


Towards a Strategic Direction for Biodiversity Enhancement

"The Whole of Northland Project"

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Glenys Mullooly, NZ Landcare Trust

Cover Photographs

Kiwi	*Photo: NZ Landcare Trust*
Tuatara	*Photo: Department of Conservation*
Pouto North Kaipara	*Photo: Northland Regional Council*
Metrosideros robusta-rata	*Photo: Northland Regional Council*

TABLE OF CONTENTS

Part 1: BACKGROUND

1.1 Introduction

This report should be considered as a developing document. The content is based on information available at the time of publication. Indeed, one of the aims of this project was to assess the level of information available for Northland. Agencies and organisations are continuing to develop and update information on biodiversity for Northland as resources become available.

Northland Biodiversity Group

The Northland Biodiversity Enhancement Group (N-Beg) was the first regional biodiversity forum established in New Zealand. When it was formed in 2001, the representative agencies and organisations agreed that N-Beg is a "forum of agencies in Northland with responsibility for promoting the protection and enhancement of biodiversity in Northland". Since then it has continued to provide a forum for increased cooperation, networking and links between such agencies and organisations at a staff level.

Convened by the NZ Landcare Trust, N-Beg includes representatives of the Northland Regional Council, Department of Conservation, QE II National Trust, Mid-North Farm Forestry Association, Fish & Game NZ, Bank of New Zealand Save the Kiwi, Whangarei, Kaipara and Far North District Council and the NZ Kiwi Foundation.

In 2004 N-Beg launched its self-help kit "Restoring the Balance", with the assistance of the Biodiversity Advice Fund. This presents a wide range of biodiversity enhancement information to provide landowners with a practical integrated approach to biodiversity management.

The Northland Biodiversity Enhancement Group recognised the need to increase the effectiveness of agencies and organisations to meet the regional needs for biodiversity enhancement on private land.

The process is only achieved by working in a collaborative partnership on various levels and utilising the strengths in the various agencies and organisations. N-Beg has built on the groundswell of interest in biodiversity in Northland resulting in biodiversity actions that would not otherwise have been made.

1.2 Biodiversity Values

Green Gecko (Photo: DOC)

Biodiversity describes the variety of all biological life-plants, animals, fungi and micro-organisms, the genes they contain and the ecosystems on land or in water where they live. It is the diversity of life.

New Zealand's unique flora and fauna has been shaped through millions of years of isolation with a high percentage of species found nowhere else on earth. Since the arrival of people and changing land use a high percentage of indigenous species have been lost through habitat modification and clearance, over-harvesting and introduction of exotic species that have become plant and animal pests. All this has occurred despite people being dependent on healthy functioning ecosystems for their survival.

While a third of the country is managed for conservation purposes, most of this is in upland areas and mountains. A vast majority of the remainder is held in private ownership. Many of these areas are lowland, river margins, wetlands and coastal areas that have relatively few natural habitats for native species.

1.3 Biodiversity Loss in Northland

Over the past 160 years the Northland region has undergone dramatic changes through land use change.

By the time European settlement occurred much of the flightless megafauna, large frogs and giant reptiles had already disappeared, while other species such as tuatara and large *Cyclodina* lizards were restricted to rodent-free offshore islands (Conning 2001).

Table 1 lists the numbers of threatened taxa in Northland. Land clearance and modification and the introduction of exotic species has resulted in ecosystem loss of:

- 99% of podocarp forest
- 96% of kauri and volcanic broadleaf forests
- 95% of freshwater wetlands and dune forests.

Above - T.pauciflora; Puketotara gumfield
Top left – Kauri canopy; Waipoua
Bottom left – Te Paki dunescape
Below – Bog; Karikari
(All Photos: NRC)

Table 1: Threatened taxa of Northland and New Zealand – 1994 and 2002 categories

Source: Hitchmough 2002.

Number of taxa (species and sub species combined)		Northland Locally extinct	Northland Present	Nationally Present	% Present Northland
Plants	Nationally Critical	3	28	169	**16.6**
	Nationally Endangered	0	22	77	**28.6**
	Nationally Vulnerable	0	3	23	**13.0**
	Serious Decline	1	11	30	**36.7**
	Gradual Decline	2	20	84	**23.8**
	Sparse	0	32	149	**21.5**
	Range Restricted	0	69	523	**13.2**
Terrestrial Animals	Nationally Critical	4	36	120	**30.0**
	Nationally Endangered	5	31	117	**26.5**
	Nationally Vulnerable	1	3	18	**16.7**
	Serious Decline	0	7	25	**28.0**
	Gradual Decline	1	19	69	**27.5**
	Sparse	0	31	94	**33.0**
	Range Restricted	1	154	440	**35.0**
Freshwater and Marine Animals	Nationally Critical	0	5	21	**23.8**
	Nationally Endangered	0	2	6	**33.3**
	Nationally Vulnerable	0	1	2	**50.0**
	Serious Decline	0	2	6	**33.3**
	Gradual Decline	0	4	17	**23.5**
	Sparse	0	2	29	**6.9**
	Range Restricted	0	84	288	**29.2**

Dolphin fishing Poor Knights Is.
(Photo : DOC)

1.4 Northland's Unique Environment

A distinctive feature of Northland is that it is a peninsular. Less than 100km across at its widest point, it is bounded by the Tasman Sea to the west and the Pacific Ocean to the east. The coastline around Northland is more than 3000 km long with many sandy and deep water harbours, rocky headlands, sandy bays, outstanding estuarine habitats, mangrove forests and two of the largest harbours in the world. Pohutukawa are a distinctive feature and an icon along Northland's coast.

There are hundreds of islands scattered along the east coast, including Hen and Chickens, Poor Knights Islands, Cavalli islands, Three Kings and the Bay of Islands.

North Island Kaka: (Photo: DOC)

Some of these islands are pest-free and provide a refuge for threatened plants and animals. The islands are a storehouse of biodiversity, important for the restoration and rehabilitation of threatened species with the potential to re-colonise areas of the mainland. This is already occurring with birds such as kaka, kakariki and bellbirds dispersing from the islands to the mainland.

The inland topography is mainly low lying (0-300 metres above sea level) but steep rolling hill country reaches to the highest point in Northland near Te Raupua in the Waima Ranges at 781 metres above sea level. Numerous rivers, tidal streams, inlets and harbour systems dissect and break the pattern of hills.

No part of Northland is more than 40km from the sea and the region experiences a strong oceanic influence. A diversity of landform and soil types has contributed to a wide diversity of natural ecosystems and an unusually high diversity and endemism of species in the Northland region.[1]

The Department of Conservation has direct management for more than 165,000 hectares of indigenous habitats in Northland. This does not include the many conservation covenants or crown land blocks administered by local authorities. The department provides mechanisms for legal protection of natural resources on private land through Nga Whenua Rahui and the Nature Heritage Fund.

Other organisations involved in facilitating legal protection on private land include Councils, QEII National Trust, Fish & Game NZ, and the NZ Native Forests Restoration Trust. In addition Landcare groups are active on private land with over 55 Landcare groups actively managing private land.

Figure 1 maps areas of legally protected land in Northland.

[1] In addition a list of Regionally Threatened Plants has been drafted for Northland by regional botanical experts from the Department of Conservation, Northland Regional Council and Auckland Herbarium. Regionally Threatened Plants are native plants additional to those listed as Nationally Threatened. They include over 100 species which are rare or have limited distributions in Northland. This list will go out for public comments this year. (Lisa Forester *pers. comm*.)

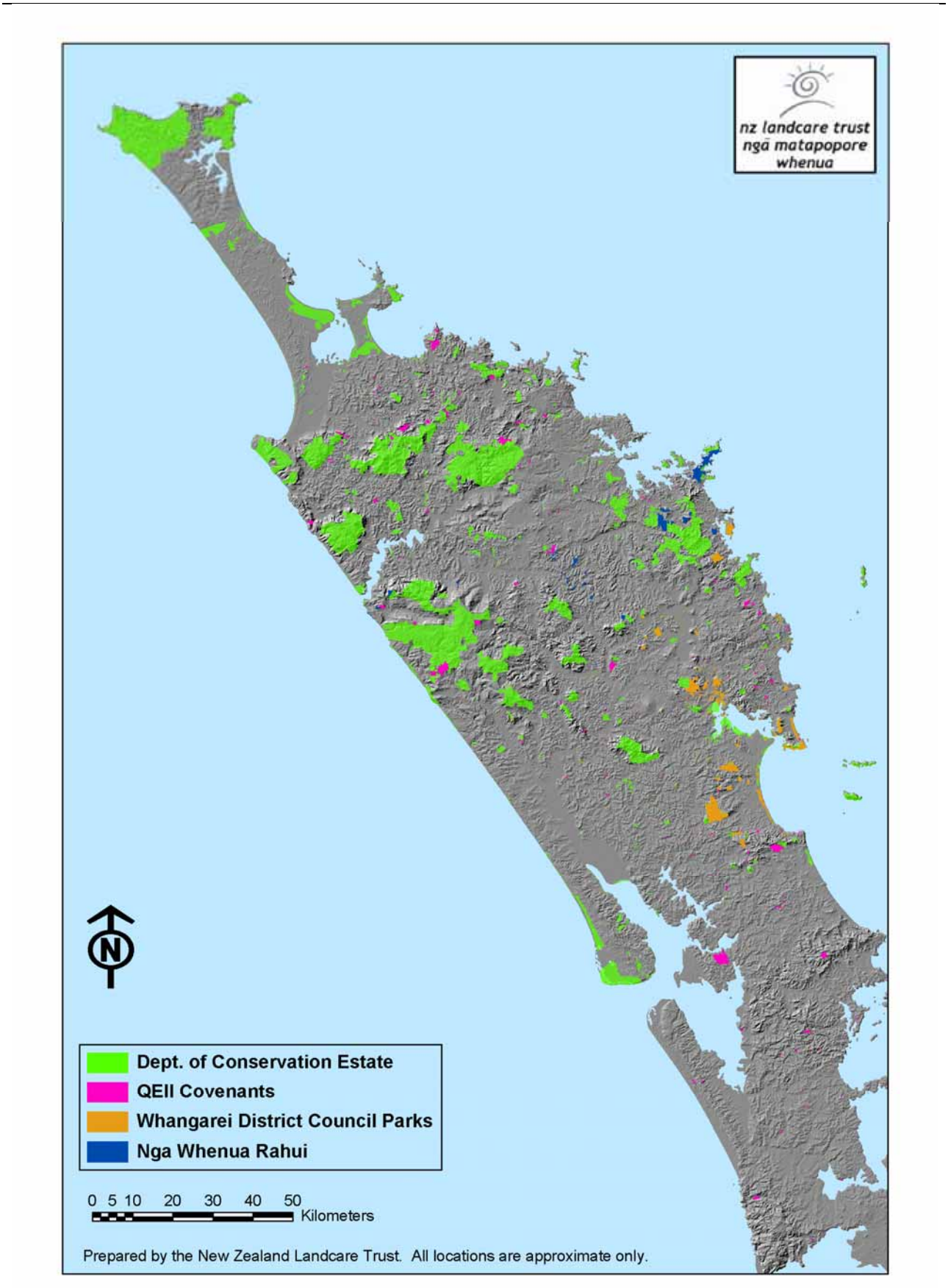


Figure 1: Legally Protected Land - GIS Database information available to July 2007

1.5 Indigenous Ecosystems of Northland

Dune Lakes Pouto, (Photo : NRC)

Conning 2001 describes four broad ecosystem types in Northland:

1. Forest and shrublands
2. Freshwater wetlands
3. Coasts, dunelands and estuaries
4. Offshore islands and stacks

The most extensive forest types are podocarp/hardwood/kauri and shrublands.

Nationally Northland has over half of the remaining kauri forest with large areas legally protected under the Department of Conservation including Waipoua, Warawara, Herekino, Puketi-Omahuta and Trounson Kauri Park.

The most distinctive coastal manuka/kanuka shrublands are found in the Far North such as Te Paki, Aupouri and Karikari Peninsula and Bream Head in the Whangarei Heads and are legally protected with the Department of Conservation.

Rare forest types

Only 1000 hectares of volcanic broadleaf forest remains in small fragmented remnants or as groups of individual trees around Whangarei, Kaikohe and Waimate North districts (Conning 2001). These forest remnants and other forest types in Northland are an important food source for the kukupa, tui, silvereye and kaka (as a seasonal visitor).

Extensive duneland forest occurs in two locations, the Aupouri Peninsula of the Far North and the Pouto Peninsula on the North Kaipara. Uncommon plants occur in both these areas, including *Pseudopanax ferox* and *Hebe diosmifolia* (Conning 2001).

The forests of Northland contain a number of threatened and endemic species including kokako, Northern NI brown kiwi, NZ pigeon, kauri snail, long and short-tailed bats, *Colensoa physaloides* and king fern, *Coprosma waima* and *Olearia crebra* (Conning 2001). Many of the avifauna are chronically threatened or locally extinct, including the tomtit and rifleman.

Dune Lakes, Pouto (Photo: NRC)

Wetlands and lakes

Northland has the most pristine dunelakes and associated freshwater wetlands remaining in mainland New Zealand. These are mainly situated on the west coast between stabilised sand dunes of the Pouto Peninsula, Kai Iwi Lakes, Aupouri and Karikari Peninsulas.

There are about 400 ancient dune lakes in Northland most between 5 to 10,000 years old. (Lisa Forester *pers. comm.)*

There is also a dense network of rivers and streams, many of which are relatively short and with small catchments. Significant inland wetlands associated with catchments are the Ngawha Springs, Motatau, Waitangi complex, Punakitere and Mangonui River wetlands.

Many of the inland freshwater wetlands have been greatly reduced due to land management practices in the region, and the remaining wetlands are small and scattered throughout the region. Northland has about 5% of the original freshwater wetlands remaining (including lakes) and less than half of these remaining wetlands are legally protected (Conning 2001). Wetlands remaining fall into several distinct types. Of these low nutrient systems such as fenns, bogs and gumlands are critically rare.

Privately owned land also contains a large percentage of important habitats, ecosystems and species and the protection of these areas relies on engagement with and management by private landowners.

Table 2 describes comparative habitat types on both private land and on crown land administered by the Department of Conservation.

Table 2: Comparative Areas of Habitat Types On and Off Land administered by the Department of Conservation

Ecosystem	Habitat Type	Area Represented *see scale below	
		Within DOC	**Outside DOC**
Forest and shrubland	Kauri-podocarp-broadleaf	5	5
	Podocarp-broadleaf:		
	(a) Lowland	5	5
	(b) Upland	2	1
	Kauri	3	2
	Shrubland-		
	(a) Manuka/kanuka	3	4
	(b) Coastal/broadleaf	2	2
	(c) Nth Cape/serpentine	1	1
	Coastal	2	2
	Volcanic broadleaf	1	1
	Podocarp	1	2
	Riverine flood/Alluvial	1	1
	Duneland	1	1
	Podzol Gumland	1	1
Freshwater wetland	**Rivers and Streams**		
	(a) Upper catchments and riparian	5	5
	(b) Lower orders and riparian	1	5
	Ephemeral		
	(a) Duneland	1	1
	(b) Hinterland	0	1
	Peatbog	1	1
	Intermediate	1	2
	Swamp	1	1
	Dunelake	2	2
	Dunelake riparian	1	1
	Volcanic lake	0	1
	Volcanic lake riparian	1	1
	Ngawha thermal lake	1	1
Estuarine	Mangrove	1	5
	Saltmarsh	1	1
	Sand/mudflat	2	5
	Shellbank	1	1
Coast	Hard coast	2	5
	Soft coast	4	5
Duneland	Sandhill	2	1
	Coastal deflation zone	2	1
	Pouto sandstone cliffs	1	1
Island	East coast	2	2
	West coast	1	1

Area Represented	**Scale**
greater than 30,000 ha	5
20,000 to 29,999 ha	4
10,000 to 19,999 ha	3
1000 to 9,999 ha	2
less than 999 ha	1
0 ha	0

(Source: DOC Conservation Management Strategy Northland 1999)

1.6 Protected Natural Areas Programme

The Protected Natural Areas Programme (PNAP) was established in 1982 to implement section 3 (b) of the Reserves Act 1977:

> *"Ensuring, that as far as possible, the survival of all indigenous species of flora and fauna, and the preservation of representative examples of all classes of natural ecosystems and landscapes which in the aggregate originally gave New Zealand its own recognisable character."*

The goal of the programme is:

> "To identify and protect representative examples of the range of indigenous biological and landscape features in New Zealand, and thus maintain the distinctive New Zealand character of the country."

Department of Conservation (2005) describes the specific aim of the PNAP as being:

> "To identify, by process of field survey and evaluation, natural areas of ecological significance throughout New Zealand which are not well represented in existing protected natural areas, and to retain the greatest possible diversity of landform and vegetation patterns consistent with what was originally present. To achieve this, representative biological and landscape features that are common or extensive within an Ecological District are considered for protection, as well as those features which are special or unique."

An Ecological District (ED) is a local part of New Zealand where the topographical, geological, climatic, soil and biological features, including the broad cultural pattern, produce characteristic landscape and range of biological communities.

The Department of Conservation is currently surveying and updating information for significant natural areas within Northland's Ecological Districts.

Fenced off bush, Mangakahia
(Photo: NZ Landcare Trust)

Figure 2 maps the reconnaissance surveys within each Ecological District (ED) that are completed.

There are thirteen published reports with three reports in press (Kaipara, Te Paki and Tutamoe).

An additional three areas, including Manaia, Tokatoka and Tangihua Ecological Districts have surveys either complete or nearly complete. (Wendy Holland, DOC *pers. comm*.)

It is noted that the oldest districts were surveyed more than 14 years ago.

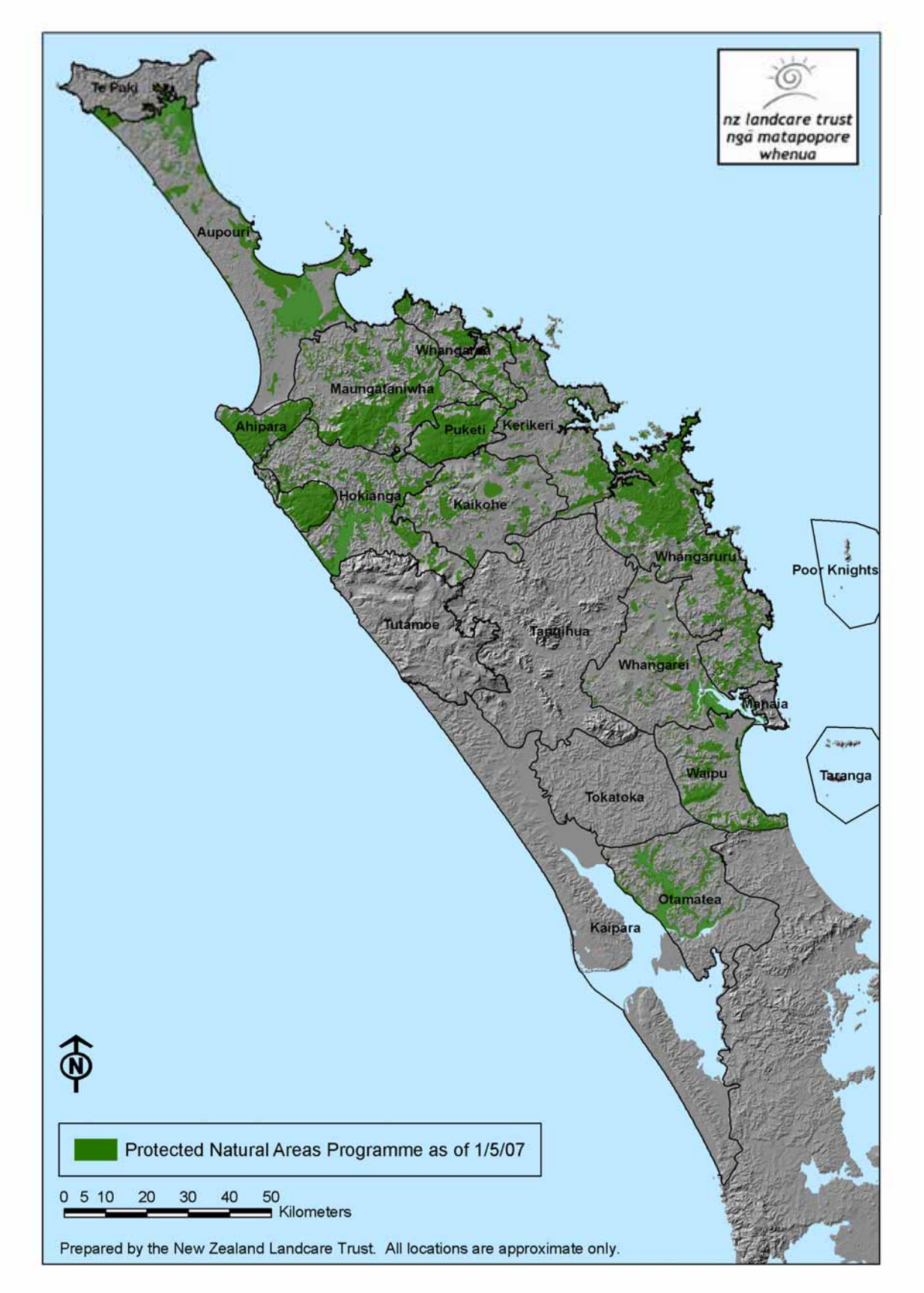


Figure 2: Ecological Districts showing PNA surveys completed to 1/05/07
Source: Department of Conservation

1.7 Land Use in Northland

Northland has a land area of 1.25 million hectares and a population of 150,440 as at March 2006 according to Statistics NZ.

Local governments in the area consist of the Northland Regional Council; and the Whangarei, Kaipara and Far North District Councils.

Pastoral farming is the dominant land use in the region accounting for more than half of the land area and contributing more than $1 billion per year to the regions economy. Table 3 details landuse in Northland as at 1990.

Northland Dairy Farm
(Photo: Jonathon Barran)

Native bush, scrub and other related vegetation types account for a quarter of the land area, with the remainder made up of exotic forests, un-vegetated dunes, wetlands, lakes and rivers, orchards and crops and urban areas.

Northland has a complex mix of soils, broken topography, near sub-tropical climate and a high level of indigenous biodiversity in comparison to most other regions in NZ.

The region has a variety of the land uses including agriculture, horticulture and exotic forestry but soils are generally poorly drained and over lower fertility. This region has a wonderful coastline and weather (indeed it is the longest coastline of any region) and is experiencing sustained population growth and development.

Table 3: Land Use in Northland in 1990

Land Use Type	Area (Ha)	% of Land Area
Pasture	745,000	59.0
Scrub, Shrub-land, Dune	164,000	13.6
Native Forest	160,000	12.7
Exotic Forest	125,000	10.0
Non-vegetated dunes	25,000	2.0
Wetland, Lakes, Rivers	23,000	1.8
Orchards, Crops	8,000	0.6
Urban Areas	6,000	0.5

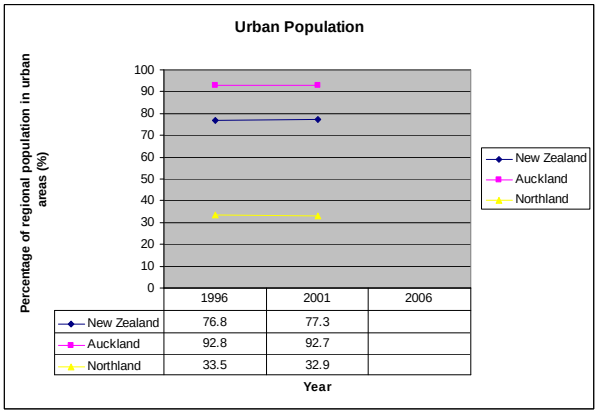
Source: DSIR Land Resource – NZ Land Resource Inventory – Northland Region, 2nd Edition.

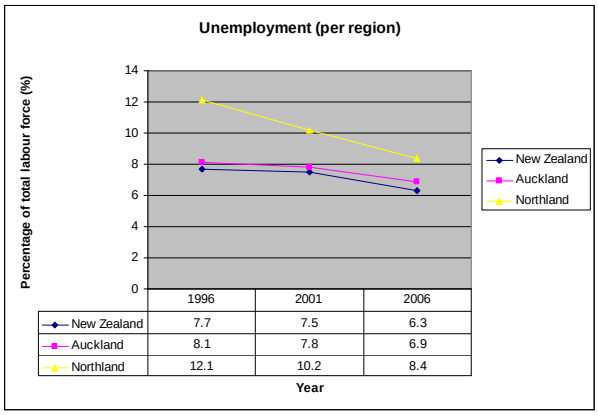
1.8 Socio-economics and Biodiversity

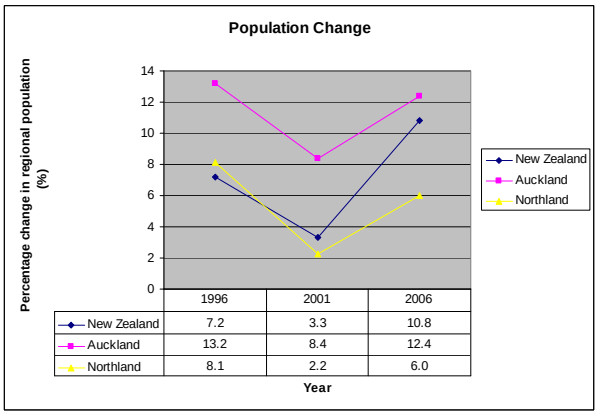
Whangarei district had a population of 73,463, Far North district 58,845 and Kaipara district 18,132 in 2006. Among the regions of New Zealand Northland has almost the lowest percentage of urban dwellers, the lowest median income and the second highest percentage Maori population after East Coast. The population is increasing dramatically and a high relative rate of unemployment exists even though the actual number has declined along with the rest of New Zealand during the census periods shown in Figure 3 (1996, 2001 and 2006). Figure 3 presents

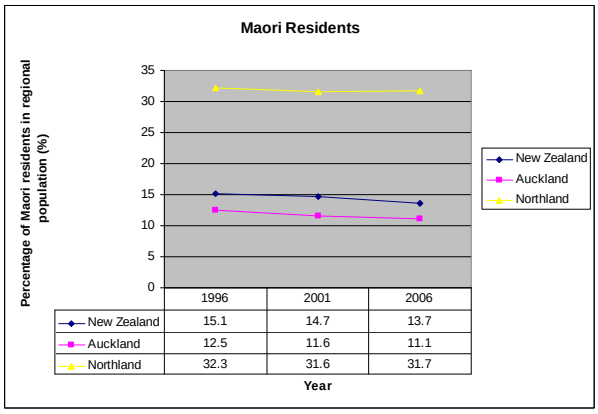
these six characteristics in a time series from the last three censuses, and compares percentages and rates of change for Northland and Auckland regions and for New Zealand.

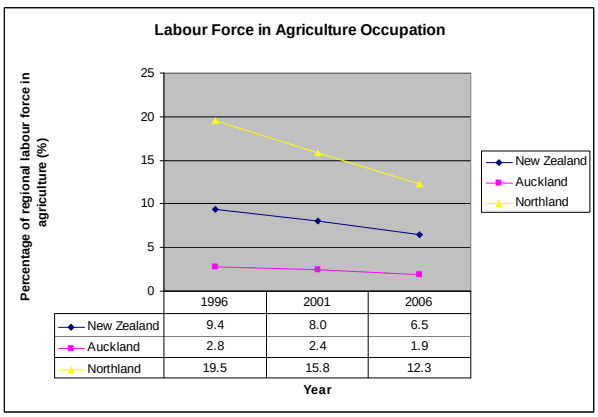
Figure 3: Relative Changes Comparative Rates of broad Census categories for Northland, Auckland and NZ

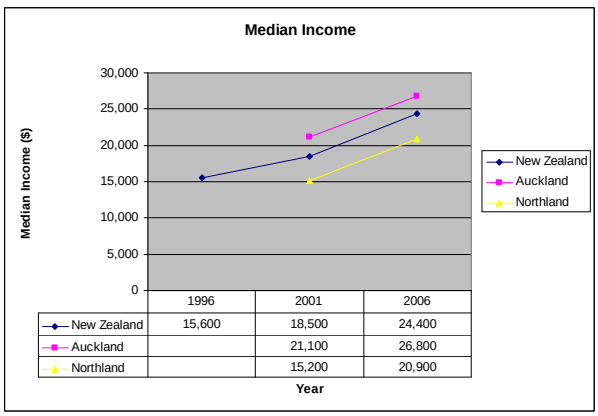












Source: Statistics New Zealand, Census 1996, 2001, 2006.

The socio-economic data presented in Figure 3 demonstrates that Auckland and Northland are quite different regions based on the set of characteristics analysed.

A central element to consider in the identity of Northland region is the amount of biodiversity in Northland relative to the rest of New Zealand. About 24 % of New Zealand's threatened plant and animal species were to be found in Northland, a disproportionately high amount given the area of our region. Around $^{1}/_{3}$ of threatened plants in Northland occur on the coast which is the main focus of subdivision in Northland (Lisa Forester *pers. comm.)*

Since the threatened species classifications were reviewed in 2002, the situation has remained similar. Initiatives to promote the maintenance and enhancement of biodiversity in Northland take place amongst this background of high biodiversity and low resources.

PART 2: THE WHOLE OF NORTHLAND PROJECT

2.1 History

The Northland Biodiversity Enhancement Group (N-Beg) recognised the need to increase the effectiveness of agencies and organisations to meet the regional needs for biodiversity enhancement on private land. The group embarked on a joint project to develop and implement an integrated approach to biodiversity enhancement in Northland.

Members of N-Beg with Marion Hobbs, Minister for the Environment (2004) (Photo: NZ Landcare Trust)

Funding was jointly provided for this project by the Biodiversity Advice Fund, the Northland Regional Council and the Department of Conservation (Northland Conservancy). The aim was to move towards an integrated "Whole of Northland" approach for biodiversity enhancement and protection for Northland.

The project mission statement is ***"That the indigenous biodiversity values of Northland are maintained and enhanced and that biodiversity restoration in Northland is integrated into normal land practices by landowners throughout the region"***

A number of key tasks of the project were identified:

- Initial development of a GIS database identifying current activity in Northland for biodiversity enhancement alongside key areas of biodiversity value.
- Facilitation of an interagency approach to identify a willingness to pursue opportunities for coordination and collaboration between agencies and organisations in Northland.
- Provision of opportunities for landowners and those involved in biodiversity restoration activities to share information and ideas via a series of workshops and trapper training days, and to gain new skills in conjunction with training providers.
- Support and encouragement of existing and new Landcare groups of landowners seeking to manage the biodiversity of their properties.
- Support of regional initiatives to increase the level of monitoring of the state of biodiversity in the region, and of outcomes of on-ground work for biodiversity enhancement.
- Engagement of staff from the district councils in Northland with the project, and encouragement of an increased level of sharing of ideas and priorities within the region.
- Developing the components of a strategic direction to identify common priorities and opportunities for coordination and collaboration for more effective biodiversity restoration in Northland.

2.2 Methodology

A number of aims, processes and outcomes were identified by N-Beg for the project:

- Identify common priorities and opportunities for biodiversity restoration and enhancement.
- Build on cooperation already in place.

- Increase the effectiveness of existing restoration initiatives.
- Enhance the 'statutory basis' for biodiversity enhancement in Northland through regulatory and non-regulatory mechanisms.

It was considered by the group that a number of actions would be required and these are summarised as follows:

- Sourcing and collating information on current biodiversity management activities in Northland.
- Liaising with landcare groups and other community initiatives, organisations and other agency staff to identify information needs, gaps and opportunities to resource further biodiversity work.
- Encouraging provision of information and advice in a way that meets the needs of both landowners and agencies.
- Developing a strategic direction for biodiversity enhancement in Northland.
- Presenting information as a series of layers within a GIS framework where possible.

A large number of agencies, organisations and landowners are undertaking biodiversity enhancement and management on public and private land. Completion of an inventory on biodiversity activities will meet a number of needs. It will identify the contribution that the region is making to New Zealand's overall biodiversity outcomes, help to grow the understanding and appreciation of the extent of biodiversity values in the region, and lever further community support for work to protect and enhance biodiversity values. The process will provide a benchmark for the basis of further work in Northland.

Biodiversity protection is an evolving process - new threats and new techniques are always on the horizon. There is a need for increased coordination between agencies and organisations around identification of what ecological information is required and what is available to assist agencies and organisations to encourage landowners' ability to sustain biodiversity.

The Resource Management Amendment Act 2003 clarified that managing biodiversity is an explicit function of both regional councils and territorial authorities (Section 30 (1) (c) (iiia); Section 30 (1) (ga) and Section 31 (b) (ii)).

As Regional and District Councils seek to meet these requirements for biodiversity protection there is scope to encourage a coordinated approach for land use by agencies and organisations responsible for biodiversity protection on private land. Currently prioritisation is based on a wide range of factors and policies. A process of consultation with a full range of stakeholders to identify priorities and opportunities will assist in development of a strategic direction for biodiversity enhancement in Northland.

A summary of some of the 'lessons learnt' during the project is given in Appendix 7.

The Whole of Northland Project's long-term outcomes are:

- A strategic direction for biodiversity enhancement in Northland
- A comprehensive understanding of regional ecological values
- Integration of efforts for biodiversity enhancement
- Increased biodiversity restoration capacity
- Collective monitoring of biodiversity health underway
- Integration of biodiversity enhancement into everyday land management.

DOC staff training landcare group members. (Photo: NZ Landcare Trust)