

FRESHWATER FISHERIES ADVISORY SERVICE

MARINE DEPARTMENT

INVESTIGATION REPORT

JOB NO. 32

ACCLIMATISATION SOCIETY DISTRICT: Southland

TITLE OF JOB: Survey of upper reaches of the Oreti and Aparima Rivers,
and their tributaries.

OBJECTIVES:

1. To determine the reasons for the small stock of trout in the survey areas.
2. To determine whether or not it is practical to transfer small fish from the middle reaches to the survey areas.
3. To determine whether or not it is necessary to introduce Galaxiids as food fish to the survey areas.

FINDINGS: This investigation was carried out in January 1962.

A. PHYSICAL FEATURES

1. Oreti River - from Rocky Point to "Limit of Survey" (see Fig. 1).

The Oreti River rises in the Thomson Mountains and flows through a steep-sided valley which averages three-quarter mile in width. The valley floor is clad in tussock; the sides, mainly in beech forest. The river is up to 30 yards wide and the bed is composed of boulders, rock-outcrops, shingle and stones, with a little sandy material between the stones. The flow is swift, and the bed fairly unstable. The river is generally rather shallow, averaging 2 to 3 feet in depth. There are occasional pools approximately 10 to 15 feet deep; these pools generally occur where the river flows against a rocky bluff, hence the bed and one bank are stable. The banks in the upper part of the survey area are fairly stable, while those in the lower part tend to be more eroded.

2. Aparima River - from Jacob's River Bridge to "Limit of Survey" (see Fig. 2).

The Aparima River rises in the Takitimu Mountains and flows for some miles through thick beech forest. Close to the confluence with the Waterloo Burn, it flows out of the bush and enters a wide tussock-clad valley similar to that of the Oreti River. The Aparima River was divided into three sections:

- (a) From Jacob's River Bridge to confluence with Waterloo Burn.
- (b) The main stream above confluence with Waterloo Burn.
- (c) Waterloo Burn.

Section (a)

This section is comparable to the Oreti River although it is possibly more unstable; especially in the upper part of the section. The bed is composed of boulders, stones, gravel and sand; the areas of fine loose gravel are more extensive here than in the Oreti River. The shingle banks are not as stable as those in the Oreti River. There are fewer deep pools than in the Oreti River.

Section (b)

In this area the river flows through the bush. The gradient is steep, consequently the flow is swift. There are, however, a number of good pools at the foot of rocky bluffs. A number of large slips have deposited considerable amounts of fine gravel and silt in the river.

Section (c)

The area of this section is similar to that of Section (a), although the stream is less than half the size here, and the bed is more stable. The banks are tussock covered and fairly stable; the bed is composed of boulders, stones and gravel.

A tributary of the Aparima River, Pleasant Creek, was examined for approximately three-quarter mile to evaluate its usefulness as a spawning stream. It is similar to Waterloo Burn.

B. BOTTOM FAUNA

Bottom fauna samples, one square foot in area, were taken with a Surber sampler throughout the survey area, except in Pleasant Creek. Details of the samples can be found in Tables I and II. From these tables, it can be seen that the dominant species were *Deleatidium* (mayflies) and *Pycnocentria* (caddisfly), in that order. The other forms varied in importance in different areas. Behaviour investigations into the food of trout have shown that mayfly and caddis larvae are the most important food organisms. However, the density of all bottom fauna is low.

C. TROUT STOCKS

Both river systems have been stocked with brown trout. Samples of the trout stocks were taken by angling and by use of an electric fishing machine. Unfortunately, this machine does not operate efficiently in large bodies of water such as the main streams; samples were therefore taken only from the small side channels with this machine. The stocks appear to be composed of a few large trout (up to 12 lbs in the Oreti River), and numerous fingerlings of the current year's hatch, but very few yearling trout.

Table III summarises the findings about the trout stocks in the various areas. Due to lack of time, the Oreti River was incompletely sampled with the electric fishing machine; however, an indication of the stock and its composition was obtained. The two trout obtained by angling from the Oreti had been eating large numbers of aquatic larvae and large *Galaxias*.

It should be noted that studies of brown trout in various New Zealand streams have shown almost invariably that the population of the upper reaches consists of a few large fish, as is the case in these river systems.

D. NATIVE FISH

During electric fishing operations, samples of the native fish were taken. Both systems contained longfinned eels, *Galaxias vulgaris*, *G. fasciatus* and various bullies (*Philypnodon* spp.) in large numbers. A few freshwater crayfish were also present in quieter pools and backwaters.

E. SPAWNING FACILITIES

Judging from the number of fingerlings seen, there appear to be adequate spawning facilities in both systems. In the Aparima River, these seem to be mainly in Pleasant Creek and Waterloo Burn where areas of good spawning gravel were seen. The Oreti River has three good spring-fed spawning creeks flowing in near the lower limit of the survey, and one near the upper limit.

It is probable, however, that much of the spawning takes place in side channels of the main stream in both systems.

CONCLUSIONS AND RECOMMENDATIONS

From the foregoing, the following conclusions can be drawn:

- A. The small stocks of large trout in the survey areas are not abnormal and may be due to:
 - (1) Poor food supply (specially in the Aparima River where the river bed is unstable).
 - (2) The apparent absence of some age groups (possibly due to the emigration of yearling trout, with the subsequent return of a few adults).
- B. Adequate spawning takes place to maintain the trout stocks at their present levels.
- C. Native fish are present in sufficient numbers to constitute an important article of the trout's food.

It is therefore recommended that no small trout or Galaxiids be liberated in the upper reaches of these river systems.

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TABLE I. Bottom fauna percentage composition.

	Average density (no. per sq. ft.)	Total number sampled	Trichoptera+	Ephemeroptera+	Plecoptera	Coleoptera*	Diptera	Neuroptera	Annelida*
Oreti River Upper reaches	204		41.8% (<i>Pycnocentria</i>) 80.4%)	43.3% (<i>Deleatidium</i> 98.4%)	2.1%	11.4%	0.8%	0.1%	0.3%
Actual numbers present		4088	1709	1772	87	467	34	6	13
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Aparima River Section (a)	116		25.1% (<i>Pycnocentria</i> 66.7%)	62.1% (<i>Deleatidium</i> 97.2%)	1.6%	8.5%	2.7%	0.1%	-
Aparima River Section (b)	32		2.3% (<i>Pycnocentria</i> 66.7%)	82.9% (<i>Deleatidium</i> 100%)	1.5%	4.5%	8.5%	-	-
Aparima River Section (c)	149		41.9% (<i>Pycnocentria</i> 95.2%)	52.2% (<i>Deleatidium</i> 93.9%)	0.5%	3.7%	1.6%	-	-
Total actual numbers present		1885	543	1138	24	127	52	1	-

+ Important food for trout

* Seldom eaten by trout

TABLE II. Bottom fauna data.

	No. of samples	Average density (number/sq.foot)	Per cent composed of	
			<i>Pycnocentria</i> and <i>Deleatidium</i>	<i>Trichoptera</i> and <i>Ephemeroptera</i>
Oreti River	20	204	76.2%	85.1%
Aparima River Section (a)	10	116	77.1%	87.2%
Section (b)	4	32	84.4%	85.2%
Section (c)	4	149	88.9%	94.1%

TABLE III. Fishing Results

Area	Number of trout caught	Size range of trout	Total number of trout caught
<u>Electric fishing machine</u>			
Oreti (incomplete)) side channels and) creeks only)	(7 (178	6" - 23" 1½" - 6"	185
Aparima River Section (a) Section (b)	(9 (233 (1	6" - 11" 1½" - 6" 20" - (3¼lb)	243
Section (c)	(10 (23	6" - 8") 2" - 6")	33
Pleasant Creek	(22 (67	5" - 9") 1-¾" - 5"	89
<u>Angling</u>			
Oreti River	1 male 1 male	25" (6-¾ lb) 27" (7½ lb)	
Aparima River	1 ?	? (6 to 8 lb) seen only	

Fig. 1

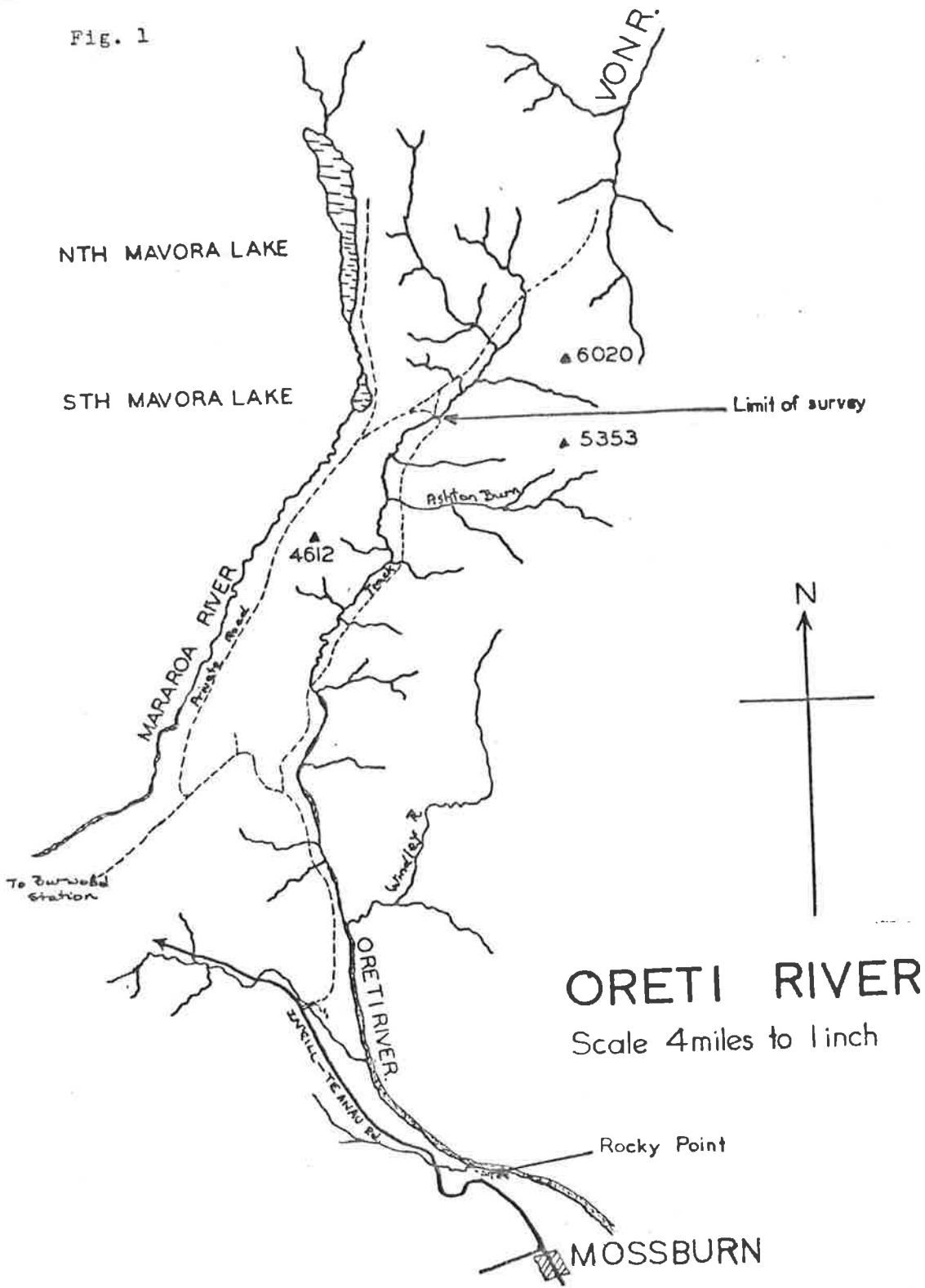


Fig. 2

APARIMA RIVER

