

FRESHWATER FISHERIES ADVISORY SERVICE

RD

MARINE DEPARTMENT

INVESTIGATION REPORT

JOB No. 55

ACCLIMATISATION DISTRICT: Southland.

TITLE OF JOB: A survey of the Otapiri Stream.

OBJECTIVES: To assess the density of the trout population and bottom fauna of the Otapiri Stream.

INTRODUCTION

Samples of the bottom fauna were taken in February, May and August, 1963, and in January, 1964, by R. Boud and E. Cudby, Technical Field Officers. Together with K. Maynard and R. Cormack, technical staff, Fisheries Laboratory, Wellington, these officers also sampled the trout population with an electric fishing machine, (January, 1964).

METHODS

78 bottom fauna samples, divided between pools and stickles, were taken with a square foot Surber sampler from five stations, (see Map 1).

Five stations (see Map 1) were electrically-fished with a pack-set type machine. Qualitative trout samples were obtained from four stations. At Station 1 the mark-and-recapture method of fishing was used to estimate trout numbers using the formula  $\frac{m(c+1)}{R+1}$

where  $m$  = no. of fish marked

$c$  = total second catch

$R$  = no. of marked fish recaptured.

### FINDINGS

#### DESCRIPTION:

The Otapiri Stream, (Map 1), a tributary of the Oreti River, rises in the vicinity of Glenure Hill between Balfour and Dipton. Flowing in a southerly direction for about 25 miles it joins the Makarewa River four miles north of Hedgehope. It has one major tributary, Taylor's Stream.

#### PHYSICAL FEATURES:

The valley of the Otapiri is initially wide and tussock covered. From the junction with Taylor's Stream it is narrow, steep, and bush clad, (the Otapiri Gorge). Shortly above Otapiri township the valley opens out into farmland and finally merges into the wide, flat lands of the Oreti River.

A stable, well-entrenched stream, largely unaffected by flooding, the Otapiri follows an extremely tortuous course from 20 to 40 ft. in width. In the upper reaches the bed is bare rock, large stones and gravels. These give way to finer gravels, clay and heavy silt deposits in the middle and lower reaches. The latter are deep and slow moving with pools up to 6 ft. deep and have little shallow fast-flowing water.

#### VEGETATION:

Aquatic plants, principally Potomageton spp. and

Anacharis canadensis, are abundant in the slower waters.

The streambank vegetation above the Otapiri Gorge is mainly grasses and tussocks. Down from this point native shrubs and trees, and subsequently willows, predominate.

BOTTOM FAUNA:

The number of samples taken at each station is listed below:

Station	1	2	3	4	5
No.	18	18	18	14	14

No samples were taken at Stations 4 and 5 during August, 1963, because of high water conditions.

Table 1 shows the average numbers and types of animals found.

BROWN TROUT (SALMO TRUTTA):

Table 2 shows the length of each station fished and the catch.

The pack-set type equipment has a limited efficiency with regard to the area (depth and width) of water which can be fished. Station 1 was the only area which was adequately sampled. The trout population of this area was estimated at 285 fish by the mark-and-recapture method.

Fig. 1 is a length-frequency distribution graph of the total catch. It is compared with the length-frequency

graph of the Station 1 samples.

NATIVE FISH:

Numbers of long-finned eels (Anguilla dieffenbachii) of all sizes, together with bullies (both Gobiomorphus and Phylipnodon spp.), and larvae (ammocoete) of the lamprey were seen.

DISCUSSION:

BOTTOM FAUNA:

The results of sampling with a Surber sampler are subject to several variables which must be taken into account when making comparisons with other streams. However, it can be said that similar types of animals are present in Surber samples from other trout streams and the numbers found in the Otapiri are within the range of numbers record elsewhere. (Ashley River, Job No. 39; Hakataramea River, Job No. 36; Aparima River, Job No. 32; Hinds River, Job No. 53).

BROWN TROUT:

The results obtained from electric fishing with the pack-set machine are inconclusive. The growth curve plotted on Fig. 2 shows a slower growth rate than either the Horokiwi or Hinds rivers, with which it is compared, yet the condition factor (as calculated on the Corbett scale) of 45 for 15 one-year old - plus trout, it is very comparable to either.

The length frequency of the whole catch as plotted in

5.

Fig. 1 is similar to the length frequency of the catch at Station 1. This indicates a size range of from 1½ inches to 16" in length.

Insufficient data was collected to estimate the trout population density.

#### CONCLUSIONS

##### BOTTOM FAUNA:

The types of animals found, and the numbers, are similar to, and within the range of, samples examined from other South Island streams.

##### TROUT POPULATION:

Insufficient data was obtained to assess the present state of the trout population.

#### RECOMMENDATIONS

An intensive study be completed.

Executed by: R. Boud  
E. Cudby,  
Technical Field Officers.

Issued September 1966.

OTAPIRI STREAM - TABLE I

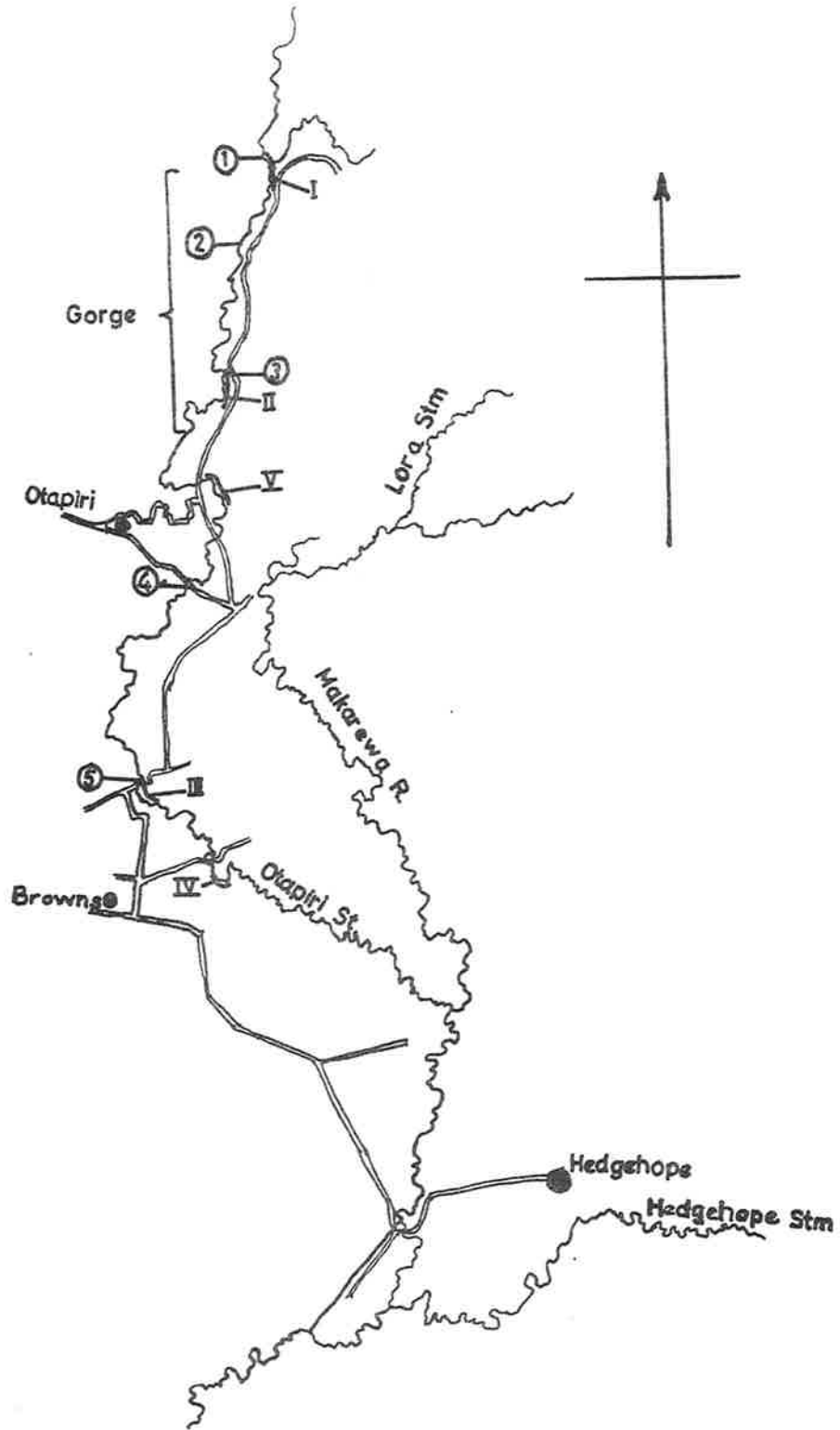
Average numbers of animals found per sq. ft.

	STATION 1		STATION 2		STATION 3		STATION 4		STATION 5		
	Ripple	Pool	Ripple	Pool	Ripple	Pool	Ripple	Pool	Ripple	Pool	
Hydropsyche	10.8	2.0	27.8	14.8	29.8	5.0	77.0	1.0	72.5	2.0	
Rhyacophilidae	3.8	6.8	4.3	8.0	3.0	8.0	3.8	1.0	4.3	70.1	
Oxyethira	8.3	8.0	3.0	7.5	0.5	3.0	0.5	-	0.8	-	Caddis
Sandy-cased Caddis	10.3	1.0	5.3	6.5	112.0	152.5	275.5	127.8	10.8	36.0	
Olinga	3.5	4.0	5.8	6.0	10.3	7.8	1.0	-	1.0	-	
Deleatidium	52.0	33.0	73.3	29.0	78.5	28.3	76.5	31.0	103.0	40.0	Mayfly
Parnid larvae	5.3	0.9	1.0	3.0	0.3	70.1	17.3	62.0	78.8	92.0	Beetle
Chironomidae	23.8	43.0	10.5	12.0	41.8	21.5	1.0	1.3	2.0	1.0	True
Simuliidae	10.8	0.9	9.3	4.8	29.3	0.5	32.0	-	1.5	-	Flies
Potamopyrgus	12.0	8.0	25.0	137.0	25.0	37.3	40.0	13.0	48.0	16.8	Molluscs
Sphaeriidae	-	-	-	2.0	0.8	8.0	0.5	-	-	-	
Tubificidae	5.0	11.0	14.9	50.0	4.0	20.0	13.8	12.0	46.5	53.0	Worms
Platyhelminthes	7.0	-	5.0	3.0	6.8	3.3	8.3	2.0	10.0	3.0	
Av. No./water type stn.	202.6	118.6	185.2	283.6	342.1	295.3	547.2	251.1	379.2	243.8	
TOTAL: Av. No./Station	160.6		234.4		318.7		399.1		311.5		

TABLE II

<u>STATION</u>	<u>LENGTH YDS.</u>	<u>TROUT CATCH</u>
1	150	161
2	75	15
3	100	34
4	50	22
5	120	118
<b>TOTAL</b>	<b>495</b>	<b>350</b>

# OTAPIRI STREAM



SCALE 1 Inch = 2 Miles

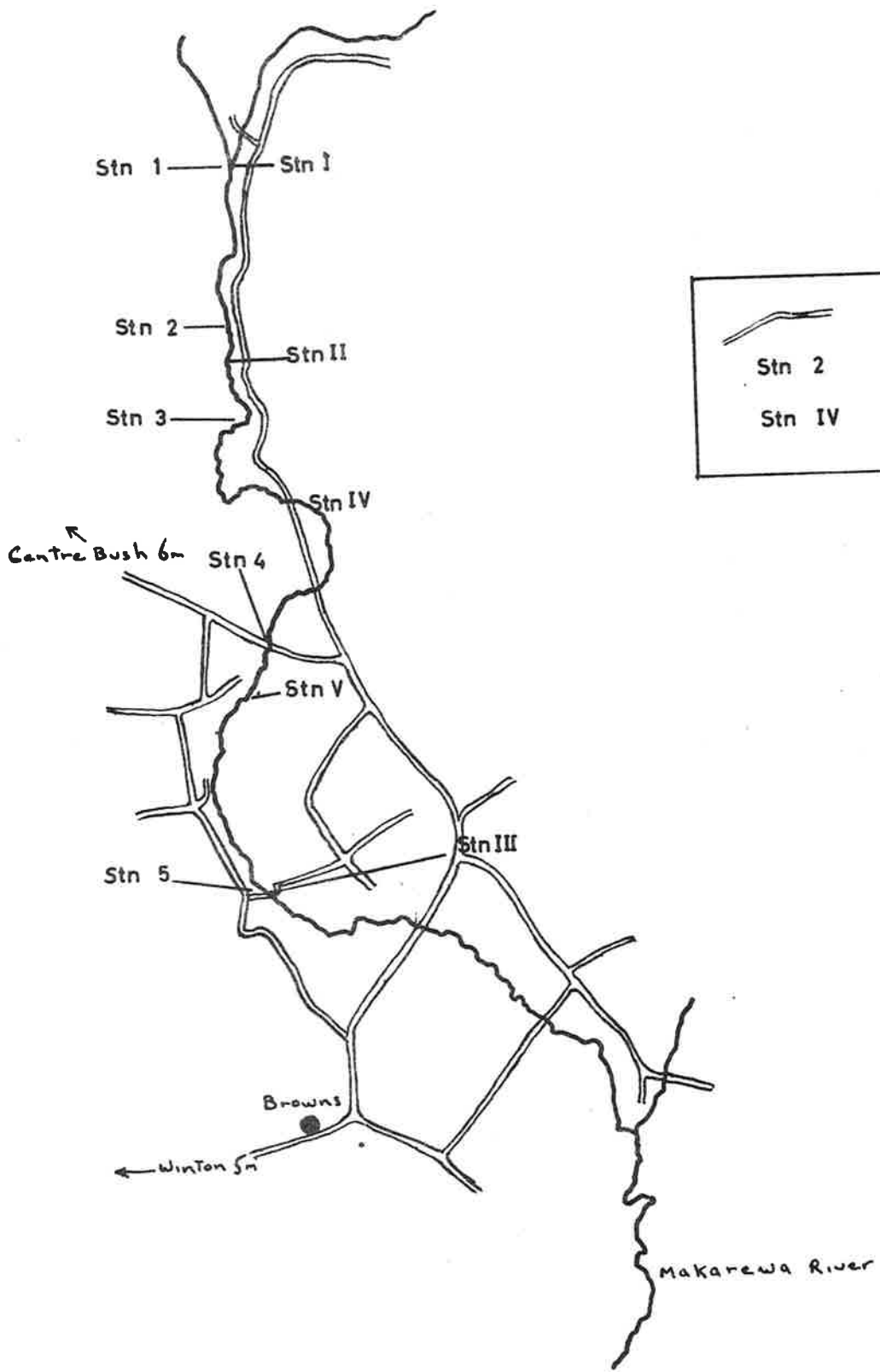
SAMPLING STATIONS ② —

ELECTRIC FISHING STATIONS I — IV



# OTAPIRI STREAM Southland

NOT TO SCALE




	Road
Stn 2	Bottom Fauna Stn.
Stn IV	Electric Fishing Stn

Fig.1 Length Frequency  
 Otapiri Stm. Brown Trout. Jan.1964

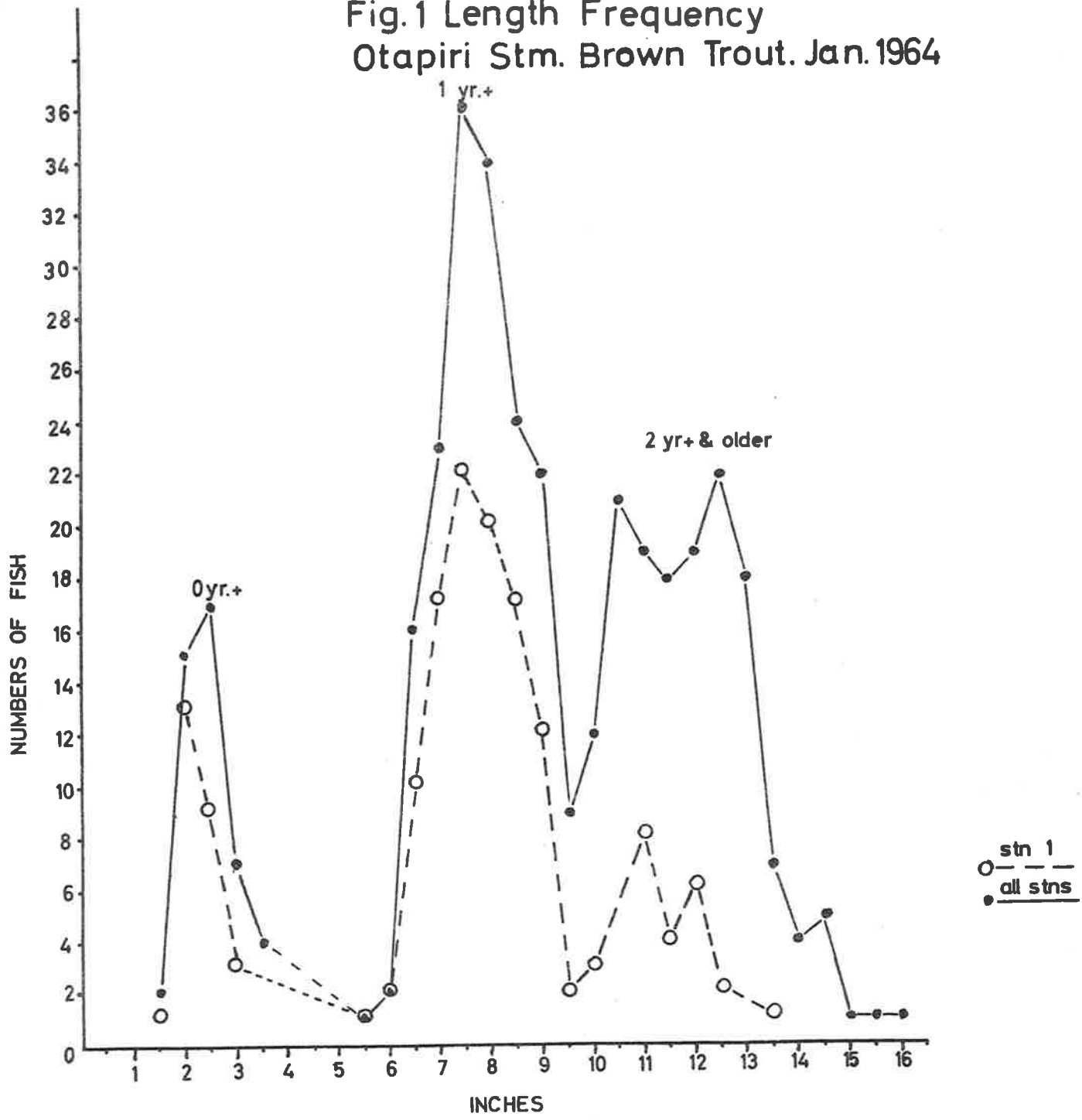


Fig. 2. OTAPIRI STM.  
Brown Trout Growth Rate.

