



CENTRAL SOUTH ISLAND REGION

2025/26 Central South Island Sea-Run Salmon Returns Summary

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Prepared for the Central South Island Fish and Game Council

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Executive Summary

North Canterbury (NC) and Central South Island (CSI) Fish and Game issued 8,122 sea-run salmon licences in the 2025/26 season. Fish & Game received 1,413 voluntary season bag card returns and anglers reported a total harvest of 56 sea-run salmon (“salmon”) in the 2025/26 season. Nine hundred and eighty-two random telephone surveys were conducted from the remaining sea-run salmon licence holders and a further 55 salmon were estimated to be harvested equating to a total estimated harvest for North Canterbury and Central South Island sea-run salmon fisheries of 111 salmon.

The combined live spawning estimate for the Rakaia, Rangitata and Waimakariri (three indicator rivers) was 1,469 salmon and places the status of the fishery in the ‘low’ management band (1,200 - 5,100 spawning salmon). The season bag limit will remain at one salmon until the number of spawning salmon in the three rivers combined has been above 1,200 for three consecutive years, in accordance with the threshold management strategy.

The total salmon run for an individual river is calculated by adding estimates of total spawning and total harvest together. The total estimated run for the Rakaia River was 998 salmon, 239 salmon for the Rangitata River, and 283 salmon for the Waimakariri River. The combined total estimated wild run for the three indicator rivers in the 2025/26 season was 1,520 salmon.

This season, the three rivers achieved 97% (Rakaia), 93% (Rangitata) and 98% (Waimakariri) of the run reaching the spawning grounds, which indicates success in terms of the original goal of the management strategy, which was to increase the proportion of fish spawning.

Following a review of additional severe-band management options this season, CSI Fish & Game adopted a temporary closure framework that will close Central South Island sea-run salmon fishing if the Rangitata spawning population falls to 200 salmon or fewer.

1.0 Introduction

Mature sea-run chinook salmon (hereafter referred to as salmon) return from the Pacific Ocean and enter the rivers to spawn. Salmon are either harvested by anglers, caught and released or avoid anglers (escape) and continue upriver to spawn. Salmon that perish by flood or other means are not considered in this report. The sum of angler harvest and salmon escapement (the spawning population) provides an estimate of the total returned population (total run) of salmon returning to fresh water each season and is the preferred methodology for identifying population trends across seasons. Salmon populations can exhibit large and unpredictable fluctuations in population size on an annual basis, so it is trends across multiple seasons that provide greater insight into the long-term status of the population.

The Central South Island Sports Fish and Game Management Plan 2022 (SFGMP) identifies declining salmon populations as one of the region's key issues (objective 8.2.7) and describes the species as being in crisis. The SFGMP emphasises a desire to see robust management of the species to arrest the decline in population. The SFGMP specifies objectives (8.3.1, 8.3.2) to monitor the population and harvest of the species as well as undertake research to inform sustainable management of sports fish.

Historically, daily bag limits allowed for anglers to harvest salmon each day of the season which meant that at times anglers were harvesting more than 50% of the total returning population. The introduction of a season bag limit in the 2021/22 season across the Central South Island (CSI) and North Canterbury (NC) Fish & Game regions was one of the most significant changes to the way salmon harvest is managed since salmon were first introduced to New Zealand over 100 years ago. A season bag limit allows for greater control of harvest than the daily bag limit and therefore greater management of the spawning component of the annual run. Sea-run salmon anglers are required to obtain a sea-run salmon licence at which time they receive a season bag limit card. Provisions of the sea-run salmon licence require that licence holders must record details of every salmon harvested on their season bag limit card and return those details to Fish & Game at the end of the season, regardless as to whether they went salmon fishing or harvested a salmon. This information assists in the assessment of angler harvest and enforcement of the season bag regulations.

The escapement (spawning) component of the run is assessed by two methods in the CSI Region. Annual salmon redd (nest) counts are undertaken in the Ashburton River system, Lake Heron, tributaries of the Rangitata, and the Orari, Opihi, Opuha, Waihi-Temuka, Waitaki and Hakataramea rivers when flow conditions allow. Some of these counts are completed by volunteers. These counts provide an estimate of peak season spawning effort. Redd counts are a valuable and continuing long-term record used as an index of spawning population size.

The second method assesses total seasonal spawning populations through five aerial counts of live salmon across two key Rangitata River spawning tributaries, conducted from March to June. An estimate of Waitaki River spawning was able to be made by this method until about 1999 when the Hakataramea River run began to be impacted by low flows. In recent seasons, lower Waitaki River spawning is assessed by aerial peak season redd count funded by Meridian Energy Limited.

In 2020 the CSI and NC Councils adopted a sea-run salmon population management strategy to jointly manage the sea-run salmon harvest in the two regions. The strategy sets combined spawning population thresholds and bands for the Waimakariri, Rakaia and Rangitata river

fisheries and corresponding regulatory outcomes within each band. The combined populations dropped into the “severe” management band in the 2024/25 spawning season. The severe management band requires the seasonal bag limit to be set at one salmon and allows for possible additional restrictions to be imposed. During the 2025/26 season, CSIFGC considered a range of additional regulations that could be applied if populations remained at severe levels as well as population thresholds that would trigger a fishery closure. This resulted in the adoption of a temporary closure framework for Central South Island sea-run salmon fisheries but no additional restriction during an open season.

The following report details the application and results from the fifth season under the sea-run salmon season bag regime and first season in the severe management band. This includes presentation of timing of harvest, size characteristics, application of the threshold management strategy to Waimakariri, Rakaia and Rangitata sea-run salmon population information, and spawning and harvest information for CSIFG Region fisheries.

2.0 Salmon Season Bag Card

2.1 Sea-run Salmon Licences

In the 2025/26 season, a total of 8,122 salmon licences were issued (Table 1 (Sanders Garrick 2026)).

This was 2,131 fewer licences than the previous season, continuing the steady decline since 2022/23.

Salmon licences issued by CSI and NC Regions comprised 90.7% of the total licences issued (39.6% & 51.1% respectively). The rest of the South Island made up most of the remainder with the North Island Regions issuing 1.1% of licences.

Table 1. Number of sea-run salmon licences issued in the history of salmon season bag cards across regions.

Licence Region	2021-22	2022-23	2023-24	2024-25	2025-26
Nelson/Marlborough	567	437	280	200	160
West Coast	120	93	64	47	52
North Canterbury	5,081	6,385	5,899	5,222	4,148
Central South Island	2,603	4,882	4,542	4,163	3,219
Otago	655	625	512	382	316
Southland	216	257	193	135	138
All North Island regions	196	180	132	104	89
Total	9,438	12,859	11,622	10,253	8,122

2.2 Salmon Season Bag Limit Card Returns

Season bag card information was voluntarily returned from 1,413 (17.4%) salmon licence holders by online form, post, email or office drop-in. Of these voluntary returned cards, only 56 anglers (4%) reported that they harvested salmon during the 2025/26 season. Roughly 32% (458 anglers) of anglers reported that they fished for sea-run salmon but did not harvest any salmon. The remaining 64% of voluntary respondents reported that they did not fish for sea-run salmon during the season.

To capture information from anglers who did not voluntarily return their sea-run salmon season information, a telephone survey was conducted on the remaining anglers. A random selection of 982 anglers participated in the survey. Of the anglers surveyed, 11 (1.1%) reported that they harvested salmon during the 2025/26 season. About 22%, (213) anglers reported that they fished for sea-run salmon but did not harvest any salmon. The remaining 758 (77%) of random telephone surveyed anglers reported that they did not fish for sea-run salmon during the season.

In total, voluntary returns and the phone survey resulted in the return of season bag card information from 2,395 anglers (Table 2), which is approximately 29.5% of the total number of salmon bag cards issued.

Table 2. Summary of sea-run salmon reported angler activity and harvest responses for the 2025/26 season.

Strata	Angler Responses	Harvested salmon	Fished but did not harvest salmon	Did not fish for salmon
Voluntary season bag card returns	1,413	56 (4%)	458 (32%)	899 (64%)
Random telephone survey	982	11 (1.1%)	213 (22%)	758 (77.2%)
Total anglers	2,395	67	671	1,657

3.0 Salmon Harvest

3.1 Mean Angler Harvest

The salmon harvest data was analysed in multiple strata (subgroups). Firstly, we isolated those who voluntarily returned their season bag cards from those who were randomly phone surveyed.

The two groups were statistically distinct; therefore, harvest information from the voluntary salmon bag card returns was not extrapolated to anglers who did not return their salmon bag card information (non-respondents). Instead, data from the random telephone survey was used to estimate the results for the remaining non-respondents.

Using previous harvest survey data, we identified anglers who have been previously successful and have reported harvesting at least one salmon between 2018-19 and 2024-25 fishing seasons. These anglers are referred to as the “known success” stratum while all remaining anglers who have not reported harvesting a salmon between 2018-19 and 2024-25 seasons are referred to as the “no known success” stratum.

3.1.2 Total Harvest

Voluntary season bag card returns reported a total harvest of 56 salmon in the 2025/26 season. A further 55 salmon were estimated to be harvested from the remainder of the salmon bag licence holders equating to a total estimated harvest for North Canterbury and Central South Island regions of approximately 111 sea-run salmon (Table 3).

3.1.3 Voluntary Returns

The mean harvest for those who voluntarily returned their season bag card was 0.11 salmon per active angler, which is more than two times higher than that of the randomly surveyed anglers which was 0.05 salmon per active angler.

3.1.4 Phone Survey

Amongst previously successful anglers, the “known success stratum” 67% actively fished for salmon in the 2025/26 season and had an average harvest of 0.12 salmon per angler. Amongst anglers with no known success, 17.9% of those surveyed actively fished for salmon in the 2025/26 salmon season, with an average harvest of 0.02 salmon per active angler.

3.1.5 Harvest Four Rivers

The Rakaia, Rangitata, Waitaki and Waimakariri rivers contributed more than 80% of the total reported harvest by salmon licence holders (Table 3). Total estimated harvest was greatest for the Waitaki River (31 salmon), followed by the Rakaia River (29 salmon), The Rangitata River (17 salmon), and the Waimakariri River (5 salmon).

Table 3. Estimated harvest of sea-run salmon in the four large East Coast salmon rivers derived from information returned by anglers over the history of the season bag card. 2025/26

River	2021/22 Salmon Harvest	2022/23 Salmon Harvest	2023/24 Salmon Harvest	2024/25 Salmon Harvest	2025/26 Salmon Harvest
Waimakariri	178	245	143	30	5
Rakaia	407	299	186	76	29
Rangitata	274	161	94	34	17
Waitaki	234	195	94	20	31
Total Estimated Harvest 4 Rivers	1093	900	517	174	82

3.2 Monthly Harvest

The season bag card requires anglers to record the date which salmon were harvested. This data cannot be used to make inferences on the timing of a run as the population status and imposition of the salmon bag card may alter angler behaviour.

We received date information for the big four rivers from 55 harvested salmon and results show that more than 99% of total harvest occurred after January 1st with only one sea-run salmon reportedly harvested before the first of January 2026 (Table 4).

Table 4. Monthly distribution of the 55 harvested salmon for which anglers provided harvest dates in the Rakaia, Rangitata, Waimakariri and Waitaki rivers during the 2025/26 fishing season.

Month	Rakaia	Rangitata	Waimakariri	Waitaki	Total
December	1	0	0	0	1
January	1	0	0	0	1
February	15	4	0	0	19
March	5	4	4	2	15
April	3	0	1	15	19
Total	25	8	5	17	55

The timing of harvest varied by river. In the Rangitata Catchment, harvest occurred in February and March. One sea-run salmon was reported to have been harvested in January.

In the Waitaki Catchment, nearly all of the reported harvest occurred in April (88.9%) with 11% of harvest occurring in March.

Caution must be taken when drawing conclusions about harvest timing and run timing as seasonal bag limits or current populations may cause anglers to change their harvesting behaviours.

3.3 Size of Salmon

Length data can provide an indication of the age structure of an adult salmon population. The returning run each season are comprised of two, three, four and sometimes five-year-old salmon. Each year class will have a size range and while there will be significant overlap in size ranges for the different ages, generally the proportion of each year class in the returning run can be identified if the sample size is large enough and the sample is random. This information can be used for assessing the relative survival of each year class through its lifetime.

Salmon bag card return data cannot be classed as a random sample due to the possible tendency for anglers to catch and release until an acceptably large salmon is caught. This can lead to the sample of angler-caught salmon lengths being biased towards longer and therefore older salmon and not a true reflection of the age composition of the run.

The average (mean) length of all harvested salmon in 2025/26 season was 64.5cm (Table 5).

Table 5. The average, maximum, and most common length (cm) of sea-run salmon harvested during the 2025/26 fishing season in North Canterbury and Central South Island regions of Fish & Game, as reported by anglers. N = sample size.

Length (cm)	All Rivers	Rakaia	Rangitata	Waimakariri	Waitaki
N	52	26	8	5	18
Average	64.5	62.7	63.8	67.8	67.1
Maximum	82	76.0	82.0	76.0	72
Most Common	60-71	65 - 70	52 - 71	62 - 71	68 - 70

Average reported salmon length has generally declined over the five seasons of the season bag-card system, decreasing from 73.8 cm in 2021/22 to 64.5 in 2025/26. The shortest average salmon length was 61.2 cm which was reported in 2023/24 (Table 6).

Table 6. The average length of all reported harvested salmon in the five seasons of the salmon bag card.

Season	Average Length (cm)
2021/22	73.8
2022/23	67.1
2023/24	61.2
2024/25	65.6
2025/26	64.5

4.0 Salmon Spawning and Run Size

The Waimakariri, Rakaia & Rangitata have annual monitoring programs for spawning and angler harvest that have been undertaken for 33 seasons and have generally been consistent in methodology (Craig et al.2025).

Spawning in the Waimakariri, Rakaia and Rangitata rivers predominantly occur in a small number of spring-fed tributary streams in their upper reaches.

Estimated salmon spawning (escapement) population plus the harvest estimate, represents the “total run” of the river. Total runs for the three large east coast salmon rivers in the 2025/26 season range from 239 to 998 salmon (Table 7).

Table 7. Harvest, spawning, and total run in the three large East Coast rivers in the 2025/26 season.

	Waimakariri	Rakaia	Rangitata	Total
Estimated Harvest	5	29	17	51
Live Spawners	278	969	222	1,469
Total salmon run (harvest + spawn)	283	998	239	1,520

The combined wild spawning population estimate for the Waimakariri, Rakaia and Rangitata in the 2025/26 season was 1,469 salmon. With the addition of the harvest, the combined wild run estimate for the Waimakariri, Rakaia and Rangitata in the 2025/26 season was 1,520 salmon. This is the second lowest wild run for these three rivers in the 33-season monitoring period, with the lowest total wild run being 1,042 salmon which occurred in 2024/25 season (Figure 1).

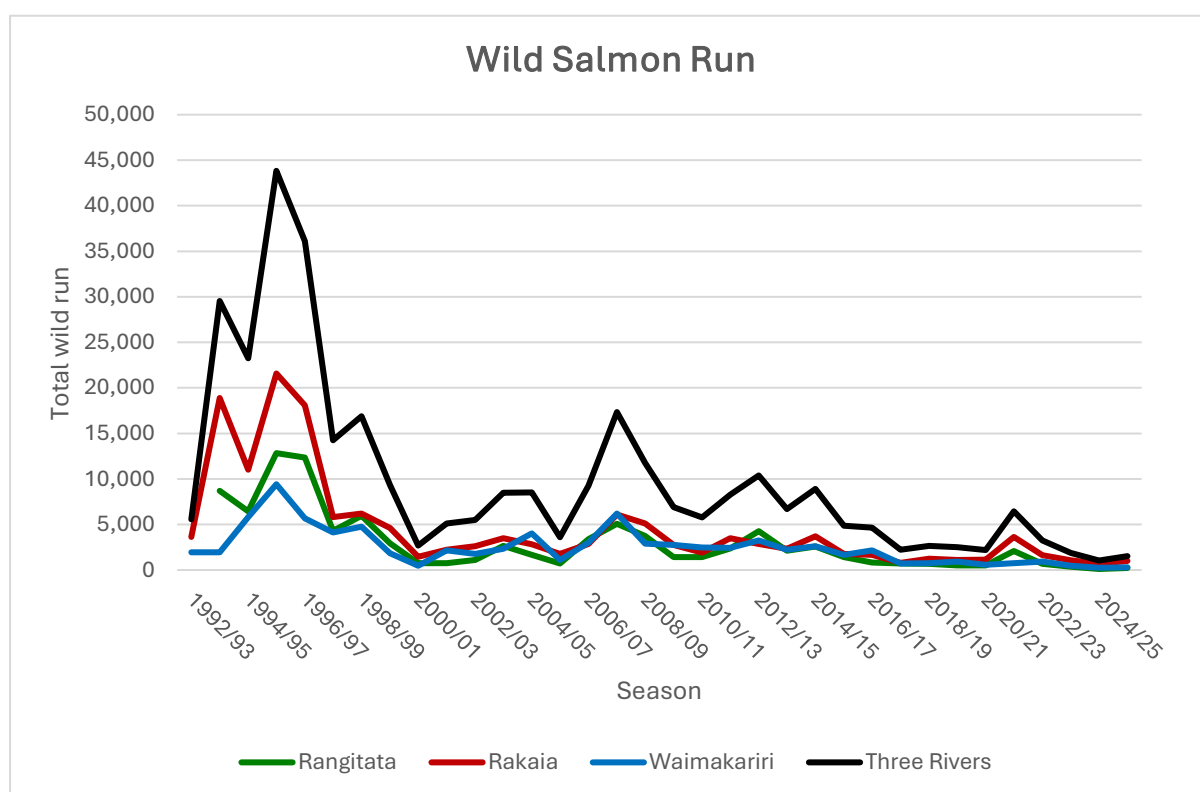


Figure 1. Estimated salmon returning to the Rakaia (red), Rangitata (Green), and Waimakariri (Blue) rivers for 1994-2026 and Rakaia, Rangitata & Waimakariri combined (Black)

4.1 Proportion of Run Reaching Spawning Grounds

Prior to the introduction of the management strategy and the season bag limit, the proportion of the salmon run that reached spawning grounds (escapement proportions) in the three indicator rivers had ranged from 44% - 70%, with an average of 57% (Table 8). Objectives outlined in the strategy (Webb M & Terry S 2020) aimed to increase the proportion of salmon spawning by 23%, relative to the historical average, through the implementation of the threshold management strategy.

In the 2025/26 season, anglers were subjected to a one-salmon season bag limit and were estimated to have harvested between 1.7% and 7.1% of the returning salmon in the Rakaia, Waimakariri, and Rangitata Rivers. This equates to spawning escapement proportions of 92–98%. The Rakaia (97%) and Waimakariri (98%) rivers recorded some of their highest escapement levels since reliable harvest and spawning surveys began in 1994. The Rangitata River achieved 93% escapement which is the highest on record in the 33 years of monitoring (Table 8).

The average escapement across all three rivers was 96% which, relative to the historic pre-season bag average of 57%, is an increase in the proportion spawned of approximately 68%. Therefore, these results indicate the objectives of the threshold management system are achieved (Figure 2).

Table 8. Percentage of total wild run to reach spawning grounds (escapement proportions) for the three indicator rivers.

	Waimakariri	Rakaia	Rangitata	3 River Average	Season Bag Limit
1993-2021	43.7	56.4	69.6	56.6	
2021/22	74.7	88.3	87.0	83.3	2
2022/23	72.0	80.0	82.0	78.0	2
2023/24	69.7	82.6	72.7	75.0	2
2024/25	87.4	88.8	73.2	83.1	2
2025/26	98.23	97.2	93.3	96.1	1

The implementation of the season bag limit appears to have successfully contributed to an increase in the proportion of the salmon run reaching the spawning grounds of the Waimakariri, Rakaia and Rangitata rivers compared to proportions observed prior to the introduction of the strategy. Other factors, such as changes in angler effort or harvest behaviours, may also have contributed to the observed decrease in harvest and increase in the proportion of the run reaching the spawning grounds.

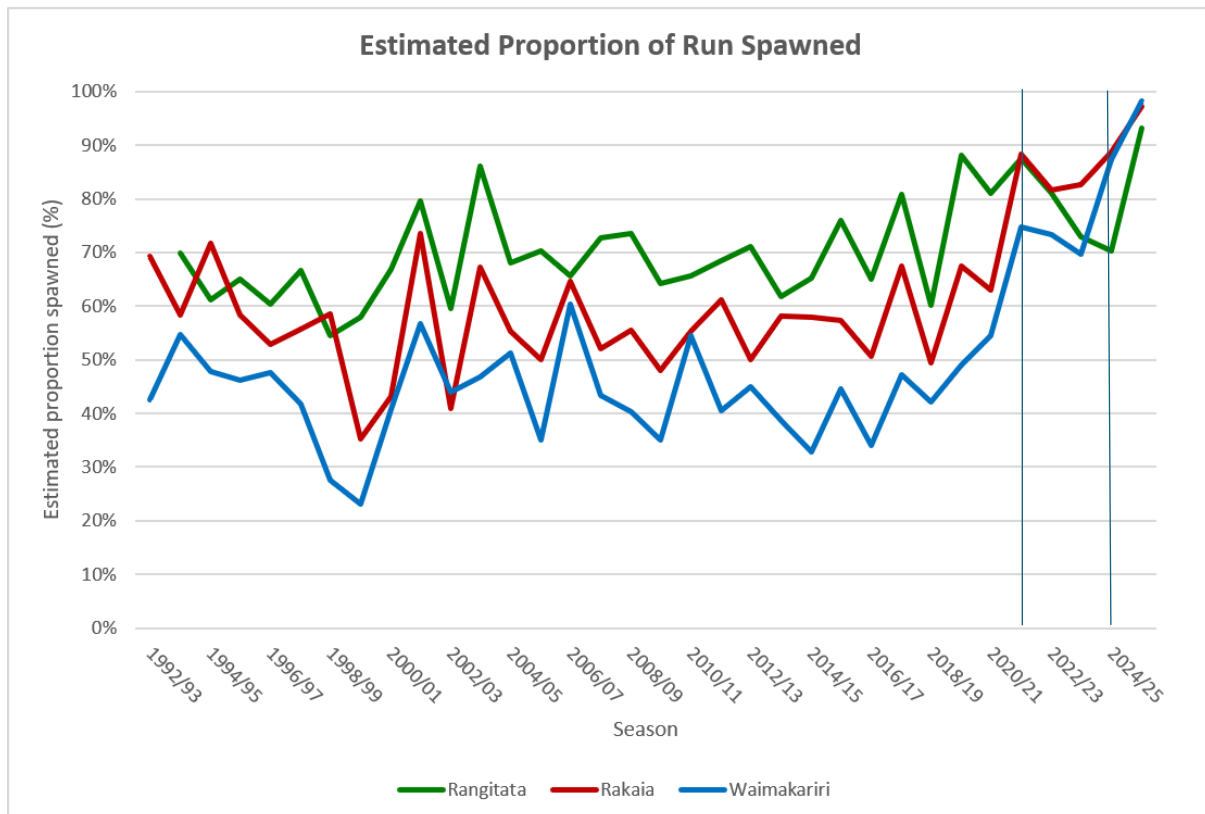


Figure 2. Proportion (%) of the returning runs of wild sea-run salmon that spawned in the Waimakariri (blue), Rakaia (red) and Rangitata (green) rivers for each season since 1993/94. The black vertical lines signify the introduction of the salmon season bag limit before the 2021/22 season and the reduction to one salmon season bag before the 2025/26 season.

5.0 Management Strategy Implications

Approximately three-quarters of all South Island sea-run salmon caught by anglers are caught in the Waimakariri, Rakaia and Rangitata rivers. Based on these rivers' contributions to the South Island East Coast salmon fishery, their shared population trends, and their on-going population monitoring programmes, in 2020 the CSIFG and NCFG Councils adopted a joint Threshold Management Strategy (Webb M, Terry S 2020) across the three rivers for setting salmon fishing regulations. The strategy aims to manage angler harvest to ensure adequate numbers of salmon spawn each season, to provide a healthy recreational sports fishery.

The strategy targets the spawning population size of wild salmon since it is from the spawning population in any season that the next generation of adult returns are generated. Annual spawning population monitoring results are also the earliest available measure of the salmon population. Using spawning population size as the guide for harvest management ensures decisions are made on the most up-to-date information.

The strategy identified four spawning population bands that would characterise the health of the spawning populations with the upper band being the level at which the fishery would be considered healthy and where minimum harvest conditions would apply. The second and third bands would be subject to increasing restrictions on harvest to help prevent the fishery falling

below the third band. The fourth band would have maximum harvest restrictions without closing the fishery and this level has been determined to be just below the sum of the lowest recorded spawning population sizes (at the time) in each of the rivers over the long-term monitoring record (Table 9).

Table 9. Threshold Management Strategy combined spawning population bands for the Waimakariri, Rakaia and Rangitata rivers and the season bag conditions triggered from these

Management band	Combined escapement	Season bag applied
Healthy	Greater than 7,800	10
Moderate	5,101 to 7,800	4
Low	1,200 to 5,100	2
Severe	Less than 1,200	1

The 2025/26 combined Waimakariri, Rakaia and Rangitata rivers salmon spawning count (combined escapement) was 1,469 salmon and positions the annual population into the ‘low’ band (Figure 3), while the fishery maintains a ‘severe population’ management status in terms of the season bag limit.

Because the spawning population was positioned in the severe band in the 2024/25 season , the management strategy requires that the season bag limit remains at one salmon until the population exceeds 1,200 spawning salmon, for three consecutive seasons before an increase in the bag limit is considered.

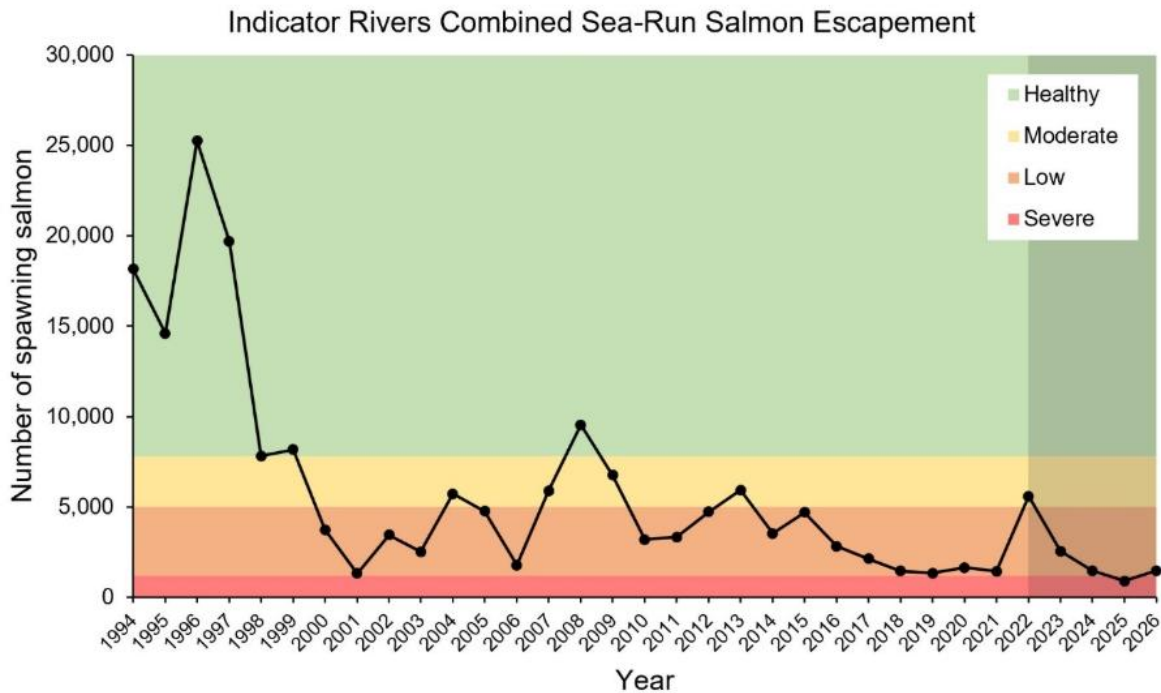


Figure 3. Combined estimated escapement across the three indicator rivers (Rakaia, Rangitata, Waimakariri) 1993-2026. Grey shaded area indicates years where season bag limit system has been in place.

5.1 Additional Severe Band Management Response

In response to the fishery entering the severe management band in 2024/25, Central South Island Fish and Game Council reviewed additional harvest management options and fishery closure thresholds available within the Threshold Management Strategy. This process resulted in the adoption of a temporary closure framework, whereby Central South Island sea-run salmon waters will close to salmon fishing if the Rangitata spawning population falls to 200 fish or fewer. The adoption of a closure trigger provides a further precautionary management response should spawning populations decline to critically low levels again in the future, as experienced in 2024/25 (80 fish). Additional restrictions such as season length or area closures were deferred pending further information around the efficacy of the one-fish season bag limit.

6.0 Central South Island Fisheries

Spawning counts on Central South Island's smaller rivers are undertaken where flows allow during the optimal survey months.

6.1 Waitaki River

Spawning: The Lower Waitaki River was surveyed aerially on the 7th of June 2026. A total of 54 redds were estimated in the Waitaki Catchment this season. This total estimate comprised of 21 redds in 37 side streams, 19 redds in four mainstem reaches, and 14 redds in the Hakataramea River (Harper 2026)

Harvest: An estimated 31 salmon were harvested by anglers on the Waitaki River in the 2025/26 season. No fin clipped salmon were reported.

6.2 Opihi River Catchment

Spawning: Key spawning sections of the Opihi river were undertaken on 28/05/2026 and 3/06/2026. One salmon redd was identified between River Road and Hanging Rock Bridge and seven salmon redds were identified above Raincliff Bridge.

The Opuha River was surveyed on the 28th of May. Two salmon redds and one dead salmon were identified in the lower half of the river. Spotting conditions were considered ok but became difficult in the lower section as the light was lost in the late afternoon.

Waihi & Temuka Rivers spawning counts were undertaken on 21/5/2026 and 2/6/2026. One salmon redd was identified on the Temuka River.

Harvest: The estimated harvest for the Opihi River in the 2025/26 season was 8 salmon. Season bag card returns did not identify any salmon harvested on the Waihi, Temuka and Opuha Rivers.

6.3 Orari River Catchment

Spawning: Three sections of the South Branch of the Ohapi River were surveyed on the 3/6/2026 and no salmon redds were identified.

Harvest: Season bag card returns did not identify any salmon harvested on the Orari River in the 2025/26 season.

6.4 Ashburton/Hakatere River

Spawning: In the 2026 spawning survey, no salmon redds were identified in the Māori Lakes outlet. Bowyers Stream was surveyed on 28 May and 3 redds and one dead salmon were recorded during the 2026 survey.

Harvest: Season bag card returns did not identify any salmon harvested in the Ashburton River for the 2025/26 season.

6.5 Lake Heron

Spawning: In addition to the live salmon surveys which inform Rakaia River spawning totals, a walking redd count was undertaken on 5 June 2026 and 68 salmon redds were identified. The observer noted that brown trout were just beginning to show up in the stream and that no fresh salmon appeared to be present which may indicate the survey was undertaken at the completion of the salmon run.

6.6 Rangitata River

Spawning: In addition to the aerial live salmon spawning surveys which inform the Rangitata River live spawning total, redd counts were undertaken on key upper Rangitata spring creeks. The results of these redd counts have not been used to make any inferences on the size of the sea-run salmon spawning population but are undertaken to maintain the historical monitoring record.

Deep Creek was surveyed on foot by staff and volunteers on 15/5/2026 and 23 salmon redds were observed.

Deep Stream was surveyed on foot by staff on 14/05/2026 and 24 salmon redds were observed. Black Mountain Stream, Brabazon Fan, Erewhon Stream and Potts Fan were surveyed on 10/6/2026 and 16 redds were observed (13, 0, 1 & 2 respectively).

7.0 McKinnons Creek Hatchery Supplementation

Since 2007, McKinnons Hatchery on the lower Rangitata has been annually releasing between 0 and 95,000, one-year old fin-clipped juvenile salmon to the Rangitata River. (Webb M 2023) The 2025/26 season was the 18th season where adult returning hatchery-origin fish have completed a lifecycle.

For the last seven seasons all hatchery-origin salmon released from McKinnons hatchery have been fin-clipped meaning that the proportion of hatchery-origin fish in the returning run can be determined by assessing returns of fin-clipped fish.

In the 2025/26 season, one McKinnon's-origin fin-clipped salmon was reported to have been caught by anglers in the Rangitata River and 14 fin-clipped salmon returned to the hatchery. Surveys on the upper Rangitata River spawning grounds did not find any fin-clipped salmon. Overall, 15 McKinnon's-origin salmon were observed to return in 25/2026, representing 6.28% of the 239 salmon that returned to the Rangitata River in the 2025/26 season (Table 10).

Table 10. Number of wild and hatchery origin salmon returning to the Rangitata, Orari and Opihi rivers that were caught by anglers, or spawned in those rivers, or returned to McKinnon's hatchery for the 2008/09 to 2025/26 seasons.

River	Season	Hatchery Origin				Wild Origin			
		Angler caught	Spawned in wild	Returned to hatchery	Hatchery Total	Angler caught	Spawned in wild	Returned to hatchery	Wild Total
Rangitata	08/09	240	39	650	929	994	2,714	0	3,708
	09/10	68	2	314	384	512	901	0	1,413
	10/11	240	33	774	1,047	483	905	31	1,419
	11/12	237	42	731	1,010	740	1,610	79	2,429
	12/13	68	61	408	537	1,215	3,042	42	4,299
	13/14	294	18	344	656	814	1,283	621	2,718
	14/15	161	24	64	249	978	1,666	346	2,990
	15/16	76	15	37	128	337	1,055	146	1,538
	16/17	30	7	28	65	293	498	42	833
	17/18	23	0	0	23	136	573	0	709
	18/19	60	0	18	78	268	403	0	671
	19/20	61	0	25	86	58	437	105	600
	20/21	15	0	11	26	93	397	11	501
	21/22	14	0	24	38	272	1,820	13	2,105
	22/23	31	-	72	103	130	552	33	715
	23/24	0	-	14	14	94	247	3	344
	24/25	1	-	9	10	9	78	15	102
	25/26	1	-	14	15	17	222	15	254

		Hatchery Origin					Wild Origin			
River	Season	Angler caught	Spawne d in wild	Returned to hatchery	Hatch Total		Angler caught	Spawned in wild	Returned to hatchery	Wild Total
Orari	08/09	28	72		100		27	48		75
	09/10	28	90		118		32	60		92
	10/11	70	62		132		23	41		64
	11/12	29	49		78		177	51		228
	12/13	13	24		37		94	176		270
	13/14	270	350		620		371	150		521
	14/15	20	4		24		86	12		98
	15/16	0	0		0		15	15		30
	16/17	4	7		11		22	40		62
	17/18	0	0		0		16	50		66
	18/19	0	0		0		5	35		40
	19/20	13	35		48		0	0		0
	20/21	0	0		0		5	30		35
	21/22	1	0		1		0	50		50
	22/23	1	0		1		1	25		26
	23/24	0	0		0					
	24/25	0	0		0					
Opihi	08/09	221	25		246		277	525		802
	09/10	137	30		167		197	670		867
	10/11	63	32		95		225	668		893
	11/12	104	27		131		252	573		825
	12/13	13	9		22		665	591		1256
	13/14	142	23		165		408	477		885
	14/15	10	30		40		28	70		98
	15/16	8	24		32		25	76		101
	16/17	12	2		14		15	148		163
	17/18	0	0		0		33	100		133
	18/19	2	4		6		35	71		106
	19/20	8	57		65		20	143		163
	20/21	5	28		33		13	72		85
	21/22	0	0		0		3	130		133
	22/23	10	80		90		28	220		248
	23/24	0	0		0					
	24/25	0	0		0					
	25/26	0	0		0		8			

The age composition of returning hatchery-origin salmon was determined from scale growth ring analysis of angler-caught and hatchery-trapped salmon for some season's returns since the 2008/09 season. In addition, the frequency with which certain sized (length) salmon occur in the hatchery returns can be used to identify age classes of salmon. Age class returns, and fin-clip rates are essential information for estimating overall return (survival) for each release of juvenile fish from McKinnon's hatchery (Table 11).

Table 11. Brood year, year of release, estimated age at return and overall return rate as a percentage of the total number of fin-clipped and non-fin-clipped juvenile salmon released from McKinnons hatchery. For cohorts yet to return the season of expected return is shown.

Brood year	Number released	Date of release	% fin-clipped	No. return 1 ⁺	No. return 2 ⁺	No. return 3 ⁺	Total return	Percent return
2006	55,000	July 07	100	0	1,253	183	1456	2.64
2007	72,000	July 08	100	22	390	89	544	0.75
2008	52,000	July 09	100	96	836	7	951	1.82
2009	65,000	July 10	100	349	1,072	8	1,429	2.20
2010	70,000	July 11	53.7	189	636	21	846	1.21
2011	95,000	July 12	47.4	36	1,400	5	1,441	1.51
2012	63,000	July 13	68.25	20	292	5	317	0.50
2013	64,000	June 14	50	5	140	5	150	0.23
2014	35,000	Jun 15	100	15	58	2	75	0.21
2015	65,000	June 16	60	27	21	42	100	0.15
2016	68,000	Jun/Jul 17	0	-	-	-	-	-
2017	55,000	July 18	37	42	200	3	245	0.45
2018	0	-	-	-	-	-	-	-
2019	7,500	July 20	100	8	35	5	48	0.64
2020	61,100	Jan/Jul 21	100	4	169	1	174	0.29
2021	5,000	Apr/Jul 22	100	20	12	0	33	0.66
2022	81,000	Feb/Jul 23	100	1	8	0	9	0.01
2023	58,350	Feb/Jul/Aug 2024	100	1	13	2026/27		
2024	75,000	Feb/April/Aug 2025	100	2	2026/27	2027/28		
2025	45,000	September 2026	100	2026/27	2027/28	2028/29		

To date there have been 16 hatchery releases that have run their full life cycle. The 2006 to 2022 broods have completed return out to 3⁺ (almost four years old) and produced a range of returns from 0.01% to 2.64% averaging 0.9%.

8.0 References and Acknowledgements .

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