

FRESHWATER FISHERIES ADVISORY SERVICE

MARINE DEPARTMENT

INVESTIGATION REPORT

NORTH ISLAND JOB No. 1

ACCLIMATISATION SOCIETY DISTRICT: Waimarino

TITLE OF JOB: A Biological survey of the Waitangi Stream.

OBJECTIVES: To investigate the reputedly high population of small rainbow trout, and to outline a management programme.

INTRODUCTION:

The Waitangi Stream rises approximately five miles north of Waiouru and flows south and then north-westerly through scrub and tussock country before entering developed farm land; eventually it joins the chemically toxic Whangaehu River which form the downstream limit to trout distribution

During the 1880's Rainbow Trout were introduced into the Waitangi Stream by Malcolm Ross; no further liberations are known to have taken place.

METHODS:

The stream was surveyed on 25 September - 16 October 1967.

The stream was divided into six sections for the purpose of survey (Fig. 1), each section being of somewhat different physical type.

In each section the physical features of the stream were noted and bottom fauna samples were collected by using a standard square foot Surber Sampler; some angling was also done.

FINDINGS:

Results of bottom fauna sampling is shown in Table 1.

SECTION I: (Source to State Highway I)

Scrub and tussock in this section grows densely to the stream edge. In many places the stream is covered completely, providing excellent fish cover, but making fishing access difficult. The stream is narrow, ranging between two and six feet wide, with many small rapids and pools. Bed stability and composition in this area was the best

and most consistent found on the survey. Long stretches of good clean gravel are present, that is suitable for spawning trout. Throughout this section numerous trout approximately three to nine inches were seen.

Bottom fauna samples were good; and several small freshwater crayfish ("koura") were found in this section. Traces of crayfish were found in the stomach of one fish caught in the area.

### SECTION II

From State Highway I the Waitangi Stream continues to flow in a South Westerly direction until it reaches a 12 foot high dam (Plate I) built by the Army. This stretch of the stream is similar to the headwaters, flowing through a moderately sloped valley, the tussock and scrub being cleared for pasture. Flax grows profusely along the stream edge, in places the stream being covered. The stream flow is fast with many small rapids. Bed composition is of heavy gravel, with a few short stretches of good spawning gravel. A marked decrease in flow occurs as the stream near the dam, behind which has formed a small lake. Trout were seen rising in the afternoon and evenings though none were taken during the period of the survey. The dam forms a barrier to trout wishing to move upstream.

A mile below the dam treated sewage effluent enters the stream (Plate 1). This has given rise to controversy among anglers and others as to the benefit or harm it may have on the stream. It was observed to have no visible effect on the trout or other aquatic life. Trout, some between 12" and 20" long, gathered below the outflow. Half a mile below the sewage outflow the stream leaves the valley and enters open farmland.

### SECTION III

In many places from below the sewage outflow to State Highway 49 prolific flax growth along the banks makes access to this part of the stream difficult, and because of this successful observations could not always be made.

At the start of this section a small tributary flows into the Waitangi. Trout were seen in most parts of the tributary, several ranging from 6" to 9" were caught by rod fishing.

Spawning facilities in this section of the Waitangi Stream were limited to areas near the Highway 49 Bridge.

SECTION IV

Directly below the Highway 49 Bridge, flax growth is heavy and in places the roots of several willow trees choke the stream. Two tributaries flow into this section of the stream. The first flows through a pond constructed by a local farmer which at times could probably be accessible to trout. The second is choked with water cress and flax. Stream bank stability and bottom composition deteriorate as the stream nears the waterfall, the banks becoming undercut with many grass sods in the water and the gravel covered with with mud and sand.

Spawning in this section is restricted to the middle and upper areas. Bottom Fauna counts were good and deteriorated to low where bed stability was poor.

SECTION V

The waterfall plunges 35 feet into a small gully once used for quarrying gravel. Good spawning conditions are available to trout for several yards beyond the waterfall, before deteriorating again into algae covered rocks, mud and silted gravel. Here again the banks are heavily undercut with turf sods in the water. Several large fish were seen in this section near a small flax swamp.

SECTION VI

The large section of the stream is the smallest and differs from the others in that the stream has been diverted from its original course. The stream banks are bare and readily eroded. The stream bed is composed of mud, sand, and algae covered stones. No fish were seen in this section. Bottom fauna was good near the confluence with the Whangaehu River.

Discussion:

Above the waterfall (Section 1-4) the stream has considerable areas of good spawning gravel and it supports a large population of small trout.

The bottom fauna in this area is numerically adequate to support these small fish, but there is insufficient food to support many large fish. The composition of the bottom fauna is such that most fauna are more readily available to small trout than to the larger fish. The low percentage composition of animals suitable to support large fish thus precludes any really attractive fishery even without regard to the rather limited deep water.

Spawning grounds below the dam and waterfall are of limited extent

but these and the recruitment of small fish from the upper reaches of the stream are probably adequate to maintain the stock's at a level appropriate to the available food supply.

Management Recommendations:

1. Present regulations allow maximum harvest, and these should not be changed.
2. Wild fish usually provide better survival rates than hatchery reared fish, and as the stream has a surplus of small fish the existing stock could be utilized as a reservoir for stocking other streams in the district. The streams small fish could be available by seining or electric fishing.
3. It is concluded that the sewerage outfall could be detrimental to public health, but the present volume is not judged to adversely effect the trout population. The stream at present is of low productivity and the added nutrient probably does more good than harm.

Executed by: D. J. P. Turner  
TECHNICAL FIELD OFFICER

Supervised by: R. W. Little  
SENIOR FISHERY SCIENTIST

M. T. Beam  
FISHERY SCIENTIST

Issued - 22 August, 1969.

TABLE I

WAITANGI STREAM - BOTTOM FAUNA

As percentage of Aquatic Organisms in each sample area - to nearest whole number.

Sampling Station	Water	Numbers in section & Range	Trichoptera	Ephemeroptera	Coleoptera	Plecoptera	Annelida	Diptera
1	Riffle & Flats	115 78-119	31%	34%	13%	11%	2%	4%
2	Riffle Flat & Pool	180 158 3	7%	38%	3%	48%	1 only	2 only
3	Riffle Flat & Pool	286 140 2	33%	40%	5%	14%	3%	4 only
4	Riffle & Flats	18 49-112	30%	8%	7%	42%	Nil	9%
5	Riffle & Flats	123 146-285	5%	4%	3%	4%	3%	79%
6	Riffle & Flats	387 201-210	13%	20%	2%	1%	1 only	63%

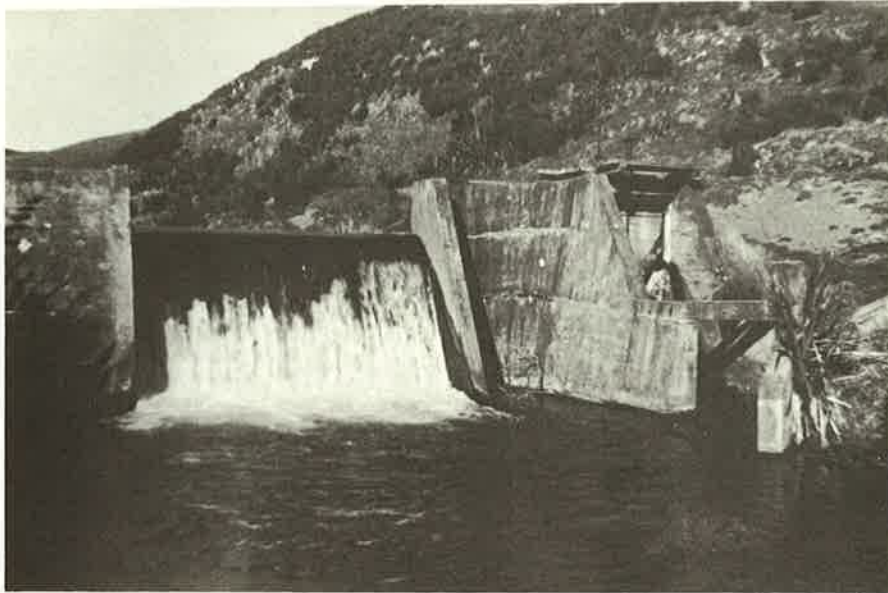


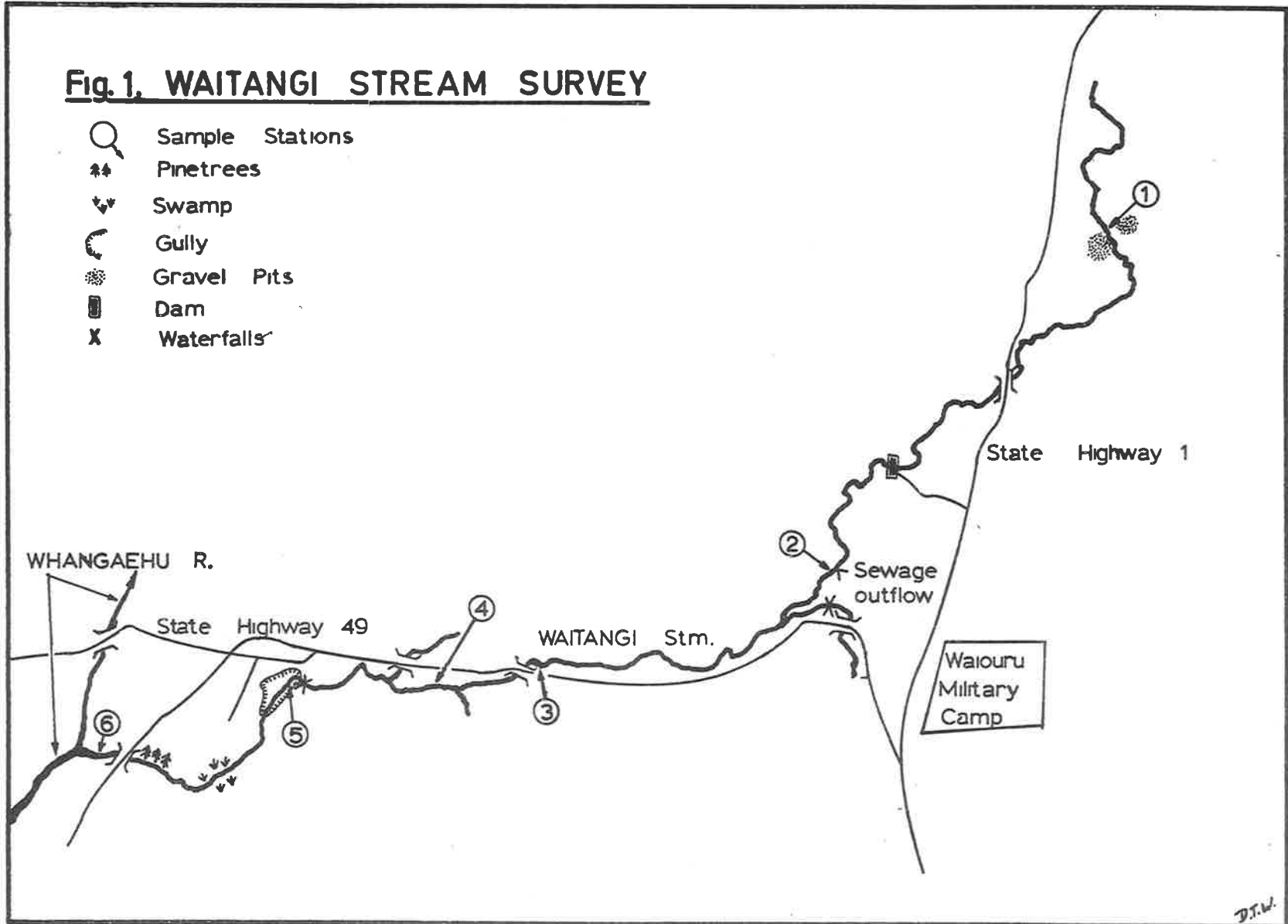
PLATE 1 Dam on the Waitangi Stream.



PLATE 2 Effluent outfall from Waiouru sewage Treatment Plant, Waitangi Stream.

**Fig. 1. WAITANGI STREAM SURVEY**

- Sample Stations
- \*\* Pinetrees
- ∨ Swamp
- ⌒ Gully
- Gravel Pits
- ▭ Dam
- X Waterfalls



D.T.W.