



Sports Fish Spawning Surveys 2016-2017

*Results of sports fish spawning surveys, June 2016-June 2017 in the
West Coast Fish & Game Region*

Lee Crosswell, Fish & Game Officer, July 2017



Rainbow Trout, Geologist Creek, October 2016



Summary

Fish & Game undertake sports fish 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 have been present in the South Westland lakes since the 1930's. During this time, various authorities have intermittently monitored salmon spawning. The long-term monitoring of 'Peak' spawning numbers in spawning grounds for Lakes Mapourika and Paringa were undertaken in May 2017, 135 live salmon were observed during the peak in MacDonalds Creek (L. Mapourika) and 88 were observed live during the peak in Windbag Stream (L. Paringa). The long-term average for MacDonalds Creek is 190 fish making the 2017 return below average. The long-term average for Windbag Stream is 176 fish, making the 2017 count below average. Salmon and trout spawning surveys were undertaken intermittently in several other known spawning creeks during the 2016 and 2017 spawning seasons including tributaries of Lake Kaniere, Hokitika River, and Taramakau River for the purpose of monitoring recent liberations of quinnat salmon and trout. Staff recommendations are; Retain current bag limits and open season duration for salmon and rainbow trout. Continue monitoring spawning tributaries MacDonalds Creek and Windbag stream with enough frequency to ensure the peak count is measured. Continue to survey catchments where sports fishery enhancement has occurred.

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 is useful when deliberating if certain factors have had an influence on the adult population. These factors could be; a change in the fishing regulations or the enhancement of a wild population by liberation of hatchery reared fish.

This report presents the data collected during this season's Quinnat salmon (*Oncorhynchus tshawytscha*) spawning surveys and relates it with results from long term salmon spawning survey data for the main spawning tributaries of the South Westland lakes, Lake Mapourika and Lake Paringa. Intermittent salmon spawning surveys are also reported from other popular salmon catchments. Additionally, surveys have been undertaken in catchments where fishery enhancements of Quinnat salmon, brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) have occurred since 2009 in an effort to measure the success of these liberations.

Spawning Survey Report 2017

Due to the availability of hatchery fish from hatcheries managed by the North Canterbury Fish & Game Region, liberations of Quinnat salmon (*Oncorhynchus tshawytscha*), rainbow trout (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*) have occurred in the West Coast Region from 2009 to 2017 (See Appendices, Table 4 for details of these enhancements).

Liberations have been 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 liberations. 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).

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, 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 three occasions between the 1st of May and 29th May 2017 at MacDonalds Creek. The peak live fish count of 135 occurred on May 15. The average peak count considering all years surveyed is 190. See Figure 1 below.

MacDonalds Creek Peak Counts

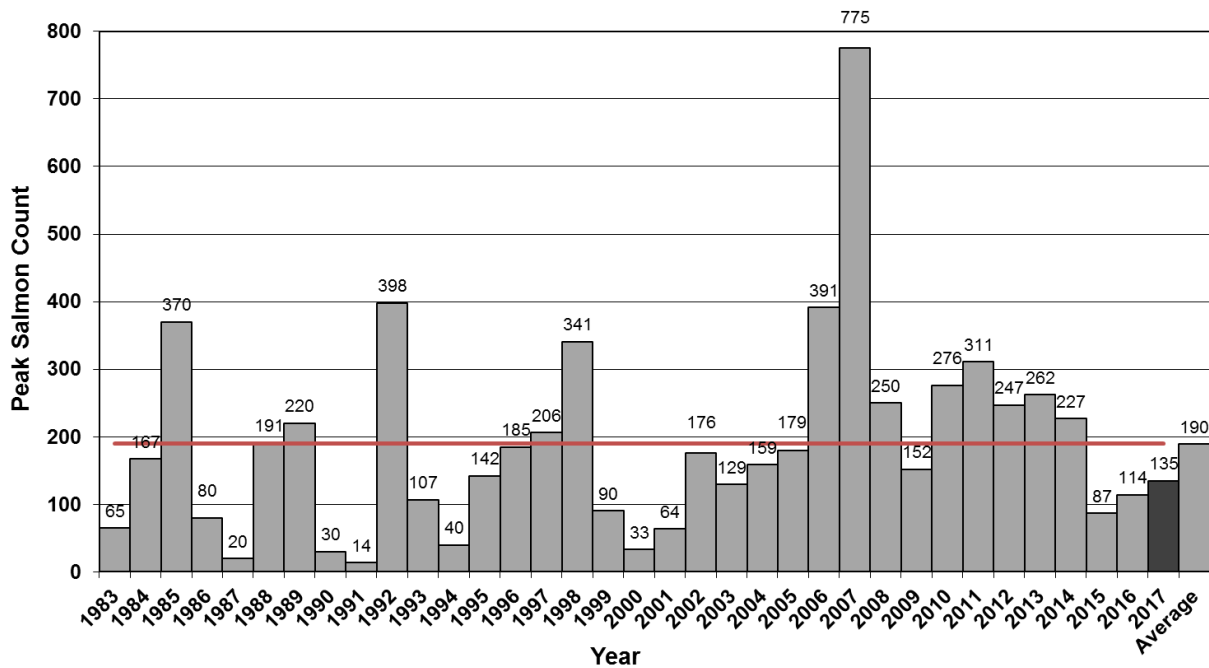


Figure 1: Peak Salmon Counts for MacDonalds Creek, Lake Mapourika. 1983 – 2017.

Lake Paringa (Windbag Stream)

Lake Paringa has one major spawning area, Windbag Stream, which is also 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 2nd and May 30th, 2017. The peak live fish count of 88 occurred on May 15, 2017. The average ‘peak’ live count considering all years surveyed is 176.

Windbag Stream Peak Counts

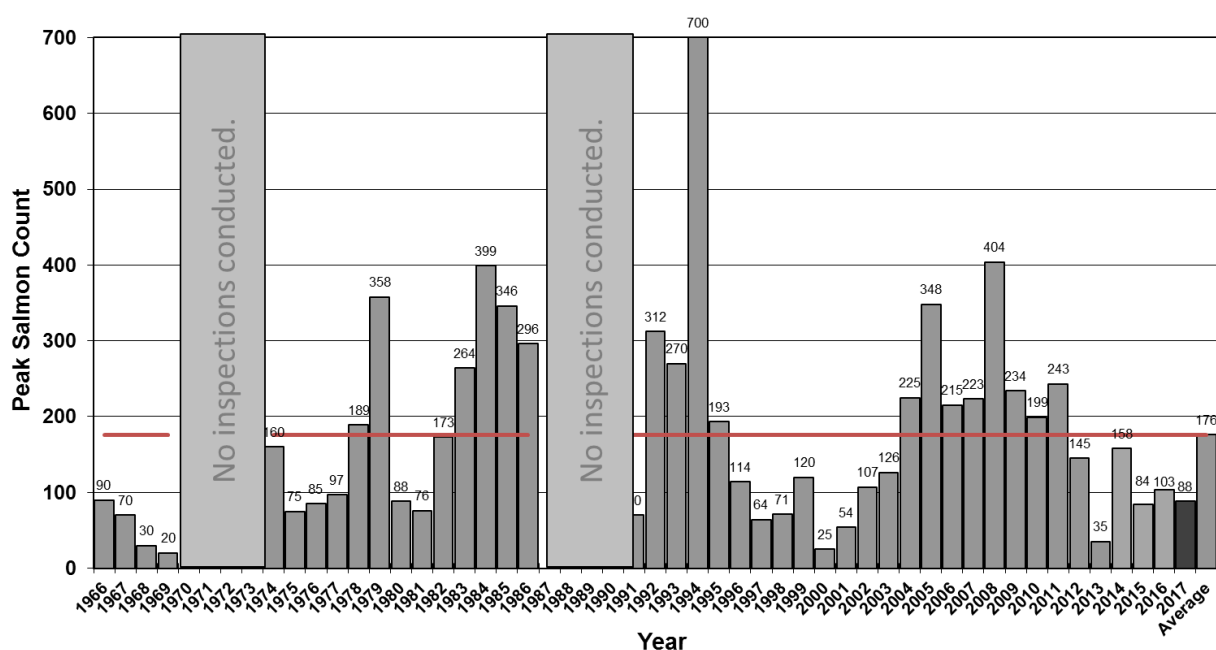


Figure 2: Peak Salmon Counts for the Windbag Stream, Lake Paringa. 1966 – 2017.

Taramakau River catchment salmon spawning

Black Creek (tributary of Taipo River) and Clear Creek (Aitkens) have been surveyed occasionally from 1996 to 2017 during the salmon spawning season. Both Creeks have received salmon smolt releases in recent years, Clear Creek in 2010, and Black Creek in 2011. Other small creeks that have had spot checks in recent years to look for spawning salmon, include Humphries, Debenham and the Little Orangipuku. The Little Orangipuku has had an enhancement release of smolt during December 2014.

Black Creek

The highest live salmon count for Black Creek in 2017 was 11 fish, on May 26th, 2017. Counts of live spawning salmon in Black Creek range from 25 fish in 2007 to three fish in 2012.

Clear Creek

For 2017 the highest live salmon count for Clear Creek was 22 fish, counted on May 26th, 2017. Counts of live spawning salmon in Clear Creek range from 64 fish in 1999 to zero fish in 2002.

Additional salmon spawning surveys in the Taramakau Catchment

Debenham, Humphries, and Little Orangipuku Creeks were surveyed in 2017. Debenham had 0 salmon present on June 15th, while Humphries Creek had 2 salmon counted on June 15th. The Little Orangipuku was checked on June 15th and had no live salmon or carcasses present.

Hokitika River catchment salmon spawning

Three known Hokitika River salmon spawning tributaries; Minnow, Doctors and Diedrichs Creeks have been surveyed occasionally from 2003 to 2017 during the salmon spawning season. Historical records of spawning in these creeks including dead salmon and brown trout have been

included in Table 3 of the Appendices. Doctors Creek has received releases of salmon smolt recently: in 2011, 2013, 2014, 2016 and 2017(See Table 4 in Appendices).

Doctors Creek

A survey was undertaken for Doctors Creek on May 25th, 2017 and June 9th. 26 salmon were observed either live or as post spawn carcasses during the later survey.

Minnow Creek

6 Live Salmon were observed in Minnow Creek on May 25th, 2017.

Lake Kanierere

Geologist Creek

In 2016 the timing of the surveys for Geologist Creek was in relation to rainbow trout spawning with nine surveys undertaken between July and December 2016.

Lake Kanierere, and Geologist Creek specifically, have received several releases of rainbow trout, salmon and brown trout between 2009 and 2016 in an attempt to resurrect the previously valued rainbow trout fishery. As shown in figure 3 below, few rainbows have been counted in Geologist Creek in the past four years.

Larger Browns released from late 2015 should be beginning to spawn in coming seasons.

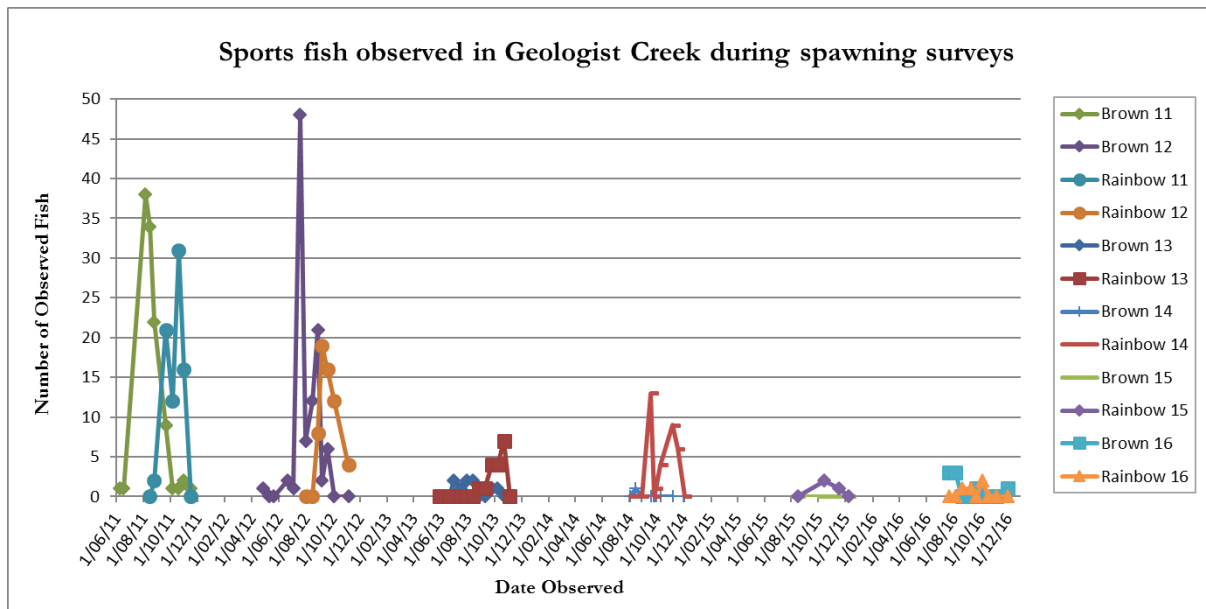


Figure 3: Geologist Creek Brown and Rainbow Trout Spawning Surveys During 2011 - 2016.

Sunny Bight Creek

Spawning surveys have been undertaken in Sunny Bight Creek occasionally since 2011. Brown trout and rainbow trout in recent years have been observed spawning in Sunny Bight Creek. In 2016 the focus of the surveys was on rainbow trout, with nine surveys undertaken between July and December 2016. Three rainbow trout was the highest count of adult fish observed on the 8th of September 2016. On the 4th November 2016, approximately 30 Juvenile rainbows were observed together, this was just after the spring release of trout in the lake nearby.

Several releases of juvenile and mature sports fish have occurred in or in the vicinity of Sunny Bight Creek in recent years (See Table 4, Appendices for details). The most recent release was of 80-100g brown trout into the lake near Sunny Bight jetty, and at the Hans Bay jetty in spring 2016. This was mainly of brown trout, however North Canterbury had some excess rainbow trout stock they included.

Discussion

During the autumn of 2017, surveys were carried out in the South Westland salmon spawning streams of The Windbag Stream and MacDonalDs Creek. Less frequent surveys of known salmon spawning tributaries within the Taramakau and Hokitika River systems were also undertaken during May and early June. Long term monitoring of 'peak' salmon spawning in The Windbag Stream and MacDonalDs Creek in South Westland allow Fish & Game to compare the 2017 spawn with 44 years of observation for Windbag Stream and 35 years for MacDonalDs Creek. The 2017 'peak' counts were below average for both spawning streams, but within the range observed historically.

While the salmon return within the traditional spawning tributaries was below average this autumn, anglers, particularly those fishing in the Westland Rivers reported good catches prior to the spawning period. A good proportion of the returning salmon in 2017 appear to have bypassed traditional spawning areas in favour of heading further up the main rivers of the same system or adjacent catchments. Given this, it is likely that during the autumn of 2017 a significant number of salmon have, or have at least attempted to spawn in areas not regularly surveyed during our salmon spawning surveys. If in future seasons this occurs it may be worthwhile putting the effort into locating any likely streams they may have gone into. Knowledge of any additional spawning grounds potentially establishing is important in evaluating overall returns.

During late summer/early autumn 2017, despite rain over much of the country for extended periods, the Okarito River remained very low with warm water temperatures. This was also likely to be the case for the Hall River exiting Lake Paringa and may be a likely reason for salmon bypassing traditional spawning catchments in favour of heading further up the main rivers.

Fin clipped salmon expected to return more in 2018 were already being caught by anglers in 2017. From those regularly out targeting the salmon this year, they commented that many of the salmon caught early on were fin-clipped, while of those caught later in the season few were fin-clipped. The presence of fin-clipped salmon already returning is promising for the season ahead.

Doctors Creek had 26 fish recorded late season which was promising after not seeing any there at all last season. These fish appeared to enter Doctors Creek relatively late.

Trout spawning streams surrounding Lake Kaniere were observed during the late winter and the spring months of 2016. The purpose of trout spawning surveys was to examine whether recent enhancement releases into Lake Kaniere are increasing the number of spawning rainbow trout entering inflowing streams. Rainbow trout spawning in the Lake Kaniere tributaries was of a low level over the past year, with very few fish present in the spring of 2016. This continues a downward trend of rainbows entering the spawning streams of Lake Kaniere over the past few years, since 2011 when over thirty were found in Geologist Creek. The 150g brown trout released in spring 2015 and 80-100g brown trout released in 2016 should hopefully be attempting to spawn during the upcoming winter.

Staff Recommendations

Staff recommendations for the 2017/18 season are as follows:

- Retain current bag limits and open season duration for salmon and rainbow trout.
- Continue monitoring spawning tributaries MacDonalds Creek and Windbag stream with enough frequency to ensure the peak count is measured.
- Continue to survey catchments where sports fishery enhancement has occurred.

References

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

Appendices

Table 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
7 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
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
4 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
6 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
9 June 2016	Redjacks Creek	2	2	0

Table 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
7 May 2002	Black Creek	8	0	0
8 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
5 May 2012	Black Creek	3	1	4
6 May 2013	Black Creek	11	0	9
12 May 2014	Black Creek	16	0	0
8 May 2015	Black Creek	11	0	3
31 May 2016	Black Creek	17	0	11
26 May 2017	Black Creek	11	2	4
7 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
7 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
8 May 2015	Clear Creek	6	0	1
9 May 2016	Clear Creek	7	0	1
26 May 2017	Clear Creek	22	0	0
2 May 1999	Debenham Creek	0	0	0
28 April 2005	Debenham Creek	0	0	0
4 June 2014	Debenham Creek	1	0	0
22 May 2015	Debenham Creek	0	0	0
3 June 2016	Debenham Creek	4	0	0
15 June 2017	Debenham Creek	0	0	0
22 May 2015	Humphries Creek	1	0	1
3 June 2016	Humphries Creek	1	1	0
15 June 2017	Humphries Creek	2	0	3

Table 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
1 June 2016	Minnow Creek	4	0	0
25 May 2017	Minnow Creek	6	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
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
2 June 2016	Diedrichs Creek	0	0	2

Table 4. Sports fish liberations from 2009 to 2017 in catchments relating to 2015-2017 sports fish spawning counts.

Date	Catchment	Location	Number	size	Species	Est. age May 2017
8/11/09	Hokitika	Harcourts Creek	2000	15g	Rainbow Trout	
8/11/09	Hokitika	Diedrichs Creek	1000	15g	Rainbow Trout	
8/09/11	Hokitika	Doctors Creek	16,300	2.8g	Quinnat Salmon	6+
16/12/13	Hokitika	Doctors Creek	7,500	5g	Quinnat Salmon	3+
10/12/14	Hokitika	Doctors Creek	4,200	6g	Quinnat Salmon	2+
14/04/16	Hokitika	Doctors Creek	3,250	38g	Quinnat Salmon	1+
7/06/2017	Hokitika	Doctors Creek	5,500	35g	Quinnat Salmon	0+
15/12/09	L. Kaniere	Geologists Creek	2500	25g	Rainbow Trout	
10/01/10	L. Kaniere	Geologists Creek	8000	7g	Quinnat Salmon	
31/01/11	L. Kaniere	Geologists Creek	4000	17g	Rainbow Trout	
18/01/12	L. Kaniere	Geologists Creek	950	108g	Rainbow Trout	
10/12/12	L. Kaniere	Geologists Creek	5,000	14g	Rainbow Trout	
28/02/12	L. Kaniere	Geologists Creek	900	115g	Rainbow Trout	
20/03/12	L. Kaniere	Hans Bay	5,000	80g	Quinnat Salmon	3+
18/10/12	L. Kaniere	Sunny bight	50	600g	Rainbow Trout	
18/10/12	L. Kaniere	Sunny bight	50	500g	Quinnat Salmon	4+
29/11/13	L. Kaniere	Sunny bight	5,000	15g	Rainbow Trout	
17/12/13	L. Kaniere	Sunny bight	90	1kg	Rainbow Trout	
8/10/14	L. Kaniere	Sunny bight	60	1-2kg	Rainbow Trout	
29/10/14	L. Kaniere	Sunny Creek	5,000	6g	Brown Trout	
15/05/15	L. Kaniere	Sunny Creek	7,000	7g	Rainbow Trout	
28/10/15	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	
1/02/11	L. Mapourika	Jetty Bay	5000	70g	Quinnat Salmon	6+
20/03/12	L. Mapourika	Jetty Bay	2,500	80g	Quinnat Salmon	5+
10/12/12	L. Mapourika	Otto's Corner	11,500	5g	Quinnat Salmon	4+
16/12/13	L. Mapourika	Otto's Corner	7,500	5g	Quinnat Salmon	3+
10/12/14	L. Mapourika	Otto's Corner	5,900	6g	Quinnat Salmon	2+
14/04/16	L. Mapourika	Otto's Corner	3,250	38g	Quinnat Salmon	1+
1/02/11	Lake Paringa	Boat ramp	5000	70g	Quinnat Salmon	6+
20/01/16	Lake Paringa	Windbag	2000	22g	Quinnat Salmon	1+
13/10/2016	Lake Paringa	Boat Ramp	1,940	250g	Quinnat Salmon	1+
19/11/09	Taramakau	Greenstone Pond	1000	15g	Rainbow Trout	
10/01/10	Taramakau	Clear Creek	2000	7g	Quinnat Salmon	
18/11/09	Taramakau	Taipo River SH 73	2000	15g	Rainbow Trout	
16/09/11	Taramakau	Taipo - Black Creek	13,000	3.4g	Quinnat Salmon	6+
10/12/14	Taramakau	Little Orangipuku	4,200	6g	Quinnat Salmon	3+
14/04/2016	Taramakau	Otira Aichens	3250	38g	Quinnat Salmon	1+
27/04/2017	Taramakau	Otira Aichens	5,000	50g	Quinnat Salmon	0+