

ISSN 1170-2001

NEW ZEALAND FRESHWATER FISHERIES MISCELLANEOUS REPORT NO. 92

TROUT IN THE MOHAKA RIVER

by

I.G. Jowett

Draft report to: Electricorp

Confidential to client

Freshwater Fisheries Centre

MAF Fisheries

PO Box 8324

CHRISTCHURCH

Servicing freshwater fisheries and aquaculture

**MAY
1991**

NEW ZEALAND FRESHWATER FISHERIES MISCELLANEOUS REPORTS

This report is one of a series initiated in January 1989, and issued by the Freshwater Fisheries Centre, MAF Fisheries. The series was established to ensure that reports prepared for clients, tribunal hearings, internal use, etc., are collected together and available to future users. They are for limited circulation, and some may be confidential.

ISBN 0-477-08436-2



MAF Fisheries is the fisheries business group of the New Zealand Ministry of Agriculture and Fisheries. The name MAF Fisheries was formalised on 1 November 1989 and replaces MAFFish, which was established on 1 April 1987. It combines the functions of the former Fisheries Research and Fisheries Management Divisions, and the fisheries functions of the former Economics Division of MAF.

Enquiries to: The Librarian
 Freshwater Fisheries Centre
 PO Box 8324
 Riccarton, Christchurch
 New Zealand

CONTENTS

- 1 Trout numbers in the Mohaka River and comparison with other New Zealand rivers
- 2 Impact of a hydroelectric reservoir on trout species and abundance in the Mohaka River.

TABLES

- 1 Mohaka River trout survey results
- 2 Ranking of Mohaka trout stocks within a set of 153 reaches
- 3 Comparison of ranking of the Mohaka River with the ranking of other important rivers within a set of 153 reaches

FIGURES

- 1 Mohaka River - drift diving locations
- 2 Estimated biomass of brown and rainbow trout at 153 drift-diving survey reaches in New Zealand - trout biomass in g/m^2
- 3 Estimated biomass of brown and rainbow trout at 153 drift-diving survey reaches in New Zealand - trout biomass in kg/km
- 4 Estimated biomass of brown trout at 153 drift-diving survey reaches in New Zealand - trout biomass in g/m^2
- 5 Estimated biomass of brown trout at 153 drift-diving survey reaches in New Zealand - trout biomass in kg/km
- 6 Estimated biomass of rainbow trout at 153 drift-diving survey reaches in New Zealand - trout biomass in g/m^2
- 7 Estimated biomass of rainbow trout at 153 drift-diving survey reaches in New Zealand - trout biomass in kg/km

APPENDICES

- 1 Trout survey results - brown and rainbow trout - sorted in order of trout biomass in g/m^2
- 2 Trout survey results - brown and rainbow trout - sorted in order of trout biomass in kg/km

- 3 Trout survey results - rainbow trout - sorted in order of trout biomass in g/m^2
- 4 Trout survey results - rainbow trout - sorted in order of trout biomass in kg/km
- 5 Trout survey results - brown trout - sorted in order of trout biomass in g/m^2
- 6 Trout survey results - brown trout - sorted in order of trout biomass in kg/km

1 TROUT NUMBERS IN THE MOHAKA RIVER AND COMPARISON WITH OTHER NEW ZEALAND RIVERS

DRIFT DIVING

Over the past 6 years a team from the Ministry of Agriculture and Fisheries has surveyed trout stocks in a large number of New Zealand rivers. The method used was drift diving. Drift diving involves a number of divers, the number depending on river width and water clarity, swimming downstream in line across the river and counting all trout they see. The accuracy of this method of survey depends upon underwater visibility and the ability of the divers to search for hidden trout and to act as a team. Experienced drift divers were used and consistent techniques were employed throughout so that results would be comparable. Over the project, the team drifted down over 200 km of river and counted over 30 000 trout.

Minimum underwater visibility was considered to be 3 m for slower flowing waters containing only brown trout and 4 m for swifter rivers or those containing rainbow trout. Trout were identified as either brown or rainbow trout and assigned to one of three size classes: small 10-20 cm, medium 20-40 cm, and large >40 cm. In order to compare rivers with different numbers of different sized fish, counts were converted into a measure of relative biomass by assuming an average weight for each trout in a size class. The average weight of large brown and rainbow trout was taken as 1.16 kg, medium brown 310 g, medium rainbow 343 g, small brown 40 g, and small rainbow trout 43 g. The total weight of fish in the reach was then divided by the reach length, giving the "quantity" of fish in the reach in kg/km. This measure is dependent upon river size, with larger rivers tending to contain more fish because of their larger area. A second measure of "quality" was calculated by dividing the weight of fish per kilometre by the river width and converting to units of g/m².

Some reaches were repeat drift-dived to determine the variation between counts and levels of uncertainty. Repeat dives were made on eight occasions with a range of different conditions, channel types, and visibilities. The mean coefficient of variation between counts was 7% for total numbers and varied from 2.4% to 10.8%. Variation in the numbers of large trout was generally less at 4%. Comparison of counts suggested that errors in species and size classification were more common in the two smaller size classes. However, the effect of these errors is minimised if comparisons are made on the basis of trout weight. Year to year variation in relative trout abundance was assessed by comparing the counts in 36 reaches which had been surveyed more than once over six years. Although some reaches showed a large variation in abundance in consecutive summers, about half showed less than 30% change from one year to the other. Where larger changes had occurred the differences could often be attributed to changes in instream habitat, floods or to differences in underwater visibility.

MOHAKA RIVER TROUT SURVEYS

Five reaches of the Mohaka River have been drift dived. The furthest upstream reach, at the "Poronui" station, was surveyed twice, on 15 February 1989 and on 8 February 1990.

This reach was 650 m long with an average width of 16 m. Just downstream from here, above the "Taharua Stream", a short 350 m reach was also dived on 15 February. This reach has not been included in the summaries because of its short length. The 2.25 km reach above the "Otupua Stream" was surveyed on 2 April 1985. Four divers were used and the average river width was 23 metres. The second reach above the "S.H.5 bridge", 1.65 km long with an average width of 40 metres, was surveyed twice, once in 1986 and again in 1988. The second survey was arranged because it was felt that underwater visibility during 1986 dive (5.0 m) was poor for the number of divers (6). The second dive was in better visibility with an additional diver. The third reach below "Glenfalls reserve", 6.5 km long, was surveyed on 25 January 1991. Six divers were used and the visibility (5.4 m) was described as marginal. The location of these reaches is shown on Figure 1.

The "Otupua Stream" reach contained very high numbers of brown trout and only two rainbow trout were seen (Table 1). This survey was carried out in April and it is possible that the high numbers of brown trout were a result of a spawning aggregation. Brown trout have been known to spawn in April and some, although probably not extensive, spawning movement is possible. Lower numbers recorded at "Poronui" tend to confirm this view, although the short reach above the Taharua Stream also contained relatively high numbers of brown trout, even allowing for possible errors in the estimation of reach length. Ideally, summer surveys of longer reaches in the headwaters are required to confirm trout numbers in the headwaters.

Further downstream near S.H.5, low numbers of rainbow trout were seen on the first survey in the "S.H.5 bridge" reach. We attributed this to the poor visibility which, because of the behaviour of rainbow trout, makes it more difficult to see and count rainbow trout than brown trout. On the second survey much higher numbers of rainbow trout were seen and their numbers approached that of brown trout. Densities and species composition of brown and rainbow trout in the "Glenfalls reserve" reach were similar to those in the "S.H.5 bridge" reach (Table 1). The fact that the species composition (brown to rainbow trout numbers) was similar to that observed in good visibility at "S.H.5 bridge" suggests that the count was not severely influenced by poor or marginal visibility.

TABLE 1. Mohaka River - trout survey results.

Section	Brown trout			Rainbow trout			Biomass	
	large	medium	small	large	medium	small	g/m ²	kg/km
Poronui (1)	36.9	3.0	3.0	3.0	0.0	0.0	2.96	47.4
Poronui (2)	52.3	7.6	0.0	0.0	0.0	0.0	3.94	63.0
Taharua Stream	91.4	5.7	8.5	8.5	0.0	0.0	7.39	118.1
Otupua Stream	76.9	36.9	58.2	0.9	0.0	0.0	4.52	103.9
S.H.5 bridge (1)	9.1	4.8	4.8	1.8	2.4	0.0	0.39	15.6
S.H.5 bridge (2)	11.5	21.2	23.0	9.7	10.9	22.4	0.92	36.8
Glenfalls reserve	16.8	11.8	8.2	9.2	19.1	9.4	1.03	41.1

COMPARISON WITH OTHER RIVERS - NATIONAL SIGNIFICANCE

Trout stocks can be compared between rivers on the basis of numbers per unit river length or numbers per unit of water surface area.

If trout stocks are expressed per unit river length, larger rivers such as the Clutha are given more weight. This tends to be a measure of "quantity". Rivers can also be compared on the basis of trout density, or stock per unit water surface area. This tends to be a measure of the "quality" of the waters. Surveys in the Mohaka were compared with other river surveys, where reach lengths were greater than 500 m and underwater visibility exceeded 3.0 m (see appendix for full list of results). Table 2 ranks the Mohaka River according to the measures of "quality" and "quantity".

TABLE 2. Ranking of Mohaka trout stocks within a set of 153 reaches.

Reach	Trout species		
	rainbow	brown	brown and rainbow
Poronui			
"quality" (gm/m ²)	48	10	13
"quantity" (kg/km)	55	19	24
Otupua Stream			
"quality" (gm/m ²)	67	7	10
"quantity" (kg/km)	63	8	10
S.H.5 bridge			
"quality" (gm/m ²)	37	79	74
"quantity" (kg/km)	29	65	49
Glenfalls reserve			
"quality" (gm/m ²)	34	74	69
"quantity" (kg/km)	24	54	41

The data are plotted on Figures 2 to 7 to show the magnitude and position of the trout stocks in the surveyed Mohaka River reaches relative to other reaches in New Zealand. Table 2 and Figures 6 and 7 show that the headwaters of the Mohaka River are close to one of the "top ten" brown trout rivers in our database. However, further downstream at "S.H.5 bridge" and "Glenfalls reserve", the river is only about or slightly above average. If only rainbow trout are considered the "S.H. 5 bridge" and "Glenfalls reserve" reaches are about

or slightly above average in the group of 73 reaches which contained rainbow trout. If the combined brown and rainbow trout stocks are considered, the two lower reaches are about average on the basis of "quality" (g/m^2) but, because of the size of the Mohaka River relative to other rivers in the dataset, it falls in the top 20% to 25% of the rivers in terms of "quantity" (kg/km).

The headwater reaches of the Mohaka River contain brown trout in outstanding numbers and density (top 10%). The total numbers of brown and rainbow trout in the reaches around Glenfalls are high (top 20-25%) but not outstanding and the density is close to average.

Trout numbers and densities in the Mohaka River can also be compared with reaches in the Motueka, Wanganui (at Kakahi), Mataura, Grey, and Ahuriri Rivers. All these rivers, except the Wanganui, have been the subject of conservation orders. Table 3 indicates the outstanding nature of the Mohaka River headwaters. It also suggests that the other rivers with conservation orders were selected on the basis of numbers rather than density.

TABLE 3. Comparison of ranking of the Mohaka River with the ranking of other important rivers within a set of 153 reaches.

River	Ranking of density (g/m^2)	Ranking of numbers (kg/km)
Mohaka "Poronui"	13	24
Mohaka "Otupua Stream"	10	10
Mohaka "S.H.5 bridge"	74	49
Mohaka "Glenfalls reserve"	69	41
Motueka	16	6
Wanganui (at Kakahi)	54	31
Mataura*	80	82
Grey	51	13
Ahuriri	85	53

* possibly not representative because of the reach selected and visibility.

REGIONAL SIGNIFICANCE

When the density of brown and rainbow trout (g/m^2) was compared with other rivers in the region, the Tauranga-Taupo was the only nearby river with higher densities than the Mohaka headwaters reaches. However, the Rangitaiki, Tongariro, Rangitikei (four reaches), Taruarau, and Ngaruroro Rivers all had higher densities than were recorded at either at the S.H.5 bridge Glenfalls reserve reaches. Making the same comparison on the basis of "quantity" (kg/km), total trout numbers in the Tongariro River exceeded those in the "Otupua Stream" reach and numbers in the Tauranga-Taupo and Rangitaiki exceeded those in the "Poronui" reach. Two reaches in the Rangitikei exceeded those in the S.H.5 bridge and Glenfalls reserve reaches.

Trout numbers and densities in the Mohaka River exceeded those in various reaches of the Rangitikei, Taruarau, Ngaruroro, Esk, Tutaekuri, and Tukituki.

2. IMPACT OF HYDROELECTRIC RESERVOIRS ON TROUT STOCKS IN THE MOHAKA RIVER

As shown in the earlier section, the headwaters of the Mohaka River contain mainly brown trout in very high densities, whereas further downstream around Glenfall the river contains moderate numbers of both brown and rainbow trout. Recent research (Jowett 1990) studied trout stocks in a large number of rivers and identified characteristics of the rivers which were related to the distribution and abundance of brown and rainbow trout. He found that factors such as minimum annual water temperature, percentage of volcanic ash in the catchment, and flow variability discriminated between rivers with brown trout only and those containing rainbow trout. Factors such as the area of lake upstream, stream gradient, and instream habitat were related to trout abundance. Jowett (1990) related stable flows, such as from volcanic ash catchments, to the presence of rainbow trout, and, by examining the rivers which were incorrectly classified by his discriminant model, concluded that the presence of downstream lakes, or lakes elsewhere in the river system was an important indicator of rainbow trout presence. This can be explained by comparing the behaviour of brown and rainbow trout. Rainbow trout tend to live in faster more open water than brown trout and also show little tendency to take cover like brown trout, preferring to "flee" instead. As a result it is likely that rainbow trout are more easily displaced during floods than brown trout, as was observed after the South Canterbury/Otago floods in March 1986. Any lake or large low gradient river downstream provides a refuge for displaced fish and prevents them from being carried to the sea.

I believe that the construction of a hydroelectric reservoir in the Mohaka River below Glenfalls would enhance rainbow trout stocks in the river because it would limit the degree of displacement during floods. Rainbow trout are often associated with lakes, spending a large part of their life in the lake and migrating into rivers or streams to spawn. Lake Taupo and the Rotorua Lakes are prime examples of this type of behaviour, but it also occurs in lakes such as Lakes Rotoroa, Benmore, Aviemore, and Whakatipu in the South Island. There is no evidence that a hydroelectric reservoir would have any influence, either beneficial or detrimental, on brown trout stocks in sections of the river upstream of the reservoir.

Fish stocks downstream of the Te Hoe confluence were not surveyed because underwater visibility was unsuitable. However, examination of the available habitat, which is, to a large degree, governed by the papa rock, would suggest that trout stocks are not high. Other Hawkes Bay rivers show a tendency for trout stocks to be lower in their downstream reaches.

REFERENCES

- Jowett, I.G. 1990. Factors related to the distribution of brown and rainbow trout in New Zealand clear-water rivers. *New Zealand Journal of Marine and Freshwater Research* 24: 429-440.

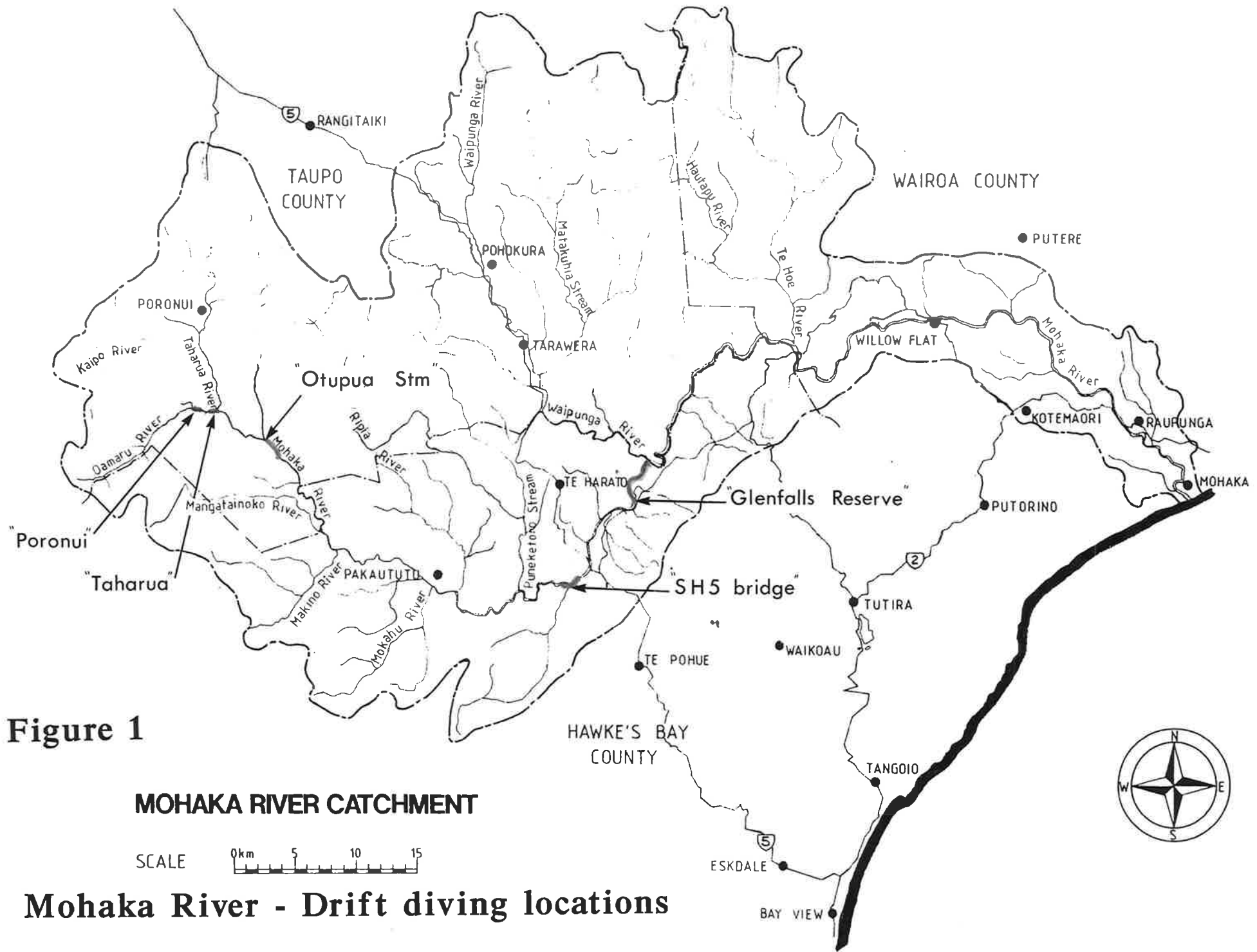
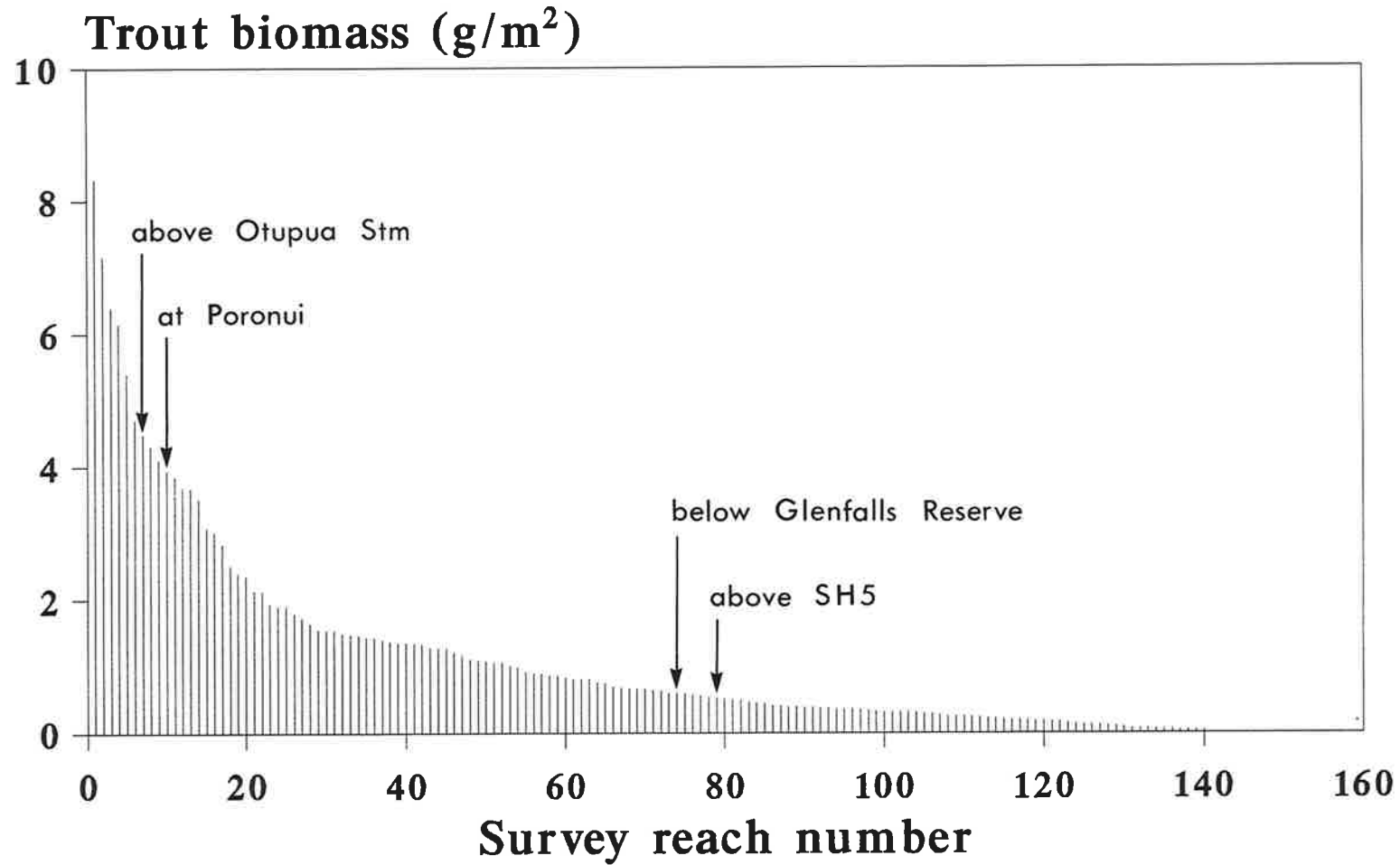


Figure 1

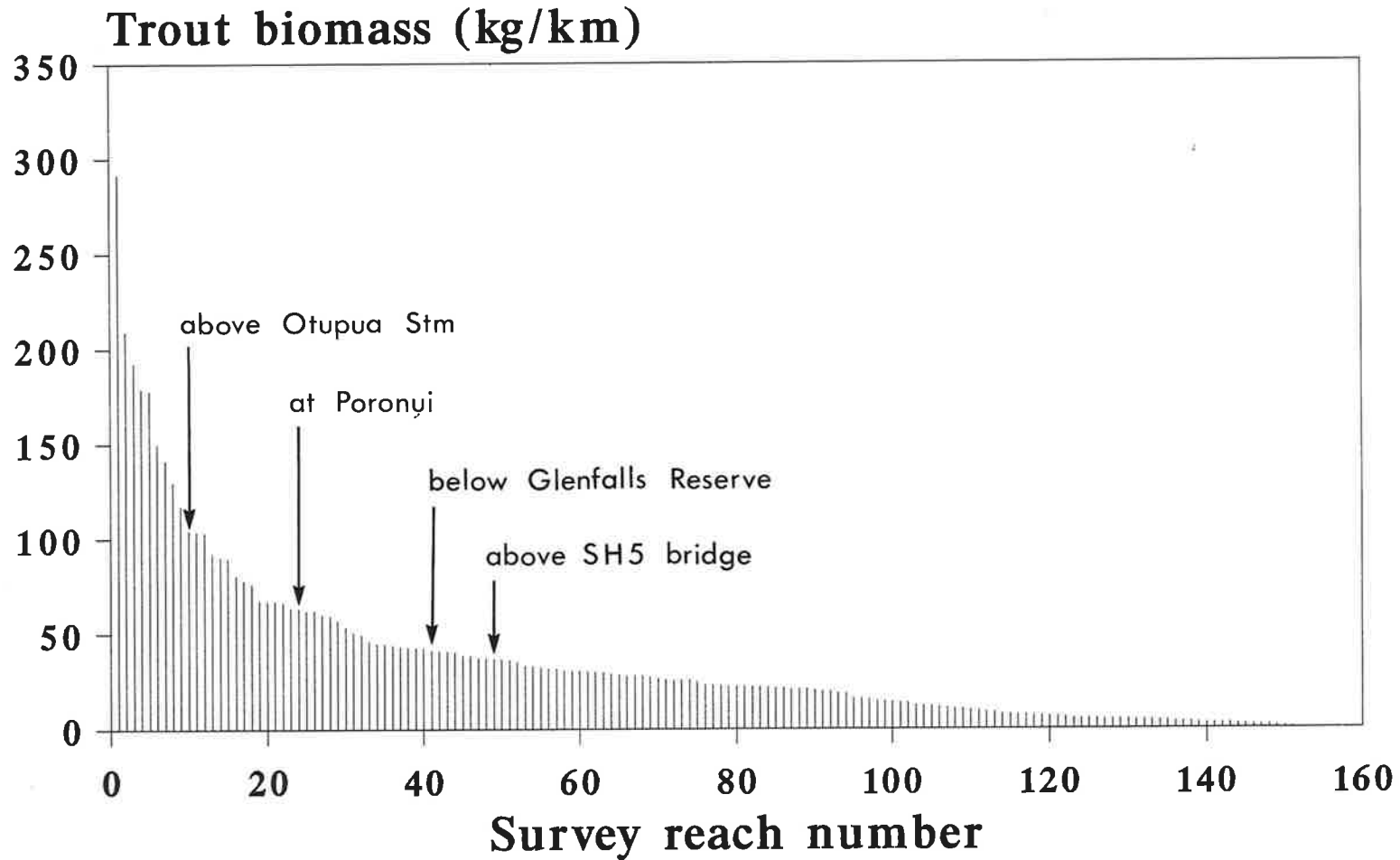
MOHAKA RIVER CATCHMENT

Mohaka River - Drift diving locations

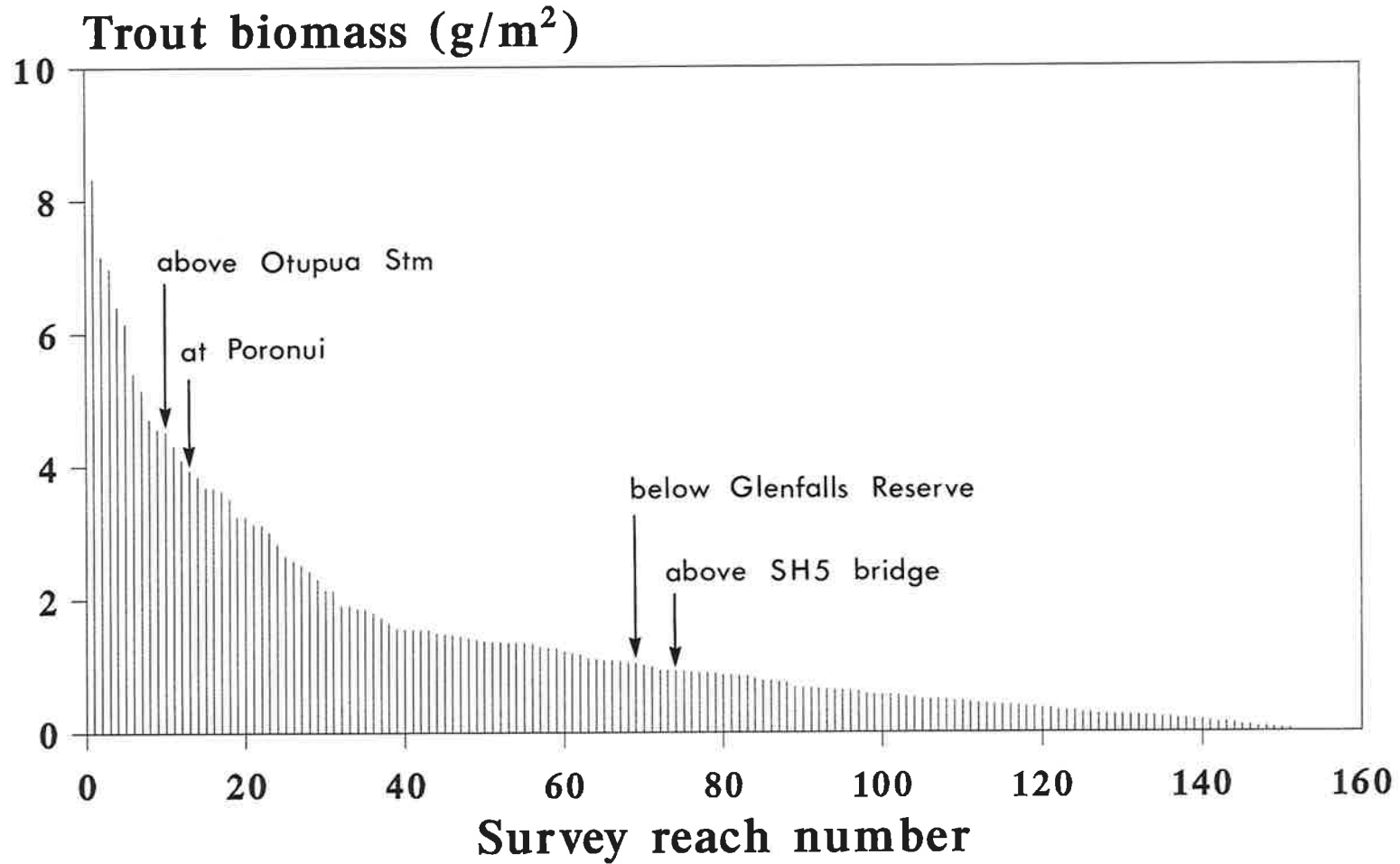
Estimated biomass of brown trout at 153 drift-diving survey reaches in New Zealand



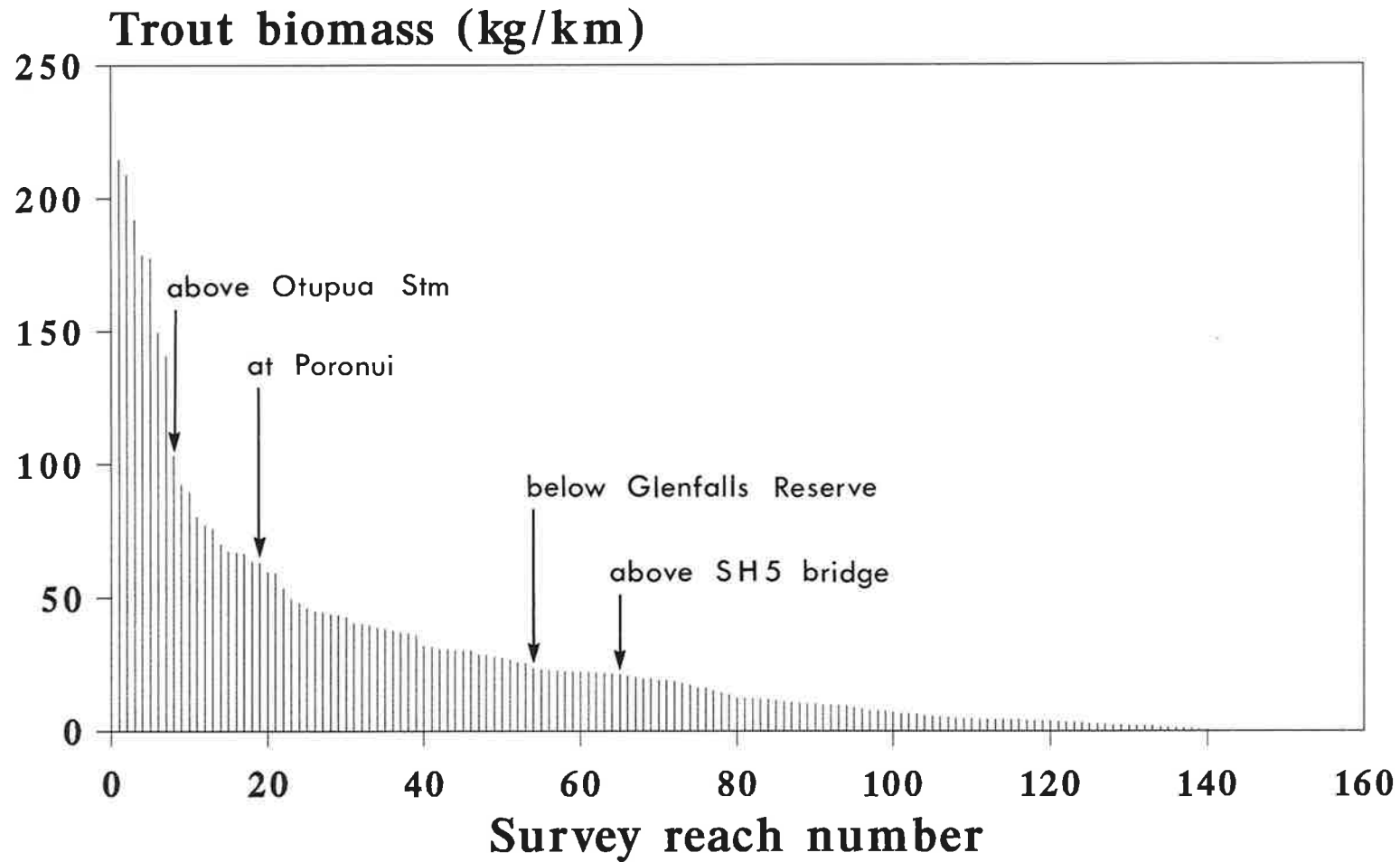
Estimated biomass of brown and rainbow trout in 153 drift-diving survey reaches in New Zealand



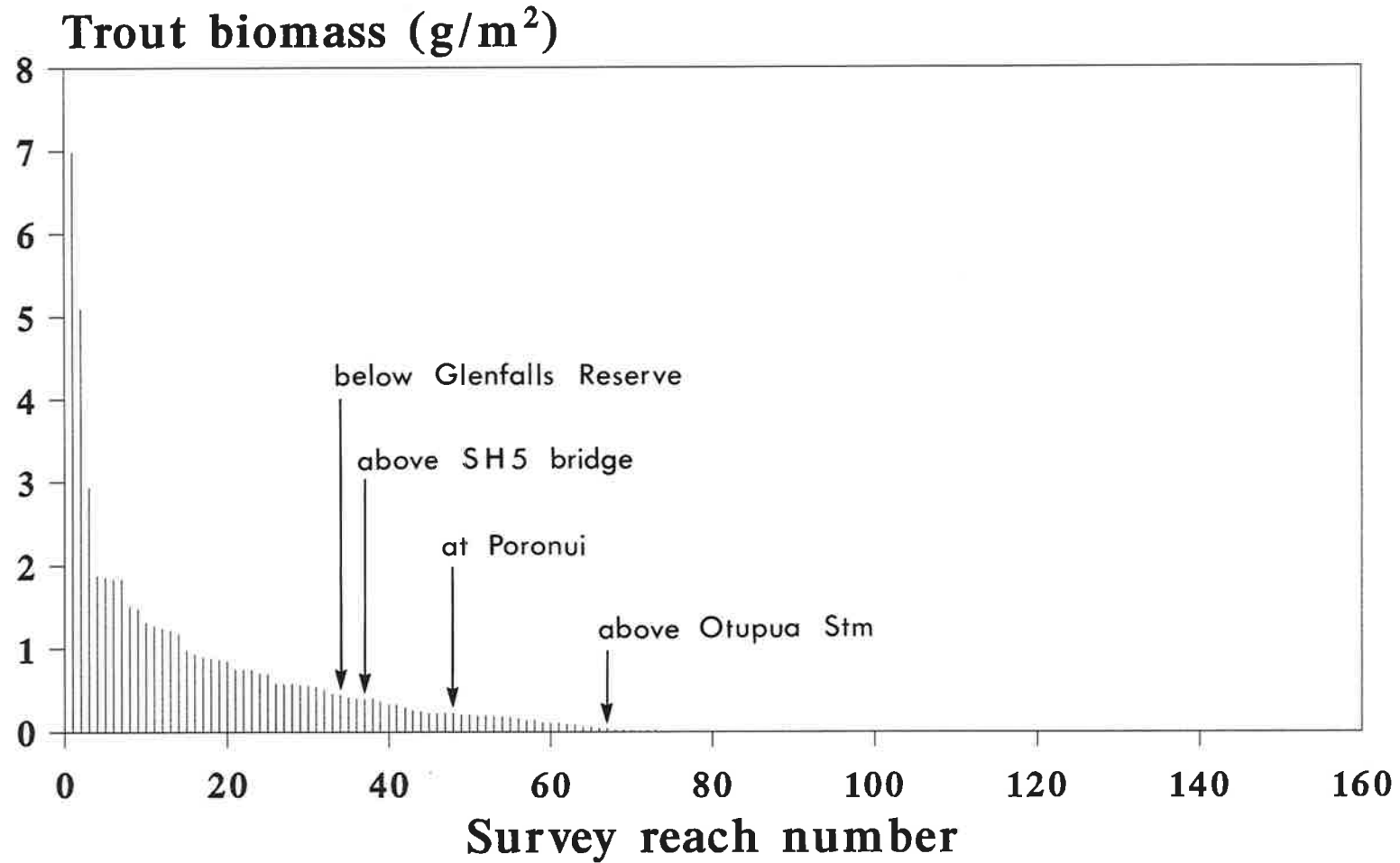
Estimated biomass of brown and rainbow trout in 153 drift-diving survey reaches in New Zealand



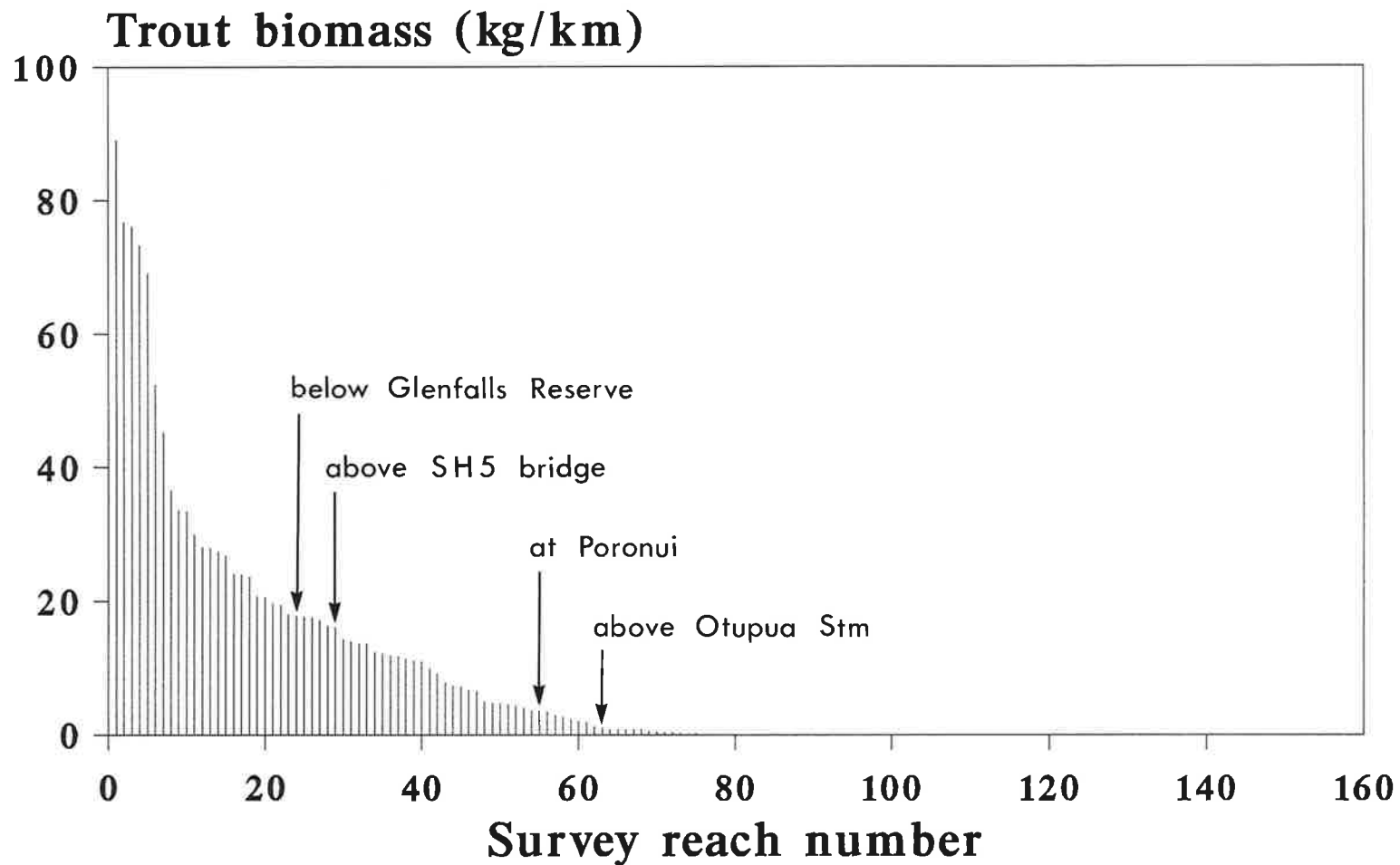
Estimated biomass of brown trout in 153 drift-diving survey reaches in New Zealand



**Estimated biomass of rainbow trout
in 153 drift-diving survey reaches
in New Zealand**



Estimated biomass of rainbow trout in 153 drift-diving survey reaches in New Zealand



Trout Survey Results - Brown and rainbow trout sorted in order of biomass in g/m²
(May-October excluded)
(Surveys with reach lengths <500 or visibility < 3 metres excluded)

River and access	Reach Leng. (m)	Width (m)	Vis. (m)	Biomass kg/km	Biomass g/m ²
1 Gowan River below outlet	1800	25.1	12.2	208.8	8.32
2 Riwaka River at Moss Bush	1750	12.5	9.2	89.5	7.16
3 Waihou River at Whites Road	2400	10.9	6.7	76.1	6.98
4 Gowan River at Lake Outlet	800	30.0	8.5	192.4	6.41
5 Shag River at Dunbach	1600	6.6	6.3	40.6	6.15
6 Hurunui River below Lake Sumner	1600	33.1	6.5	178.6	5.40
7 Tauranga-Taupo River at Pump Pool	1800	17.5	5.4	90.1	5.15
8 Haupiri River d/s of Lake	1400	30.0	8.0	140.9	4.70
9 Rai River above falls	1000	22.8	5.0	103.8	4.55
10 Mohaka River above Otupua Stm	2250	23.0	3.9	104.0	4.52
11 Arnold River at Kotuku	1400	41.2	4.0	177.5	4.31
12 Mangles River at Gorge	850	16.4	5.1	67.2	4.10
13 Mohaka River at Poronui	650	16.0	8.8	63.1	3.94
14 Spring Creek at Odwyers Road	3100	9.6	7.0	36.9	3.84
15 Hutt River below Akatarawa Forks	1450	21.8	4.0	80.3	3.68
16 Motueka River at Woodstock	2040	40.8	7.2	149.6	3.67
17 Tekapo River below Pukaki confluence	1440	18.5	5.9	67.0	3.62
18 Riwaka River at Moss Bush	1270	12.5	3.0	43.8	3.51
19 Tekapo River below Maryburn	1300	40.0	5.0	129.6	3.24
20 Clutha River at Lake Wanaka outlet	3200	90.0	5.0	291.5	3.24
21 Rangitaiki River above Murapara	1300	25.0	4.7	78.1	3.13
22 Tongariro River at Turangi	1900	37.7	4.9	117.1	3.11
23 Spring Creek at Spring Creek	2500	10.0	5.0	30.1	3.01
24 Waingongoro River at Eltham	1540	7.9	5.4	22.2	2.82
25 Rangitikei River at Mangaohane Gorge	1600	16.0	5.0	42.5	2.65
26 Tekapo River at Willows	1000	40.0	5.0	103.2	2.58
27 Selwyn River at Coes Ford	1000	12.0	8.0	30.2	2.51
28 Hakataramea River at SH Bridge	1450	13.0	9.5	31.5	2.42
29 Mararoa River above w.l. recorder	2000	26.9	7.0	61.8	2.30
30 Taruarau River headwaters	1300	15.0	4.4	32.1	2.14
31 Aparima River above Otautau	2400	30.0	12.4	63.5	2.12
32 Waitaki River 20 cumec channel	1750	28.2	7.0	53.2	1.89
33 Rangitikei River headwaters A	1600	30.0	17.5	56.8	1.89
34 Tarawera River at lake outlet	1100	20.0	7.4	37.2	1.86
35 Waimakariri River at SH 5 Bridge	1600	11.2	3.5	20.7	1.85
36 Hurunui River below Lake Sumner (reach a)	4700	33.1	6.0	59.3	1.79
37 Kakanui River at Pringles	1140	22.3	7.3	38.3	1.72
38 Karamea River above Crow Hut	2050	30.0	12.6	49.3	1.64
39 Taruarau River headwaters	1000	14.0	9.0	21.9	1.56
40 Buller River above Hope Junction	1865	25.0	7.1	38.7	1.55
41 Tekapo River above steel bridge	1100	40.0	5.0	61.8	1.54
42 Mokihinui River (South Branch)	1950	30.0	12.0	45.9	1.53
43 Akatarawa River at West Akatarawa Road	1500	13.2	6.7	20.2	1.53
44 Maruia River at Paenga	1400	40.0	7.2	59.7	1.49
45 Patea River at King Edward Park	950	9.6	3.0	14.1	1.47
46 Baton River above concrete ford	2000	18.2	4.5	26.5	1.46

47 Mokihiui River (North Branch)	2050	25.0	10.8	36.0	1.44
48 Pelorus River at Maungatapu Road	1300	30.3	8.8	42.9	1.41
49 Arnold River at Kokiri	1200	48.0	4.5	66.8	1.39
50 Kakanui River at Pringles	1140	22.3	6.5	30.7	1.37
51 Grey River at Waipuna	1350	68.6	9.5	92.4	1.35
52 Selwyn River at Whitecliffs	1200	14.3	3.6	19.4	1.35
53 Wairoa River at Gorge	1300	21.4	10.0	28.7	1.34
54 Wanganui River at Kakahi	1700	37.9	4.9	50.7	1.34
55 Rangitikei River at Springvale A	1670	26.5	10.0	35.2	1.33
56 Karamea River above bend	1850	50.0	14.0	66.4	1.33
57 Buller River below Lake Rotoiti	1500	20.0	6.8	25.5	1.28
58 Hutt River at Whakatiki Street	840	20.0	9.6	25.4	1.27
59 Ngaruroro River Ngawapurua	1100	20.0	8.7	25.3	1.26
60 Oreti River above Mossburn	1825	30.2	5.0	36.5	1.21
61 Tarawera River below falls	1600	10.0	6.8	11.8	1.18
62 Inangahua River at Blacks Point	1800	18.5	6.4	21.4	1.16
63 Moawhango River at Moawhango	1700	13.7	3.1	15.1	1.10
64 Manuherikia River at Ophir	1250	25.0	3.0	27.3	1.09
65 Wanganui River at SH 47	1700	4.5	10.5	4.9	1.08
66 Irthing Stream at recorder	1100	21.0	8.6	22.6	1.08
67 Hutt River at Silverstream cut	610	40.0	4.0	42.6	1.06
68 Rangitikei River at Mangaohane A	1890	32.0	3.5	32.9	1.03
69 Mohaka River below Glenfalls reserve	6500	40.0	5.4	41.1	1.03
70 Ahaura River above Haupiri confluence	1970	40.0	19.0	40.5	1.01
71 Tekapo River below Forks River	700	15.0	3.0	14.7	0.98
72 Rangitikei River headwaters B	1600	32.0	14.8	29.8	0.93
73 Rangitikei River at Mangaohane A	1280	32.0	6.0	29.7	0.93
74 Mohaka River at SH5 bridge	1650	40.0	7.5	36.8	0.92
75 Taruarau River at Taihape Road	1400	12.0	10.2	10.9	0.91
76 Rangitikei River at Mangaohane B	1510	31.0	5.0	27.8	0.90
77 Rangitikei River at Mangaohane B	1750	31.0	3.5	27.7	0.89
78 Mokihiui River at cableway	2100	45.0	5.4	40.1	0.89
79 Mangatainoka River at Tui Brewery	1500	26.0	4.5	22.8	0.88
80 Mataura River at Nokomai	950	25.5	3.0	22.0	0.86
81 Opihi River at SH1 Bridge	1300	24.2	10.2	20.8	0.86
82 Tekapo River above Grays River	1000	25.0	5.0	21.3	0.85
83 Rangitikei River at Pukeokahu	1100	34.0	3.5	28.5	0.84
84 Hautapu River at Abattoir Road	1600	13.0	4.6	10.3	0.80
85 Ahuriri River at SH Bridge	1100	43.0	4.0	33.2	0.77
86 Waitaki River 30 cumec channel	2630	55.0	7.0	42.4	0.77
87 Inangahua River at Landing	1250	60.0	5.1	44.8	0.75
88 Ruamahanga River at Wardells	1270	30.1	5.5	22.2	0.74
89 Hurunui River at Lake Taylor (reach b)	3300	28.0	5.0	18.7	0.67
90 Waitaki River 5 cumec channel	1500	18.6	5.0	12.3	0.66
91 Otaki River at Swingbridge	1335	24.2	12.0	15.9	0.66
92 Waikaia River at Piano Flat	1050	30.0	8.6	19.5	0.65
93 Karamea River at Arapito	1400	70.0	5.3	44.5	0.64
94 Stony River at Okato	1150	11.8	13.0	7.5	0.63
95 Aorere River at Devils Boots	2100	50.0	5.5	31.5	0.63
96 Ngaruroro River at Whanawhana	1500	23.0	6.0	14.4	0.62
97 Manganuioteao River Training pool	1200	50.0	3.0	30.4	0.61
98 Waiwakaiho River at SH 3	1000	16.5	4.2	9.3	0.57
99 Takaka River at Harwoods	1400	18.4	4.9	10.4	0.56
100 Manganuioteao River Hoihenga Bridge	4000	50.0	3.0	27.8	0.56
101 Rangitikei River at Springvale B	2010	40.0	3.5	22.3	0.56

102	Waipapa River at recorder	1050	25.0	4.6	13.7	0.55
103	Manganuioteao River Mangamingi	2300	50.0	3.5	25.8	0.52
104	Whakatiki River at Bulls Run Road	1060	9.5	4.1	4.9	0.51
105	Manganuioteao River Possum Ridge	4900	50.0	3.5	24.7	0.49
106	Rangitikei River headwaters C	1000	15.0	10.0	7.3	0.49
107	Kaupokonui River at Skeet Road	900	10.5	6.2	5.1	0.49
108	Hurunui River at Lake Taylor (reach c)	2800	28.0	5.0	13.7	0.49
109	Waingawa River at Water level recorder	1600	16.3	6.3	7.5	0.46
110	Waitaki River 15 cumec channel	850	25.4	5.9	11.7	0.46
111	Manganui River at Croyden Road	1100	14.7	5.7	6.4	0.44
112	Ngaruroro River at Kuripapango	2900	20.1	9.0	8.7	0.43
113	Manganuioteao River Ram paddock	2200	50.0	3.0	20.8	0.42
114	Mangahao River at Ballance Bridge	1400	27.1	4.8	11.1	0.41
115	Waitaki River 10 cumec channel	2350	21.3	5.2	8.6	0.40
116	Waipawa River at Fletchers Crossing	1340	15.0	6.8	6.0	0.40
117	Waimana River at Gorge	1200	25.0	3.6	9.6	0.39
118	Makaroro River at Makaroro Road	2100	12.0	3.3	4.4	0.37
119	Manganuioteao River Olivers Swing Br.	1700	50.0	3.0	18.6	0.37
120	Ohau River at Gladstone Road	1910	17.5	14.8	6.4	0.36
121	Esk River at Eskdale Park	1400	14.4	4.0	5.1	0.36
122	Manganuioteao River Mangaturuturu	8200	50.0	3.0	16.2	0.32
123	Pohangina River at Raumai	2250	22.6	4.6	7.0	0.31
124	Takaka River at Kotinga Bridge	1990	70.0	9.5	21.8	0.31
125	Tauherenikau River at Recorder	928	14.3	11.6	4.1	0.29
126	Waimana River at Olgivies Bridge	1300	18.4	5.3	5.4	0.29
127	Otematata River at Pumphouse	1800	19.8	5.5	5.2	0.26
128	Tongariro River at Waipakahi Confluence	1300	28.0	6.5	7.3	0.26
129	Patea River above Stratford water intake	1920	5.0	4.1	1.2	0.25
130	Kakanui River (upper)	1560	9.0	5.0	2.2	0.25
131	Whakapapa River at Intake	6500	20.0	3.0	4.9	0.24
132	Orari River at Gorge	1400	14.0	11.0	3.4	0.24
133	Maerewhenua River at Kellys Gully	1350	11.0	10.6	2.5	0.23
134	Taramakau River at Kumara	4000	100.0	4.2	23.0	0.23
135	Waioeka River at Gorge	1500	30.0	9.0	6.7	0.22
136	Tutaekuri River at Puketapu Bridge	1700	20.4	4.0	4.5	0.22
137	Waikanae River at Water treatment plant	1400	25.0	7.7	4.6	0.19
138	Mangorewa River at Water level recorder	2000	12.0	12.6	2.3	0.19
139	Pomahaka River at Hukarere	1300	15.0	9.0	2.6	0.17
140	Ruamahanga River at SH 2 Bridge	2200	22.0	9.0	3.7	0.17
141	Ahuriri River at Thomas's	1200	31.1	6.0	4.7	0.15
142	Whakapapa River at Whakapapanui	3700	20.0	4.0	2.9	0.14
143	Taipo River at Gorge	3000	29.3	12.4	4.2	0.14
144	Opihi River at Rockwood Bridge	1280	14.5	4.4	1.8	0.12
145	Waimakariri River at groyne 0	4500	30.0	5.0	2.6	0.09
146	Kaueranga River at Water level recorder	1200	22.8	5.4	1.9	0.08
147	Waiohine River at Gauge	2060	38.3	11.6	2.6	0.07
148	Hutt River at Taita Rock	500	50.0	3.0	3.6	0.07
149	Ahuriri River (upper) above Birchwood	1940	30.0	9.0	1.8	0.06
150	Tairua River above Broken Hills	2000	20.0	4.1	0.8	0.04
151	Oroua River at Feilding Road	1600	14.1	3.1	0.6	0.04
152	Waiari Stream at Muttons farm	2000	9.7	9.7	0.0	0.00
153	Tukituki River at Fairfield Road	1000	9.0	5.0	0.0	0.00

Trout Survey Results - Brown and rainbow trout sorted in order of biomass in kg/km

(May-October excluded)

(Surveys with reach lengths <500 or visibility < 3 metres excluded)

River and access	Reach Leng. (m)	Width (m)	Vis. (m)	Biomass	
				kg/km	g/m2
1 Clutha River at Lake Wanaka outlet	3200	90.0	5.0	291.5	3.24
2 Gowan River below outlet	1800	25.1	12.2	208.8	8.32
3 Gowan River at Lake Outlet	800	30.0	8.5	192.4	6.41
4 Hurunui River below Lake Sumner	1600	33.1	6.5	178.6	5.40
5 Arnold River at Kotuku	1400	41.2	4.0	177.5	4.31
6 Motueka River at Woodstock	2040	40.8	7.2	149.6	3.67
7 Haupiri River d/s of Lake	1400	30.0	8.0	140.9	4.70
8 Tekapo River below Maryburn	1300	40.0	5.0	129.6	3.24
9 Tongariro River at Turangi	1900	37.7	4.9	117.1	3.11
10 Mohaka River above Otupua Stm	2250	23.0	3.9	104.0	4.52
11 Rai River above falls	1000	22.8	5.0	103.8	4.55
12 Tekapo River at Willows	1000	40.0	5.0	103.2	2.58
13 Grey River at Waipuna	1350	68.6	9.5	92.4	1.35
14 Tauranga-Taupo River at Pump Pool	1800	17.5	5.4	90.1	5.15
15 Riwaka River at Moss Bush	1750	12.5	9.2	89.5	7.16
16 Hutt River below Akatarawa Forks	1450	21.8	4.0	80.3	3.68
17 Rangitikei River above Murapara	1300	25.0	4.7	78.1	3.13
18 Waihou River at Whites Road	2400	10.9	6.7	76.1	6.98
19 Mangles River at Gorge	850	16.4	5.1	67.2	4.10
20 Tekapo River below Pukaki confluence	1440	18.5	5.9	67.0	3.62
21 Arnold River at Kokiri	1200	48.0	4.5	66.8	1.39
22 Karamea River above bend	1850	50.0	14.0	66.4	1.33
23 Aparima River above Otautau	2400	30.0	12.4	63.5	2.12
24 Mohaka River at Poronui	650	16.0	8.8	63.1	3.94
25 Mararoa River above w.l. recorder	2000	26.9	7.0	61.8	2.30
26 Tekapo River above steel bridge	1100	40.0	5.0	61.8	1.54
27 Maruia River at Paenga	1400	40.0	7.2	59.7	1.49
28 Hurunui River below Lake Sumner (reach a)	4700	33.1	6.0	59.3	1.79
29 Rangitikei River headwaters A	1600	30.0	17.5	56.8	1.89
30 Waitaki River 20 cumec channel	1750	28.2	7.0	53.2	1.89
31 Wanganui River at Kakahi	1700	37.9	4.9	50.7	1.34
32 Karamea River above Crow Hut	2050	30.0	12.6	49.3	1.64
33 Mokihinui River (South Branch)	1950	30.0	12.0	45.9	1.53
34 Inangahua River at Landing	1250	60.0	5.1	44.8	0.75
35 Karamea River at Arapito	1400	70.0	5.3	44.5	0.64
36 Riwaka River at Moss Bush	1270	12.5	3.0	43.8	3.51
37 Pelorus River at Maungatapu Road	1300	30.3	8.8	42.9	1.41
38 Hutt River at Silverstream cut	610	40.0	4.0	42.6	1.06
39 Rangitikei River at Mangaohane Gorge	1600	16.0	5.0	42.5	2.65
40 Waitaki River 30 cumec channel	2630	55.0	7.0	42.4	0.77
41 Mohaka River below Glenfalls reserve	6500	40.0	5.4	41.1	1.03
42 Shag River at Dunbach	1600	6.6	6.3	40.6	6.15
43 Ahaura River above Haupiri confluence	1970	40.0	19.0	40.5	1.01
44 Mokihinui River at cableway	2100	45.0	5.4	40.1	0.89
45 Buller River above Hope Junction	1865	25.0	7.1	38.7	1.55
46 Kakanui River at Pringles	1140	22.3	7.3	38.3	1.72
47 Tarawera River at lake outlet	1100	20.0	7.4	37.2	1.86

48 Spring Creek at Odwyers Road	3100	9.6	7.0	36.9	3.84
49 Mohaka River at SH5 bridge	1650	40.0	7.5	36.8	0.92
50 Oreti River above Mossburn	1825	30.2	5.0	36.5	1.21
51 Mokihinui River (North Branch)	2050	25.0	10.8	36.0	1.44
52 Rangitikei River at Springvale A	1670	26.5	10.0	35.2	1.33
53 Ahuriri River at SH Bridge	1100	43.0	4.0	33.2	0.77
54 Rangitikei River at Mangaohane A	1890	32.0	3.5	32.9	1.03
55 Taruarau River headwaters	1300	15.0	4.4	32.1	2.14
56 Hakataramea River at SH Bridge	1450	13.0	9.5	31.5	2.42
57 Aorere River at Devils Boots	2100	50.0	5.5	31.5	0.63
58 Kakanui River at Pringles	1140	22.3	6.5	30.7	1.37
59 Manganuioteao River Training pool	1200	50.0	3.0	30.4	0.61
60 Selwyn River at Coes Ford	1000	12.0	8.0	30.2	2.51
61 Spring Creek at Spring Creek	2500	10.0	5.0	30.1	3.01
62 Rangitikei River headwaters B	1600	32.0	14.8	29.8	0.93
63 Rangitikei River at Mangaohane A	1280	32.0	6.0	29.7	0.93
64 Wairoa River at Gorge	1300	21.4	10.0	28.7	1.34
65 Rangitikei River at Pukeokahu	1100	34.0	3.5	28.5	0.84
66 Rangitikei River at Mangaohane B	1510	31.0	5.0	27.8	0.90
67 Manganuioteao River Hoihenga Bridge	4000	50.0	3.0	27.8	0.56
68 Rangitikei River at Mangaohane B	1750	31.0	3.5	27.7	0.89
69 Manuhierikia River at Ophir	1250	25.0	3.0	27.3	1.09
70 Baton River above concrete ford	2000	18.2	4.5	26.5	1.46
71 Manganuioteao River Mangamingi	2300	50.0	3.5	25.8	0.52
72 Buller River below Lake Rotoiti	1500	20.0	6.8	25.5	1.28
73 Hutt River at Whakatiki Street	840	20.0	9.6	25.4	1.27
74 Ngaruroro River Ngawapurua	1100	20.0	8.7	25.3	1.26
75 Manganuioteao River Possum Ridge	4900	50.0	3.5	24.7	0.49
76 Taramakau River at Kumara	4000	100.0	4.2	23.0	0.23
77 Mangatainoka River at Tui Brewery	1500	26.0	4.5	22.8	0.88
78 Irthing Stream at recorder	1100	21.0	8.6	22.6	1.08
79 Rangitikei River at Springvale B	2010	40.0	3.5	22.3	0.56
80 Ruamahanga River at Wardells	1270	30.1	5.5	22.2	0.74
81 Waingongoro River at Eltham	1540	7.9	5.4	22.2	2.82
82 Mataura River at Nokomai	950	25.5	3.0	22.0	0.86
83 Taruarau River headwaters	1000	14.0	9.0	21.9	1.56
84 Takaka River at Kotinga Bridge	1990	70.0	9.5	21.8	0.31
85 Inangahua River at Blacks Point	1800	18.5	6.4	21.4	1.16
86 Tekapo River above Grays River	1000	25.0	5.0	21.3	0.85
87 Opihi River at SH1 Bridge	1300	24.2	10.2	20.8	0.86
88 Manganuioteao River Ram paddock	2200	50.0	3.0	20.8	0.42
89 Waimakariri River at SH 5 Bridge	1600	11.2	3.5	20.7	1.85
90 Akatarawa River at West Akatarawa Road	1500	13.2	6.7	20.2	1.53
91 Waikaia River at Piano Flat	1050	30.0	8.6	19.5	0.65
92 Selwyn River at Whitecliffs	1200	14.3	3.6	19.4	1.35
93 Hurunui River at Lake Taylor (reach b)	3300	28.0	5.0	18.7	0.67
94 Manganuioteao River Olivers Swing Br.	1700	50.0	3.0	18.6	0.37
95 Manganuioteao River Mangaturuturu	8200	50.0	3.0	16.2	0.32
96 Otaki River at Swingbridge	1335	24.2	12.0	15.9	0.66
97 Moawhango River at Moawhango	1700	13.7	3.1	15.1	1.10
98 Tekapo River below Forks River	700	15.0	3.0	14.7	0.98
99 Ngaruroro River at Whanawhana	1500	23.0	6.0	14.4	0.62
100 Patea River at King Edward Park	950	9.6	3.0	14.1	1.47
101 Waipapa River at recorder	1050	25.0	4.6	13.7	0.55
102 Hurunui River at Lake Taylor (reach c)	2800	28.0	5.0	13.7	0.49

103 Waitaki River 5 cumec channel	1500	18.6	5.0	12.3	0.66
104 Tarawera River below falls	1600	10.0	6.8	11.8	1.18
105 Waitaki River 15 cumec channel	850	25.4	5.9	11.7	0.46
106 Mangahao River at Ballance Bridge	1400	27.1	4.8	11.1	0.41
107 Taruarau River at Taihape Road	1400	12.0	10.2	10.9	0.91
108 Takaka River at Harwoods	1400	18.4	4.9	10.4	0.56
109 Hautapu River at Abattoir Road	1600	13.0	4.6	10.3	0.80
110 Waimana River at Gorge	1200	25.0	3.6	9.6	0.39
111 Waiwakaiho River at SH 3	1000	16.5	4.2	9.3	0.57
112 Ngaruroro River at Kuripapango	2900	20.1	9.0	8.7	0.43
113 Waitaki River 10 cumec channel	2350	21.3	5.2	8.6	0.40
114 Stony River at Okato	1150	11.8	13.0	7.5	0.63
115 Waingawa River at Water level recorder	1600	16.3	6.3	7.5	0.46
116 Tongariro River at Waipakahi Confluence	1300	28.0	6.5	7.3	0.26
117 Rangitikei River headwaters C	1000	15.0	10.0	7.3	0.49
118 Pohangina River at Raumai	2250	22.6	4.6	7.0	0.31
119 Waioeke River at Gorge	1500	30.0	9.0	6.7	0.22
120 Ohau River at Gladstone Road	1910	17.5	14.8	6.4	0.36
121 Manganui River at Croyden Road	1100	14.7	5.7	6.4	0.44
122 Waipawa River at Fletchers Crossing	1340	15.0	6.8	6.0	0.40
123 Waimana River at Olgivies Bridge	1300	18.4	5.3	5.4	0.29
124 Otematata River at Pumphouse	1800	19.8	5.5	5.2	0.26
125 Kaipokonui River at Skeet Road	900	10.5	6.2	5.1	0.49
126 Esk River at Eskdale Park	1400	14.4	4.0	5.1	0.36
127 Wanganui River at SH 47	1700	4.5	10.5	4.9	1.08
128 Whakatiki River at Bulls Run Road	1060	9.5	4.1	4.9	0.51
129 Whakapapa River at Intake	6500	20.0	3.0	4.9	0.24
130 Ahuriri River at Thomas's	1200	31.1	6.0	4.7	0.15
131 Waikanae River at Water treatment plant	1400	25.0	7.7	4.6	0.19
132 Tutaekuri River at Puketapu Bridge	1700	20.4	4.0	4.5	0.22
133 Makaroro River at Makaroro Road	2100	12.0	3.3	4.4	0.37
134 Taipo River at Gorge	3000	29.3	12.4	4.2	0.14
135 Tauherenikau River at Recorder	928	14.3	11.6	4.1	0.29
136 Ruamahanga River at SH 2 Bridge	2200	22.0	9.0	3.7	0.17
137 Hutt River at Taita Rock	500	50.0	3.0	3.6	0.07
138 Orari River at Gorge	1400	14.0	11.0	3.4	0.24
139 Whakapapa River at Whakapapanui	3700	20.0	4.0	2.9	0.14
140 Waiohine River at Gauge	2060	38.3	11.6	2.6	0.07
141 Pomahaka River at Hukarere	1300	15.0	9.0	2.6	0.17
142 Waimakariri River at groyne 0	4500	30.0	5.0	2.6	0.09
143 Maerewhenua River at Kellys Gully	1350	11.0	10.6	2.5	0.23
144 Mangorewa River at Water level recorder	2000	12.0	12.6	2.3	0.19
145 Kakanui River (upper)	1560	9.0	5.0	2.2	0.25
146 Kaueranga River at Water level recorder	1200	22.8	5.4	1.9	0.08
147 Ahuriri River (upper) above Birchwood	1940	30.0	9.0	1.8	0.06
148 Opihi River at Rockwood Bridge	1280	14.5	4.4	1.8	0.12
149 Patea River above Stratford water intake	1920	5.0	4.1	1.2	0.25
150 Tairua River above Broken Hills	2000	20.0	4.1	0.8	0.04
151 Oroua River at Feilding Road	1600	14.1	3.1	0.6	0.04
152 Tukituki River at Fairfield Road	1000	9.0	5.0	0.0	0.00
153 Waiari Stream at Muttons farm	2000	9.7	9.7	0.0	0.00

Trout Survey Results - Brown trout sorted in order of biomass in g/m²

(May-October excluded)

(Surveys with reach lengths <500 or visibility < 3 metres excluded)

River and access	Reach Leng. (m)	Width (m)	Vis. (m)	Biomass kg/km	g/m ²
1 Gowan River below outlet	1800	25.1	12.2	208.8	8.32
2 Riwaka River at Moss Bush	1750	12.5	9.2	89.5	7.16
3 Gowan River at Lake Outlet	800	30.0	8.5	192.0	6.40
4 Shag River at Dunbach	1600	6.6	6.3	40.6	6.15
5 Hurunui River below Lake Sumner	1600	33.1	6.5	178.6	5.40
6 Haupiri River d/s of Lake	1400	30.0	8.0	140.9	4.70
7 Mohaka River above Otupua Stm	2250	23.0	3.9	103.0	4.48
8 Arnold River at Kotuku	1400	41.2	4.0	177.5	4.31
9 Mangles River at Gorge	850	16.4	5.1	67.2	4.10
10 Mohaka River at Poronui	650	16.0	8.8	63.1	3.94
11 Spring Creek at Odwyers Road	3100	9.6	7.0	36.9	3.84
12 Hutt River below Akatarawa Forks	1450	21.8	4.0	80.3	3.68
13 Motueka River at Woodstock	2040	40.8	7.2	149.6	3.67
14 Riwaka River at Moss Bush	1270	12.5	3.0	43.8	3.51
15 Rai River above falls	1000	22.8	5.0	70.2	3.08
16 Spring Creek at Spring Creek	2500	10.0	5.0	30.1	3.01
17 Waingongoro River at Eltham	1540	7.9	5.4	22.2	2.82
18 Selwyn River at Coes Ford	1000	12.0	8.0	30.2	2.51
19 Clutha River at Lake Wanaka outlet	3200	90.0	5.0	214.7	2.39
20 Tekapo River below Pukaki confluence	1440	18.5	5.9	43.4	2.35
21 Hakataramea River at SH Bridge	1450	13.0	9.5	27.7	2.13
22 Aparima River above Otautau	2400	30.0	12.4	63.5	2.12
23 Tekapo River below Maryburn	1300	40.0	5.0	77.1	1.93
24 Tekapo River at Willows	1000	40.0	5.0	75.8	1.89
25 Waitaki River 20 cumec channel	1750	28.2	7.0	53.2	1.89
26 Hurunui River below Lake Sumner (reach a)	4700	33.1	6.0	59.2	1.79
27 Kakanui River at Pringles	1140	22.3	7.3	38.3	1.72
28 Karamea River above Crow Hut	2050	30.0	12.6	49.3	1.64
29 Buller River above Hope Junction	1865	25.0	7.1	38.7	1.55
30 Akatarawa River at West Akatarawa Road	1500	13.2	6.7	20.2	1.53
31 Mokihinui River (South Branch)	1950	30.0	12.0	45.9	1.53
32 Maruia River at Paenga	1400	40.0	7.2	59.7	1.49
33 Patea River at King Edward Park	950	9.6	3.0	14.1	1.47
34 Baton River above concrete ford	2000	18.2	4.5	26.5	1.46
35 Mokihinui River (North Branch)	2050	25.0	10.8	36.0	1.44
36 Rangitikei River at Mangaohane Gorge	1600	16.0	5.0	22.9	1.43
37 Arnold River at Kokiri	1200	48.0	4.5	66.8	1.39
38 Kakanui River at Pringles	1140	22.3	6.5	30.7	1.37
39 Grey River at Waipuna	1350	68.6	9.5	92.4	1.35
40 Selwyn River at Whitecliffs	1200	14.3	3.6	19.4	1.35
41 Wairoa River at Gorge	1300	21.4	10.0	28.7	1.34
42 Karamea River above bend	1850	50.0	14.0	66.4	1.33
43 Buller River below Lake Rotoiti	1500	20.0	6.8	25.5	1.28
44 Hutt River at Whakatiki Street	840	20.0	9.6	25.4	1.27
45 Tongariro River at Turangi	1900	37.7	4.9	48.0	1.27
46 Oreti River above Mossburn	1825	30.2	5.0	36.5	1.21
47 Inangahua River at Blacks Point	1800	18.5	6.4	21.4	1.16

48	Moawhango River at Moawhango	1700	13.7	3.1	15.1	1.10
49	Manuherikia River at Ophir	1250	25.0	3.0	27.3	1.09
50	Irthing Stream at recorder	1100	21.0	8.6	22.6	1.08
51	Mararoa River above w.l. recorder	2000	26.9	7.0	28.4	1.06
52	Hutt River at Silverstream cut	610	40.0	4.0	42.6	1.06
53	Pelorus River at Maungatapu Road	1300	30.3	8.8	30.6	1.01
54	Ahaura River above Haupiri confluence	1970	40.0	19.0	39.7	0.99
55	Wanganui River at SH 47	1700	4.5	10.5	4.1	0.91
56	Mokihinui River at cableway	2100	45.0	5.4	40.1	0.89
57	Mangatainoka River at Tui Brewery	1500	26.0	4.5	22.8	0.88
58	Mataura River at Nokomai	950	25.5	3.0	22.0	0.86
59	Opihi River at SH1 Bridge	1300	24.2	10.2	20.8	0.86
60	Rangitikei River at Springvale A	1670	26.5	13.0	21.7	0.82
61	Tekapo River above steel bridge	1100	40.0	5.0	31.9	0.80
62	Hautapu River at Abattoir Road	1600	13.0	4.6	10.3	0.80
63	Wanganui River at Kakahi	1700	37.9	4.9	30.2	0.80
64	Inangahua River at Landing	1250	60.0	5.1	44.8	0.75
65	Ruamahanga River at Wardells	1270	30.1	5.5	22.2	0.74
66	Waitaki River 30 cumec channel	2630	55.0	7.0	37.7	0.69
67	Hurunui River at Lake Taylor (reach b)	3300	28.0	5.0	18.7	0.67
68	Waitaki River 5 cumec channel	1500	18.6	5.0	12.3	0.66
69	Otaki River at Swingbridge	1335	24.2	12.0	15.9	0.66
70	Waikaia River at Piano Flat	1050	30.0	8.6	19.5	0.65
71	Karamea River at Arapito	1400	70.0	5.3	44.5	0.64
72	Aorere River at Devils Boots	2100	50.0	5.5	31.5	0.63
73	Taruarau River headwaters	1000	14.0	9.0	8.2	0.59
74	Mohaka River below Glenfalls reserve	6500	40.0	5.4	23.5	0.59
75	Rangitikei River at Mangaohane A	1890	32.0	3.5	18.6	0.58
76	Waiwakaiho River at SH 3	1000	16.5	4.2	9.3	0.57
77	Takaka River at Harwoods	1400	18.4	4.9	10.4	0.56
78	Stony River at Okato	1150	11.8	13.0	6.3	0.53
79	Mohaka River at SH5 bridge	1650	40.0	7.5	20.9	0.52
80	Whakatiki River at Bulls Run Road	1060	9.5	4.1	4.9	0.51
81	Kaupokonui River at Skeet Road	900	10.5	6.2	5.1	0.49
82	Hurunui River at Lake Taylor (reach c)	2800	28.0	5.0	13.7	0.49
83	Waingawa River at Water level recorder	1600	16.3	6.3	7.5	0.46
84	Waitaki River 15 cumec channel	850	25.4	5.9	11.3	0.44
85	Manganui River at Croyden Road	1100	14.7	5.7	6.4	0.44
86	Mangahao River at Ballance Bridge	1400	27.1	4.8	11.1	0.41
87	Waitaki River 10 cumec channel	2350	21.3	5.2	8.6	0.40
88	Rangitikei River headwaters A	1600	30.0	17.5	11.7	0.39
89	Waimana River at Gorge	1200	25.0	3.6	9.6	0.39
90	Manganuioteao River Possum Ridge	4900	50.0	3.5	19.0	0.38
91	Ngaruroro River Ngawapurua	1100	20.0	8.7	7.7	0.38
92	Taruarau River at Taihape Road	1400	12.0	10.2	4.4	0.37
93	Ahuriri River at SH Bridge	1100	43.0	4.0	16.1	0.37
94	Ohau River at Gladstone Road	1910	17.5	14.8	6.4	0.36
95	Rangitikei River at Pukeokahu	1100	34.0	3.0	12.2	0.36
96	Manganuioteao River Hoihenga Bridge	4000	50.0	3.0	17.8	0.36
97	Manganuioteao River Mangamingi	2300	50.0	3.5	17.3	0.35
98	Rangitikei River at Mangaohane B	1750	31.0	3.5	10.2	0.33
99	Rangitikei River at Mangaohane B	1510	31.0	5.0	9.8	0.32
100	Rangitikei River at Springvale B	2010	40.0	3.5	12.3	0.31
101	Pohangina River at Raumai	2250	22.6	4.6	7.0	0.31
102	Rangitikei River headwaters C	1000	15.0	10.0	4.6	0.31

103	Takaka River at Kotinga Bridge	1990	70.0	9.5	21.8	0.31
104	Esk River at Eskdale Park	1400	14.4	4.0	4.3	0.30
105	Tekapo River above Grays River	1000	25.0	5.0	7.3	0.29
106	Tauherenikau River at Recorder	928	14.3	11.6	4.1	0.29
107	Taruarau River headwaters	1300	15.0	4.4	4.1	0.27
108	Kakanui River (upper)	1560	9.0	5.0	2.2	0.25
109	Patea River above Stratford water intake	1920	5.0	4.1	1.2	0.25
110	Tekapo River below Forks River	700	15.0	3.0	3.7	0.25
111	Orari River at Gorge	1400	14.0	11.0	3.4	0.24
112	Manganuioteao River Ram paddock	2200	50.0	3.0	11.7	0.23
113	Manganuioteao River Olivers Swing Br.	1700	50.0	3.0	10.8	0.22
114	Taramakau River at Kumara	4000	100.0	4.2	22.1	0.22
115	Manganuioteao River Training pool	1200	50.0	3.0	9.8	0.20
116	Rangitaiki River above Murapara	1300	25.0	4.7	4.8	0.19
117	Ngaruroro River at Kuripapango	2900	20.1	9.0	3.8	0.19
118	Waikanae River at Water treatment plant	1400	25.0	7.7	4.6	0.19
119	Maerewhenua River at Kellys Gully	1350	11.0	10.6	2.0	0.18
120	Rangitikei River headwaters B	1600	32.0	14.8	5.8	0.18
121	Ruamahanga River at SH 2 Bridge	2200	22.0	9.0	3.7	0.17
122	Pomahaka River at Hukarere	1300	15.0	9.0	2.6	0.17
123	Otematata River at Pumphouse	1800	19.8	5.5	3.1	0.15
124	Taipo River at Gorge	3000	29.3	12.4	4.0	0.14
125	Tutaekuri River at Puketapu Bridge	1530	24.0	3.0	3.1	0.13
126	Ngaruroro River at Whanawhana	1500	23.0	6.0	2.9	0.13
127	Opihi River at Rockwood Bridge	1280	14.5	4.4	1.8	0.12
128	Manganuioteao River Mangaturuturu	8200	50.0	3.0	5.3	0.11
129	Waimana River at Olgivies Bridge	1300	18.4	5.3	1.8	0.10
130	Waimakariri River at groyne 0	4500	30.0	5.0	2.5	0.08
131	Hutt River at Taita Rock	500	50.0	3.0	3.6	0.07
132	Waiohine River at Gauge	2060	38.3	11.6	2.6	0.07
133	Waipawa River at Fletchers Crossing	1340	15.0	6.8	1.0	0.07
134	Rangitikei River at Mangaohane A	1280	32.0	6.0	1.8	0.06
135	Ahuriri River (upper) above Birchwood	1940	30.0	9.0	1.8	0.06
136	Tauranga-Taupo River at Pump Pool	1800	17.5	5.4	1.0	0.06
137	Whakapapa River at Intake	6500	20.0	3.0	0.9	0.04
138	Oroua River at Feilding Road	1600	14.1	3.1	0.6	0.04
139	Ahuriri River at Thomas's	1200	31.1	6.0	1.3	0.04
140	Tarawera River at lake outlet	1100	20.0	7.4	0.6	0.03
141	Waioeka River at Gorge	1500	30.0	9.0	0.0	0.00
142	Tukituki River at Fairfield Road	1000	9.0	5.0	0.0	0.00
143	Waihou River at Whites Road	2400	10.9	8.3	0.0	0.00
144	Waipapa River at recorder	1050	25.0	4.6	0.0	0.00
145	Waiari Stream at Muttons farm	2000	9.7	9.7	0.0	0.00
146	Waimakariri River at SH 5 Bridge	1600	11.2	3.5	0.0	0.00
147	Makaroro River at Makaroro Road	2100	12.0	3.3	0.0	0.00
148	Tongariro River at Waipakahi Confluence	1300	28.0	6.5	0.0	0.00
149	Tairua River above Broken Hills	2000	20.0	4.1	0.0	0.00
150	Whakapapa River at Whakapapanui	3700	20.0	4.0	0.0	0.00
151	Mangorewa River at Water level recorder	2000	12.0	12.6	0.0	0.00
152	Kaueranga River at Water level recorder	1200	22.8	5.4	0.0	0.00
153	Tarawera River below falls	1600	10.0	6.8	0.0	0.00

Trout Survey Results - Brown trout sorted in order of biomass in kg/km

(May-October excluded)

(Surveys with reach lengths <500 or visibility < 3 metres excluded)

River and access	Reach Leng. (m)	Width (m)	Vis. (m)	Biomass kg/km	g/m2
1 Clutha River at Lake Wanaka outlet	3200	90.0	5.0	214.7	2.39
2 Gowan River below outlet	1800	25.1	12.2	208.8	8.32
3 Gowan River at Lake Outlet	800	30.0	8.5	192.0	6.40
4 Hurunui River below Lake Sumner	1600	33.1	6.5	178.6	5.40
5 Arnold River at Kotuku	1400	41.2	4.0	177.5	4.31
6 Motueka River at Woodstock	2040	40.8	7.2	149.6	3.67
7 Haupiri River d/s of Lake	1400	30.0	8.0	140.9	4.70
8 Mohaka River above Otupua Stm	2250	23.0	3.9	103.0	4.48
9 Grey River at Waipuna	1350	68.6	9.5	92.4	1.35
10 Riwaka River at Moss Bush	1750	12.5	9.2	89.5	7.16
11 Hutt River below Akatarawa Forks	1450	21.8	4.0	80.3	3.68
12 Tekapo River below Maryburn	1300	40.0	5.0	77.1	1.93
13 Tekapo River at Willows	1000	40.0	5.0	75.8	1.89
14 Rai River above falls	1000	22.8	5.0	70.2	3.08
15 Mangles River at Gorge	850	16.4	5.1	67.2	4.10
16 Arnold River at Kokiri	1200	48.0	4.5	66.8	1.39
17 Karamea River above bend	1850	50.0	14.0	66.4	1.33
18 Aparima River above Otautau	2400	30.0	12.4	63.5	2.12
19 Mohaka River at Poronui	650	16.0	8.8	63.1	3.94
20 Maruia River at Paenga	1400	40.0	7.2	59.7	1.49
21 Hurunui River below Lake Sumner (reach a)	4700	33.1	6.0	59.2	1.79
22 Waitaki River 20 cumec channel	1750	28.2	7.0	53.2	1.89
23 Karamea River above Crow Hut	2050	30.0	12.6	49.3	1.64
24 Tongariro River at Turangi	1900	37.7	4.9	48.0	1.27
25 Mokihinui River (South Branch)	1950	30.0	12.0	45.9	1.53
26 Inangahua River at Landing	1250	60.0	5.1	44.8	0.75
27 Karamea River at Arapito	1400	70.0	5.3	44.5	0.64
28 Riwaka River at Moss Bush	1270	12.5	3.0	43.8	3.51
29 Tekapo River below Pukaki confluence	1440	18.5	5.9	43.4	2.35
30 Hutt River at Silverstream cut	610	40.0	4.0	42.6	1.06
31 Shag River at Dunbach	1600	6.6	6.3	40.6	6.15
32 Mokihinui River at cableway	2100	45.0	5.4	40.1	0.89
33 Ahaura River above Haupiri confluence	1970	40.0	19.0	39.7	0.99
34 Buller River above Hope Junction	1865	25.0	7.1	38.7	1.55
35 Kakanui River at Pringles	1140	22.3	7.3	38.3	1.72
36 Waitaki River 30 cumec channel	2630	55.0	7.0	37.7	0.69
37 Spring Creek at Odwyers Road	3100	9.6	7.0	36.9	3.84
38 Oreti River above Mossburn	1825	30.2	5.0	36.5	1.21
39 Mokihinui River (North Branch)	2050	25.0	10.8	36.0	1.44
40 Tekapo River above steel bridge	1100	40.0	5.0	31.9	0.80
41 Aorere River at Devils Boots	2100	50.0	5.5	31.5	0.63
42 Kakanui River at Pringles	1140	22.3	6.5	30.7	1.37
43 Pelorus River at Maungatapu Road	1300	30.3	8.8	30.6	1.01
44 Selwyn River at Coes Ford	1000	12.0	8.0	30.2	2.51
45 Wanganui River at Kakahi	1700	37.9	4.9	30.2	0.80
46 Spring Creek at Spring Creek	2500	10.0	5.0	30.1	3.01
47 Wairoa River at Gorge	1300	21.4	10.0	28.7	1.34

48 Mararoa River above w.l. recorder	2000	26.9	7.0	28.4	1.06
49 Hakataramea River at SH Bridge	1450	13.0	9.5	27.7	2.13
50 Manuherikia River at Ophir	1250	25.0	3.0	27.3	1.09
51 Baton River above concrete ford	2000	18.2	4.5	26.5	1.46
52 Buller River below Lake Rotoiti	1500	20.0	6.8	25.5	1.28
53 Hutt River at Whakatiki Street	840	20.0	9.6	25.4	1.27
54 Mohaka River below Glenfalls reserve	6500	40.0	5.4	23.5	0.59
55 Rangitikei River at Mangaohane Gorge	1600	16.0	5.0	22.9	1.43
56 Mangatainoka River at Tui Brewery	1500	26.0	4.5	22.8	0.88
57 Irthing Stream at recorder	1100	21.0	8.6	22.6	1.08
58 Ruamahanga River at Wardells	1270	30.1	5.5	22.2	0.74
59 Waingongoro River at Eltham	1540	7.9	5.4	22.2	2.82
60 Taramakau River at Kumara	4000	100.0	4.2	22.1	0.22
61 Mataura River at Nokomai	950	25.5	3.0	22.0	0.86
62 Takaka River at Kotinga Bridge	1990	70.0	9.5	21.8	0.31
63 Rangitikei River at Springvale A	1670	26.5	13.0	21.7	0.82
64 Inangahua River at Blacks Point	1800	18.5	6.4	21.4	1.16
65 Mohaka River at SH5 bridge	1650	40.0	7.5	20.9	0.52
66 Opihi River at SH1 Bridge	1300	24.2	10.2	20.8	0.86
67 Akatarawa River at West Akatarawa Road	1500	13.2	6.7	20.2	1.53
68 Waikaia River at Piano Flat	1050	30.0	8.6	19.5	0.65
69 Selwyn River at Whitecliffs	1200	14.3	3.6	19.4	1.35
70 Manganuioteao River Possum Ridge	4900	50.0	3.5	19.0	0.38
71 Hurunui River at Lake Taylor (reach b)	3300	28.0	5.0	18.7	0.67
72 Rangitikei River at Mangaohane A	1890	32.0	3.5	18.6	0.58
73 Manganuioteao River Hoihenga Bridge	4000	50.0	3.0	17.8	0.36
74 Manganuioteao River Mangamingi	2300	50.0	3.5	17.3	0.35
75 Ahuriri River at SH Bridge	1100	43.0	4.0	16.1	0.37
76 Otaki River at Swingbridge	1335	24.2	12.0	15.9	0.66
77 Moawhango River at Moawhango	1700	13.7	3.1	15.1	1.10
78 Patea River at King Edward Park	950	9.6	3.0	14.1	1.47
79 Hurunui River at Lake Taylor (reach c)	2800	28.0	5.0	13.7	0.49
80 Waitaki River 5 cumec channel	1500	18.6	5.0	12.3	0.66
81 Rangitikei River at Springvale B	2010	40.0	3.5	12.3	0.31
82 Rangitikei River at Pukeokahu	1100	34.0	3.0	12.2	0.36
83 Manganuioteao River Ram paddock	2200	50.0	3.0	11.7	0.23
84 Rangitikei River headwaters A	1600	30.0	17.5	11.7	0.39
85 Waitaki River 15 cumec channel	850	25.4	5.9	11.3	0.44
86 Mangahao River at Ballance Bridge	1400	27.1	4.8	11.1	0.41
87 Manganuioteao River Olivers Swing Br.	1700	50.0	3.0	10.8	0.22
88 Takaka River at Harwoods	1400	18.4	4.9	10.4	0.56
89 Hautapu River at Abattoir Road	1600	13.0	4.6	10.3	0.80
90 Rangitikei River at Mangaohane B	1750	31.0	3.5	10.2	0.33
91 Manganuioteao River Training pool	1200	50.0	3.0	9.8	0.20
92 Rangitikei River at Mangaohane B	1510	31.0	5.0	9.8	0.32
93 Waimana River at Gorge	1200	25.0	3.6	9.6	0.39
94 Waiwakaiho River at SH 3	1000	16.5	4.2	9.3	0.57
95 Waitaki River 10 cumec channel	2350	21.3	5.2	8.6	0.40
96 Taruarau River headwaters	1000	14.0	9.0	8.2	0.59
97 Ngaruroro River Ngawapurua	1100	20.0	8.7	7.7	0.38
98 Waingawa River at Water level recorder	1600	16.3	6.3	7.5	0.46
99 Tekapo River above Grays River	1000	25.0	5.0	7.3	0.29
100 Pohangina River at Raumai	2250	22.6	4.6	7.0	0.31
101 Ohau River at Gladstone Road	1910	17.5	14.8	6.4	0.36
102 Manganui River at Croyden Road	1100	14.7	5.7	6.4	0.44

103	Stony River at Okato	1150	11.8	13.0	6.3	0.53
104	Rangitikei River headwaters B	1600	32.0	14.8	5.8	0.18
105	Manganuioteao River Mangaturuturu	8200	50.0	3.0	5.3	0.11
106	Kaupokonui River at Skeet Road	900	10.5	6.2	5.1	0.49
107	Whakatiki River at Bulls Run Road	1060	9.5	4.1	4.9	0.51
108	Rangitaiki River above Murapara	1300	25.0	4.7	4.8	0.19
109	Rangitikei River headwaters C	1000	15.0	10.0	4.6	0.31
110	Waikanae River at Water treatment plant	1400	25.0	7.7	4.6	0.19
111	Taruarau River at Taihape Road	1400	12.0	10.2	4.4	0.37
112	Esk River at Eskdale Park	1400	14.4	4.0	4.3	0.30
113	Wanganui River at SH 47	1700	4.5	10.5	4.1	0.91
114	Taruarau River headwaters	1300	15.0	4.4	4.1	0.27
115	Tauherenikau River at Recorder	928	14.3	11.6	4.1	0.29
116	Taipo River at Gorge	3000	29.3	12.4	4.0	0.14
117	Ngaruroro River at Kuripapango	2900	20.1	9.0	3.8	0.19
118	Ruamahanga River at SH 2 Bridge	2200	22.0	9.0	3.7	0.17
119	Tekapo River below Forks River	700	15.0	3.0	3.7	0.25
120	Hutt River at Taita Rock	500	50.0	3.0	3.6	0.07
121	Orari River at Gorge	1400	14.0	11.0	3.4	0.24
122	Otematata River at Pumphouse	1800	19.8	5.5	3.1	0.15
123	Tutaekuri River at Puketapu Bridge	1530	24.0	3.0	3.1	0.13
124	Ngaruroro River at Whanawhana	1500	23.0	6.0	2.9	0.13
125	Pomahaka River at Hukarere	1300	15.0	9.0	2.6	0.17
126	Waiohine River at Gauge	2060	38.3	11.6	2.6	0.07
127	Waimakariri River at groyne 0	4500	30.0	5.0	2.5	0.08
128	Kakanui River (upper)	1560	9.0	5.0	2.2	0.25
129	Maerewhenua River at Kellys Gully	1350	11.0	10.6	2.0	0.18
130	Opihi River at Rockwood Bridge	1280	14.5	4.4	1.8	0.12
131	Ahuriri River (upper) above Birchwood	1940	30.0	9.0	1.8	0.06
132	Waimana River at Olgivies Bridge	1300	18.4	5.3	1.8	0.10
133	Rangitikei River at Mangaohane A	1280	32.0	6.0	1.8	0.06
134	Ahuriri River at Thomas's	1200	31.1	6.0	1.3	0.04
135	Patea River above Stratford water intake	1920	5.0	4.1	1.2	0.25
136	Waipawa River at Fletchers Crossing	1340	15.0	9.0	1.1	0.07
137	Tauranga-Taupo River at Pump Pool	1800	17.5	5.4	1.0	0.06
138	Whakapapa River at Intake	6500	20.0	3.0	0.9	0.04
139	Oroua River at Feilding Road	1600	14.1	3.1	0.6	0.04
140	Tarawera River at lake outlet	1100	20.0	7.4	0.6	0.03
141	Tongariro River at Waipakahi Confluence	1300	28.0	6.5	0.0	0.00
142	Waiari Stream at Muttons farm	2000	9.7	9.7	0.0	0.00
143	Makaroro River at Makaroro Road	2100	12.0	3.3	0.0	0.00
144	Mangorewa River at Water level recorder	2000	12.0	12.6	0.0	0.00
145	Kaueranga River at Water level recorder	1200	22.8	5.4	0.0	0.00
146	Tarawera River below falls	1600	10.0	6.8	0.0	0.00
147	Waihou River at Whites Road	2400	10.9	8.3	0.0	0.00
148	Whakapapa River at Whakapapanui	3700	20.0	4.0	0.0	0.00
149	Waioeka River at Gorge	1500	30.0	9.0	0.0	0.00
150	Tukituki River at Fairfield Road	1000	9.0	5.0	0.0	0.00
151	Waimakariri River at SH 5 Bridge	1600	11.2	3.5	0.0	0.00
152	Tairua River above Broken Hills	2000	20.0	4.1	0.0	0.00
153	Waipapa River at recorder	1050	25.0	4.6	0.0	0.00

Trout Survey Results - Rainbow trout sorted in order of biomass in g/m²

(May-October excluded)

(Surveys with reach lengths <500 or visibility < 3 metres excluded)

River and access	Reach Leng. (m)	Width (m)	Vis. (m)	Biomass kg/km	g/m ²
1 Waihou River at Whites Road	2400	10.9	6.7	76.1	6.98
2 Tauranga-Taupo River at Pump Pool	1800	17.5	5.4	89.0	5.09
3 Rangitikei River above Murapara	1300	25.0	4.7	73.3	2.93
4 Taruarau River headwaters	1300	15.0	4.4	28.0	1.87
5 Waimakariri River at SH 5 Bridge	1600	11.2	3.5	20.7	1.85
6 Tarawera River at lake outlet	1100	20.0	7.4	36.6	1.83
7 Tongariro River at Turangi	1900	37.7	4.9	69.1	1.83
8 Rangitikei River headwaters A	1600	30.0	17.5	45.2	1.51
9 Rai River above falls	1000	22.8	5.0	33.6	1.48
10 Tekapo River below Maryburn	1300	40.0	5.0	52.4	1.31
11 Tekapo River below Pukaki confluence	1440	18.5	5.9	23.6	1.27
12 Mararoa River above w.l. recorder	2000	26.9	7.0	33.4	1.24
13 Rangitikei River at Mangaohane Gorge	1600	16.0	5.0	19.6	1.22
14 Tarawera River below falls	1600	10.0	6.8	11.8	1.18
15 Taruarau River headwaters	1000	14.0	9.0	13.7	0.98
16 Hakataramea River at SH Bridge	1450	13.0	7.0	12.1	0.93
17 Rangitikei River at Springvale A	1670	26.5	10.0	23.9	0.90
18 Ngaruroro River Ngawapurua	1100	20.0	8.7	17.6	0.88
19 Rangitikei River at Mangaohane A	1280	32.0	6.0	27.9	0.87
20 Clutha River at Lake Wanaka outlet	3200	90.0	5.0	76.8	0.85
21 Rangitikei River headwaters B	1600	32.0	14.8	24.0	0.75
22 Tekapo River above steel bridge	1100	40.0	5.0	29.9	0.75
23 Tekapo River below Forks River	700	15.0	3.0	11.0	0.74
24 Wanganui River at Kakahi	1700	37.9	4.9	26.7	0.70
25 Tekapo River at Willows	1000	40.0	5.0	27.4	0.69
26 Rangitikei River at Mangaohane B	1510	31.0	5.0	18.0	0.58
27 Rangitikei River at Mangaohane B	1750	31.0	3.5	17.5	0.57
28 Rangitikei River at Pukeokahu	1100	34.0	3.5	19.4	0.57
29 Tekapo River above Grays River	1000	25.0	5.0	13.9	0.56
30 Waipapa River at recorder	1050	25.0	4.6	13.7	0.55
31 Taruarau River at Taihape Road	1400	12.0	10.2	6.5	0.54
32 Ngaruroro River at Whanawhana	1500	23.0	6.0	11.4	0.50
33 Rangitikei River at Mangaohane A	1890	32.0	3.5	14.3	0.45
34 Mohaka River below Glenfalls reserve	6500	40.0	5.4	17.7	0.44
35 Manganuioteao River Training pool	1200	50.0	3.0	20.6	0.41
36 Ahuriri River at SH Bridge	1100	43.0	4.0	17.1	0.40
37 Mohaka River at SH5 bridge	1650	40.0	7.5	16.0	0.40
38 Pelorus River at Maungatapu Road	1300	30.3	8.8	12.3	0.40
39 Makaroro River at Makaroro Road	2100	12.0	3.3	4.4	0.36
40 Manganuioteao River Mangamingi	2300	50.0	3.0	16.3	0.33
41 Waipawa River at Fletchers Crossing	1340	15.0	6.8	5.0	0.33
42 Rangitikei River at Springvale B	1330	40.0	10.0	11.7	0.29
43 Tongariro River at Waipakahi Confluence	1300	28.0	6.5	7.3	0.26
44 Ngaruroro River at Kuripapango	2900	20.1	9.0	4.8	0.24
45 Waioeka River at Gorge	1500	30.0	9.0	6.7	0.22
46 Manganuioteao River Mangaturuturu	8200	50.0	3.0	10.9	0.22
47 Tutaekuri River at Puketapu Bridge	1700	20.4	4.0	4.5	0.22

48 Mohaka River at Poronui	650	16.0	10.0	3.6	0.22
49 Manganuioteao River Hoihenga Bridge	4000	50.0	3.0	10.0	0.20
50 Whakapapa River at Intake	6500	20.0	3.0	4.0	0.20
51 Mangorewa River at Water Level recorder	2000	12.0	12.6	2.3	0.19
52 Waimana River at Olgivies Bridge	1300	18.4	5.3	3.6	0.19
53 Rangitikei River headwaters C	1000	15.0	10.0	2.7	0.18
54 Manganuioteao River Ram paddock	2200	50.0	3.0	9.1	0.18
55 Wanganui River at SH 47	1700	4.5	10.5	0.8	0.17
56 Manganuioteao River Olivers Swing Br.	1700	50.0	3.0	7.8	0.16
57 Manganuioteao River Possum Ridge	4900	50.0	3.0	7.2	0.14
58 Whakapapa River at Whakapapanui	3700	20.0	4.0	2.9	0.14
59 Otematata River at Pumphouse	1800	19.8	5.5	2.1	0.11
60 Ahuriri River at Thomas's	1200	31.1	6.0	3.4	0.11
61 Stony River at Okato	1150	11.8	13.0	1.2	0.10
62 Waitaki River 30 cumec channel	2630	55.0	7.0	4.7	0.09
63 Kaueranga River at Water Level recorder	1200	22.8	5.4	1.9	0.08
64 Esk River at Eskdale Park	1400	14.4	4.0	0.8	0.06
65 Maerewhenua River at Kellys Gully	1350	11.0	10.6	0.5	0.05
66 Tairua River above Broken Hills	2000	20.0	4.1	0.8	0.04
67 Mohaka River above Otupua Stm	2250	23.0	3.9	1.0	0.04
68 Waitaki River 15 cumec channel	850	25.4	5.9	0.4	0.02
69 Ahaura River above Haupiri confluence	1970	40.0	19.0	0.8	0.02
70 Waitaki River 20 cumec channel	1750	28.2	5.5	0.2	0.01
71 Hurunui River below Lake Sumner (reach a)	4700	33.1	3.3	0.4	0.01
72 Gowan River at Lake Outlet	800	30.0	8.5	0.4	0.01
73 Taramakau River at Kumara	4000	100.0	4.2	0.9	0.01
74 Tukituki River at Fairfield Road	1000	9.0	5.0	0.0	0.00
75 Oroua River at Feilding Road	1600	14.1	3.1	0.0	0.00
76 Pohangina River at Raumai	2250	22.6	4.6	0.0	0.00
77 Whakatiki River at Bulls Run Road	1060	9.5	4.1	0.0	0.00
78 Hutt River at Whakatiki Street	800	20.0	3.0	0.0	0.00
79 Otaki River at Swingbridge	1335	24.2	14.0	0.0	0.00
80 Karamea River at Arapito	1400	70.0	5.3	0.0	0.00
81 Patea River at King Edward Park	950	9.6	3.0	0.0	0.00
82 Waiari Stream at Muttons farm	2000	9.7	9.7	0.0	0.00
83 Ohau River at Gladstone Road	1910	17.5	6.4	0.0	0.00
84 Patea River above Stratford water intake	1920	5.0	4.1	0.0	0.00
85 Waingongoro River at Eltham	1540	7.9	5.4	0.0	0.00
86 Mangatainoka River at Tui Brewery	1500	26.0	4.5	0.0	0.00
87 Waimana River at Gorge	1200	25.0	3.0	0.0	0.00
88 Kaupokonui River at Skeet Road	900	10.5	6.2	0.0	0.00
89 Moawhango River at Moawhango	1700	13.7	3.1	0.0	0.00
90 Ruamahanga River at SH 2 Bridge	2200	22.0	9.0	0.0	0.00
91 Hutt River at Taita Rock	500	50.0	3.0	0.0	0.00
92 Opihi River at Rockwood Bridge	1280	14.5	4.4	0.0	0.00
93 Ahuriri River (upper) above Birchwood	1940	30.0	9.0	0.0	0.00
94 Hutt River at Silverstream cut	610	40.0	4.0	0.0	0.00
95 Manganui River at Croyden Road	1100	14.7	5.7	0.0	0.00
96 Waiwakaiho River at SH 3	1000	16.5	4.2	0.0	0.00
97 Hutt River below Akatarawa Forks	1450	21.8	5.1	0.0	0.00
98 Selwyn River at Coes Ford	1000	12.0	8.0	0.0	0.00
99 Karamea River above bend	1850	50.0	14.0	0.0	0.00
100 Karamea River above Crow Hut	2050	30.0	12.6	0.0	0.00
101 Opihi River at SH1 Bridge	1300	24.2	10.2	0.0	0.00
102 Mokihinui River (South Branch)	1950	30.0	12.0	0.0	0.00

103 Akatarawa River at West Akatarawa Road	1500	13.2	6.7	0.0	0.00
104 Tauherenikau River at Recorder	928	14.3	18.0	0.0	0.00
105 Mokihinui River (North Branch)	2050	25.0	10.8	0.0	0.00
106 Waiohine River at Gauge	2060	38.3	16.0	0.0	0.00
107 Waitaki River 5 cumec channel	1500	18.6	5.0	0.0	0.00
108 Waitaki River 10 cumec channel	2350	21.3	5.2	0.0	0.00
109 Hautapu River at Abattoir Road	1600	13.0	4.6	0.0	0.00
110 Ruamahanga River at Wardells	1270	30.1	5.5	0.0	0.00
111 Mangahao River at Ballance Bridge	1400	27.1	4.8	0.0	0.00
112 Manuherikia River at Ophir	1250	25.0	3.0	0.0	0.00
113 Kakanui River (upper)	1560	9.0	5.0	0.0	0.00
114 Kakanui River at Pringles	1140	22.3	3.8	0.0	0.00
115 Kakanui River at Pringles	1140	22.3	6.5	0.0	0.00
116 Takaka River at Harwoods	1400	18.4	4.9	0.0	0.00
117 Riwaka River at Moss Bush	1750	25.0	3.8	0.0	0.00
118 Riwaka River at Moss Bush	1270	12.5	3.0	0.0	0.00
119 Shag River at Dunbach	1600	6.6	6.7	0.0	0.00
120 Waikanae River at Water treatment plant	1400	25.0	7.7	0.0	0.00
121 Oreti River above Mossburn	1825	30.2	10.2	0.0	0.00
122 Irthing Stream at recorder	1100	21.0	8.6	0.0	0.00
123 Mataura River at Nokomai	950	25.5	3.0	0.0	0.00
124 Waikaia River at Piano Flat	1050	30.0	8.6	0.0	0.00
125 Waingawa River at Water level recorder	1600	16.3	6.3	0.0	0.00
126 Pomahaka River at Hukarere	1300	15.0	9.0	0.0	0.00
127 Aparima River above Otautau	2400	30.0	12.4	0.0	0.00
128 Baton River above concrete ford	2000	18.2	4.5	0.0	0.00
129 Motueka River at Woodstock	2040	40.8	7.2	0.0	0.00
130 Wairoa River at Gorge	1300	21.4	10.0	0.0	0.00
131 Inangahua River at Landing	1250	60.0	5.1	0.0	0.00
132 Maruia River at Paenga	1400	40.0	7.2	0.0	0.00
133 Mangles River at Gorge	850	16.4	5.1	0.0	0.00
134 Buller River above Hope Junction	1865	25.0	7.1	0.0	0.00
135 Buller River below Lake Rotoiti	1500	20.0	6.8	0.0	0.00
136 Aorere River at Devils Boots	2100	50.0	5.5	0.0	0.00
137 Mokihinui River at cableway	2100	45.0	5.4	0.0	0.00
138 Spring Creek at Odwyers Road	3100	9.6	7.0	0.0	0.00
139 Inangahua River at Blacks Point	1800	18.5	6.4	0.0	0.00
140 Taipo River at Gorge	3000	29.3	12.4	0.1	0.00
141 Arnold River at Kotuku	1400	41.2	4.0	0.0	0.00
142 Haupiri River d/s of Lake	1400	30.0	8.0	0.0	0.00
143 Gowan River below outlet	1800	25.1	9.0	0.0	0.00
144 Arnold River at Kokiri	1200	48.0	4.5	0.0	0.00
145 Hurunui River below Lake Sumner	1600	33.1	6.5	0.0	0.00
146 Hurunui River at Lake Taylor (reach b)	3300	28.0	5.0	0.0	0.00
147 Hurunui River at Lake Taylor (reach c)	2800	28.0	5.0	0.0	0.00
148 Selwyn River at Whitecliffs	1200	14.3	6.6	0.0	0.00
149 Waimakariri River at groyne 0	4500	30.0	5.0	0.1	0.00
150 Takaka River at Kotinga Bridge	1990	70.0	9.5	0.0	0.00
151 Orari River at Gorge	1400	14.0	6.0	0.0	0.00
152 Spring Creek at Spring Creek	2500	10.0	5.0	0.0	0.00
153 Grey River at Waipuna	1350	68.6	9.5	0.0	0.00

Trout Survey Results - Rainbow trout sorted in order of biomass in kg/km
(May-October excluded)
(Surveys with reach lengths <500 or visibility < 3 metres excluded)

River and access	Reach	Width	Vis.	Biomass	
	Leng. (m)	(m)	(m)	kg/km	g/m2
1 Tauranga-Taupo River at Pump Pool	1800	17.5	5.4	89.0	5.09
2 Clutha River at Lake Wanaka outlet	3200	90.0	5.0	76.8	0.85
3 Waihou River at Whites Road	2400	10.9	6.7	76.1	6.98
4 Rangitaiki River above Murapara	1300	25.0	4.7	73.3	2.93
5 Tongariro River at Turangi	1900	37.7	4.9	69.1	1.83
6 Tekapo River below Maryburn	1300	40.0	5.0	52.4	1.31
7 Rangitikei River headwaters A	1600	30.0	17.5	45.2	1.51
8 Tarawera River at lake outlet	1100	20.0	7.4	36.6	1.83
9 Rai River above falls	1000	22.8	5.0	33.6	1.48
10 Mararoa River above w.l. recorder	2000	26.9	7.0	33.4	1.24
11 Tekapo River above steel bridge	1100	40.0	5.0	29.9	0.75
12 Taruarau River headwaters	1300	15.0	4.4	28.0	1.87
13 Rangitikei River at Mangaohane A	1280	32.0	6.0	27.9	0.87
14 Tekapo River at Willows	1000	40.0	5.0	27.4	0.69
15 Wanganui River at Kakahi	1700	37.9	4.9	26.7	0.70
16 Rangitikei River headwaters B	1600	32.0	14.8	24.0	0.75
17 Rangitikei River at Springvale A	1670	26.5	10.0	23.9	0.90
18 Tekapo River below Pukaki confluence	1440	18.5	5.9	23.6	1.27
19 Waimakariri River at SH 5 Bridge	1600	11.2	3.5	20.7	1.85
20 Manganuioteao River Training pool	1200	50.0	3.0	20.6	0.41
21 Rangitikei River at Mangaohane Gorge	1600	16.0	5.0	19.6	1.22
22 Rangitikei River at Pukeokahu	1100	34.0	3.5	19.4	0.57
23 Rangitikei River at Mangaohane B	1510	31.0	5.0	18.0	0.58
24 Mohaka River below Glenfalls reserve	6500	40.0	5.4	17.7	0.44
25 Ngaruroro River Ngawapurua	1100	20.0	8.7	17.6	0.88
26 Rangitikei River at Mangaohane B	1750	31.0	3.5	17.5	0.57
27 Ahuriri River at SH Bridge	1100	43.0	4.0	17.1	0.40
28 Manganuioteao River Mangamingi	2300	50.0	3.0	16.3	0.33
29 Mohaka River at SH5 bridge	1650	40.0	7.5	16.0	0.40
30 Rangitikei River at Mangaohane A	1890	32.0	3.5	14.3	0.45
31 Tekapo River above Grays River	1000	25.0	5.0	13.9	0.56
32 Waipapa River at recorder	1050	25.0	4.6	13.7	0.55
33 Taruarau River headwaters	1000	14.0	9.0	13.7	0.98
34 Pelorus River at Maungatapu Road	1300	30.3	8.8	12.3	0.40
35 Hakataramea River at SH Bridge	1450	13.0	7.0	12.1	0.93
36 Tarawera River below falls	1600	10.0	6.8	11.8	1.18
37 Rangitikei River at Springvale B	1330	40.0	10.0	11.7	0.29
38 Ngaruroro River at Whanawhana	1500	23.0	6.0	11.4	0.50
39 Tekapo River below Forks River	700	15.0	3.0	11.0	0.74
40 Manganuioteao River Mangaturuturu	8200	50.0	3.0	10.9	0.22
41 Manganuioteao River Hoihenga Bridge	4000	50.0	3.0	10.0	0.20
42 Manganuioteao River Ram paddock	2200	50.0	3.0	9.1	0.18
43 Manganuioteao River Olivers Swing Br.	1700	50.0	3.0	7.8	0.16
44 Tongariro River at Waipakahi Confluence	1300	28.0	6.5	7.3	0.26
45 Manganuioteao River Possum Ridge	4900	50.0	3.0	7.2	0.14
46 Waioeka River at Gorge	1500	30.0	9.0	6.7	0.22
47 Taruarau River at Taihape Road	1400	12.0	10.2	6.5	0.54

48 Waipawa River at Fletchers Crossing	1340	15.0	6.8	5.0	0.33
49 Ngaruroro River at Kuripapango	2900	20.1	9.0	4.8	0.24
50 Waitaki River 30 cumec channel	2630	55.0	7.0	4.7	0.09
51 Tutakuri River at Puketapu Bridge	1700	20.4	4.0	4.5	0.22
52 Makaroro River at Makaroro Road	2100	12.0	3.3	4.4	0.36
53 Whakapapa River at Intake	6500	20.0	3.0	4.0	0.20
54 Waimana River at Olgivies Bridge	1300	18.4	5.3	3.6	0.19
55 Mohaka River at Poronui	650	16.0	10.0	3.6	0.22
56 Ahuriri River at Thomas's	1200	31.1	6.0	3.4	0.11
57 Whakapapa River at Whakapapanui	3700	20.0	4.0	2.9	0.14
58 Rangitikei River headwaters C	1000	15.0	10.0	2.7	0.18
59 Mangorewa River at Water level recorder	2000	12.0	12.6	2.3	0.19
60 Otematata River at Pumphouse	1800	19.8	5.5	2.1	0.11
61 Kaueranga River at Water level recorder	1200	22.8	5.4	1.9	0.08
62 Stony River at Okato	1150	11.8	13.0	1.2	0.10
63 Mohaka River above Otupua Stm	2250	23.0	3.9	1.0	0.04
64 Taramakau River at Kumara	4000	100.0	4.2	0.9	0.01
65 Wanganui River at SH 47	1700	4.5	10.5	0.8	0.17
66 Esk River at Eskdale Park	1400	14.4	4.0	0.8	0.06
67 Tairua River above Broken Hills	2000	20.0	4.1	0.8	0.04
68 Ahaura River above Haupiri confluence	1970	40.0	19.0	0.8	0.02
69 Maerewhenua River at Kellys Gully	1350	11.0	10.6	0.5	0.05
70 Waitaki River 15 cumec channel	850	25.4	5.9	0.4	0.02
71 Hurunui River below Lake Sumner (reach a)	4700	33.1	3.3	0.4	0.01
72 Gowan River at Lake Outlet	800	30.0	8.5	0.4	0.01
73 Waitaki River 20 cumec channel	1750	28.2	5.5	0.2	0.01
74 Waimakariri River at groyne 0	4500	30.0	5.0	0.1	0.00
75 Taipo River at Gorge	3000	29.3	12.4	0.1	0.00
76 Hutt River at Whakatiki Street	800	20.0	3.0	0.0	0.00
77 Hutt River below Akatarawa Forks	1450	21.8	5.1	0.0	0.00
78 Akatarawa River at West Akatarawa Road	1500	13.2	6.7	0.0	0.00
79 Tauherenikau River at Recorder	928	14.3	18.0	0.0	0.00
80 Waiohine River at Gauge	2060	38.3	16.0	0.0	0.00
81 Hutt River at Silverstream cut	610	40.0	4.0	0.0	0.00
82 Hutt River at Taita Rock	500	50.0	3.0	0.0	0.00
83 Ruamahanga River at Wardells	1270	30.1	5.5	0.0	0.00
84 Moawhango River at Moawhango	1700	13.7	3.1	0.0	0.00
85 Mangatainoka River at Tui Brewery	1500	26.0	4.5	0.0	0.00
86 Ohau River at Gladstone Road	1910	17.5	6.4	0.0	0.00
87 Waimana River at Gorge	1200	25.0	3.0	0.0	0.00
88 Kaupokonui River at Skeet Road	900	10.5	6.2	0.0	0.00
89 Manganui River at Croyden Road	1100	14.7	5.7	0.0	0.00
90 Whakatiki River at Bulls Run Road	1060	9.5	4.1	0.0	0.00
91 Waiwakaiho River at SH 3	1000	16.5	4.2	0.0	0.00
92 Otaki River at Swingbridge	1335	24.2	14.0	0.0	0.00
93 Pohangina River at Raumai	2250	22.6	4.6	0.0	0.00
94 Tukituki River at Fairfield Road	1000	9.0	5.0	0.0	0.00
95 Selwyn River at Coes Ford	1000	12.0	8.0	0.0	0.00
96 Ahuriri River (upper) above Birchwood	1940	30.0	9.0	0.0	0.00
97 Ruamahanga River at SH 2 Bridge	2200	22.0	9.0	0.0	0.00
98 Oroua River at Feilding Road	1600	14.1	3.1	0.0	0.00
99 Opihi River at Rockwood Bridge	1280	14.5	4.4	0.0	0.00
100 Karamea River at Arapito	1400	70.0	5.3	0.0	0.00
101 Karamea River above bend	1850	50.0	14.0	0.0	0.00
102 Karamea River above Crow Hut	2050	30.0	12.6	0.0	0.00

103 Opihi River at SH1 Bridge	1300	24.2	10.2	0.0	0.00
104 Mokihinui River (South Branch)	1950	30.0	12.0	0.0	0.00
105 Hautapu River at Abattoir Road	1600	13.0	4.6	0.0	0.00
106 Waingongoro River at Eltham	1540	7.9	5.4	0.0	0.00
107 Mokihinui River (North Branch)	2050	25.0	10.8	0.0	0.00
108 Patea River at King Edward Park	950	9.6	3.0	0.0	0.00
109 Waitaki River 5 cumec channel	1500	18.6	5.0	0.0	0.00
110 Waitaki River 10 cumec channel	2350	21.3	5.2	0.0	0.00
111 Patea River above Stratford water intake	1920	5.0	4.1	0.0	0.00
112 Waiari Stream at Muttons farm	2000	9.7	9.7	0.0	0.00
113 Mangahao River at Ballance Bridge	1400	27.1	4.8	0.0	0.00
114 Manuherikia River at Ophir	1250	25.0	3.0	0.0	0.00
115 Kakanui River (upper)	1560	9.0	5.0	0.0	0.00
116 Kakanui River at Pringles	1140	22.3	3.8	0.0	0.00
117 Kakanui River at Pringles	1140	22.3	6.5	0.0	0.00
118 Takaka River at Harwoods	1400	18.4	4.9	0.0	0.00
119 Riwaka River at Moss Bush	1750	25.0	3.8	0.0	0.00
120 Riwaka River at Moss Bush	1270	12.5	3.0	0.0	0.00
121 Shag River at Dunbach	1600	6.6	6.7	0.0	0.00
122 Waikanae River at Water treatment plant	1400	25.0	7.7	0.0	0.00
123 Oreti River above Mossburn	1825	30.2	10.2	0.0	0.00
124 Irthing Stream at recorder	1100	21.0	8.6	0.0	0.00
125 Mataura River at Nokomai	950	25.5	3.0	0.0	0.00
126 Waikaia River at Piano Flat	1050	30.0	8.6	0.0	0.00
127 Waingawa River at Water level recorder	1600	16.3	6.3	0.0	0.00
128 Pomahaka River at Hukarere	1300	15.0	9.0	0.0	0.00
129 Aparima River above Otautau	2400	30.0	12.4	0.0	0.00
130 Baton River above concrete ford	2000	18.2	4.5	0.0	0.00
131 Motueka River at Woodstock	2040	40.8	7.2	0.0	0.00
132 Wairoa River at Gorge	1300	21.4	10.0	0.0	0.00
133 Buller River below Lake Rotoiti	1500	20.0	6.8	0.0	0.00
134 Maruia River at Paenga	1400	40.0	7.2	0.0	0.00
135 Inangahua River at Blacks Point	1800	18.5	6.4	0.0	0.00
136 Inangahua River at Landing	1250	60.0	5.1	0.0	0.00
137 Mangles River at Gorge	850	16.4	5.1	0.0	0.00
138 Mokihinui River at cableway	2100	45.0	5.4	0.0	0.00
139 Spring Creek at Odwyers Road	3100	9.6	7.0	0.0	0.00
140 Buller River above Hope Junction	1865	25.0	7.1	0.0	0.00
141 Arnold River at Kotuku	1400	41.2	4.0	0.0	0.00
142 Haupiri River d/s of Lake	1400	30.0	8.0	0.0	0.00
143 Gowan River below outlet	1800	25.1	9.0	0.0	0.00
144 Aorere River at Devils Boots	2100	50.0	5.5	0.0	0.00
145 Hurunui River below Lake Sumner	1600	33.1	6.5	0.0	0.00
146 Hurunui River at Lake Taylor (reach b)	3300	28.0	5.0	0.0	0.00
147 Hurunui River at Lake Taylor (reach c)	2800	28.0	5.0	0.0	0.00
148 Selwyn River at Whitecliffs	1200	14.3	6.6	0.0	0.00
149 Arnold River at Kokiri	1200	48.0	4.5	0.0	0.00
150 Takaka River at Kotinga Bridge	1990	70.0	9.5	0.0	0.00
151 Orari River at Gorge	1400	14.0	6.0	0.0	0.00
152 Spring Creek at Spring Creek	2500	10.0	5.0	0.0	0.00
153 Grey River at Waipuna	1350	68.6	9.5	0.0	0.00