FRESHWATER FISHERIES ADVISORY SERVICE

MARINE DEPARTMENT

INVESTIGATION REPORT

JOB NO. 17

ACCLIMATISATION SOCIETY DISTRICT: Marlborough

TITLE OF JOB: Investigation of the Waihopai and Avon Rivers.

OBJECTIVES: To determine the causes for the apparent low trout population of the Waihopai and Avon Rivers.

FINDINGS: This investigation was made in November 1959.

A. PHYSICAL FEATURES

Waihopai River

The Waihopai River rises on the northern slope of the Acheron Saddle, and flows north-eastwards through steep grass and scrub covered hill country for approximately 50 miles before joining the Wairau River 4 miles west of Renwicktown.

In the upper 12 miles the river flows rapidly through a wide unstable flood bed which sometimes exceeds 100 yards in breadth, and is composed of boulders and large stones. The water in the rapids is not deep, seldom exceeding 3 ft and there are few deep pools. The banks in this region are very unstable; their cover consists mainly of grass and manuka.

From a point just below the end of the Waihopai Valley Road, to Craiglochart, the river flows through a narrow steep sided gorge with very stable scrub and bush covered banks rising from 50 to 150 ft. The water here flows alternately through deep narrow pools and over short rapids.

A hydro-electric dam situated a mile above the Benhopai Station divides the river into two sections, and for some distance above the dam, the gorge has been filled in by deposits of shingle.

For the final 8 or 10 miles of the Waihopai's course, the country opens out, and the river regains a wide unstable flood bed, with grass covered banks from 3 ft to 50 ft in height.

There is no higher plant life in the entire course of the Waihopai River, and in most places there is only a very meagre algal growth.

Avon River

The Avon River rises in steep hill country between the Awatere and Waihopai Rivers. It flows north-eastwards for approximately 12 miles gradually converging with the Waihopai, which it joins 12 miles above the junction with the Wairau River.

In the upper reaches the Avon is a stable stream some 12 ft wide, with stable grass and scrub covered banks rising to 5 ft. There is no flood bed, and the stream bed comprises good gravel and larger stones, with no weed growth. Below the confluence of the Teme River, the Avon enters a narrow gorge with bush clad banks rising to about 120 ft. The bed of the stream becomes very unstable, and is composed of large boulders, loose stones and gravel.

B. BOTTOM FAUNA

Bottom samples were taken with a Surber square foot sampler in both rivers. It was not necessary to take many samples as conditions altered very little in either stream, except from one main section to another, as outlined above.

Waihopai River

Ten bottom samples were taken from various parts of the river, six from ripples and four from flats. The bottom fauna density is very light, with an average of 22 animals per square foot in the ripples and 50 animals per square foot in the flats (see Table 1).

Avon River

Five samples were taken from the Avon, three from ripples and two from flats. Animal density was higher than in the Waihopai, but still light, at 203 animals per square foot. (208 ripple and 196 flat) (see Table 1).

C. EELS

Eels were taken by trapping from both rivers. The method used was to set a number of traps at three chain intervals for a period of three nights, thereby making an expected catch of 90% trappable eels from the areas between the traps (Burnet).

The Waihopai River is estimated as holding a minimum average of 101 lbs of eels per acre, and the Avon as holding an average of 79 lbs per acre. These populations are only moderate by comparison with some other rivers and are probably kept down by the lack of cover and the rapid fall.

An examination of all gut contents of eels trapped revealed remains of many of the species of bottom fauna found in their locality and also the remains of various terrestrial insects, notably the grass grub beetle, and in some cases

the remains of other eels, trout and in one instance, hedgehog.

D. OTHER NATIVE FISH

Waihopai River

Few native fish were observed in the Waihopai from the gorge downstream, but a few scattered colonies of bullies, probably *Philypnoden* spp. were located in quieter areas of the gorge itself. In the upper reaches, however, larger numbers of bullies were noted, and a second type, *Gobiomorphus radiata*, was identified. Most of these bullies, and a number of unidentified galaxiid fry were seen in small springs rising in the flood bed or flood area of the main river.

Avon River

The same species were also observed in the Avon River, but the numbers were greater in a given area of water. Galaxiid fry were particularly prominent in sheltered areas, but no adult fish were located.

E. THE TROUT STOCK

Waihopai River

Brown trout were observed at many points in the Waihopai River (see map), both above and below the hydro dam. These would be two entirely separate stocks as the dam cannot be surmounted by migrant fish. Since there was no difference, either in size range, apparent numbers, or quality, of the two stocks, they have been combined for the purpose of this report.

The majority of fish seen were over the 3 lbs mark, but during the latter days of the survey, lower water conditions revealed many small fish under 12" in length. These were never in shoals, but always in ones or twos, and generally at the tails of pools which contained a similar number of large fish at their heads.

Five brown trout were taken on rod and line during experimental angling, and all these fish were in good conditions, the lowest condition factor figure being 40 on the Corbett Scale. Their size ranged from 1¼ lb to 6¼ lb (see Fig. II). The rate of catch was only one fish to nearly three hours fishing, but several fish were hooked and lost in the difficult gorge area.

The trout appear to feed mainly on caddis fly larvae and terrestrial insects which fall off the bush on the steep banks of the gorge. An exception to this was one trout which contained over 400 mayfly larvae. Some organisms which were not found when taking bottom samples, appeared in the trout stomach contents.

Two local anglers estimated that their combined fishing time on the Waihopai this season was 60 hours and that they had caught only five fish - all over 4 lbs. At least 30 hours of this fishing time, however, had been spent in using a method on which no fish were taken, though some were lost.

Avon River

Only one brown trout was seen in the Avon River, and this was a small fish about 10" long which was taken inadvertently in a eel trap. Despite careful observations no other trout were noted, and one hour's fishing gave no results.

F. SPAWNING CONDITIONS

Waihopai River

The Waihopai River offers practically no good spawning gravel in any quantity, and what there is is unstable. There are virtually no suitable tributary creeks. Above the dam there is a considerable stretch of gravel of a suitable size for spawning purposes, but it is extremely unstable, and probably too low down in that section of the river to be utilised by the majority of fish. Spawning is reported locally to take place in the headwaters, but this must necessarily be very limited, owing to the nature of the stream bed. As far as could be ascertained, there are no suitable side creeks.

Avon River

The Avon River contains some good stretches of spawning gravel in the upper reaches above the confluence of the Teme. Below this point there are only occasional stretches of unstable gravel.

CONCLUSIONS AND RECOMMENDATIONS

1. The Waihopai River is too unstable to support any great number of trout. River food is supplemented to some extent by terrestrial insects from the profuse overhanging bush and scrub growth in many places.

2. Spawning conditions are poor, but probably balance the low food supply.

3. It is probable that the Waihopai holds the maximum weight of trout which it is capable of supporting.

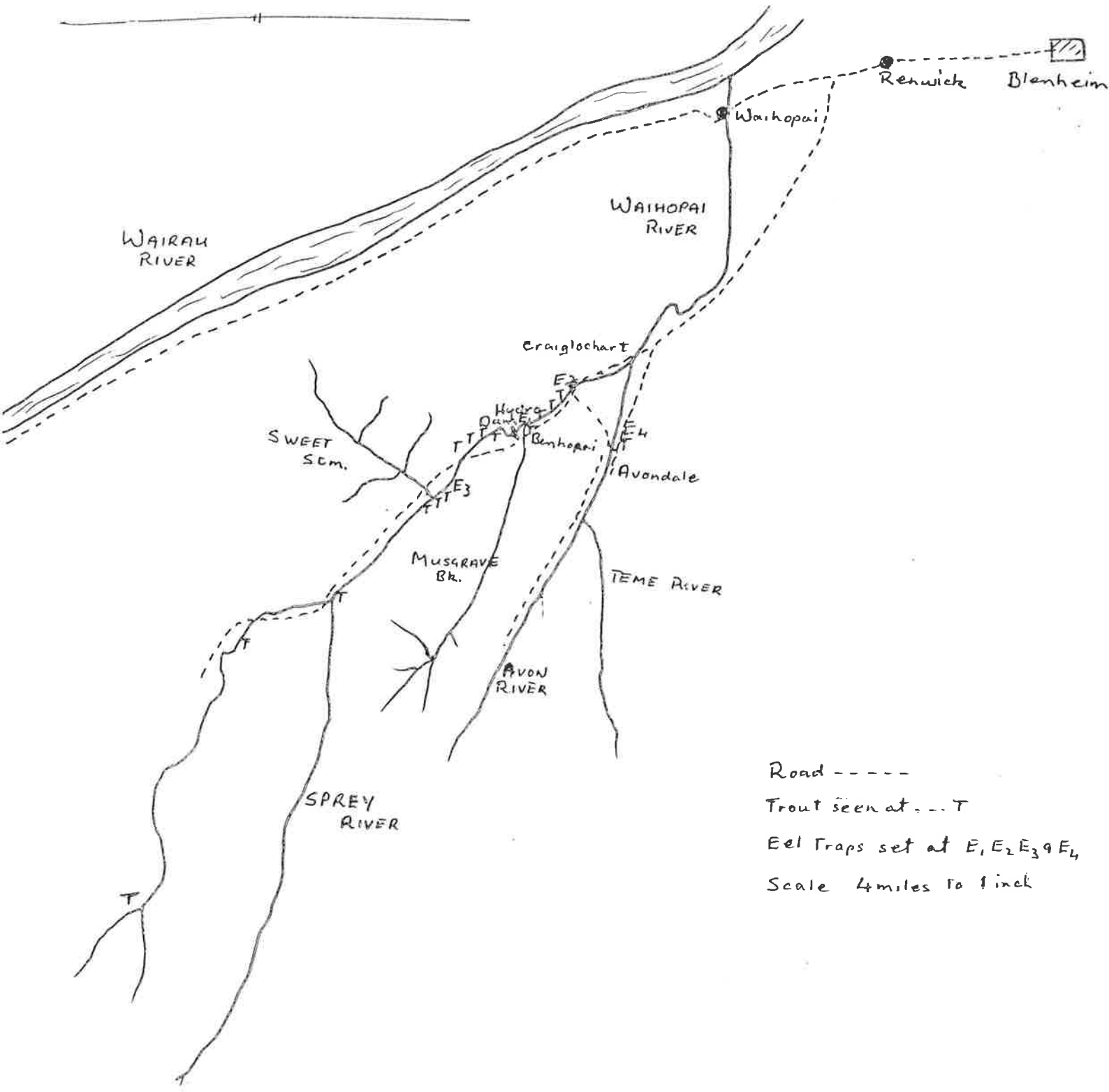
4. The Avon River appears to hold practically no resident trout at present, but contains good spawning gravel in the upper reaches, and a moderate food supply. It may serve as a spawning stream for trout resident below the dam in the main river.

5. It is recommended that a small trial release (5-10,000) of brown trout fry or ova be made in the Avon River.

Executed by: G.A. Eldon
Technical Field Officer

Supervised by: R.C. Watson
Fishery Officer

WAIHOPAI RIVER & TRIBUTARIES



Road - - - - -

Trout seen at . . . T

Eel Traps set at E_1 E_2 E_3 & E_4

Scale 4 miles to 1 inch

TABLE 1. Bottom Fauna - percentage of dominant forms.

River	No. of samples	Caddis flies	Mayflies	Beetles	Others
Waihopai	10	Pycnocentria 21% Others 6%	Deleatidium 28% Others 1%	Parnids Adult 33%	Diptera 2% Stoneflies 2%
	Av = 33.2 animals per sq. ft.				
Avon	5	Pycnocentria 15% Others 8%	Deleatidium 28%	Parnids Adult 17% Larvae 11%	Simulidae 19% Others 2%
	Av = 203.2 animals per sq. ft.				

TABLE II. Details of trout taken - Waihopai River

Place Caught	Method	Sex	Length	Weight	Condition Factor
2 miles above dam	spoon	F	22"	4 lb 3 oz	40
Headwaters	spoon	F	24-3/4"	6 lb 3 oz	41
Below dam	minnow	F	14"	1 lb 4 oz	45
Below dam	dry fly	M	22½"	4 lb 10 oz	41
Below dam	dry fly	M	18½"	2 lb 14 oz	46