FISHERIES ENVIRONMENTAL REPORT NO. 34

DEVELOPMENT PROPOSALS AFFECTING FUTURE FRESHWATER

FISHERIES INVESTIGATIONS

IN NORTHLAND



FISHERIES RESEARCH DIVISION MINISTRY OF AGRICULTURE AND FISHERIES TURANGI Report to: Northland Federation of Acclimatisation Societies

DEVELOPMENT PROPOSALS AFFECTING FUTURE FRESHWATER FISHERIES INVESTIGATIONS IN NORTHLAND

BY

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N.Z. MINISTRY OF AGRICULTURE AND FISHERIES

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FISHERIES ENVIRONMENTAL REPORTS

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CONTENTS

1

			Page	
1.	Intro	duction	1	
2.	Metho	ods		
3.	Major	Development Works and Proposals in Northland	2	
	3.1	Peat mining - Kaimaumau Swamp	2	
	3.2	Forestry	4	
ŝ.		3.2.1 Afforestation	4	
		3.2.2 Pulp mills	4	
13		3.2.3 Chip mill - Ngatu (Sweetwater)	4	
	3.3	Geothermal power development - Ngawha	4	
	3.4	Mining investigations - Puhipuhi area	5	
	3.5	Water abstraction	5	
		3.5.1 Kerikeri irrigation scheme	5	
		3.5.2 Maungatapere/Poroti irrigation scheme	6	
5		3.5.3 North River water supply	6	
		3.5.4 Others	6	
	3.6	Small hydroelectric schemes	6	
4.	Organisations Concerned with Northland's Freshwater Fisheries			
	4.1	Acclimatisation societies	7	
		4.1.1 Whangarei Acclimatisation Society	7	
		4.1.2 Hobson Acclimatisation Society	7	
	4.2	Northland Catchment Commission	7	
		4.2.1 Draft guidelines for land development	7	
		4.2.2 Catchment plans	8	
	4.3	General	8	
5.	Concl	lusions	9	
6.	Recon	mmendations for an Inventory System	10	

Page	Pa	ae
------	----	----

	6.1	Data	base		10
	6.2	Iden	tificati	on of field work required	11
7.	Recom	mende	d Areas	of Responsibility	11
	7.1	Fish	eries Re	search Division	11
	7.2	Fish	eries Ma	nagement Division	12
	7.3	Acc1	imatisat	ion Societies	12
8.	Litera	ature	Cited		13
9.	Append	dices	Ι.	Persons consulted regarding develop- ments affecting freshwater fisheries in Northland.	15
			II.	Useful literature on freshwater fish in Northland.	16
			III.	Sample format for interviews, Northland fishery inventory	18
			IV.	Example of presentation of fish distribution data on maps.	19
			۷.	Example of a fish distribution register to be used in conjunction with maps.	20

ii

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1. INTRODUCTION

This report attempts to identify forthcoming developments in Northland which might affect freshwater fisheries. It has been compiled to assist Fisheries Research Division's Freshwater Fisheries Resource Assessment Group (FRARG) determine its priorities for potential work commitments in the North Island.

Development schemes involving water use are increasing throughout the North Island and, because of limited staff, FRARG policy is to restrict environmental investigations to fisheries of national or regional importance. This means that a national fishery resource inventory for all species is needed as a basis for priority setting. Such information will also be required for Fisheries Research Division (FRD) and others to protect fisheries under the Water and Soil Conservation Amendment Act (1981), commonly referred to as the "Wild and Scenic Rivers Legislation". One implication of FRARG policy is that lesser fisheries under threat will receive little attention, unless non-Governmental organisations (e.g. Acclimatisation societies, whitebaiters, eel fishermen's associations) can find the resources for protection themselves.

This report seeks to identify areas which may require FRD investigations in future, and outlines a proposal for co-ordinating fisheries information as a basis for protection work and management of all fisheries in Northland. A resource inventory, a system for dealing with environmental problems, and the level of involvement necessary for Fisheries Management Division (Rosemary Mason, Whangarei), and the acclimatisation societies, to carry out these functions, are outlined for discussion.

2. METHODS

The author visited Northland in May 1982 to gain a general impression of developments affecting freshwater fisheries and the potential involvement necessary for FRD. Rosemary Mason of Fisheries Management Division (FMD) contacted organisations involved with freshwater and environmental matters, and invited them to an informal meeting, aimed at discussing forseeable environmental problems in Northland.

Those contacted were:

Northland Catchment Commission and Regional Water Board Wildlife Service, Department of Internal Affairs

- * Department of Lands and Survey
- * Planning Division, Ministry of Works and Development
 Northland United Council

* Whangarei Acclimatisation Society Hobson, Bay of Islands, and Mangonui - Whangaroa Acclimatisation Societies (contacted by Secretary of Whangarei Acclimatisation Society).

A list of people who attended the meeting, and others consulted during my visit, is given in Appendix I.

Although not everyone I wanted to see was consulted, I felt that a general impression of what was taking place, and the work needed, was evident without going any further at this stage. Hopefully, any gaps that may have arisen can be filled after this report has been circulated for comment.

3. MAJOR DEVELOPMENT WORKS AND PROPOSALS IN NORTHLAND

Figure 1 shows the location of major developments which have potential implications for freshwater fisheries in Northland.

3.1 Peat Mining - Kaimaumau Swamp

An investigation and submission on this proposal were done by FRD (Hicks 1980, 1981) and a mining licence and water right have not yet been granted. One of the conditions sought for the licence is that an entire catchment be set aside. Impacts include the possible modification and/or drainage of Lake



Waikaramu, as well as a large area of swamp associated with these works. An inventory of fish species present in the swamp would be needed to comment on the impacts of proposals. A species known to be threatened is the Black Mudfish (*Neochanna diversus*).

3.2 Forestry

A port and associated railway links is planned for Marsden Point, to handle the export of Northland's forest produce. Northland Harbour Board have prepared an environmental impact report on this (Northland Harbour Board 1981).

3.2.1 Afforestation

At present, 54 700 ha of forest estate have been planted in Northland and a further 45 300 ha of planting have been recommended for 1981-1985 by the Afforestation Working Party (1981). Conservation planting is planned for 1 300 ha of unplanted forest estate.

3.2.2 Pulp Mills

N.Z. Forest Products have announced plans (NZ Herald, 27.7.82) for a joint venture with the Shell group of companies, to develop forests and forest-based industries in Northland. Apart from the establishment of sawmills in districts where forests are developed, it is also planned to build an integrated pulp and paper mill at Marsden Point, with a potential output of 150 000 tonnes a year. A second pulp mill has also been talked about by Northern Pulp Ltd. As yet, no proposals as to its location and type have been made public.

3.2.3 Chip Mill - Ngatu (Sweetwater)

Northern Pulp Ltd. have made public their proposals to establish a chip mill, and a hearing has been held. No effect on fisheries interests is likely, as it will be a dry process with bark and other waste products spread back on to forest land.

3.3 Geothermal Power Development - Ngawha

FRD were notified of proposals, and a request for information on an impact assessment was received from N.Z. Electricity (NZE) on 5 April 1982. An

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inventory of fish species present in the Waitangi River, and possibly the Waiharakeke Stream, will be necessary if this scheme's impact on either of these waterways is to be evaluated.

No mention appears to have been made of effluent being discharged into, or water abstracted from, either of these two systems for the purpose of the scheme. At this stage, it would be helpful to know the proposed source of all the cooling water needed, if any, and if it is to be re-injected into wells or discharged into a stream. NZE simply state that condensate "will be disposed of by re-injection".

Eel fishermen reported catching tench in the Waitangi River and one of its tributaries last year; one was 900 g and another 1 500 g. A major concern will be the high mercury level in any effluent discharged into natural waters.

3.4 Mining Investigations - Puhipuhi Area

Most of this area forms the uppermost catchment of the Wairua River, so that tailings and runoff from mining operations could affect many downstream users (see Section 3.5.2), as well as the fish throughout the system. Tributaries in this area, such as Kaimamaku Stream, Kirikiritoki Stream, Kaikanui Stream, Whakapara River, Mangahuruhuru River and Waiotu River, are all locally important trout fisheries (Allen, Turner and Little undated), and eels are taken commercially throughout the catchment.

Prospecting licences have been applied for, but little is known of what may eventuate from these investigations. The progress of investigation and development proposals needs to be kept under surveillance, but current public awareness of the consequences of mining (e.g. Coromandel) should provide reasonable warning of likely future threats to fisheries.

3.5 Water Abstraction

3.5.1 Kerikeri irrigation scheme

This scheme is the subject of a report by the Northland Catchment Commission

(1979), and construction has commenced. There is a possibility that an extension to the scheme could involve abstraction from the Waipapa River nearby. The reservoir created by the scheme may develop as a fishery. The local acclimatisation society is represented on the management committee for the recreational development of the reservoir.

3.5.2 Maungatapere/Poroti irrigation scheme

The Maungatapere/Poroti area is destined for an increase in horticultural development and an irrigation scheme is planned. A scheme statement is pending, but basically the scheme will utilise the Poroti Stream, supplemented by some draw-off from the Wairua River (a tributary of the Wairoa River). Poroti Stream contains trout and eels. Before water rights for the scheme are advertised, some inventory work, as a follow up to the electric fishing work of Allen, Turner and Little (undated), should be carried out in the Wairua catchment.

3.5.3 North River water supply

A water right application is pending for taking water from the North River at Waipu for piping to the Marsden Point oil refinery. Fisheries values in the North River are unknown.

3.5.4 Others

Several other water abstraction proposals are under investigation; e.g. one at Kaikohe, and another north of Kerikeri, but definite scheme proposals are unavailable.

3.6 Small Hydroelectric Schemes

Figure 1 shows sites identified for potential hydroelectric schemes by Tonkin and Taylor Ltd. (1978). Sites 3. 4. 5. 6 and 8 on Figure 1 are within the Bay of Islands Electric Power Board's territory, while the remainder (sites 10-13) fall within the North Auckland Electric Power Board territory. Of these nine sites, the most economic is the Wairua Falls scheme (Site 12), which would involve redevelopment of the existing 3 200 kW scheme. The next most attractive schemes are Taheke (Site 8) and Omapere (Site 5).

The Kerikeri scheme, if enhanced by abstraction from the Waipapa and Puketotara/ Maungaparerua irrigation storage dams, is economically comparable with these two schemes as well. All the schemes would have an effect on freshwater fish to some degree and would require fisheries investigations before final planning of any scheme took place.

4. ORGANISATIONS CONCERNED WITH NORTHLAND'S FRESHWATER FISHERIES

4.1 Acclimatisation Societies

4.1.1 Whangarei Acclimatisation Society

This society recognises and supports FRD's efforts to protect rivers and fisheries of national importance, but has made it clear that it regards fisheries inventory work within the Northland area as essential to assist in planning proposals which will safeguard the impact that land development is having on fisheries values. The society has offered voluntary help to carry out basic inventory work, provided expertise is available to guide and assist it.

4.1.2 Hobson Acclimatisation Society

This society was unaware of any development threats affecting freshwater fisheries in its area. Its fisheries involvement is mainly in stocking the Kai Iwi lakes with trout, and interest in achieving the correct stocking rates was expressed.

4.2 Northland Catchment Commission (NCC)

4.2.1 Draft Guidelines for land development

The concept and initiation of these guidelines is good, but the text is inadequate and too general for full protection of fisheries values. Northland is an area which has very sensitive catchments, incapable of withstanding the massive land development which has taken place so far. This is mainly evidenced by the nature and state of most of the natural waterways which have been adversely affected by land clearing and drainage. Radical changes in land development procedures and practice are needed to save the few unmodified

remnant catchments and also to improve, where practical, the modified catchments. The guidelines prepared by the Commission do not suit this purpose and FRD (Hicks, Strickland and Mason 1982) has submitted comments to the NCC accordingly.

4.2.2 Catchment plans

There will be requests for fisheries input to NCC catchment plans very soon. The type of data required from FRD will be similar to that provided for the Kaihu survey (Hicks 1978). Catchment plans should incorporate safeguards and perhaps improvement works for fisheries, such as riparian reserves, minimum flows, water quality standards and improvement, streamside and instream enhancement works, and more.

Pending catchment plans are:

Wairua - preliminary plan to be completed within the next two years. Waipu-Ruakaka - to be completed by 1985. Waitangi/Haruru - to be completed by 1986.

Fisheries data would be required well before these dates.

4.3 General

Eel fishermen are concerned by the increasing numbers and spread of catfish in Northland. Most of the tributaries of the Wairoa River which are accessible to catfish, have these fish present, and they are also found in the Hikurangi Swamp tributaries.

Recent reports confirm that rudd are present in most of the headwaters of the Manganui River, so that natural dispersal through to other Wairoa tributaries is likely.

Koura have been taken commercially in the Dargaville area and sold in a local supermarket. These were being taken from Lake Taharoa (Kai Iwi), until stopped by the Hobson Acclimatisation Society several years ago. However, there is now another operator working from Auckland who is reported as having an overseas export market for koura. He has been in contact with the Hobson

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Acclimatiation Society, who have given him a verbal approval so long as he does not fish the lakes with trout stocks. If he is sticking to his word, he is probably working the Pouto lakes on the Kaipara North Head (Fig. 1).

5. CONCLUSIONS

Apart from work needed to find out whether the three irrigation schemes and the Ngawha geothermal project will affect important fisheries, there are no major development proposals in Northland requiring FRD investigations in the immediate future. Forestry, mining, irrigation and hydro-electric development projects being considered at present point to future threats and to the immediate need for inventory work.

Inventory work to identify the size, type and location of fishery resources in Northland is required, both to assess the need for investigation of development proposals, and for the eventual management and development of the region's fisheries. There are fisheries in Northland about which little is known, and these need documenting as part of the inventory, e.g. koura, whitebait and mullet. This work could be initiated using voluntary assistance from the acclimatisation societies, with backup and supervision from Rosemary Mason, FMD. Planning for this type of work would need to be co-ordinated by FRD and some assistance given with specialist jobs, such as electric fishing and preparation of submissions. There is an immediate need to commence work for input to catchment plans, using voluntary assistance.

A further avenue which could safeguard freshwater fisheries interests would be to develop guidelines for land development and catchment protection, and to seek to have these incorporated into district schemes. Where district schemes are operative, the same approach could be tried when these schemes come up for review. Rather than waiting to be asked to comment on such schemes, as is the current practice, the initiative should be taken to be part of the planning.

6. RECOMMENDATIONS FOR AN INVENTORY SYSTEM

6.1 Data Base

Before any inventory field work takes place, a data base of all freshwater fisheries information for Northland should be collated as follows:

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- (i) Literature search Reports which should be consulted include N.Z.
 Marine Department Technical Field Service reports, environmental impact assessments, NCC water resource reports, FRD freshwater fish survey data (data stored on computer in Wellington), and FRD's National Angler Survey results (unpublished data held by L.D. Teirney, FRD, Wellington). See also the "Literature Cited" section of this report and Appendix II.
- (ii) Acclimatisation society records Liberation records will identify most of the river and lake systems containing trout, and societies should be able to identify their most important trout fisheries. These could be ranked in order of popularity and importance.
- (iii) Interviews Additional data could be gained by interviews. A simple interview sheet would ensure consistent format and could be used on anglers, eel fishermen, whitebaiters, etc. An example form is included as Appendix III.

Large scale maps, similar to that shown in Appendix IV could be used to present the data. These should have incorporated on them the use made of each fish species e.g. eel fishery (commercial), trout fishery (recreational), etc. All information appearing on the maps should also be cross-referenced in some form of register, where additional and specific data can be stored. Such a register could be divided into catchments and subdivided for each subsystem, i.e. rivers, lakes, streams, swamps, and even canals and ditches where appropriate. Appendix V is an example of such a register.

6.2 Identification of Field Work Required

After all available data have been compiled onto maps and registers, catchments lacking in data will become obvious. Places where nothing is known of any particular water, or fish are present but nothing is known of their exploitation, will form the basis for future field work or investigation. The starting point and order in which the catchments are investigated should be determined by NCC deadlines for Catchment Management Plans.

Field work could be done through a number of channels:

Rosemary Mason (FMD); voluntary (acclimatisation societies); school or university study groups; consultants (funded by acclimatisation societies, who may be able to seek grants through various channels); FRD teams on special trips; or combinations of any of these.

Where environmental impact reports are required, the development agencies may need to fund investigations by FRD or consultants. Alternatively, funding might be obtained from local Ministry of Recreation and Sport grants for enhancement studies, or from the National Water Protection Committee of the Council of Acclimatisation Societies. Water allocation funds provided by the Water and Soil Division of Ministry of Works and Development to Catchment Boards, and/or investigations grants for small hydro feasibility studies and irrigation schemes, are other avenues which could be explored.

7. RECOMMENDED AREAS OF RESPONSIBILITY

7.1 Fisheries Research Division (Rowan Strickland)

- Maintain a co-ordinating and supervisory role regarding all aspects of environmental freshwater fish work in Northland.
- Make two annual visits to Northland, in conjunction with field work assistance and general liaison with all participants in the inventory.

- Carry out major impact assessments for freshwater fisheries, the level of involvement to be determined on the basis of FRARG's national priorities.
- 7.2 Fisheries Management Division (Rosemary Mason)
- Advise FRD of the nature and timing of developments affecting freshwater fisheries in Northland.
- Advise FRD when submissions or comments are required on freshwater fisheries matters for water right applications, town and country planning schemes and reviews, etc., and provide input as directed by FRD, with FRD assistance as appropriate.
- Carry out preliminary collation of data for the inventory system, as outlined in Section 6.1, by June 1983. The Department of Lands and Survey may be able to assist with the mapping format, as they have done similar work for the King Country land use study (Department of Lands and Survey 1977).
- Make recommendations to FRD for inventory field work, by September 1983. This will include areas to be sampled, methods, personnel, and time scale.
- Liaise with acclimatisation societies, NCC, local bodies, etc., on freshwater fisheries matters. Close contact with the Northland Federation of Acclimatisation Societies will be necessary as they will provide key participants in the inventory work. The appointment of a fulltime officer for the Northland Federation will make this task easier.
- Act as the freshwater fisheries contact for liaison with the Farm Advisory
 Officer who represents MAF at NCC Board meetings.
- Investigate possible methods for utilising town and country planning procedures for protection and enhancement of freshwater fisheries in Northland, and make recommendations to FRD (e.g. find out how the Taupo County Council have used this legislation to protect spawning streams).
- 7.3 Acclimatisation Societies (full-time officer)
 - Set up a working party for each acclimatisation district to liaise and

assist Rosemary Mason.

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- Assist Rosemary Mason with her functions, as described in Section 7.2.
- Maintain a list of lakes, rivers and streams containing acclimatised fish.
- Maintain a list of lakes, rivers and streams into which trout are liberated, including dates and numbers released.
- Identify and list the most popular and important trout fisheries for
 the district. Such a list should include the average number of anglers
 utilising the fishery, and catch rates.

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- Tonkin and Taylor. 1978. Study of hydroelectric potential in Northland and guidelines for regional investigation of small hydroelectric potential. N.Z. Energy Research and Development Committee Report No. 36. 101 pp.

<u>APPENDIX I.</u> Persons consulted regarding developments affecting freshwater fisheries in Northland.

Rosemary Mason	Fisheries Management Division, MAF
Peter Anderson	Wildlife Service
Maurice Wilkie	Wildlife Service
Ray Froggatt	Hobson Acclimatisation Society
Rod McIndoe	Hobson Acclimatisation Society
Kevin Hayes	Whangarei Acclimatisation Society
Tony Mathews	Lands and Survey
Jeff Griggs	Ministry of Works and Development
David Roke	Northland Catchment Commission and Regional Water Board
Hank ?	Kamo Eels Ltd
Alan Fielding	Environmental Entrepreneur

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APPENDIX II. Useful literature on freshwater fish in Northland.

- Allen, P.J., Turner, D.J.P., and Little, R.W. Undated. Examination of waters in the Whangarei Acclimatisation District. <u>N.Z. Marine Department</u>, <u>Electric Fishing Service Report No. 3</u>. 14 pp.
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- Turner, A.S. and Allen, P.J. Undated. Investigation report Hobson Acclimatisation Society. A survey of the Waipoua River. Unpublished report, N.Z. Marine Department. 3 pp.

RETRIEVAL SYSTEMS

1. Bibliography of New Zealand Freshwaters.

Enquiries to: User Services Librarian Central Library Science Information Division DSIR P.O. Box 9741 Wellington.

2. New Zealand Freshwater Fish Survey.

Enquiries to: Fisheries Research Division Ministry of Agriculture and Fisheries P.O. Box 297 Wellington. APPENDIX III. Sample format for interviews, Northland fishery inventory.

INTERVIEWER	DATE			
AME OF FISHERMAN				
NAME OF STREAM, RIVER OR LAKE FISHED				
SPECIFIC AREA OF SYSTEM FISHED				
FISH SOUGHT				
METHOD(s) COMMONLY USED				
OTHER FISH CAUGHT OR OBSERVED				
COMMENTS				
i i i i i i i i i i i i i i i i i i i				
Use separate sheet for each system or part	of system.			

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APPENDIX V.

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Example of a fish distribution register, to be used in conjunction with maps.

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CATCHMENT_	HATEA	
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SUB CATCHMENT WAIAROHIA STM

SYSTEM	FISH PRESENT	LOCAT	FION Lower	DATE LAST RECORDED	FISHERY
RAUMANGA STM	Eers	N20 813149		13.9.81	RECREATION
	TORRENT HSH	ų		"	
TE HIHI STM	BANDED KOKOPU				
WAIPONAMU STM					
NIHOTETEN STM					
KIRIKIRI STM	EELS				REIRFATIONAL
	BANDED KOKOPU				
WIHAROWHARD STM	KOKOPU SPECIES				
WAIAROHIN STM	Eres				
	EELS SHORTEIN	N20 804992			RECREMTIONAL
	11 LONGEIN	11	N20 822996		
	SMELT	N20 820494	N20 824986		
	INANGA				
	BANORD KOKOPU				
	GREY MULLET				
	YELLOW EVED MULLET	-			l
	BLACK FLOUNDER				L.
	Common BULLY				
	REDGINNED BULLY				-
	TRUE SHRIMP				
	Koura				
WHAN DAME	RAINBOW TROUT		N20 801985		REEREATIONAL
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