards is quite high). Around 80% of the cards were issued to anglers from NC/CSI, and the remainder scattered elsewhere. Of the 9400 cards issued, only around 1000 cards were returned from the approx 3100 anglers that actually went fishing, mostly from those who caught at least one fish (there was some reluctance for those who didn't catch a fish to return a card, even though the information is valuable), meaning only around 5-7% of anglers who received a card caught a fish, and approximately 20% of anglers who actually went fishing caught at least one fish.

Early indications is that the card (and season limit) has been successful to reduce harvest, with unconfirmed data from the Waimakariri suggesting an approximate halving of the salmon harvest from 60% of the run to around 30% of the run caught by anglers.

In the Rakaia, around 600 salmon were caught, with 3200 making it through to their spawning grounds.

# NATIVE FISH MONITORING

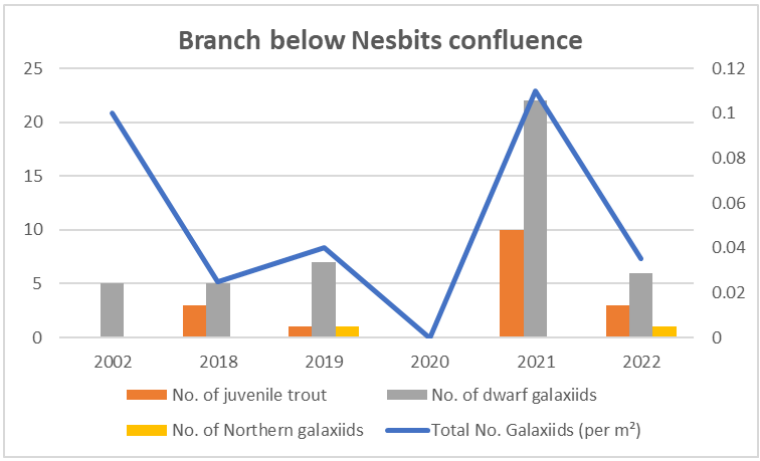
Electric fishing monitoring of both native fish and juvenile trout continued in a number of trout fisheries including the Branch/Leatham, Opouri, and Riuwaka Rivers. This monitoring work has two main purposes, firstly, to monitor any potential effects of the current or past (last 5 years) regional trout release program on native fish species (relative to the impacts of flooding or other factors), and secondly to also try and determine what are the specific salmonid population limiting factors within these fisheries. The Branch/Leathem catchment is currently the only catchment where riverine salmonid releases are undertaken annually within this region, as part of the Branch hydro weir mitigation program.

## BRANCH/LEATHAM STUDY

An intensive multi day sampling trip 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 March 2022 survey work revealed a significant drop in numbers of both native fish and juvenile trout present within nearly all the mainstem Branch/Leatham sites, however tributary sites had more variable results. Interestingly, no juvenile brown trout were located during this sampling visit, possibly due to a large July flood (~750 cumecs), of around an 8-9 year return period which may have destroyed most brown trout fry/redds at that time of the year. A series of more moderate floods also occurred during February 2022 which could have influenced galaxiid biomass recorded in March 2022. The two monitoring sites below the hydro weir within the residual flow channel were not sampled in 2022 due to the hydro scheme being offline and all instream flow travelling down the channel area rather than through the hydro canals.

As can be seen in the monitoring results table and graphs (see Appendix and below representative graph), the 6 flood-prone mainstem river monitoring sites all recorded drops in galaxiid biomass from the previous sampling year, and 4 out of these 6 sites also recorded a drop in juvenile trout numbers, along with no change in another. Only 1 out of 6 mainstem sites recorded an increase in juvenile trout numbers, and this was minimal going from 1 to 2 juvenile fish located over 200 m2.




The 7 tributary sites sampled however showed more mixed results, with 4 out of 7 tributaries recording an increase in galaxiid biomass from the previous year, and 3 recording a decline. In relation to trout, 2 out of 7 of these sites recorded an increase in juvenile trout biomass, and 5 recorded a decline - see Appendix on page 27 where tributary graphs are shown.

These results indicate that the density of main river populations of galaxiids and juvenile trout within the Branch/Leatham catchment appear to be highly regulated by flood frequency, as last years very high abundance of dwarf galaxiids (and juvenile trout at some sites) recorded in a number of mainstem sites, was preceded by a stable 12-month period with no major floods. In addition, not once over the 5 years of sampling have staff encountered mature large adult northern galaxiids within mainstem river sites, instead all individuals located tend to be half grown sub-adult fish. It is considered that the habitat preference for Northern Galaxiids noted within this catchment, may mean that the sub-adult Northern galaxiids located within mainstem river sites, are simply undertaking locational shifts in an attempt to find new tributary sites in which to grow to full maturity.

This pattern is at times mirrored in salmonid free tributary sites within the catchment, with mature Northern galaxiids only being located within the upper reaches of these sites where riparian shading occurs, whereas the lower more exposed sections being favored instead by dwarf galaxiids. Whether this is completely normal distributional behavior for northern galaxiids or influenced by potential predation pressure from large salmonids within the mainstem rivers, is unknown. The goal of the monitoring program however is to ensure both Northern and dwarf galaxiids within the entire catchment retain healthy population levels within tributary sites and no long-term declines potentially attributable to trout restocking are able to be detected over time.

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 freshwater fisheries into the future.

A recent article (see Appendix) from Angus McIntosh voiced concern over the health of Aoteraoa's freshwater ecosystems in future in a warming climate, noting large floods had decimated many of their alpine native fish monitoring sites, but that the species had held on at low levels and recovery was underway – this mirrors what we are currently seeing in the Branch/Leatham catchment after significant flood events.

## 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 historically for increasing angler participation/success.

**OPOURI RIVER NATIVE FISH MONITORING RESULTS**

| Year | Location | Area Sampled (m2) | No. of juvenile trout | No. of trout (per m2) | No. of dwarf galaxiids | No. galaxiids (per m2) | 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 |
| Mar-22 | Opouri at Tunakino Bridge | 75 | 0 | 0.00 | 54 | 0.72 | 11 upland bullies |
| 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 |
| Mar-22 | Opouri at Ronga Confluence | 80 | 0 | 0.00 | 57 | 0.71 | 11 upland bullies |

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. While the March 2022 sampling showed the density of dwarf galaxiid numbers to have dropped modestly, the overall population density is still considered relatively healthy. It is possible that either the later sampling date of March, or the large bed changing flood events that had occurred since the previous sampling period, had influenced this year's result.

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.

We also inputted to a landowner resource consent application to undertake bank protection works within this river system and sought that rock riprap use be avoided wherever possible due to its destructive long-term impact on river morphology and ecosystem functioning.

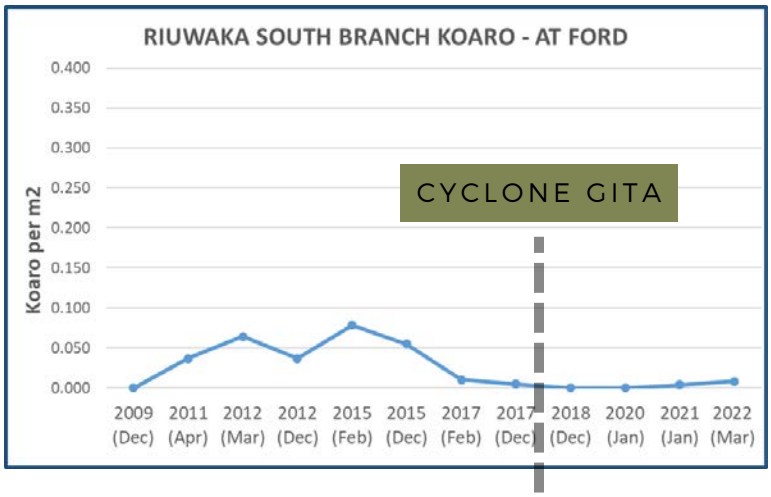
## RIUWAKA RIVER

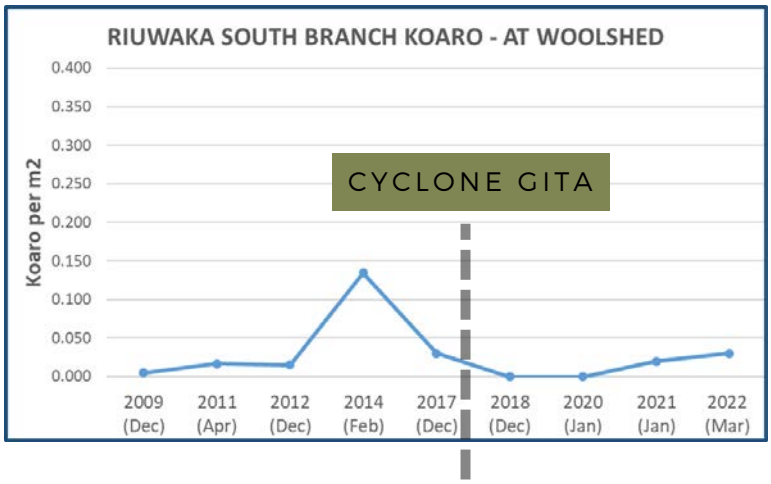
The Riuwaka River has long suffered from poor juvenile brown trout recruitment, possibly due to a lack of small stable side streams (all spawning occurs in the more flood prone mainstem of the North/South Branches).

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 on following page for data on native fish.

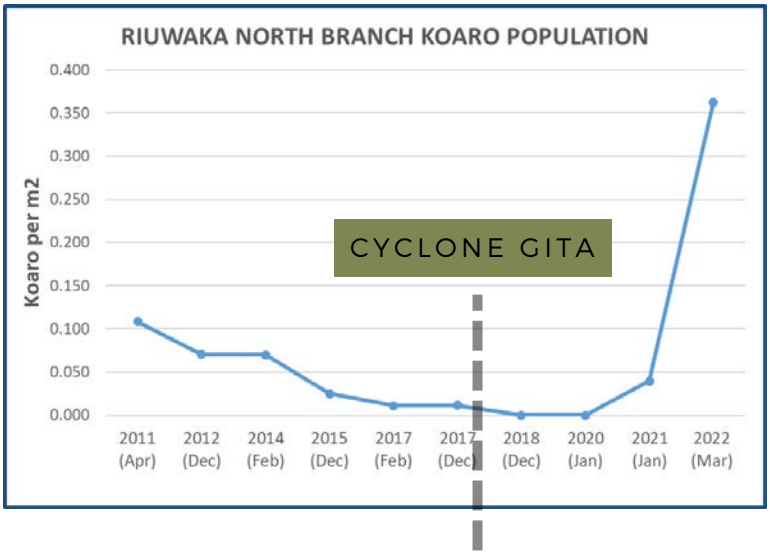
It has also been the recipient of one brown adult trout release back in 2017. While this release was successful in boosting the adult fish population (some of these fin-clipped adult fish were still recorded over 5 years later in the 2022 drift dive), further Riuwaka releases have been discontinued due to Treaty Partner concerns expressed following the 2017 release.

Concerningly, the native fishery, particularly koaro, collapsed after Cyclone Gita and took 3 years to start to recover from the impact of the Cyclone induced flood as illustrated in the graphs below. Encouragingly, this year's monitoring within the North Branch of the Riuwaka recorded a record number of koaro (one of the adult whitebait species).




Annual monitoring will continue within this Awa-Tapu waterway which is of great cultural significance to Iwi.




**RIUWAKA KOARO MONITORING**

| Year | Location | Area Sampled ($m^2$) | No. of koaro | No. koaro (per $m^2$) | Comments |
|---|---|---|---|---|---|
| 2009 (Dec | South Branch | 200 | 0 | 0.000 | 1 LF eel, 1 upland bully |
| 2011 (Apr | South Branch | 190 | 7 | 0.037 | 7 Koaro, 6 LF eel, 1 upland bully |
| 2012 (Mar | South Branch | 140 | 9 | 0.064 | 9 Koaro, 8 LF eel |
| 2012 (Dec | South Branch | 244 | 9 | 0.037 | 9 Koaro, 6 LF eel, 7 koura, 3 upland bully |
| 2015 (Feb | South Branch | 191 | 15 | 0.079 | 15 Koaro, 5 LF eel. Stable Spring |
| 2015 (Dec | South Branch | 200 | 11 | 0.055 | 11 Koaro, 10 LF eel. |
| 2017 (Feb | South Branch | 200 | 2 | 0.010 | 2 Koaro, 8 LF eel |
| 2017 (Dec | South Branch | 200 | 1 | 0.005 | 1 Koaro, 2 koura, 15+LF eel |
| 2018 (Dec | South Branch | 266 | 0 | 0.000 | 0 Koaro, 6 LF eel, 2 koura - post Gita |
| 2020 (Jan) | South Branch | 246 | 0 | 0.000 | 2 LF eel |
| 2021 (Jan) | South Branch | 260 | 1 | 0.004 | 26 lf eel, 1 koaro, 2 koura |
| 2022 (Mar | South Branch | 250 | 2 | 0.008 | 2 koaro, 7 LF eel, 1 koura |
| 2009 (Dec | South Branch (Woolshed) | 200 | 1 | 0.005 | 1 Koaro, 5 LF eel |
| 2011 (Apr | South Branch (Woolshed) | 180 | 3 | 0.017 | 3 koaro |
| 2012 (Dec | South Branch (Woolshed) | 200 | 3 | 0.015 | 3 Koaro, 2 LF eel |
| 2014 (Feb | South Branch (Woolshed) | 186 | 25 | 0.134 | 25 Koaro, 6 LF eel, 2 sjk possibly sighted? |
| 2017 (Dec | South Branch (Woolshed) | 200 | 6 | 0.030 | 6 Koaro, 8 LF eel |
| 2018 (Dec | South Branch (Woolshed) | 200 | 0 | 0.000 | zero natives - Cyclone Gita? |
| 2020 (Jan) | South Branch (Woolshed) | 80 | 0 | 0.000 | zero natives - Cyclone Gita? |
| 2021 (Jan) | South Branch (Woolshed) | 200 | 4 | 0.020 | 4 koaro, 8 lf eel |
| 2022 (Mar | South Branch (Woolshed) | 200 | 6 | 0.030 | 6 koaro, 4 lf eel |
| 2011 (Apr | North Branch | 230 | 25 | 0.109 | 25 Koaro, 1 LF eel |
| 2012 (Dec | North Branch | 184 | 13 | 0.071 | 13 Koaro, 3 koura |
| 2014 (Feb | North Branch | 157 | 11 | 0.070 | 11 Koaro, 16 LF eel, 10 year return flood |
| 2015 (Dec | North Branch | 120 | 3 | 0.025 | 3 Koaro, 15 F eel, 1 LF eel, |
| 2017 (Feb | North Branch | 177 | 2 | 0.011 | 2 Koaro, 12 LF eel |
| 2017 (Dec | North Branch | 168 | 2 | 0.012 | 2 Koaro, 7 LF eel |
| 2018 (Dec | North Branch | 115 | 0 | 0.000 | 1 LF eel - post Gita |
| 2020 (Jan) | North Branch | 80 | 0 | 0.000 | 5 LF eel, 1 koura |
| 2021 (Jan) | North Branch | 100 | 4 | 0.040 | 4 koaro, 6 lf eel |
| 2022 (Mar | North Branch | 80 | 29 | 0.363 | 29 koaro, 5 lf eel, 1 koura |

# HATCHERY

## RELEASE PROGRAMME

It's been a busy year of fish releases, and in the time since the last fisheries report, staff have undertaken a record number of fish releases. Just three fisheries received fish, being Lake Argyle, Branch/Leatham, and Waimea Park.

All told, since August last year, 5114 rainbow trout have been released (1kg+), as well as 3000 juvenile rainbows (namely to get rid of insurance stock).

Lake Argyle - the region's most popular fishery, received 2602 fish; Waimea Park adults pond, 1375; Waimea Park junior ponds, 600; and the Branch/Leatham, 537 - see table below. We expect a similar year of fish outputs over the next 12 months.

**TROUT RELEASES**

| Date | Number | Species | Stage | Size (av) | Tag/Fin Clip | Location |
|---|---|---|---|---|---|---|
| 6/08/2021 | 83 | Mixed | Adult | Mixed | Fin dipped | Lake Argyle |
| 29/09/2021 | 300 | Rainbow trout | Adult | 900g | Fin dipped | Lake Argyle |
| 29/09/2021 | 200 | Rainbow trout | Adult | 900g | Fin dipped | Waimea Park (adults) |
| 20/10/2021 | 250 | Rainbow trout | Adult | 1.0kg | Fin dipped | Lake Argyle |
| 21/10/2021 | 200 | Rainbow trout | Adult | 1.0kg | Fin dipped | Waimea Park (adults) |
| 8/11/2021 | 251 | Rainbow trout | Adult | 1.1kg | Fin dipped | Leatham River |
| 23/11/2021 | 300 | Rainbow trout | Adult | 1.2kg | Fin dipped | Lake Argyle |
| 23/11/2021 | 200 | Rainbow trout | Adult | 1.2kg | Fin dipped | Waimea Park (adults) |
| 2/12/2021 | 286 | Rainbow trout | Adult | 1.2kg | Fin dipped | Branch River |
| 16/12/2021 | 202 | Rainbow trout | Adult | 1.2/5kg | Fin dipped | Lake Argyle |
| 16/12/2021 | 200 | Rainbow trout | Adult | 1.2/5kg | Fin dipped | Waimea Park (junior) |
| 17/12/2021 | 1500 | Rainbow trout | Fry | 5g | No | Waimea Park (adults) |
| 22/12/2021 | 200 | Rainbow trout | Adult | 1.3kg | Tagged | Lake Argyle |
| 22/12/2021 | 200 | Rainbow trout | Adult | 1.3kg | Fin dipped | Waimea Park (adults) |
| 21/01/2022 | 200 | Rainbow trout | Adult | 1.4kg | Fin dipped | Lake Argyle |
| 21/01/2022 | 200 | Rainbow trout | Adult | 1.4kg | Fin dipped | Waimea Park (adults) |
| 17/03/2022 | 100 | Rainbow trout | Adult | 2.0kg | Fin dipped | Waimea Park (adults) |
| 17/03/2022 | 100 | Rainbow trout | Adult | 2.0kg | Fin dipped | Waimea Park (junior) |
| 18/03/2022 | 200 | Rainbow trout | Adult | 2.0kg | Fin dipped | Lake Argyle |
| 4/05/2022 | 200 | Rainbow trout | Adult | 2.0kg | Fin dipped | Lake Argyle |
| 4/05/2022 | 102 | Rainbow trout | Adult | 2.0kg | Fin dipped | Waimea Park (adults) |
| 4/05/2022 | 100 | Rainbow trout | Adult | 2.0kg | Fin dipped | Waimea Park (junior) |
| 19/05/2022 | 403 | Rainbow trout | Adult | 2.0kg | Fin dipped | Lake Argyle |
| 25/05/2022 | 100 | Rainbow trout | Adult | 2.0kg | Fin dipped | Waimea Park (adults) |
| 25/05/2022 | 100 | Rainbow trout | Adult | 2.0kg | Fin dipped | Waimea Park (junior) |
| 8/06/2022 | 73 | Rainbow trout | Adult | 2.2kg | Fin dipped | Waimea Park (adults) |
| 8/06/2022 | 100 | Rainbow trout | Adult | 2.2kg | Fin dipped | Waimea Park (junior) |
| 30/06/2022 | 100 | Rainbow trout | Adult | 2.5kg | Fin dipped | Lake Argyle |
| 30/06/2022 | 1500 | Rainbow trout | Yearling | 30g | No | Lake Argyle |
| 14/07/2022 | 164 | Rainbow trout | Adult | 2.5kg | Fin dipped | Lake Argyle |

| | |
|---|---|
| **TOTAL (LAKE ARGYLE)** | **2602** |
| **TOTAL (BRANCH/LEATHAM)** | **537** |
| **TOTAL (WAIMEA PARK - ADULTS)** | **1375** |
| **TOTAL (WAIMEA PARK - JUNIOR)** | **600** |
| **TOTAL ALL FISHERIES** | **5114** |

*^ Lawson & Rob doing a pre-holiday release*
*> New hatchery manager, Rob Foster.*

## HATCHERY UPDATE

For the last nine months, new hatchery manager Rob Foster has been running the hatchery facility we manage on behalf of Manawa Energy (formerly Trust Power), whom own the hatchery infrastructure. Rob, with the support of his family, has slipped into his new role with ease and is doing a fantastic job, helped no doubt by previous experiences including being the manager of a one thousand cow dairy herd unit in his former life, giving him plenty of experience at 7 day per week live in type jobs such as Wairau hatchery manager. Rumour has it he has even joined the local rural fire fighting team.

Picking up where Bruce left off, Rob has continued with site improvements including:

- Removal, weld repair and reinstallation of the paddlewheel
- Bore pump service
- Hydro wheel repairs and maintenance
- Intake race weed clearing
- Installation of shag netting across fish races
- Rationalisation of the Manawa Energy owned crayfish farm operation
- Spawning/incubation/rearing of rainbow trout fry for next season
- Installation of a 23000m3 tank as backup water supply for egg incubation
- General maintenance, cleaning, feeding and the like required to rear 5000 fish annually

# R3 | RECRUITMENT, RETENTION, REACTIVATION

The usual R3 initiatives were in action again this season, with targeted pre-season and holiday seasons comms, the summer tag comp and trophy fish releases. We also had a new fishery to increase local participation: the new family/adult pond at Waimea Park.

## WAIMEA PARK FAMILY/ADULT POND

It's not often you welcome in a new fishery, this season saw the first releases of fish into the family/adult pond at Waimea Park. We released 200 trout in time for the new season, and releases most months thereafter.

Feedback was very positive from anglers, though being a new fishery it has been interesting to see how the trout behave. Most of the season they are largely unseen, occupying the deep water areas with occasional rises just to let anglers know they're there. If there were no rises, anglers would suspect there are no fish in there as few are seen cruising the edges. Later in the season in autumn and winter, fish can be seen cruising around the edges, and being of bigger size at the time of release, it sure excites anglers.

All told 1,375 large trout were released here over the course of the first 8 months. We look forward to more positive use of this pond, and there is plenty of work to be done in the season ahead to promote this fishery to new anglers that reside in the area.

*^ Henry Grab found plenty of success using pink softbaits at Waimea Park.*
*> Winners of this years' major prizes spending up at Henderson's.*

*"Thanks for this awesome facility.*
*I have no fresh water experience and my 9yr old Son Max has been trying for a long time to land a trout. We have had countless unsuccessful river excursions, and a few to Argyle, Max finally landed his first trout on the weekend in the Family pond. Thank you!"*

## WAIMEA PARK - JUNIOR PONDS

Due to covid irregularities, most formal Kids Fishing events were cancelled this season. Fish & Game stocked the three junior ponds before Christmas and several times after this into the winter. There were generally plenty of fish present, and the ponds got very good patronage by junior anglers over the season. Thanks to the efforts of the Youth Sports Fishing Trust who continue to make this such a fantastic community asset.

## LAKE ARGYLE TAG COMP

Staff considered giving this competition (now in it's 4th year), a rest this season, thinking anglers may be getting tired of it. This misgiving turned out to be unfounded and the competition was met with as much anticipation and enthusiasm as normal.

Both $500 vouchers were won during the season and most other of the 20 prizes won - not surprising with 85% of the tags were handed in. Thanks very much to Henderson's Ltd for their generous sponsorship.

# BACKCOUNTRY FISHERIES

It's was a relatively quiet year on our pressure sensitive fisheries (PSF), not only in terms of angler effort (anecdotal reports and compliance efforts), but also staff time spent in management of PSF's.

In 2020-21 we gathered great data from our cameras up the Travers, and also obtained a significant amount of information via angler surveys (with findings published in last years' Fisheries Report). We also gained useful information through our compliance efforts on these fisheries.

So for this year we felt we had all the information we needed and did not not apportion much staff time on gathering more data for this region. Most of the staff effort has been on a national focus - the development of a new PSF management system, which we aim to bring in for the 2023-24 season.

## BACKCOUNTRY ENDORSEMENTS

This season the number of resident backcountry endorsements (BCE) issued showed a massive increase from 2078 BCE's issued the season prior to 5255 for this season. Of the 5255 endorsements issued, only 31 were from non-resident anglers, meaning the number of BCE's issued to resident anglers was more than double. Why? To be honest we have no idea. Initially thought to be a database error with the new licence system, we have checked previous years records and they appear to check out, so this reading is pretty mystifying - see table below.

NELSON MARLBOROUGH BACKCOUNTRY ENDORSEMENTS ISSUED

| B/C endorsements issued | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|---|---|
| Resident | 738 | 1004 | 1145 | 1260 | 2017 | 5224 |
| Non-resident | 796 | 1256 | 1284 | 1325 | 61 | 31 |
| **Total** | **1534** | **2260** | **2429** | **2585** | **2078** | **5255** |

Regardless of the huge rise in BCE's issued, staff have little concern about this as the 'backcountry licence' is likely run its course in this region, and we are anticipating a more effective management regime for the 2023-24 season, with the 'Designated Waters' management system.

The BCE system has some merit, however as can be seen for this year, a huge number of BCE's were issued, and minimal effort was spent angling on these waters, most who apply do not fish the waters they have applied for.

## PRESSURE SENSITIVE FISHERIES MANAGEMENT - A NEW FOCUS

There has been plenty going on behind the scenes regarding a new management approach to our pressure sensitive fisheries (PSF).

While the NZ Council (with support from many regional F&G Councils) managed to bring in a significant price increase for non-residents ($250 for whole season licence), we will also be proposing a new PSF management regime for 2023-24, with most new controls directed at non-resident anglers.

In a nutshell, this centres around anglers obtaining a Designated Waters licence (similar to a BCE) in order to fish any of the listed designated waters (free for residents, a small charge for non-residents on purchase of a whole season licence), a per-diem day licence for non-residents to fish a particular designated water (during a specified time e.g. December-March), and a cap on the number of per-diem licences issued to non-resident anglers per season.

The actual specifics have yet to be confirmed (e.g. what is the cap on the number of per-diem licences per angler, and the time period when these are required), however it is envisioned (if approved by DOC) that each region would have the ability to determine which are the fisheries that come under the designated waters licence system, and hopefully the time period the per-diem licence is required for.

Note, the terminology has been changed from 'backcountry fisheries' to 'designated waters'. The term 'designated waters' could now encompass any fishery that is deemed to be pressure sensitive, whether it is wilderness, or not.

With international anglers returning, staff will be spending more time monitoring the use of our PSF fisheries during the 2022-23 season.

# GENERAL

## ANGLERS HELP FARMERS

During recent years parts of Aotearoa have copped a fair bit of ire from natural weather events, it is becoming the norm. 2021 was a bad year for the top half of the South Island, with the Northern West Coast getting battered, and Nelson as well as Marlborough was simultaneously hammered by a once in a generation rain event.

More than anyone, rural people are in the firing line and need assistance following these events. In 2021, following a huge July rain event, Fish & Game staff called in on a farm in The Motueka Valley that had flood water rip through it and asked if they needed a hand. A week later 15 volunteers arrived on site to remove flood debris and re-instate fences. It was a chance for anglers to repay the generosity of farmers, many who allow access through their land for fishing, and was a show of good-will that was hugely appreciated by the landowners. A week later we had 20 volunteers helping out another farmer, who to put it plainly, didn't know where to start with the clean-up. What was achieved was huge, with much of the farm back in order by the end of the day. We then tapped into the Rural Support Network and attended several more farm clean-ups organised by them, both in the Motueka catchment but also further afield.

There is little doubt the social landscape is changing within New Zealand, and anglers and hunters need to be seen by the public in a positive light to maintain what we love doing, given freshwater anglers make up only 3% of the population. These actions by anglers were recognised by the general public as well as the rural sector and, for a short time at least, helped to bridge the rural urban divide which may exist on occasion. One thing is certain, there will be a time in the near future that rural people will need help in the wake of natural disasters, we hope anglers can be a group to provide some of that assistance.

## MOTUEKA CATCHMENT COLLECTIVE

The Motueka Catchment Collective is starting to gain a fair bit of momentum, and there is quite a lot happening with this group, both from a large scale planning perspective, and at grassroots level with many passionate landowners undertaking their own conservation initiatives.

The MCC has applied to MPI for funding catchment related conservation activities, including the recruitment of a pad catchment coordinator role. This will be great for the MCC going forward to have someone funded in this role as there is quite a bit of momentum building with landowners and interested parties within the catchment.

There are a number of educational evenings with guest speakers to inform valley residents about issues of interest, including forestry management, river management, and the like.

Fish & Game have been invited to sit on the 'monitoring' table, and will at some point adress the MCC about what Fish & Game do (and have done in the past). There is growing anti-trout rhetoric starting to become obvious, and Fish & Game need to have a seat at the table to address this. More importantly, the Motueka is one of the regions most important fisheries with high angler use and significant effort in management efforts by staff and Councillors. F&G need to remain relevant with the public, especially passionate conservation minded public such as members of the MCC, and being involved in catchment groups such as this is important going forward.

There have been a number of private planting days over winter, and staff have attended a number of them. These are a simple way to be seen by the public and landowners to be giving back to these grassroots conservation efforts.

There are local catchment groups in other areas too, and these remain an important PR avenue, as already identified by the NZF&G Council.

# RMA ADVOCACY

## RESOURCE MANAGEMENT ACTIVITY

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, pursuant to our statutory advocacy functions as laid out in our 10-year Sports Fish & Game management plan. 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 year we have also had activity within the hunting space in the form of our appeal on the Marlborough Environment Plan status of hunter maimai within riverbeds. Unfortunately, it is often an adversarial lengthy process costing licence holders considerable time and funding resources for legal assistance and the like.

## MARLBOROUGH ENVIRONMENT PLAN APPEAL RESOLUTION PROCESS

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.

To date Fish & Game has engaged peripherally within the natural character and landscape mediation appeal topics as a section 274 party, our most significant input so far has been around the status of hunter maimai within riverbeds - currently resource consent is required for any permanent maimai within Marlborough. The bulk of our effort in relation to mediation however will be when the water chapter is heard in early 2023 as Fish & Game lodged an extensive appeal on decisions on this chapter. We have been lucky to also receive a significant chunk of legal assistance funding from Save the Wairau incorporated, a Trust set up many years ago to fight the proposed Wairau hydro scheme.

Now that Manawa Energy (formally Trust Power) have let the consented Wairau scheme lapse, Save the Wairau are disbanding as an organisation. Funding provided by Save the Wairau will be used by Fish & Game specifically to try and get agreement to a more sustainable minimum flow for the Wairau at Tuamarina, in order to better support the ecology of this river over the summer months.

## MARLBOROUGH RESOURCE CONSENTS

To maintain our appeal position on water allocation and minimum flows within the Marlborough Environment Plan (MeP), we continue to submit in opposition to Marlborough resource consents, mainly renewals of existing water permits. To date we have managed to resolve these through agreement of appropriate conditions with the applicants which ensure consistency with our MeP appeal.

Applications for all new water permits within the Kaituna and Rai catchments have been opposed by Fish & Game and currently remain on hold hopefully until mediation and potentially environment court hearings on the MeP water chapter have been completed. Specific minimum flow agreements have been reached for some Wairau North bank consent renewals such as within the Tuamarina and Pine Valley Catchments. A long-term river erosion control consent within the Opouri lodged by a landowner has also been agreed to by Fish & Game subject to conditions.

# TASMAN DISTRICT COUNCIL PLANNING AND CONSENTS

Fish and Game reviewed a draft Tasman biodiversity strategy to seek consistency with the Governments national biodiversity strategy which specifically recognises valued introduced species and the role they can play in improving habitat outcomes for native species via Fish & Games advocacy role.

Tasman District Council continue to undertake hydrological monitoring work to inform the upcoming TRMP review scheduled to occur in 2024, which will need to be consistent with the Governments 2020 National Policy Statement for Freshwater Management. Fish & Game hope to see the Council consider more appropriate minimum flow levels within the Upper Motueka catchment particularly within the lower Motupiko River.

Good habitat outcomes are also now being achieved through a shift in standard practice within river repair works throughout Tasman as a result of earlier Fish & Game Environment Court engagement. Encouragingly, Taylors contracting have established a number of small willow pole nurseries around Tasman to assist with provision of proactive tree willow planting to help with future river control.

Environment Court Hearings on the Waikoropupu Springs Water Conservation Order, lodged by Ngati Tama and Laurence Yuill continue, which include the community trying to address the problematic topic of nitrate increases within the springs and likely potential contributions to this from surrounding landuse, including the Upper Takaka new water allocation proposed by Tasman District Council. Fish & Game was not able to participate in this water conservation order as the trout fishery within the Waikoropupu and Takaka Rivers do not meet the required threshold of nationally outstanding trout fisheries.

# PROACTIVE ENGAGEMENT WORK

Several national New Zealand Fish & Game Council contributions to Government policy have been inputted to including the National Environmental Standard for wetlands, and the NZBEA (Governments proposed replacement of the RMA).

The manager is no longer participating on the steering committee for the Pelorus catchment project, a recipient of significant Government funding. The project involves collaboration between Iwi, DOC, NGOs, landowners, and Local and Central Government agencies. Fish & Game 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.

On a more positive note, Fish & Game staff were able to engage with the Motueka Catchment Collective, as there is no new water allocation looming within this catchment, and much of the river flow is currently protected by a water conservation order. Several flood clean-up days with Motueka landowners post the July 2021 flood were attended by staff and anglers. Several planting days have been attended by staff and further community engagement is in the pipeline.

Staff also hosted several Iwi cadets for some summer fieldwork jobs and hosted an electric fishing demonstration within the Riuwaka River for trainee rangers.

*> Griff Lucas helping out at a Mot Catchment Collective planting day*

# COMPLIANCE

## LICENCE CHECKS SUMMARY

This year most of our licence checks were on lowland fisheries, and unfortunately little effort was spent on our more remote rivers.

Our annual target of checking 10% of anglers was met this season with 378 total licence checks (3379 LEQ's = 338 checks required to meet 10% threshold).

There is little doubt that, with the return of non-resident anglers, our staff and voluntary ranger team will spend more time in the backcountry, with the possibility that there could be some casual employment offered to one or two voluntary rangers to undertake backcountry compliance.

This season we welcomed two new rangers to the team, being Steve Ngatai (based in Wairau Valley), and our own Karen Crook - one of the few (if any) NZFG administrators to undertake compliance work.

| **Total licence checks** | **378** |
|---|---|
| Total on backcountry designated fisheries | 17 |
| Total other fisheries (except Argyle & Waimea Park) | 102 |
| Total Argyle | 196 |
| Total Waimea Park | 63 |
| Total non-compliant | 2 |

## NON-COMPLIANCE

Non-compliance was again very low with just one offence notice issued at Waimea Park for Fishing Without a Licence. One warning were given to an angler at Lake Argyle for fishing with two rods.

## OUR COMPLIANCE TEAM

The majority of our licence checks come from our team of dedicated voluntary rangers. Without them, staff would struggle to meet our compliance target of checking 10% of anglers. They are also great ambassadors for the organisation, helping anglers when needed by providing fishing expertise, flies or lures, and general Fish & Game information. In particular we'd like to acknowledge the fantastic effort of one of our newest rangers, Steve Ngatai, who achieved 138 licence checks last season (his first season), a huge effort. So, here's thanks to:

Weesang Paaka
Jim Anderson
Steve Ngatai
Don McFadzien
Nick King
Paul Watts
Bruce McKenzie
Jack Gauld
Lee Crosswell
Jean Willis

# LICENCE INFORMATION

## RESIDENT LICENCE INSIGHTS

After at least six years of growth, there was a slight tapering off of resident licence sales for the 2021-22 fishing season. All told there was a ~1% decrease in resident fish LEQ's, however with the increase in licence fee there was a minor net income gain - see table below.

It was pleasing to see an increase in most whole season licences (Family, Loyal Senior, Local Area, Junior), though there was a minor decrease in the Adult Whole Season category - see table below. Shorter licence categories all showed a decrease, and there must be some thought given as to the future of the Long Break licence which is not popular with anglers.

Nationally, fish licence sales were down 2.8% compared to the 2020-21 year, however due to the licence fee increase there was a very minor increase in total income.

Otago and Southland were the only regions to show an increase in LEQ's, most other regions had fewer LEQ's than 2020-21 (though some regions had a net income gain due to the price increase). Some may say that is because of these regions popularity with Australian anglers (who had a window of opportunity to fish here at the end of the season), however non-resident LEQ's for Southland and Otago were fewer than the year before, so the increase was, pleasingly, resident anglers.

It is possible a bit of the shine may have been rubbed off from the epic 'summer of freedom' experienced the year before, when kiwi's traveled domestically in droves and spent a good chunk of money on outdoor recreation. Covid lock-downs may have also affected some regions, e.g. Auckland Waikato who had more travel restrictions than any other region.

## NON-RESIDENT DATA

Without international borders open, non-resident licence sales were again going to be a fraction of the normal, and for this season just 34 Adult Whole Season licences were sold along with a very low 21 day licences - see table below.

| | Non-res Adult WS | Non-res Adult Day |
|---|---|---|
| 2015- 2016 | 608 | 1318 |
| 2016 - 2017 | 689 | 1410 |
| 2017 - 2018 | 852 | 1313 |
| 2018 - 2019 | 876 | 755 |
| 2019 - 2020 | 836 | 661 |
| 2020 - 2021 | 62 | 23 |
| 2021 - 2022 | 34 | 21 |

Nationally, there was a short 'window of opportunity' at the end of the regular season for non-resident anglers to fish here, with the most obvious area of attraction being Otago and Southland for which Australian anglers, in particular, have a special affinity for. As it turns out, non-resident LEQ's were lower for the 2021-22 in both southern regions, and indeed across the entire country, when compared with the season prior when there was zero international travel.

A possible explanation for this is because during the season prior, NZF&G Comms sent an email to many previous non-resident anglers asking if they would like to purchase a licence as a donation to Fish & Game in light of the decrease in revenue that was anticipated (but never eventuated).

All told nationally, non-resident sales dropped from 841 to 660 LEQ's, a drop in the bucket for what is expected in a normal year with no international travel restrictions. With open borders in 2022-23, we expect our non-resident sales to increase considerably, however with current global inflation pressures and the cost of living squeeze, time will tell if they return to pre-pandemic levels.

| | | Adult | | | | | | | Junior | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Family | Whole Season | Loyal Senior | Local Area | Winter | Long Break | Short Break | Day | Whole Season | Junior Day | Total | LEQ |
| 2015- 2016 | 656 | 1473 | 213 | 212 | 92 | 35 | 118 | 479 | 145 | 48 | 3,471 | 2905 |
| 2016 - 2017 | 650 | 1387 | 194 | 135 | 108 | 21 | 111 | 467 | 134 | 45 | 3,252 | 2730 |
| 2017 - 2018 | 641 | 1435 | 193 | 131 | 101 | 22 | 124 | 549 | 196 | 95 | 3,487 | 2787 |
| 2018 - 2019 | 701 | 1512 | 219 | 189 | 133 | 23 | 132 | 718 | 247 | 76 | 3,950 | 3073 |
| 2019 - 2020 | 707 | 1529 | 245 | 208 | 144 | 17 | 128 | 752 | 275 | 126 | 4,131 | 3147 |
| 2020 - 2021 | 781 | 1659 | 313 | 174 | 146 | 13 | 172 | 814 | 227 | 111 | 4,410 | 3417 |
| 2021 - 2022 | 806 | 1588 | 323 | 203 | 154 | 7 | 127 | 694 | 250 | 114 | 4,266 | 3379 |

# APPENDIX

## FRESHWATER ECOSYSTEMS UNDER THREAT IN WARMING NZ - PROF ANGUS MACINTOSH

***Nature is taking with one hand and giving with the other when it comes to Aotearoa New Zealand's freshwater ecosystems.***

University of Canterbury Professor Angus McIntosh is concerned about how climate change will affect native species such as this brown mudfish, from a South Westland tree tip-up pool.

While the increasing number of severe droughts is playing havoc with our waterways, more floods could prove to be their friend. Professor McIntosh is heading research into how climate warming is affecting our freshwater ecosystems and how to best deal with those influences in the future.

"A major climate-drive threat to freshwater life in New Zealand is increased frequency and magnitude of drought. We know that river communities collapse when rivers dry completely, but we're trying to find the early warning signs indicating when communities start that process so we can offer better advice in water allocation decisions."

A big challenge, especially in some recent Environment Court decisions, has been how to manage river flows when interactions between trout and native fish (galaxiids) are involved, Professor McIntosh says.

"It's often thought that native fish will benefit when rivers are lower because there will be fewer of their predators – trout. What actually happens with no trout present is that the number of non-migratory native fish decline as the river flow slows. Just how to manage native fish populations and how their interactions are affected by longer periods of low flow is going to be tricky as climate change bites."

Professor McIntosh says the flip side of climate warming is that large magnitude floods could also be very influential.

"We were worried that Canterbury's autumn floods last year would have wiped out native fish in the headwater and alpine areas. In some of our study streams around Porters Pass, for example, the stream beds were scoured down many metres.

"But, to our surprise, all the populations have held on. They've been greatly reduced, but they're still there. We're now interested in how quickly they recover, whether the trout were more or less affected and what the long term effects are."

Professor McIntosh says the ability of those native fish to deal with ongoing extreme events such as flooding will depend on the resilience of their populations and his Freshwater Ecology Research Group's research is now focusing on how to enhance that ability.

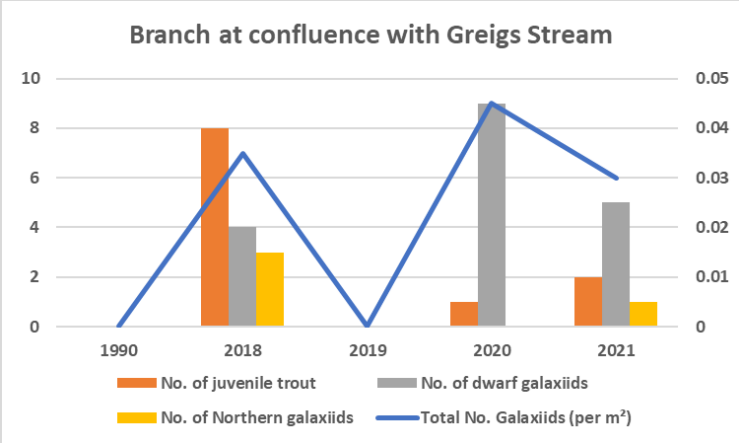
The research group has also recently finished work that reveals the relationship between river size, in other words, flow, and their ability to absorb sudden environmental disturbances such as floods.

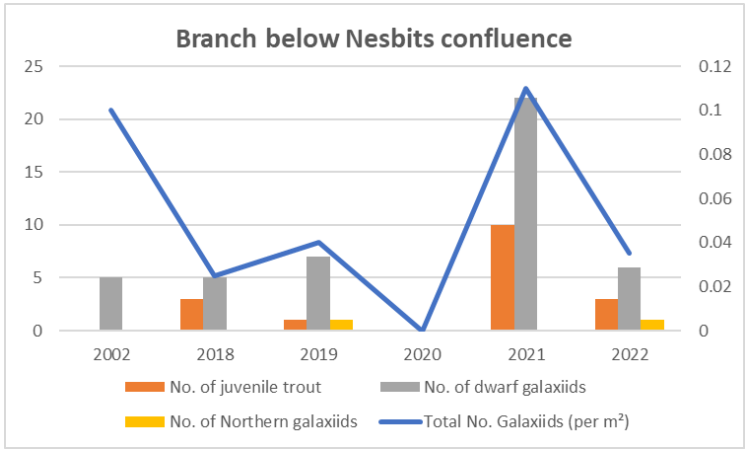
Mimicking the impact of climate change, they used a waterblaster to simulate the influence of scour over small reaches of stream bed and observed the recovery. In general, the bigger a river, the more able it was to absorb the effects and maintain structure. The smaller the river, especially if water is taken out, the more vulnerable they become.

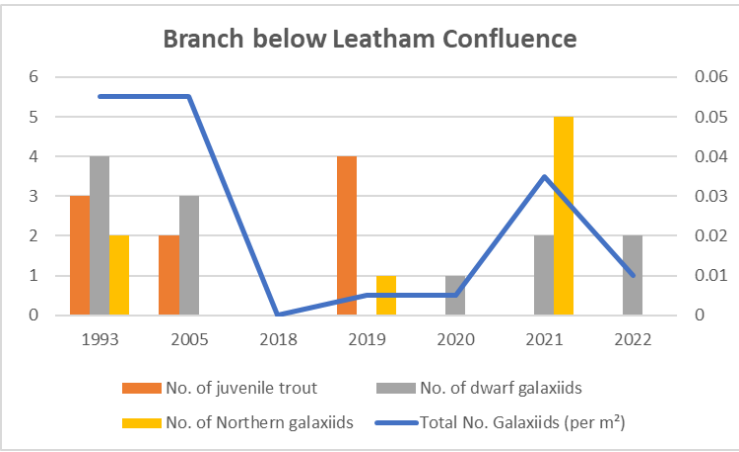

*^ Professor Angus McIntosh is concerned about how climate change will affect native species such as this brown mudfish, from a South Westland tree tip-up pool. Photo: Angus McIntosh*

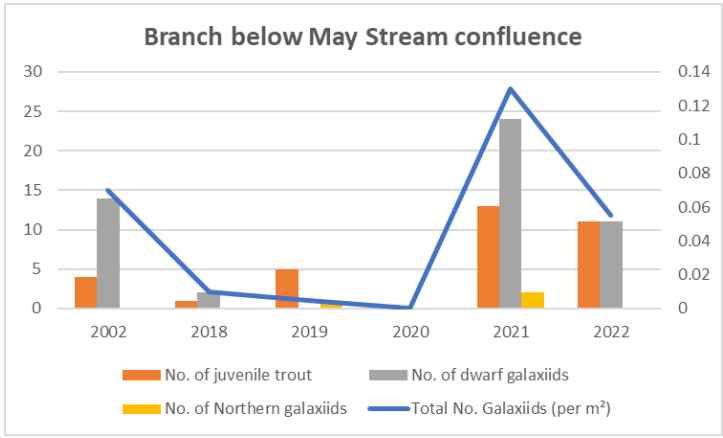
# BRANCH RIVER NATIVE FISH MONITORING - GRAPHS

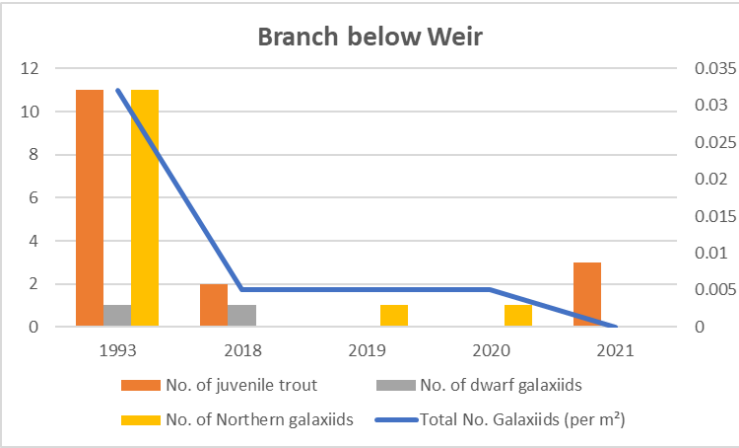
## MAINSTEM SITES - BRANCH

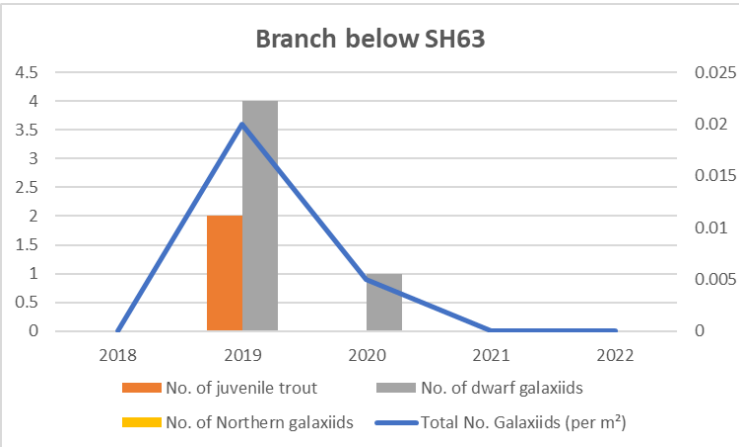


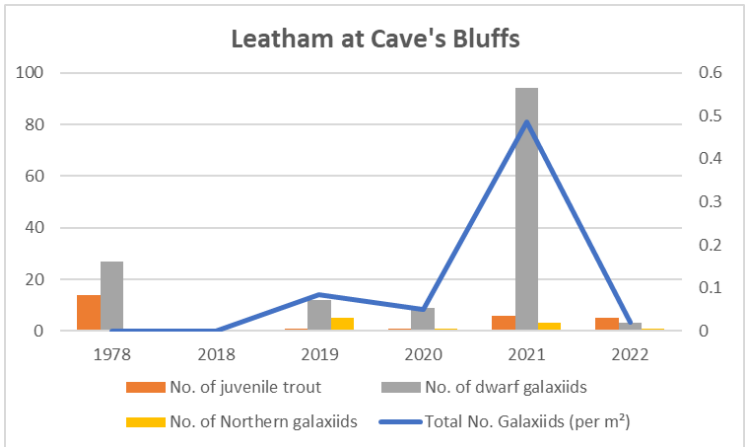



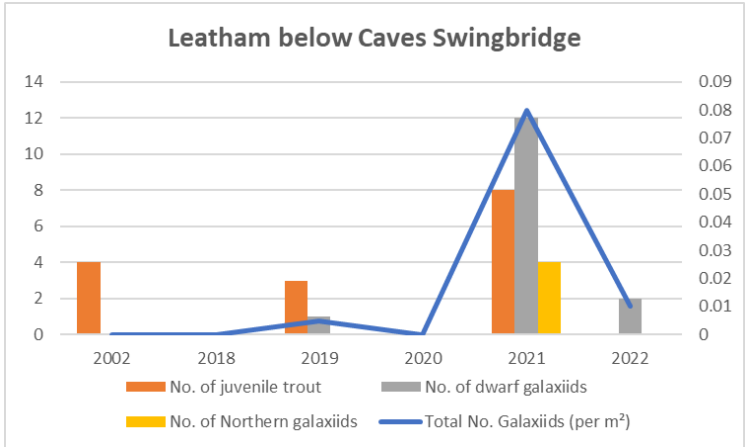



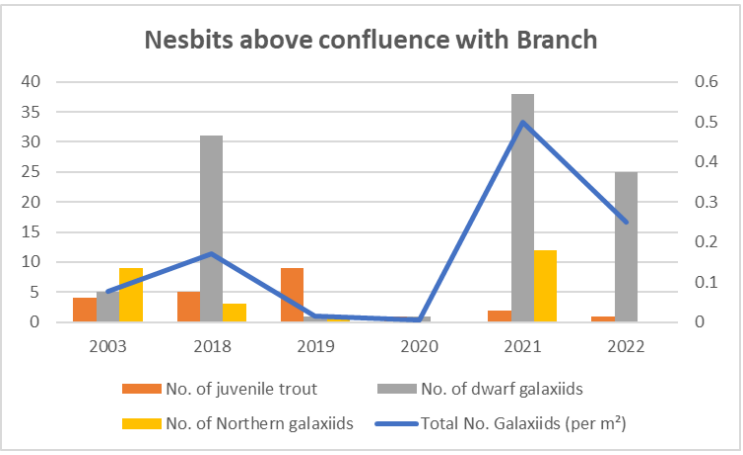

## MAINSTEM SITES - LEATHAM

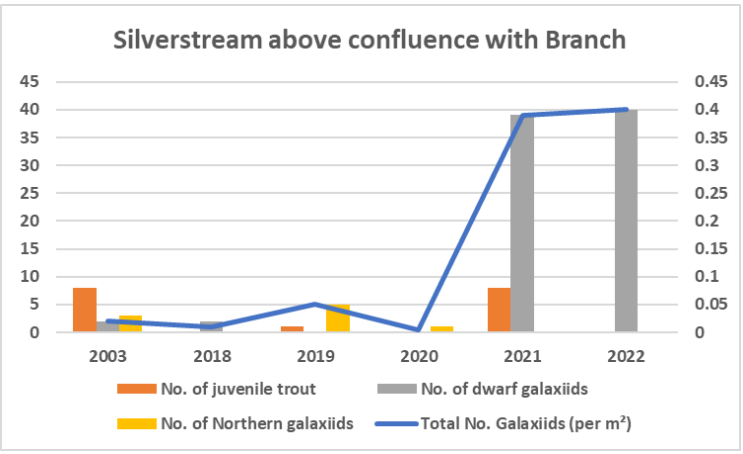


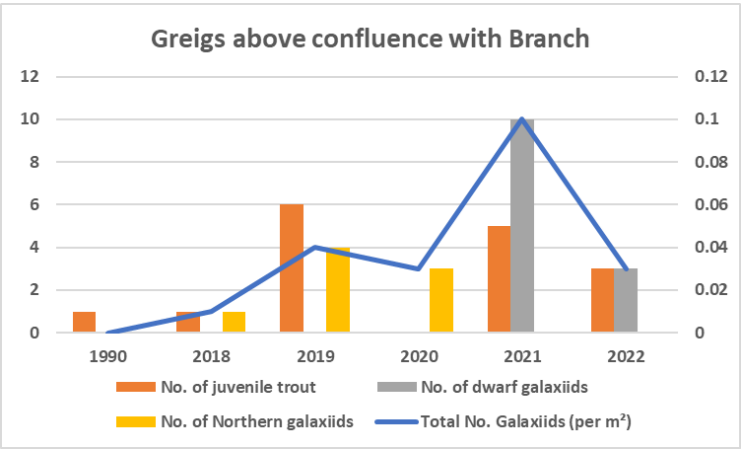



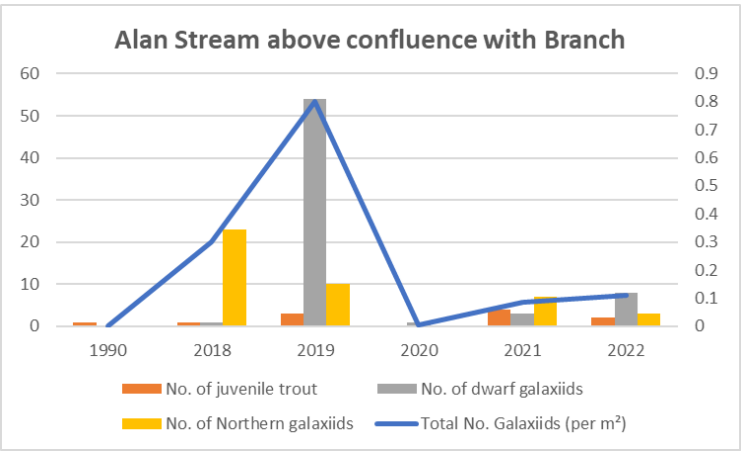
# BRANCH RIVER NATIVE FISH MONITORING - GRAPHS

## BRANCH - TRIBUTARIES




## LEATHAM - TRIBUTARIES