

Fisheries Environmental Report No. 14

The Manganuioteao River fishery

by

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The correct spelling of the name is "Manganuioteao" (New Zealand Gazette 1985, p. 403). It means, literally, "the big tributary of the (coming from the) clouds", which describes how it may be viewed from the Wanganui valley, the "clouds" being those surrounding the central volcanoes. Other meanings are; "great river of the world" (Reed 1961), "river of ever dancing waters and steep echoing cliffs" and "great and powerful waters of Rongomai" (Voelkerling 1980).

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SUMMARY

The Manganuioteao River is the third largest tributary of the Wanganui River and its water quality is among the highest, comparable with that of streams flowing from undeveloped bush catchments. It has a variable flow pattern similar to that of other New Zealand rivers which are affected by mountain climates, but it has a very stable bouldery bed and a high base flow which is important in maintaining flows in the lower Wanganui River during dry periods. The comparatively unmodified state of a large part of the river and its environs, and its size, quality, and proximity to the sea, are important reasons for the diversity of aquatic life it supports and for its high quality trout fishery.

Eleven species of indigenous fishes inhabit the river, more than have been found in any other Wanganui River tributary investigated. Ten species migrate between freshwater and the sea to complete their life cycles and seven of them contribute to traditional, commercial, and recreational fisheries in the Wanganui River.

The Manganuioteao River is a nationally important scenic river fishery for brown and rainbow trout and it compares favourably with other highly regarded New Zealand trout rivers in many respects. Both species of trout are about the same average size (50 cm and 1.6 kg) and are distributed through more than 60 km of the 80-km-long river; on average there are three large fish per pool (12 fish per kilometre). Rainbow trout are predominant in the upper reaches and brown trout in the lower; both co-exist in the middle reaches and are most abundant there (average 5 fish per pool or 21 fish per kilometre). A change from an overall predominance of rainbow trout (61%) to brown trout (67%) was

noted during the 3 year study period. Both species move extensively throughout the system and one tagged brown trout was caught over 200 km away after travelling a considerable distance in coastal marine waters. The shift to brown trout predominance is attributed to an influx, during winter 1980, of Wanganui River estuarine or sea-run fish which did not disperse completely afterward.

The most important spawning tributary of the Manganuioteao River is the Orautoha Stream which enters the river's middle reaches. It is used by both species of trout formerly seen from throughout the system. A concentration of spawning rainbow trout in the Manganuioteao headwaters was not noted after 1979 when the final liberation of hatchery reared rainbow trout was made. Some spawning and most rearing of juveniles appears to take place in the mainstem of the river.

The Manganuioteao River is fished by anglers from throughout New Zealand and from overseas, but most of its anglers live within 100 km of the river and visit it repeatedly. Anglers generally catch the smaller fish, and catch more rainbow trout and fewer brown trout than are sampled by other means. Spoon fishing is the most successful method and the average catch rate is 0.3-0.5 fish per hour. Experienced anglers average 0.7 fish per hour, a rate which has not changed during the past 40 years.

Hydro-electric development and land use practices which increase sedimentation are the greatest threats to the river and its fishery. Hydro-electric development was first proposed in 1978. The effects seen after the diversion of a substantial flow from a prime fishing river in an adjacent catchment clearly indicate that it is not possible to establish a compromise between hydro-electric development and maintenance of the present values of the river.

The many attributes of the Manganuioteao River, its linkage between two areas of National Park, and its status as the last unmodified trout river in the Wanganui River catchment, make it worthy of protection that would maintain it in its present state forever.

1. INTRODUCTION

1.1 The Setting

The Manganuioteao River is a moderate-sized tributary of the Wanganui River. It begins on the slopes of Mount Ruapehu, one of the central North Island volcanoes, and flows in a south-westerly direction to join the Wanganui River 11 km upstream from Pipiriki (Fig. 1). The nearest town is Raetihi (population 1260, New Zealand Year Book 1983); other towns nearby, all of a similar size, are Ohakune, National Park, and Waiouru. State Highway 4 (S.H. 4) and the North Island main trunk railway cross the upper reaches, and Ohura Road leaves S.H. 4 north of Raetihi and gives access to the middle reaches where Pukekaha and Makakahi Roads run parallel to much of the river. Most of the upper and lower reaches of the river have no road access.

1.2 Regulating Bodies

The river is in the Waimarino County, and the headwaters lie within the Tongariro National Park. The water resource is administered by the Rangitikei-Wanganui Catchment Board (RWCB) under the provisions of the Water and Soil Conservation Act 1967. The Central North Island Wildlife Conservancy (CNIWC) is responsible for managing the Manganuioteao fishery and associated wildlife. Reticulation and supply of electricity in the area is the responsibility of the Wanganui-Rangitikei Electric Power Board (WREPB).

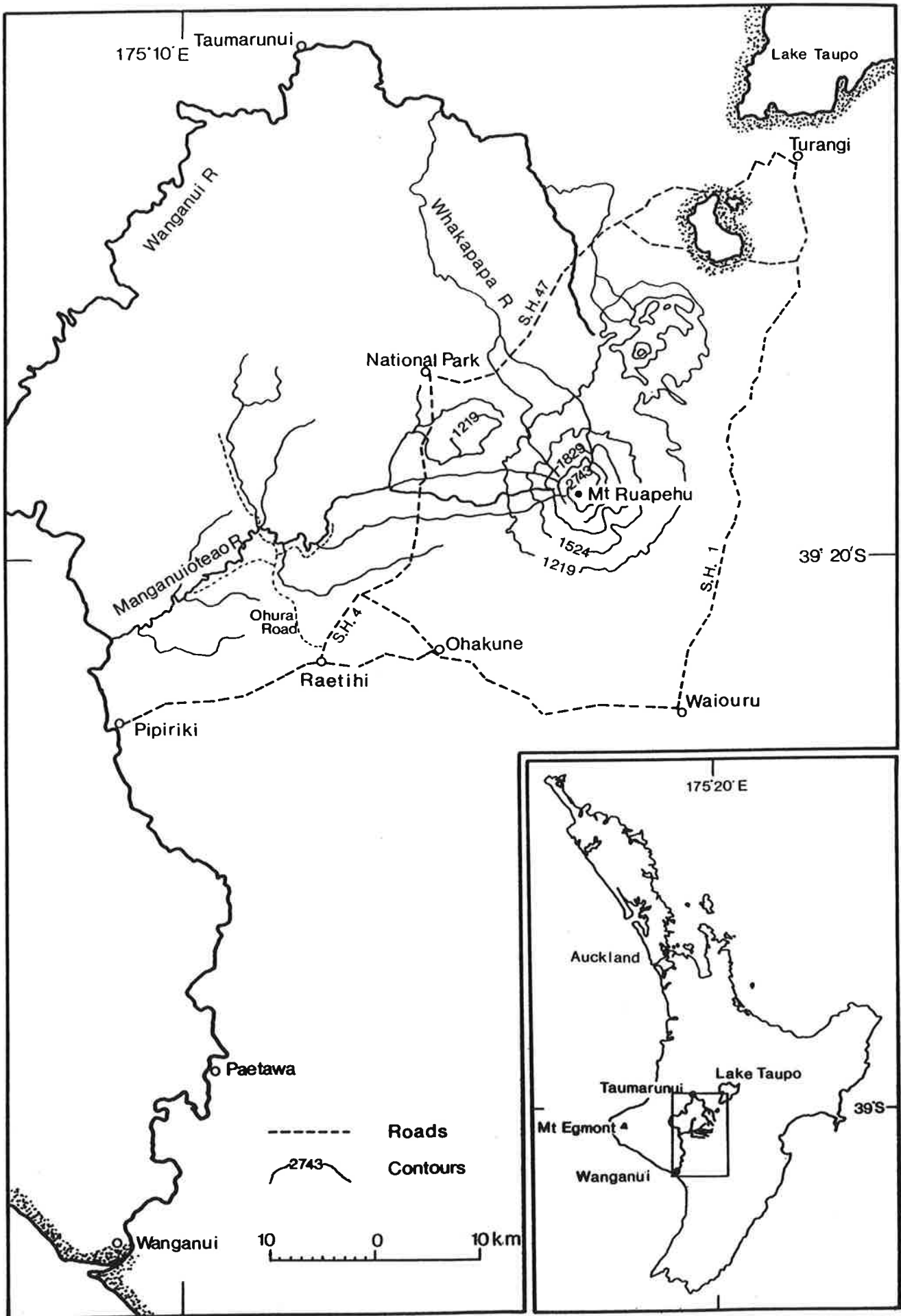


FIGURE 1. Location and setting.

1.3 Fishery Responsibilities

The Fisheries Act 1983 is administered by the Ministry of Agriculture and Fisheries (MAF) and provides for the management and conservation of fisheries and fishery resources within New Zealand. Part V of the Act refers to freshwater fisheries and it charges acclimatisation societies with responsibility for the protection, management, and enhancement of all acclimatised fish species and their habitats and with the conservation of all indigenous fish species and their habitats.

Acclimatisation societies are governed by the Wildlife Act 1953, which is administered by the Wildlife Service, Department of Internal Affairs (WS). In the tourist areas of Rotorua-Taupo and southern lakes WS itself acts in lieu of an acclimatisation society. Since 1980, preceded by a 3 year trial period, WS has taken over the management of the former Waimarino Acclimatisation Society district which is now known as the Waimarino ward of the Central North Island Wildlife Conservancy Council (CNIWCC). The former Society's executive continues to operate as an advisory body acting on behalf of the district's sports people and is represented on the governing Conservancy Council.

Fisheries Research Division (FRD) of MAF is responsible for the conservation of fish and fishery resources and habitats and for providing support and management advice for recreational fisheries.

1.4 Background

A 1978 proposal by the WREPB to develop the hydro-electric potential of the Manganuioteao River (WREPB 1978) caused concern amongst local trout fishermen who foresaw the degradation and possible loss of a

valued resource. This concern spread to other groups and individuals, some of whom had a direct interest in the river, while others had more general concerns about loss of recreational areas, manipulation of natural resources etc.

Protest against the WREPB proposals was initiated by the Waimarino ward of the CNIWCC whose members lobbied widely and finally presented a petition to Parliament asking that the river be preserved in perpetuity (Dobson 1979). In their view the river has high status as a trout fishery, is the last large river remaining in the Waimarino district and flowing from the central mountains which is unmodified, and should be afforded protection. This view attracted wide support from the New Zealand public (the petition gained 5433 signatures) and also from several government departments and agencies including MAF, WS, the Commission for the Environment, Lands and Survey Department, and the Queen Elizabeth the Second National Trust (QEII Trust).

In May 1980 the Lands and Agriculture Committee of Parliament House returned the Manganuioteao petition to Government "for consideration" with a recommendation that the petitioners explore the possibility of achieving the desired protection under the Town and Country Planning Act.

In October 1980 the QEII Trust sought protection for the river under the Water and Soil Conservation Act on behalf of the petitioners and the departments and agencies which had supported the petition. The QEII Trust asked the National Water and Soil Conservation Authority (NWASCA) to set a minimum flow equalling the natural flow of the river at all times. The request was referred to RWCB for consideration and a recommendation. RWCB called for submissions from interested parties and

conducted a hearing on 23 July 1981 to hear and consider the submissions. On 24 August 1981, RWCB recommended to NWASCA "that for a period of five years, the minimum flow for the Manganuioteao River from its source to its confluence with the Wanganui River and for the Orautoha, Mangaturuturu, Makatote and Waimarino Streams from their sources to their confluences with the Manganuioteao River be fixed at 90% of the existing or remaining natural flow of those rivers and streams" (Hogg 1981). On 9 June 1982, after considering the QEII Trust's application, the submissions, report, and recommendation of RWCB, and the report of the Water Resources Council, NWASCA adopted the recommendation of RWCB and fixed the minimum flow until 31 July 1987.

From the time its hydro-development proposals were made public in 1978, WREPB sought comments from interested parties and also maintained contact with these groups and individuals. Project development was then shelved in June 1980 until government grants could be obtained to carry out the feasibility studies, design, and construction of the power scheme.

FRD commented upon the WREPB proposals in September 1978 stating its concern that the proposed development could have a major impact upon the fishery and outlining the information required to assess that impact. WREPB then commissioned Cawthron Technical Group (CTG) to investigate the environmental and social effects of its proposals, and ensuing discussions between CTG, FRD, and WS representatives resulted in a study during 1979 in which all three groups participated and shared the information gained.

The 1979 study provided sufficient information to encourage FRD to support the Manganuioteao petition and to include the river in a list of

six North Island rivers which it wished to protect (Teirney 1979). In March 1980, the Director-General of MAF released a press statement calling for the preservation of the Manganuioteao River in its natural state and with the Director, FRD, commissioned a film portraying the range of natural values supported by the river. The film, "River in Question - Manganui-a-te-ao", was released during 1984. FRD also made submissions and appeared at the RWCB hearing in July 1981 in support of the QEII Trust application for a minimum flow equalling the naturally occurring flow to be set (Cudby 1981).

An introduction to understanding the Manganuioteao fishery was gained during the summer 1979 study, but critical questions remained unanswered and FRD, supported by WS, continued the investigation through 1980-81.

2. THE STUDY

2.1 Previous Work

Earlier studies included parts of the Manganuioteao or gave results gained indirectly, for example, from anglers' diaries. It was not until the WREPB and their consultants began investigating the feasibility of hydro-electric development in 1978 that comprehensive studies of the fishery were undertaken.

Anglers' diaries collected between 1947-52 were analysed as part of a nationwide study by Allen and Cunningham (1957). Graynoth (1973b, 1974c) analysed diaries collected in 1962-63 and 1967-68. Samples of benthic fauna were collected in the Orautoha Stream during an investigation of sedimentation from a gravel plant (Cudby 1966). From 1969 to 1971 the acidity of the Mangaturuturu Stream at S.H. 4 was

monitored after the 1969 eruption of Mount Ruapehu (Cudby 1976). Electric fishing surveys carried out in the district included the Manganuioteao River and several of its tributaries (Turner and Allen 1970, Allen 1971). After the 1975 Mount Ruapehu eruption, members of the Waimarino Acclimatisation Society collected samples and assessed damage (Turner 1975) and after-effects of the eruption on aquatic life were monitored by drift diving and benthic sampling (Cudby 1976). A consultant spent several days in 1978 inspecting the river and interviewing people for an ecological assessment of the impact of hydro-electric proposals (Darby 1978), and Tonkin and Taylor (1978) give climatological and hydrological data for the river and its catchment and discuss these in relation to the Wanganui River catchment.

Hydrological records from 1961 to 1980 have been collected at Ashworth by the Ministry of Works and Development (MWD 1982). RWCB also collected flow records in the upper catchment from 1979 to 1981. These data are stored in the Tideda system (RWCB pers comm).

The 1979 study carried out by CTG, WS, and FRD was aimed at describing the existing environment with emphasis on fish and blue duck populations, and was also aimed at identifying possible impacts of the hydro-electric development proposals on these populations (Armstrong 1979). The questions that arose from the study were:

- Where do the trout spawn?
- What is the extent of their movements?
- How important are the tributaries and upper reaches to the trout fishery?
- How would an altered flow regime affect the fishery?
- What are the angling values of the fishery?

- How do these values compare with other fisheries?
- What changes take place within the system over a longer term?

The results of fishery studies from 1979 to 1981, and information from other sources giving an insight into the fishery and conditions affecting it, are brought together in this report.

2.2 Study Aims

1. To locate trout spawning areas and evaluate their relative importance within the system;
2. To investigate trout movements;
3. To examine seasonal and long-term trends in the distribution of trout;
4. To investigate the effect of different flows upon the physical habitat of juvenile trout;
5. To examine angling values associated with the river;
6. To acquire further information upon the distribution and importance of indigenous species within the system;
7. To gain a broader view of the Manganuioteao River's place within the Wanganui River system and its relationship with physical, chemical, and climatic factors;
8. To estimate the impacts of current resource use strategies and proposals, and to advise upon future management and protection of the river.

2.3 The Study Area

The study area in the Manganuioteao River extends from 2.5 km upstream of S.H. 4 downstream to the confluence of the Manganuioteao and Wanganui rivers, and it includes most of the tributaries between (Fig. 2). Some tributaries were examined after the study period to fill in gaps in fish distributions and spawning records.

The area is divided into four zones based upon gradient, geology, and land use. They are:

- the subalpine zone which is within the Tongariro National Park;
- the upper zone which extends from the National Park boundary to the Mangamingi Stream-Manganuioteao confluence;
- the middle zone extending from the Mangamingi Stream-Manganuioteao confluence to the river's confluence with the Makakahi Stream;
- the lower zone, which is the remainder of the river (Fig. 2).

The upper, middle and lower zones are the study area; the sub-alpine zone was not included because of access difficulties and also because it is protected by the status of the surrounding land.

3. HISTORY

3.1 Maori

Maori people are thought to have first occupied the Wanganui Valley over 800 years ago in 1100 AD, but the tribes who lived there when Europeans first arrived during the first half of last century originated from the canoes of the so-called "great fleet" which came 250 years

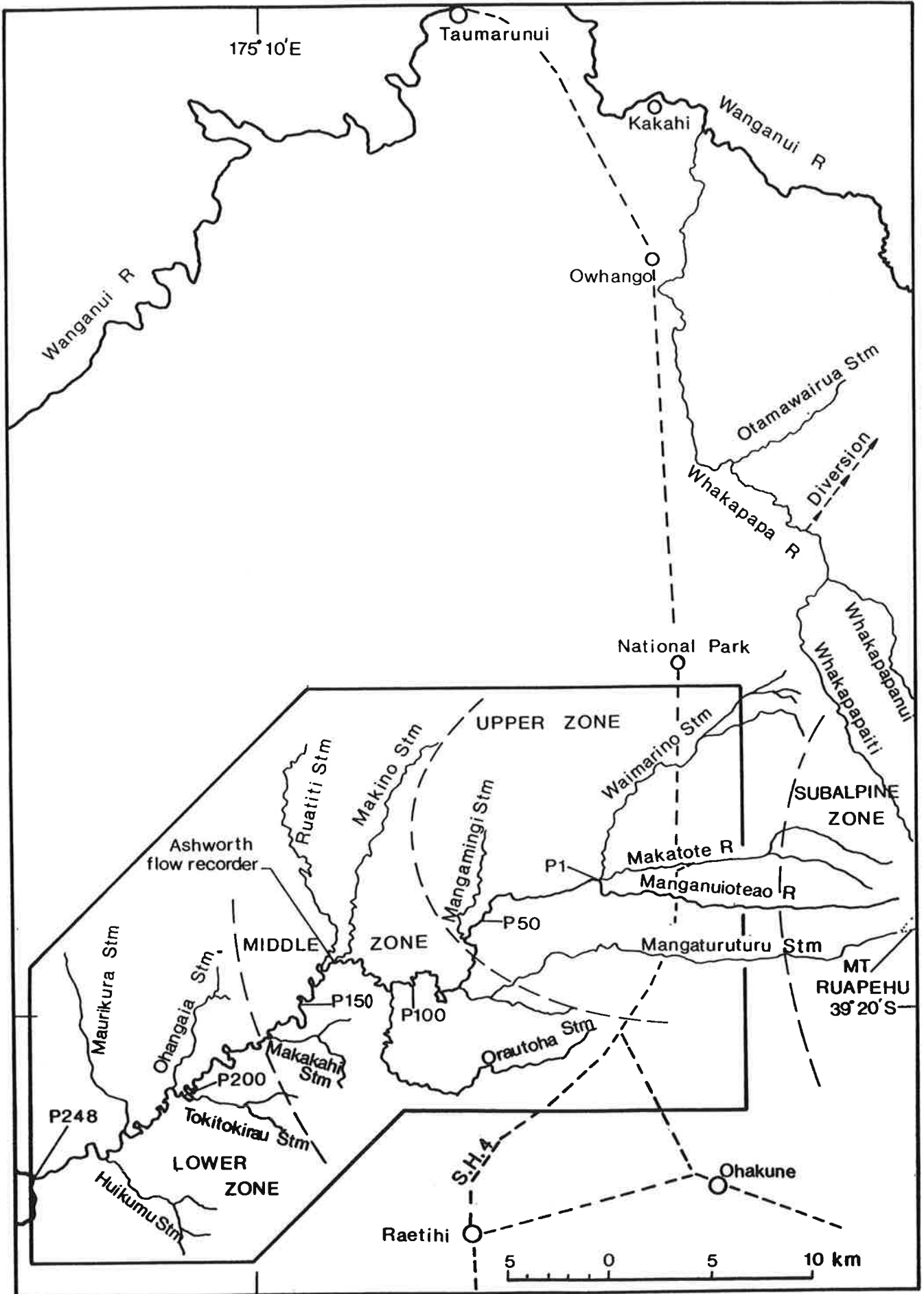


FIGURE 2. Study area.

after the first occupants had established themselves (Ombler and Ombler, n.d.). These later arrivals spread upstream and into the valleys of suitable tributaries including the Manganuioteao where they cleared land for cropping and for living space and also trapped birds and fish.

In the 1840s the Maori population in the Wanganui Valley, between the present town of Taumarunui and the sea, was estimated by Downes (1921) at 25 000-30 000 people, there were as many pa and kainga in the Manganuioteao valley as there were in (a comparable length of) the Wanganui. This population estimate is considered to be much too high, but the comparability of the two valleys is likely to be true. Extrapolating from a census carried out in 1843 by Reverend Richard Taylor, in which 2241 people were counted and named between Wanganui and Pipiriki, Cawthron Technical Group (1979) estimated a total population of 4000-5000 people along the Wanganui River, including the Ongarue and Manganuioteao tributaries. Wakefield (1845) when travelling up the Manganuioteao valley in 1841 noted that most of it had been formerly occupied, but had since been abandoned, and the Reverend Taylor made several trips through the valley during the 1840s and 1850s and mentioned only three villages and several small kainga during that period (Taylor 1846-52). The villages contained 10-50 people on most of his visits, but in 1849 Taylor recorded 100 canoes drawn up 3.5 km upstream from the Wanganui River-Manganuioteao confluence and a congregation of 2000 people at a village where normally only 50 lived. Here again 2000 seems to be an overestimate.

The Manganuioteao valley was an important route between the Wanganui valley and the central North Island. Travellers used canoes in the lower reaches and then followed tracks upstream crossing and recrossing the river and sometimes leaving the valley to bypass difficult country.

The route left the river in the vicinity of the Mangaturuturu Stream and descended to it again at the Manganuioteao-Makatote confluence before leaving it finally between the Waimarino-Makatote confluence and ascending to open country near Erua (Taylor 1846-52, Wakefield 1845, Kerry-Nicholls 1884, Grace 1959).

3.2 European

The first recorded landing of Europeans at Wanganui took place in 1831 when a group endeavouring to establish a trade in dried human heads landed and were killed (except for a Negro and a European). The attackers were from the Taupo area and they returned there via the Manganuioteao valley with the captive European (Taylor 1855). European settlement of the present city of Wanganui began in 1840, but did not proceed far upriver (Smart and Bates 1972). Downes (1921) stated that in 1892 there were no white settlers further than 22 km upstream. Instead settlement moved inland toward Raetihi and in 1886 the Waimarino district was purchased by the government and the Manganuioteao valley was subsequently surveyed and subdivided into 81 ha sections. The sections were taken up by Europeans from 1895 onward and the road from Raetihi down the Orautoha valley (Ohura Road) reached the Manganuioteao River in 1898 (Voelkerling 1980).

Settlers gradually spread up and down the river and into the valleys of tributaries such as the Ruatiti Stream. By 1920 the easy land had been taken up and surveyors and settlers were moving further afield into more difficult country (Bogle 1975). Bates (1981) described the transformation of an adjoining valley between 1917 and 1943.

The first European settler in the lower valley of the Manganuioteao began farming and bush clearing opposite the Makakahi Stream confluence in mid 1912 (Barton n.d.).