



## Sports Fish Spawning Surveys 2023

*Results of sports fish spawning surveys, April 2023 - June 2023 in the  
West Coast Fish & Game Region*

*Baylee Kersten, Fish & Game Officer, July 2023*



*A salmon spawning in The Windbag, Lake Paringa, May 2022.*



## Summary

*Fish & Game undertake spawning surveys as a tool to monitor adult sports fish populations and provide information for management purposes. Quinnat salmon were introduced to the West Coast in the early 1900's and spawning counts have been undertaken intermittently since 1966. This season counts of 'Peak' salmon spawning numbers were undertaken at lakes Mapourika and Paringa, the Taramakau and Hokitika rivers were also counted to monitor recent liberations of salmon. At Lake Mapourika two live salmon were observed during the peak count at MacDonalds Creek, below the long-term average of 173 fish. At Lake Paringa five live salmon were observed during the peak count in the Windbag Stream, below the long-term average of 166 fish. No live salmon were observed in the Taramakau, and Hokitika rivers by staff. Staff recommendations are to; Continue monitoring spawning tributaries MacDonalds Creek and Windbag Stream with enough frequency to ensure the peak count is measured. Continue to survey catchments where salmon enhancement has occurred. Continue stocking Lake Ianthe with salmon.*

## Introduction

Fish & Game West Coast has a statutory responsibility under section 26Q of the Conservation Act 1987 to: manage, maintain, and enhance the West Coast sports fish and game resource in the recreational interests of anglers and hunters. To honour this responsibility, Fish & Game gathers information on the resource it manages in several ways. This report presents the data collected during sports fish spawning surveys.

Spawning surveys are an effective means for evaluating sports fish populations as they provide an index of the adult population that can be compared between years. This information helps guide management decisions which can influence the adult population ie. changing the fishing regulations to alter harvest rates or enhancing a limited wild population by the release of hatchery reared fish.

Enhancement releases of fish on the West Coast are guided by the West Coast Fish & Game Council's 'Strategy for sports fishery enhancement' adopted in 2010 and revised in 2013. The strategy states that; with limited resources comes the need to select priorities for enhancements. West Coast Fish & Game will give priority to those waters and species where;

- a viable population already exists or has existed in the past,
- the fish will benefit a wider number or range of anglers,
- it has been determined that the liberation will have a reasonable probability of success,
- there is a means of monitoring the success or failure of the release,
- it is a special purpose situation e.g. put and take (take a kid fishing).

This report presents the results from this season's Quinnat salmon (*Oncorhynchus tshawytscha*) spawning surveys in the main spawning tributaries of lakes Mapourika and Paringa along with the

Taramakau and Hokitika rivers. Comparison is made with the long-term dataset from these catchments in context of measuring the success of enhancements undertaken (Appendices 1, 2 and 3). These enhancements were possible due to the availability of hatchery reared fish from North Canterbury Fish & Game (NCFG). However, in 2020 NCFG ceased all hatchery operations and now fish are sourced from alternative hatcheries (Appendix 4).

## **Method**

Spawning surveys are generally undertaken on foot, by walking slowly along the stream bank spotting fish with the aid of polaroid sunglasses. The lower section of Windbag Stream is counted while kayaking. Counts of live salmon, dead salmon and trout are recorded. If a sports fish cannot be positively identified to species, it is recorded as 'unidentified sports fish.' Weather conditions and stream clarity must be sufficient for accurate counting. Generally, surveys are 'spot checks' during the known spawning seasons. 'Peak' counts are different to spot checks as a series of counts are undertaken at more regular intervals during the spawn and the peak count is the highest live count from that year. The observed counts presented in this report do not represent the total number of salmon that spawned for any spawning season.

## **Survey Results**

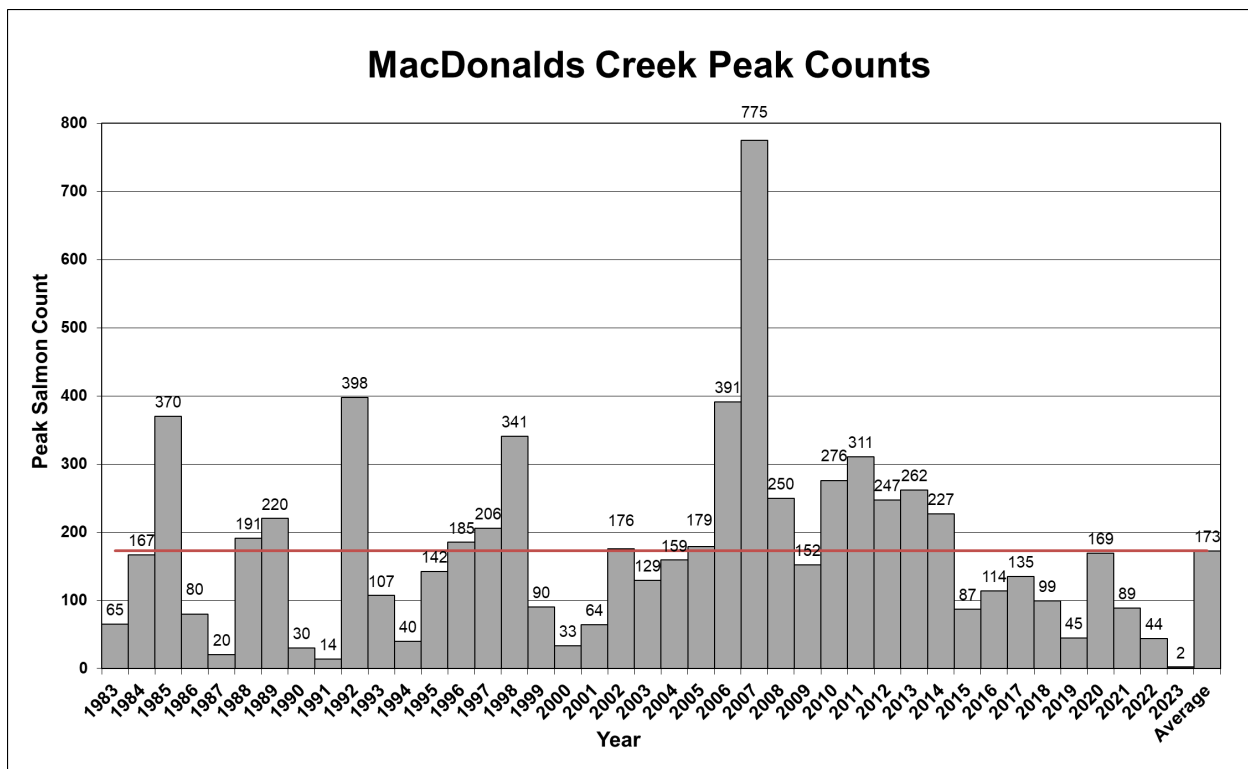
### **Lake Mapourika**

Lake Mapourika has five in-flowing streams that have been identified as suitable spawning habitat for Quinnat salmon. Of these, only MacDonalds Creek was monitored during this season. MacDonalds Creek is the largest and most utilised spawning area for Lake Mapourika.

### **MacDonalds Creek**

The spawning area for MacDonalds Creek starts approximately 100m upstream of where the Creek enters Lake Mapourika and extends 3 km upstream to where the river forks. This is the limit of the area surveyed, although spawning has been observed on occasion up each branch, none further than 200m upstream.

Spawning surveys were conducted on four occasions between the May 1<sup>st</sup> and June 23<sup>rd</sup>, 2023, at MacDonalds Creek with the peak live count of two salmon occurring on June 6<sup>th</sup>. The average peak count considering all years surveyed is 173 salmon (Figure 1).



*Figure 1: Peak live salmon counts for MacDonalds Creek, Lake Mapourika. 1983 – 2023*

### Lake Paringa (Windbag Stream)

Lake Paringa has one major spawning area, Windbag Stream, which is the main inflowing tributary of the lake. Windbag Stream has several tributaries that also provide limited spawning areas. These were not surveyed in addition to the main stem of Windbag Stream. The spawning grounds extend from approximately the Rata Creek - Windbag Stream confluence, upstream to where Quad Creek joins the Windbag, a total of 6.5km. The majority of spawning occurs around and upstream of the old Salmon trap site at Dawn Creek.

Spawning surveys were conducted on three occasions between May 1<sup>st</sup> and June 6<sup>th</sup>, 2023, with the peak live count of five salmon occurring on May 1<sup>st</sup>. The average ‘peak’ live count considering all years surveyed is 166 salmon (Figure 2).

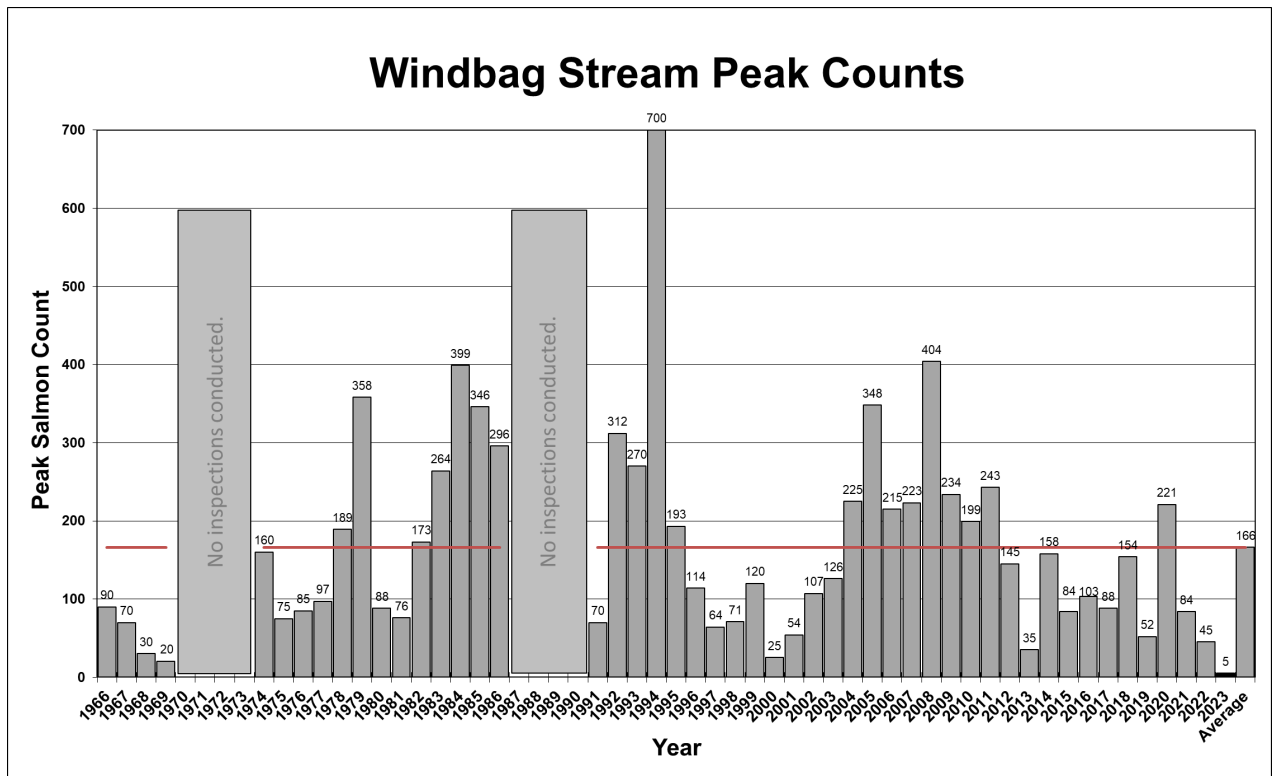


Figure 2: Peak live salmon counts for the Windbag Stream, Lake Paringa. 1966 – 2023.

## Taramakau River Catchment Salmon Spawning

Black Creek (tributary of Taipo River) and Clear Creek (Aickens) have been surveyed occasionally from 1996 to 2023 during the salmon spawning season. Both creeks have received salmon smolt releases in this period, Clear Creek in 2010, and Black Creek in 2011. Other small creeks that have been checked in recent years for spawning salmon are Humphries, Debenham, Aickens Spring Creek and the Little Orangipuku.

### Black Creek

A spawning survey was conducted on one occasion, May 15<sup>th</sup>, 2023, at Black Creek but no salmon were observed. Historic counts of live spawning salmon in Black Creek range from 25 fish in 2007 to 0 in 2012.

### Clear Creek

A spawning survey was conducted on one occasion, May 15<sup>th</sup>, 2023, at Clear Creek but no salmon were observed. Historic counts of live spawning salmon in Clear Creek range from 64 fish in 1999 to 0 fish in 2002.

### Additional salmon spawning surveys in the Taramakau Catchment

Humphries Creek, Debenham Creek and Aickens Spring Creek were surveyed on one occasion, May 15<sup>th</sup>, 2023, but no salmon were observed.

## Hokitika River Catchment Salmon Spawning

Three known Hokitika River salmon spawning tributaries; Minnow, Doctors and Diedrichs Creeks have been surveyed occasionally from 2003 to 2023 during the salmon spawning season. Doctors Creek has received releases of salmon smolt recently: in 2013, 2014, 2016, 2017, 2018 and 2019.

### Doctors Creek

A spawning survey was conducted on one occasion, June 8<sup>th</sup>, 2023, at Doctors Creek but no salmon were observed.

### **Minnow Creek**

One spawning survey was conducted at Minnow Creek on May 16<sup>th</sup>, 2023. No live salmon were observed.

### **Diedrichs Creek**

One spawning survey was conducted at Diedrichs Creek on May 16<sup>h</sup>, 2023. No live salmon were observed.

## **Discussion**

Long term monitoring of ‘peak’ salmon spawning at MacDonald’s Creek allows comparison of salmon returns over 40 continuous years. This season the count was lowest on record. Long term monitoring of ‘peak’ salmon spawning at the Windbag Stream allows comparison of salmon returns over 56 years although there are two “gaps” in the dataset. Similar to MacDonalds Creek, the count was well down being the lowest recorded count.

Angler reports indicate it was an exceptionally challenging season, with water temperatures high and low flows in rivers. Very few salmon were caught and those that were appeared to be lake resident salmon, being not much larger than the minimum size of 450mm. Anglers did report catching and releasing good number of undersize salmon, which is promising to hear for the fishery, but their capture is undesirable given potentially casualties. It was noted during spawning surveys, the smaller lake resident fish made up majority of the salmon observed spawning, contributing to keeping the population steadier in weaker years. This was observation noted last season too.

The Hokitika and Taramakau rivers run was reported as very weak, with only rumours of one of two salmon being caught. Unfavourable conditions combined with a weak run, saw many dedicated anglers go without bagging a salmon this season. No salmon were observed spawning by staff but unfavourable weather limited opportunity to complete counts. One spawning salmon was observed in the Little Orangipuku by Jeremy Dalzell.

Lake Ianthe was again a discussion point with anglers this season, with salmon getting caught regularly above the 450mm minimum size. Anglers report high success especially early in the season before water temperatures warm up and push salmon deep. This release should continue, with it creating additional angling opportunities while keeping the rudd population at depressed levels via salmon predating on them, confirmed by recent captures.

## **Staff Recommendations**

Staff recommendations are to:

- Continue monitoring spawning tributaries MacDonalds Creek and Windbag Stream with enough frequency to ensure the peak count is measured.
- Continue to survey catchments where salmon enhancement has occurred.
- Continue stocking Lake Ianthe with salmon.

## **References**

**Fish & Game West Coast internal policy.** *Strategy for sports fishery enhancement through liberations in the West Coast Fish & Game region.*



## Appendices

**Appendix 1:** Sports fish spawning surveys in Lake Mapourika tributaries. In years with more than one survey completed only the date with the highest live count is tabled.

Date	Tributary	Salmon	Dead Salmon	Brown Trout
30 May 1991	Mummy Creek	0	0	0
24 June 1992	Mummy Creek	4	0	4
29 April 1993	Mummy Creek	2	0	0
15 May 1996	Mummy Creek	23	11	0
13 May 1998	Mummy Creek	1	0	2
27 May 1997	Mummy Creek	2	0	0
13 May 1999	Mummy Creek	14	0	0
07 May 2003	Mummy Creek	2	0	0
10 May 2011	Mummy Creek	6	0	0
11 May 2012	Mummy Creek	21	0	0
14 May 2013	Mummy Creek	21	1	0
13 May 2014	Mummy Creek	12	1	0
18 May 2015	Mummy Creek	22	0	0
19 May 2016	Mummy Creek	32	0	0
10 May 2018	Mummy Creek	7	0	0
07 May 2019	Mummy Creek	5	0	0
15 May 2020	Mummy Creek	19	1	1
13 May 1991	Redjacks Creek	0	0	0
28 May 1992	Redjacks Creek	38	13	0
13 May 1993	Redjacks Creek	20	0	0
25 May 1994	Redjacks Creek	5	0	2
04 May 1995	Redjacks Creek	13	0	0
11 May 1996	Redjacks Creek	23	0	0
17 May 1997	Redjacks Creek	12	3	0
14 May 2002	Redjacks Creek	4	2	0
06 May 2003	Redjacks Creek	5	0	0
18 May 2003	Redjacks Creek	15	4	0
18 May 2005	Redjacks Creek	15	4	0
18 May 2006	Redjacks Creek	9	0	0
10 May 2011	Redjacks Creek	3	0	1
11 May 2012	Redjacks Creek	5	2	1
14 May 2013	Redjacks Creek	0	0	0
13 May 2014	Redjacks Creek	4	0	0
15 May 2015	Redjacks Creek	2	2	2
09 June 2016	Redjacks Creek	2	2	0
10 May 2018	Redjacks Creek	4	0	0
07 May 2019	Redjacks Creek	0	0	0
05 May 2020	Redjacks Creek	1	0	0

**Appendix 2:** Sports fish spawning surveys in Taramakau River tributaries. In years with more than one survey completed, only the date with the highest live count is tabled.

Date	Tributary	Salmon	Dead salmon	Brown trout
18 May 1998	Black Creek	6	4	0
20 May 1999	Black Creek	16	1	4
10 May 2000	Black Creek	5	0	0
07 May 2002	Black Creek	8	0	0
08 May 2003	Black Creek	5	0	0
19 May 2005	Black Creek	23	0	0
19 May 2006	Black Creek	10	0	4
22 May 2007	Black Creek	25	0	9
13 May 2008	Black Creek	9	0	4
21 May 2009	Black Creek	12	1	9
17 May 2010	Black Creek	9	0	18
10 May 2011	Black Creek	12	0	5
05 May 2012	Black Creek	3	1	4
06 May 2013	Black Creek	11	0	9
12 May 2014	Black Creek	16	0	0
08 May 2015	Black Creek	11	0	3
31 May 2016	Black Creek	17	0	11
26 May 2017	Black Creek	11	2	4
28 May 2018	Black Creek	7	0	5
01 May 2019	Black Creek	5	0	6
18 May 2020	Black Creek	0	0	6
25 May 2021	Black Creek	0	0	15
12 May 2022	Black Creek	0	0	3
15 May 2023	Black Creek	0	0	5
07 May 1996	Clear Creek	9	0	0
18 May 1998	Clear Creek	7	3	0
18 May 1999	Clear Creek	64	9	0
10 May 2000	Clear Creek	6	0	0
07 May 2002	Clear Creek	0	0	0
30 May 2005	Clear Creek	18	7	3
22 May 2007	Clear Creek	23	2	0
25 May 2009	Clear Creek	9	1	0
10 May 2011	Clear Creek	3	0	0
12 May 2012	Clear Creek	6	0	0
23 May 2013	Clear Creek	9	3	0
12 May 2014	Clear Creek	10	0	0
27 May 2014	Clear Creek	8	0	2
08 May 2015	Clear Creek	6	0	1
09 May 2016	Clear Creek	7	0	1
26 May 2017	Clear Creek	22	0	0
28 May 2018	Clear Creek	6	0	0
17 May 2019	Clear Creek	5	0	2
18 May 2020	Clear Creek	2	0	0
20 May 2021	Clear Creek	2	0	0
12 May 2022	Clear Creek	0	0	0
15 May 2023	Clear Creek	0	0	0
02 May 1999	Debenham Creek	0	0	0
28 April 2005	Debenham Creek	0	0	0
04 June 2014	Debenham Creek	1	0	0
22 May 2015	Debenham Creek	0	0	0
03 June 2016	Debenham Creek	4	0	0
15 June 2017	Debenham Creek	0	0	0
17 May 2019	Debenham Creek	0	0	2
15 May 2020	Debenham Creek	1	0	3
25 May 2021	Debenham Creek	3	0	2
12 May 2022	Debenham Creek	0	0	0



15 May 2023	Debenham Creek	0	0	1
22 May 2015	Humphries Creek	1	0	1
03 June 2016	Humphries Creek	1	1	0
15 June 2017	Humphries Creek	2	0	3
28 May 2018	Humphries Creek	0	0	3
17 May 2019	Humphries Creek	0	0	1
15 May 2020	Humphries Creek	11	0	0
20 May 2021	Humphries Creek	7	0	3
12 May 2022	Humphries Creek	2	0	2
15 May 2023	Humphries Creek	0	0	0
17 May 2019	Aickens Spring Creek	2	0	2
15 May 2020	Aickens Spring Creek	8	0	1
20 May 2021	Aickens Spring Creek	7	0	4
12 May 2022	Aickens Spring Creek	1	0	3
15 May 2023	Aickens Spring Creek	0	0	1
15 June 2017	Little Orangipuku	0	0	9
16 May 2019	Little Orangipuku	0	0	0
15 May 2020	Little Orangipuku	0	0	0

**Appendix 3:** Sports fish spawning surveys in Hokitika River tributaries. In years with more than one survey completed, only the date with the highest live count is tabled.

Date	Tributary	Salmon	Dead salmon	Brown trout
25 May 2007	Minnow Creek	4	0	15
14 June 2011	Minnow Creek	9	17	2
21 June 2012	Minnow Creek	1	0	1
24 May 2013	Minnow Creek	0	0	0
4 June 2014	Minnow Creek	18	0	0
20 May 2015	Minnow Creek	0	1	0
01 June 2016	Minnow Creek	4	0	0
25 May 2017	Minnow Creek	6	0	0
25 May 2018	Minnow Creek	2	0	0
07 June 2019	Minnow Creek	2	0	0
19 May 2020	Minnow Creek	0	0	0
24 May 2020	Minnow Creek	0	0	0
12 May 2022	Minnow Creek	6	0	0
16 May 2023	Minnow Creek	0	0	0
12 May 2003	Doctors Creek	0	0	0
25 May 2005	Doctors Creek	9	0	1
28 May 2007	Doctors Creek	5	0	5
14 June 2011	Doctors Creek	4	1	2
22 June 2012	Doctors Creek	3	1	3
13 May 2013	Doctors Creek	6	0	1
12 May 2014	Doctors Creek	15	0	2
20 May 2015	Doctors Creek	6	0	3
30 May 2016	Doctors Creek	0	0	5
09 June 2017	Doctors Creek	21	0	0
29 May 2018	Doctors Creek	5	0	0
02 May 2019	Doctors Creek	4	0	2
20 May 2020	Doctors Creek	1	0	0
14 May 2021	Doctors Creek	7	0	4
08 June 2023	Doctors Creek	0	0	0
25 May 2005	Diedrichs Creek	2	0	0
25 May 2007	Diedrichs Creek	0	0	0
28 June 2011	Diedrichs Creek	3	1	0
21 June 2012	Diedrichs Creek	1	1	0
24 May 2013	Diedrichs Creek	5	0	1
12 May 2014	Diedrichs Creek	3	0	3
19 May 2015	Diedrichs Creek	0	0	0
02 June 2016	Diedrichs Creek	0	0	2
05 June 2019	Diedrichs Creek	2	0	1
05 June 2020	Diedrichs Creek	0	1	0
24 May 2021	Diedrichs Creek	1	0	0
12 May 2022	Diedrichs Creek	2	0	0
16 May 2023	Diedrichs Creek	0	0	0

**Appendix 4.** Sports fish liberations from 2009 to 2023 in catchments relating to 2015-2023 sports fish spawning counts.

Date	Catchment	Location	Number	size	Species	Est. age May 2023
08/11/2009	Hokitika	Harcourts Creek	2,000	15g	Rainbow Trout	
08/11/2009	Hokitika	Diedrichs Creek	1,000	15g	Rainbow Trout	
08/09/2011	Hokitika	Doctors Creek	16,300	2.8g	Quinnat Salmon	
16/12/2013	Hokitika	Doctors Creek	7,500	5g	Quinnat Salmon	
10/12/2014	Hokitika	Doctors Creek	4,200	6g	Quinnat Salmon	
14/04/2016	Hokitika	Doctors Creek	3,250	38g	Quinnat Salmon	
07/06/2017	Hokitika	Doctors Creek	5,500	35g	Quinnat Salmon	
26/04/2018	Hokitika	Doctors Creek	5,000	45g	Quinnat Salmon	
16/05/2019	Hokitika	Doctors Creek	4,000	45g	Quinnat Salmon	5
15/12/2009	L. Kaniere	Geologists Creek	2,500	25g	Rainbow Trout	
10/01/2010	L. Kaniere	Geologists Creek	8,000	7g	Quinnat Salmon	
31/01/2011	L. Kaniere	Geologists Creek	4,000	17g	Rainbow Trout	
18/01/2012	L. Kaniere	Geologists Creek	950	108g	Rainbow Trout	
10/12/2012	L. Kaniere	Geologists Creek	5,000	14g	Rainbow Trout	
28/02/2012	L. Kaniere	Geologists Creek	900	115g	Rainbow Trout	
20/03/2012	L. Kaniere	Hans Bay	5,000	80g	Quinnat Salmon	
18/10/2012	L. Kaniere	Sunny Bight	50	600g	Rainbow Trout	
18/10/2012	L. Kaniere	Sunny Bight	50	500g	Quinnat Salmon	
29/11/2013	L. Kaniere	Sunny Bight	5,000	15g	Rainbow Trout	
17/12/2013	L. Kaniere	Sunny Bight	90	1kg	Rainbow Trout	
08/10/2014	L. Kaniere	Sunny Bight	60	1-2kg	Rainbow Trout	
29/10/2014	L. Kaniere	Sunny Creek	5,000	6g	Brown Trout	
15/05/2015	L. Kaniere	Sunny Creek	7,000	7g	Rainbow Trout	
28/10/2015	L. Kaniere	Sunny Creek/Hans Bay	2,000	150g	Brown Trout	
1/11/2016	Lake Kaniere	Sunny Creek/Hans Bay	7,000	80-100g	Brown Trout	
1/11/2016	Lake Kaniere	Sunny Creek/Hans Bay	1,250	80-100g	Rainbow Trout	
01/03/2018	Lake Kaniere	Sunny Creek/Hans Bay	3,000	80g	Brown Trout	
10/04/2019	Lake Kaniere	Sunny Bight	3,000	80g	Brown Trout	5
01/02/2011	L. Mapourika	Jetty Bay	5,000	70g	Quinnat Salmon	
20/03/2012	L. Mapourika	Jetty Bay	2,500	80g	Quinnat Salmon	
10/12/2012	L. Mapourika	Otto's Corner	11,500	5g	Quinnat Salmon	
16/12/2013	L. Mapourika	Otto's Corner	7,500	5g	Quinnat Salmon	
10/12/2014	L. Mapourika	Otto's Corner	5,900	6g	Quinnat Salmon	
14/04/2016	L. Mapourika	Otto's Corner	3,250	38g	Quinnat Salmon	
01/02/2011	Lake Paringa	Boat ramp	5,000	70g	Quinnat Salmon	
20/01/2016	Lake Paringa	Windbag	2,000	22g	Quinnat Salmon	
13/10/2016	Lake Paringa	Boat Ramp	1,940	250g	Quinnat Salmon	
19/11/2009	Taramakau	Greenstone Pond	1,000	15g	Rainbow Trout	
10/01/2010	Taramakau	Clear Creek	2,000	7g	Quinnat Salmon	
18/11/2009	Taramakau	Taipo River SH 73	2,000	15g	Rainbow Trout	
16/09/2011	Taramakau	Taipo - Black Creek	13,000	3.4g	Quinnat Salmon	
10/12/2014	Taramakau	Little Orangipuku	4,200	6g	Quinnat Salmon	

14/04/2016	Taramakau	Otira Aickens	3,250	38g	Quinnat Salmon	
27/04/2017	Taramakau	Otira Aickens	5,000	50g	Quinnat Salmon	
01/04/2018	Taramakau	Otira Aickens	5,000	45g	Quinnat Salmon	
17/04/2019	Taramakau	Spring Creek Aickens	4,000	45g	Quinnat Salmon	5
20/03/2012	L.Ianthe	Boat Ramp	2,500	80g	Quinnat Salmon	
10/12/2012	L.Ianthe	Boat Ramp	11,500	5g	Quinnat Salmon	
10/12/2014	L.Ianthe	Boat Ramp	4,200	6g	Quinnat Salmon	
14/04/2016	L.Ianthe	Boat Ramp	1,250	38g	Quinnat Salmon	
07/06/2017	L.Ianthe	Boat Ramp	5,500	35g	Quinnat Salmon	
31/05/2018	L.Ianthe	Boat Ramp	5,160	45g	Quinnat Salmon	
15/05/2019	L.Ianthe	Boat Ramp	4,000	45g	Quinnat Salmon	
28/05/2020	L.Ianthe	Boat Ramp	1,000	170g	Quinnat Salmon	5
29/05/2020	L.Ianthe	Boat Ramp	1,000	100g	Quinnat Salmon	4
12/04/2021	L.Ianthe	Boat Ramp	1,000	100g	Quinnat Salmon	3
15/04/2022	L.Ianthe	Boat Ramp	2,200	100g	Quinnat Salmon	2