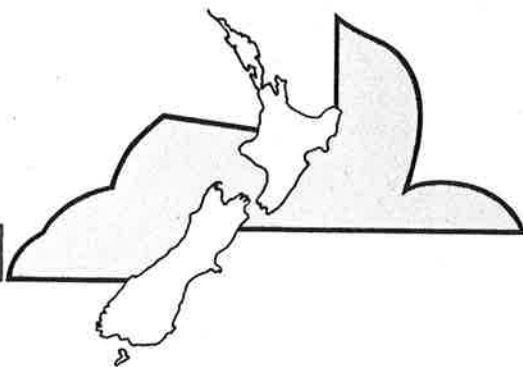


**CENTRAL FISHERIES REGION
INTERNAL REPORT No: 3**

**PROPOSED MARINE PROTECTED AREA:
NORTHERN D'URVILLE ISLAND,
CENTRAL SOUTH REGION.**

G. E. RUSHTON and A. R. KILNER



Central Region

Central Fisheries Region Internal Report No. 3

Proposed Marine Protected Area:
Northern D'Urville Island,
Central South Region

G.E. Rushton
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MAFFish Central Region
Nelson
1987

Internal reports are primarily for use within MAFFish. The views expressed are those of the author and are not necessarily those of MAFFish.

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ABSTRACT

The scenic waterways of Port Hardy and the coastline north to Cape Stevens has been the topic of numerous Marine Reserve proposals.

Considered typical of the outer Marlborough Sounds, the rich and diverse marine environments of the protected and exposed coastlines are a popular diving, fishing and boat cruising area.

Isolated on the northwest tip of D'Urville Island, 75 kilometres northeast of Nelson, and almost inaccessible by public road, this marine environment appears largely unaffected by human development.

The majority of land adjacent to the sea is privately owned and farmed. Private land extends down to high tide line. Most of the catchment and half of the coast of South Arm in Port Hardy is Scenic Reserve.

The climate is mild but the winds, like other parts of Cook Strait, can be fierce. Port Hardy, deep and endowed with numerous protected anchorages, is an excellent refuge for all sized boats.

Abundant sea-food and argillite for stone tools supported a large pre-European Maori population. The first British troops to come ashore in New Zealand landed in Port Hardy. The harbour was also the rendezvous point for some of the first European settlement boats.

Scientific information about the marine environment of this area is very sketchy. Commercial fishing needs to be investigated more thoroughly.

Port Hardy and the coastline north to Cape Stevens is suggested as an obvious candidate for Marine Protected Area status.

SECTION I

1.1 INTRODUCTION TO THE REPORT

1.1.1 BACKGROUND INFORMATION

In New Zealand, large areas of exceptional landscape are set aside in the form of parks and reserves. The legal framework is not available for comparable protection of marine environments. The narrowly defined function of the Marine Reserves Act (1971) cannot cope with the recognized need to protect a broad range of marine environments.

The Ministry of Agriculture and Fisheries, acting on its mandate to protect marine resources, has set out to improve the legislation. In 1985-1986 a draft Marine Protected Areas Bill was written to replace the Marine Reserves Act (1971). When implemented, it will provide legal framework for a flexible, three-tier system of protection for marine environments.

To facilitate the protection of marine habitats once new legislation takes effect, background information has been collected on important areas in the Central South Region.

This report collates information on one of the areas identified.

Submissions

Records held by MAFFish, Ministry of Agriculture and Fisheries, Nelson contain numerous Marine Reserve submissions. Forty-three submissions from private individuals, clubs and societies, Government Departments, planning agencies, etc. were collated and mapped. [see: APPENDIX 1]

Coastal Ecological Districts

Within the Central South Region, 11 ecologically different Coastal Ecological Districts have been identified in a document by King et al. (29). These are:

Heaphy
N.W. Nelson
Whanganui Inlet
Farewell Spit
Golden Bay
Seperation Point [Abel Tasman National Park coastline]
Tasman Bay
Boulder Bank
Outer Sounds
Pelorous
Queen Charlotte Sounds.

In the long term, it would be ideal to have protected coastal habitats in all of the Ecological Districts.

Priorities and the Selection Process

Because of budget and time constraints, investigations were confined to the N.W. coast of South Island, Golden/Tasman Bays and the Marlborough Sounds.

Priority was assigned to areas that were:

1. Representative of at least one Ecological District.
2. The focus of a number of proposals.
3. Reasonable candidates for success.

Selected Areas

The five documented areas are:

1. Whanganui Inlet - the largest estuary on the west coast of South Island. [Whanganui Ecological District]
2. Abel Tasman National Park Coastline - high value recreation waterway. [Seperation Point Ecological District]
3. Delaware Inlet - well researched, typical, unpolluted estuary. [Boulder Bank Ecological District]
4. Port Hardy - typical outer Sounds inlet and coastline. [Outer Sounds Ecological District]
5. Tennyson Inlet - high value recreation waterway typical of the inner Sounds. [Pelorus Ecological District]

Separate reports have been prepared on each area.

Future Investigations

Other Central South Region coastal areas that need to be looked at in the near future are:

1. Central West Coast - Haast to Kahurangi Point
2. N.W. Coast - Farewell Spit to Kahurangi Point [N.W. Nelson Ecological District]
3. Tasman Bay [Tasman Bay Ecological District]
4. Queen Charlotte Sound - numerous areas [Queen Charlotte Ecological District]
5. Tory Channel [Outer Sounds Ecological District]

Future Responsibility

The responsibility for Marine Reserves will pass from the Ministry of Agriculture and Fisheries to the Department of Conservation on 1 April 1987. Therefore, the implementation of the areas covered by this series of reports will be the responsibility of the Department of Conservation.

It is not the intention of these reports to specify boundaries or sizes, nor the proposed status and uses for the suggested areas. Such details can only be determined after consultation with the appropriate user groups by the Department of Conservation if and when the Department proceeds to implement Marine Protected Area status for these areas.

Protection of Marine Environments

The aim of the Marine Reserves Act 1971 is to:

"provide for the setting up of areas of the sea and foreshore as marine reserves for the purpose of preserving their natural state as the habitat of marine life for scientific study."

This restrictive "scientific purposes only" function of the Marine Reserves Act has encouraged government departments to use authority contained within the Fisheries Act [1983], the Harbours Act [1950], and the Reserves Act [1977].

The 'coral' beds at Separation Point, for example, are gazetted and managed by regulation under the Fisheries Act. This Act is

intended to control fishing activity.

Similarly, a grant of control over a 800m. wide coastal strip adjacent to Abel Tasman National Park has been delegated to the Park through the authority of the Harbours Act. While the function of the strip is to help manage water-based recreation activity, the intent of the Act is to control activity in harbours and on the seabed.

Another example is the intertidal shorebird habitat of Farewell Spit. This is controlled by authority established through the Reserves Act and is primarily aimed at protecting terrestrial habitats.

The use of these other Acts has clearly demonstrated a need for better legislation that can accomodate a wider range of reserve types.

The Marine Protected Areas Bill

The draft Marine Protected Areas legislation (54) is expected to provide the flexibility necessary to comprehensively protect marine environments.

The proposed Bill allows for a wider variety of reserve types. The purposes of the Bill are to:

1. Conserve, protect and enhance marine life for the benefit and enjoyment of people.
2. Designate areas as either
 - Marine Reserves - total protection with extraction in only exceptional cases.
 - Marine Parks - protection of the recreation values with extraction where it does not threaten these values.
 - Marine Habitat Reserves - protection of special habitats and habitats that are important or critical to the maintenance of marine species.
3. Promote public awareness

1.1.2 OBJECTIVES OF THIS REPORT

This report has been prepared to:

1. Collate information available on the proposed Marine Protected Area collected from published and unpublished sources. Where possible anecdotal knowledge was sought from expert people such as Ministry of Agriculture and Fisheries and Cawthron Institute staff and in some cases fishermen and contract biologists. Time allotted to this project limited the opportunity to consult with every expert group and the general public. On-site research was also limited by the time available.
2. Prepare a source document which can be used to identify further information requirements necessary to promote the study area as a Marine Protected Area.
3. Discuss different Marine Protected Area categories for this proposed Marine Protected Area and note their possible effects.

This report contains five sections

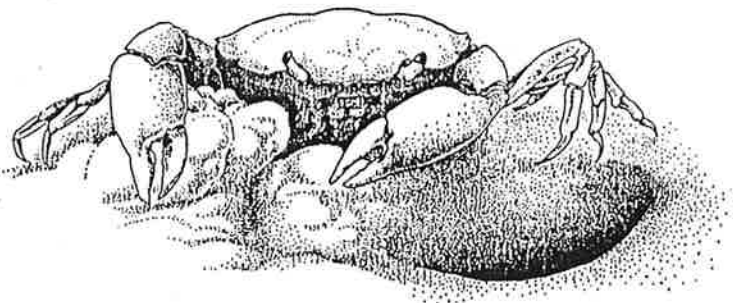
Section I introduces the report and the concept of Marine Protected Areas.

Section II of this report provides a general description of the area considered for Marine Protected Area status.

Section III details known biophysical and user information indicating also where more information is necessary.

Section IV discusses the possible actions, options, implications and management considerations.

Section V contains acknowledgements and a detailed bibliography.



SECTION II

2.1 INTRODUCTION TO PORT HARDY AND N.W. D'URVILLE ISLAND

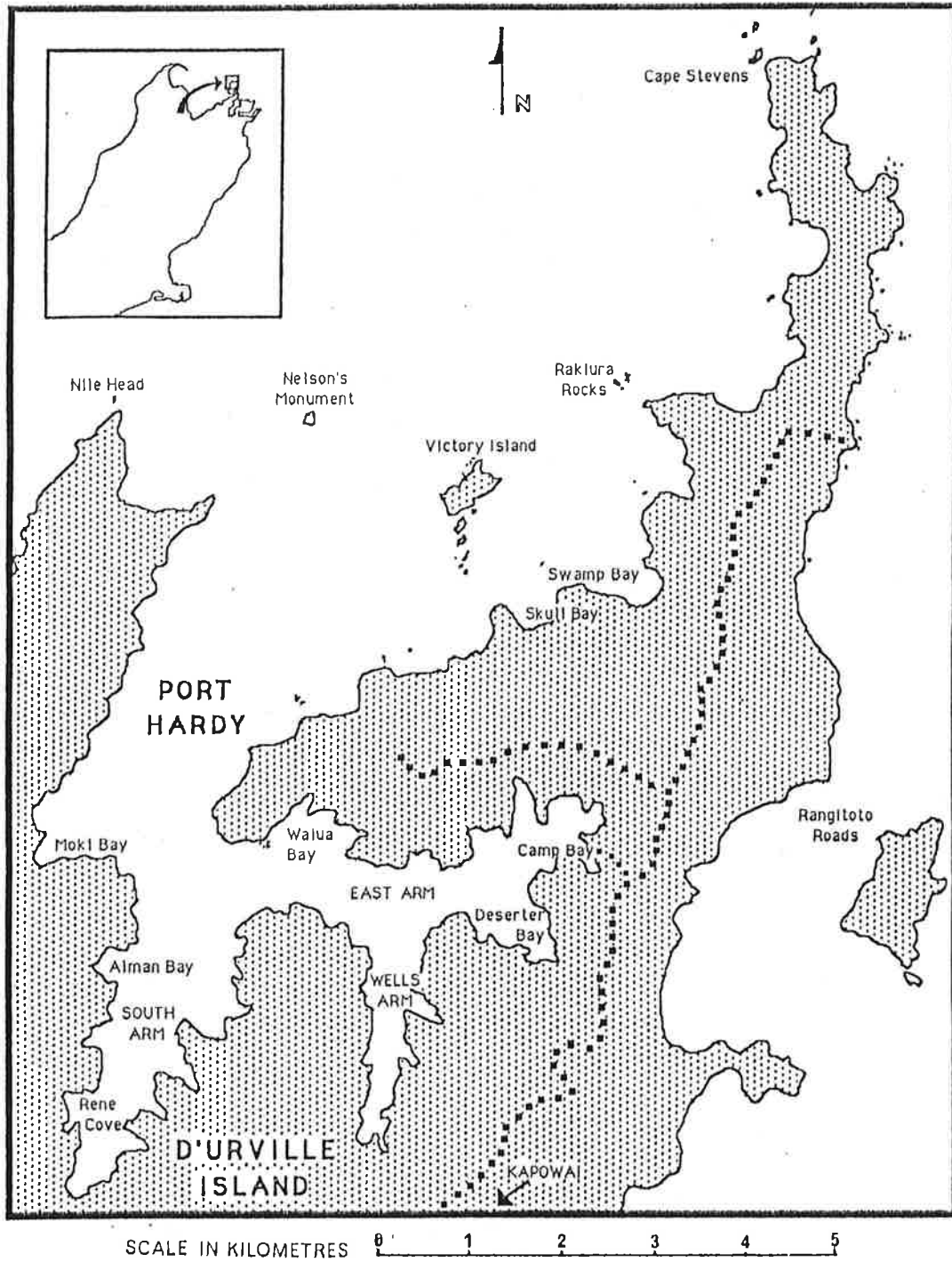


Fig. 1 MAP OF THE NORTHERN D'URVILLE AREA ILLUSTRATING THE MAJOR FEATURES

2.1.1 LOCATION AND SURROUNDINGS

The area considered in this document is the water and coastlines located south of a line drawn between Nile Head (grid ref. P25 528825) and Cape Stevens (grid ref. P25 567903). This includes the open coast of northwest D'Urville Island and the protected waters of Port Hardy.

South of Cape Stevens the landscape is dramatic. High colourful cliffs and surf washed rocks contrast with the pasture land above. Port Hardy's protected shores on the other hand seem to merge with the surrounding farm and forested lands. The land surrounding Port Hardy's South Arm with its scenic mature native forest is part of the Marlborough Sounds Maritime Park. With the exception of small pieces of Maori land, the remaining lands are privately operated farms.

2.1.2 ACCESS

Road access to Port Hardy and the coastal areas north to Cape Stevens is almost non-existent. Farm tracks provide access to Allman and Waiua Bays and a poorly maintained public road links the main north/south ridge road to Camp Bay in East Arm. Almost all users of the northern D'Urville coastal areas gain access by boat from Nelson or from the Sounds. The treacherous weather of the outer Sounds limits users to those that have larger vessels.

2.1.3 EXTERNAL INFLUENCES

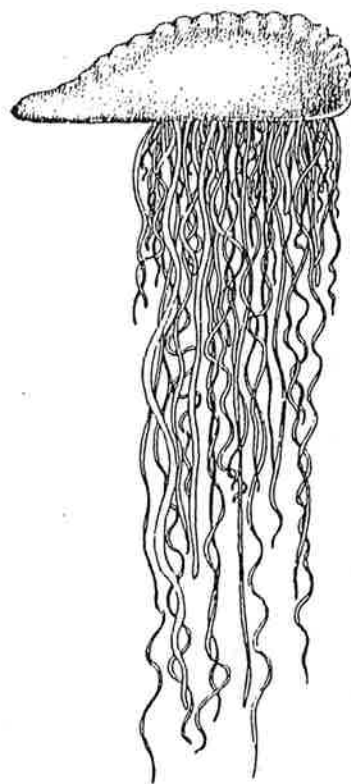
Farming is the only active land use of the slopes above Port Hardy and the coast north. Mature and regenerating forests, mainly protected by Scenic Reserve, cover much of the catchments of south and east Port Hardy. No negative effect from existing land management is expected.

2.1.4. EXISTING USE

Port Hardy and the coastal water north to Cape Stevens is a popular venue for recreationists. Diving, fishing and cruising are the main activities. This scenic and remote coastline attracts people from many parts of the country. Some commercial fishermen are dependent on the inshore fishery of this coastline.

2.1.5 INFORMATION SOURCES

Information concerning the marine biophysical system and human users of this part of D'Urville is very limited. History of the harbour is well documented by Baldwin (1-3). Study of these coastal waters should be encouraged.



SECTION III

3.1 BIOPHYSICAL INFORMATION

3.1.1 CURRENTS

Information on the currents of Port Hardy is limited. Early explorers made note of the strong tidal set in the vicinity of Nelsons Monument. Lt. Clarke of HMS "Alligator" in 1834 reported that "the flood tide during the springs sets strong to the westward and the ebb nearly in the opposite direction and across the harbour mouth. In sailing in or out of this port during the springs it will be necessary to make allowances for the strength of the tides"(1).

The northwest shore of D'Urville is undoubtedly swept by the east trending D'Urville current. An opposing tidal phase between the east and west coast of central New Zealand results in an amplified flow around the district (34).

Heath reports that the anti-clockwise movement of water through Tasman Bay has its outflow near D'Urville Island (38).

3.1.2 DEPTHS

Port Hardy is a deep inlet well favoured as a port by early explorers and modern recreationists. Once inside Castle Head depths range from about 20 metres to 32 metres. Generally speaking only a narrow belt of shallows exists around the edge of the shoreline. Almost no shallows exist along the shoreline east of Wells Arm. South of Nelsons Monument, near the mouth of the harbour, the bottom reaches its deepest point at 49 metres. From Fleet Rocks shoreward the depths remain shallow at about 7.5 metres. North of Swamp Bay to beyond Rakiura Rocks shallows are common and exceed 9 metres in only a few places.

3.1.3 TOPOGRAPHY

Port Hardy, like the rest of the Sounds, is a drowned valley. The marine and terrestrial topography of the harbour and the coastline up to Cape Stevens is more rugged and extreme than inner Sounds. Except for the ends of the large embayments, the

coastal edges of Port Hardy generally support only a narrow fringe of shallows which quickly drop to a depth of about 30 metres. This 'fiord-like' quality can be explained by the crustal and climate changes over the years. Back in the Tertiary Period the area around D'Urville is thought to have tilted westward providing conditions for the east/west sculpturing of East Arm. After this the Sounds area generally warped downward allowing for the sea to invade the valleys. Later with the onslaught of Pleistocene Epoch sea levels went through cyclic lowering and raising periods. During the coldest periods sea levels depressed such that Port Hardy became a dry wide-valleyed landscape. Winds blew sediments inland to form sand dunes and loess deposits at the heads of the valleys. When the climate warmed up again the seas reinvaded the valleys to a depth even higher than the present sea level and then receded to existing tide levels.

3.1.4

TIDES

The tides in the outer Sounds are quite large. King et al. comment that "An opposing tidal phase between the east and west coast of central New Zealand results in an amplified flow around the district"(34).

Historical reference to the tides made by a member of one of the first ships that explored D'Urville also indicate that the tides are large.

"The latitude of Port Hardy 40 degrees 47 minutes South, longitude 173 degrees 55 minutes East, high water at full and change about 9 O'clock, rise and fall of the tide [by the pole] about twelve feet (1)."

The closest tide information that relates to Port Hardy is ten kilometres away at nearby Stevens Island. For Stevens Island, the tides are recorded as:

Mean High Water Spring	2.5 m
Mean Low Water Spring	0.3 m
Mean High Water Neap	2.0 m
Mean Low Water Neap	0.8 m

The Stevens Island records suggest that Port Hardy's tides are less extreme than inner Tasman Bay [Nelson] which can reach a Mean High Water Spring height of 4.0 m.

3.1.5

SEA ACTION

Seas in Port Hardy depend the strength and the direction of the wind. The degree of roughness ranges from light seas in well protected embayments to heavy seas along the exposed northwest coastline. Parts of South Arm and East Arm, such as Waiiau Bay, are thought to have well protected anchorages. Wells Arm and Camp Bay are prone to funnel winds especially when the direction comes from the prevalent northwest. More detailed information on anchorage and sea conditions is available in "A Cruising Guide: Palliser to the Marlborough Sounds and Tasman Bay" [1982] by K.W.J. Murray and R.S. Von Kohorn (35).

3.1.6

FRESH WATER INPUT AND SALINITY

Catchments in Port Hardy are small. The volume of fresh water input is assumed to be low. The fresh water that flows either through farmland or forested scenic reserve and is not expected to be polluted.

3.1.7

WEATHER AND CLIMATE

Olive Baldwin notes that "D'Urville Island has warm summers and mild winters with frequent strong winds reaching gale force or stronger. Due to its geographic position the island is exposed to winds from virtually any direction but winds from the westerly quarter prevail. The annual rainfall averages 890-1270 mm and is fairly evenly distributed throughout the year with a tendency towards winter maximum. The mean annual temperature is 11.7 - 12.8 degrees C. and frosts are few. Sunshine hours total 2000 to 2200 per year"(3).

Winds from the north-west seem to funnel down Wells Arm and Camp Bay making them less secure anchorages than those in South Arm or Waiua Bay.

3.1.8

GEOLOGY

The complex geology of D'Urville Island is complex and one of the reasons why Port Hardy has such an interesting natural and human history. All three major rock types (sedimentary, igneous and metamorphic) underlie the harbour. Most of Port Hardy has a

basement of sedimentary rocks composed of sandstones, siltstones and mudstones belonging to the Greville and Waiua formations. The Waiua formation "forms the magnificent colourful cliffs of laminated alternating bright red and green sandstone and siltstone, grading into red mudstones"(3). Limestones are found along the northeastern bays of East Arm. These complexly folded 'Wooded Peak' limestones in turn define the northern extent of the ultramafic complex. The north-south spine of the island is mainly composed of iron and magnesium rich Dun Mountain Serpentine which contain lenses of 'baked' argillite. Easily worked into sharp, iron-hard cutting tools, argillite proved to be a very valuable mineral for the Maori culture. D'Urville has the largest deposits in the country. This important resource was traded throughout the country by the resident Maoris. A small and almost insignificant deposit of argillite is found along the shoreline of the harbour at Lookout Bay. To the north and west the coastline is composed of 'Brook Street' volcanics, the same rocks that underlie parts of Nelson.

Port Hardy's more recent tectonic history of downwarping, flooding, and erosion produced the deep fiord-like 'Arms' that figured as an important rendezvous and redistribution point for the first European settlers in this region [see: 3.2.9 - EUROPEAN HISTORY].

When world-wide sea levels were very low, settlers of a different sort used D'Urville. "There is ...evidence of a land bridge linking the Marlborough block with the south-west of the North Island continuing until the late Pliocene [two million years ago] and possibly existing as a narrow isthmus through D'Urville Island until the late Pleistocene [11,000 years ago]. This bridge allowed free movement of flora and fauna between North and South Islands"(10).

"The sequence of D'Urville Island's isolation, first from the North Island and then from the South Island has had significant effects on the floral and faunal distribution and subspeciation"(3).

3.1.9 HABITATS - INTERTIDAL AND SUBTIDAL

So far, no published information detailing the marine habitats of Port Hardy and the coast north to Cape Stevens has been found. However, even at a glance, it seems obvious that protected shores

of Port Hardy and the exposed coastline north to Cape Stevens offers almost all the marine habitats found in the outer Sounds plus many that are similar to those found in the inner Sounds as well.

Marine birds can be an indicator of the richness of nearby marine habitats. From one of Olive Baldwins books an author comments that..."d'Urville's coasts are rich in bird life, with a total of 18 species having been recorded. All but eight of these species breed on the island and of these eight, four species [fairy prions, diving petrels, fluttering and sooty shearwaters] breed on the small islands off d'Urville's; two species, the gannet and the black shag breed in other parts of the Sounds, whilst giant petrels and arctic skuas are visitors from afar. d'Urville is an important nesting site for both pied and little shags and colonies of these species have been recorded from Te Puna lagoon, Penguin Island, Port Hardy, Whareatea Bay and Billhook Bay "(3).

M. Bradstock comments that..."this general area [northern D'Urville] is marked by a prominent belt of brown seaweed growing subtidally, with rather sparsely covered rock surfaces underneath. I believe the abundant urchins feed on everything to produce the barren appearance described. What are present are: urchins, paua, simple ascidians, bryzoan clusters [empty Galeopsis under rocks], some hard coral colonies in deeper water; crays, some Ecklonia [only here and at Taupo Point is this found]"(30).

3.1.10 DOMINANT SPECIES - PLANTS AND ANIMALS

FISH

Fish found in Port Hardy, according to Bradstock(30), are:

butterfish	blue cod
red snapper	trevally
conger eel	school shark
dog fish	spotty
butterfly perch	blenny
marble fish	red-banded perch
sea perch	leather jacket
banded-parrotfish	rock cod
scarlet parrotfish	slender roughy
sweep	groper

SHELLFISH

paua
sea urchin [kina]
crayfish

Lorraine Moleta of Waitai Bay (28), D'Urville reports that in Camp Bay [East Arm] snapper are no longer numerous; scallops can be found in good patches; eagle rays and hagfish can be common at times; and starfish seem to be increasing with a corresponding decrease in rock oyster numbers.

BIRDS

Buckingham and Elliot (10) report 16 species of sea or shoreline birds known to exist around northern D'Urville. These are:

gannet	pied shag
little shag	spotted shag
white-faced heron	paradise duck
mallard	western weka
southern black-backed gull	red-billed gull
white-fronted tern	kingfisher
sooty shearwater	variable oystercatcher
caspian tern	

A continuing survey by the Marlborough Sounds Maritime Park staff(29), Havelock has, in addition, identified:

reef heron
fluttering shearwater
black-billed gull
black-fronted tern
black shag
little black shag
spur-winged plover
crested shag
little blue penguin
diving petrel

Birds reported by Webb (33) that could occasionally be blown shorewards along the exposed coast south of Cape Stevens are:

wandering albatross
white-capped mollymock
buller's mollymock
cape pigeon
cook's petrel
giant petrel

buller's shearwater
fleshfooted shearwater

Port Hardy is known to support breeding and nesting populations of blue penquins, pied shags and spotted shags (33).

3.1.11 SPECIES DIVERSITY AND ABUNDANCE

The diversity and abundance of the marine life in the harbour and and outside north to Cape Stevens is expected to be high. Further study is required.

3.1.12 UNUSUAL OR RARE SPECIES

According to former fisheries scientist M. Bradstock (30), Ecklonia sp. seaweed has its only known South Island growing areas in northern D'Urville and at Taupo Point [Abel Tasman National Park coastline].

3.1.13 REPRESENTATIVENESS OF THE HABITAT

The exposed coastline and part of the protected coastline inside the harbour is thought to be typical of the outer Sounds marine environment.



3.2

USER INFORMATION

3.2.1

TRADITIONAL MAORI USE

Port Hardy and the coastline north to Cape Stevens was a valuable source of food for the pre-European contact Maori. The Island also yielded abundant supplies of argillite which was collected by the Maori from the hills surrounding the Port.

Recent use of the coastal resources by the Maori people has not been documented.

3.2.2

TRADITIONAL EUROPEAN USE

Non commercial collection of sea food by 'european' New Zealanders is mainly recreational diving and line fishing. Local families usually have favourite spots and collect sea food from time to time(28).

Total use of the nearby marine resources by D'Urville Island residents is low.

3.2.3

RECREATION

Almost all recreation activity in Port Hardy area is water-based. The Marlborough Sounds Maritime Planning Authority recognize the recreation potential of Port Hardy in their "Marine Farming Study"(39). They state that "Port Hardy contains a number of outstanding beaches with considerable recreation potential. The South Arm has the highest recreation potential of any of the bays on the Port. This is because most of Port Hardy is surrounded by part of the Marlborough Sounds Maritime Park which contains many superb stands of indigenous forest, and excellent beaches."

Matthias Shellhorn in 1984 prepared a detailed recreation profile of visitor use in the Sounds (31). The study focused primarily on Pelorus and Queen Charlotte Sounds. D'Urville was included but received only a cursory look. The only survey that applied directly to Port Hardy was an aerial survey of the Sounds where boats were counted and averaged per flight. Six flights over the summer period recorded an average of 1-3 boats in Port Hardy; slightly less than half of these were wind powered. The author noted that "While the overall counts clearly showed more

motorboats compared with sailing craft, the reverse was the case in 7 specific locations - In Mistletoe Bay, Kaikakirikiri, Hitana, Ship Cove,, Tawa Bay, Waiona Bay, and Mill Arm. On D'Urville Island sailing craft clearly outnumbered motor boats"(31).

Local residents claim that most people that use Port Hardy come by sailboat or by commercial launch. The commercial ventures are usually dive or fishing trips out of Picton that can remain in the area for about 4-6 days (28). Many people fish or dive outside the harbour in places such as the Victory Islands and return to the protected anchorages in the harbour.

In the publication "A Cruising Guide; Cape Palliser to the Marlborough Sounds and Tasman Bay" [1982] by K.W.J. Murray and R.S. Von Kohorn,(35) it noted that the South Arm is often used as an anchorage and provides shelter from all winds. Streams flowing into Port Hardy provide an important source of fresh water for mariners. The southern part of Wells Arm was identified by the Deputy Harbourmaster as an anchorage, but it is of lesser value than the South Arm. Wells Arm often acts as a wind funnel. Also, the head of the arm dries and shallows for some distance seaward. The head of Deserter Bay is a good anchorage. The seaward end of Deserter Bay is unsuitable for anchoring smallcraft as the Bay deepens quickly. Winds that funnel through Camp Bay make it a poor anchorage

3.2.4

COMMERCIAL FISHING

Information sources investigated so far indicate that very little commercial fishing takes in Port Hardy.

While the potential exists for some fisheries [ie. scallops] its distance from markets perhaps makes harvest expensive.

Paua diving as well as line and net fishing is active along the exposed coastline from Victory Island to Cape Stevens. It is fished from both Nelson and Picton bases (37). More investigation is needed to detail the commercial fishery in this area.

3.2.5

SCIENTIFIC STUDIES

A sea and land bird study conducted by the Marlborough Sounds Maritime Park is the only on going study found in the course of this investigation. [see: 3.1.10.- DOMINANT SPECIES - BIRDS]

3.2.6

ADJACENT LAND AND CATCHMENT USE

Most of the coastline of Port Hardy is freehold land. Riparian rights to the foreshore are held by the land owners down to Mean High Water Spring tide (29). The southern half of South Arm is Scenic Reserve and part of the Marlborough Sounds Maritime Park. A small piece of south-east Wells Arm is Maori land as is Victory Island and Nelsons Monument (32). The land along the western slopes of the harbour north of Allmans Bay and the slopes above Waiau Bay is actively farmed. Some farmlands are reverting to scrub. Most of the private land above South Arm, Wells Arm, Deserter and Camp Bay is forested mainly with hard beech, black beech, hinau and rimu. South and Wells Arms contain small estuaries where salt marsh gradually gives way to rushes, flax, shrubs and forest.

The largest scenic reserve on the island [3616 ha.] encompasses most of the watershed of South Arm and a small part of Wells Arm. Freshwater input into the harbour is small. Activities on the slopes surrounding the the harbour are not expected to contribute significant pollutants into the harbour.

3.2.7

MAORI HISTORY

Maori historic settlement of D'Urville Island is thought to go back to some of the earliest colonizers of New Zealand. Buckingham and Elliot note that... "Both traditional Maori History and archaeological findings support an early Maori occupation of D'Urville Island. The convenient geographic location, the sheltered harbours and superb fishing grounds would have been attractive features but most important, perhaps, was the presence of "baked argillite" which occurs in association with D'Urville Island's ultramafic belt. This stone was highly valued for the production of adzes and other impliments, and a long tradition of quarrying, stone working, and trade developed on D'Urville Island"(10).

"Traditional Maori history has revealed a complex story of tribal succession incorporating peaceful contact and bitter warfare. Each successive invasion disrupted or modified previous cultures thus affecting the influence of the Maori people on the D'Urville Island landscape"(10).

"According to Duff [1963] the Marlborough area was first inhabited about 850 A.D. by a people who hunted moa and caught fish for food. Moa bones have been found in D'Urville Island midden and occupation sites, and whole skeletons have occasionally been found in caves..."(10).

"After the moa hunters D'Urville Island was inhabited by a succession of Maori groups"(10). The last known change took place in 1829 when the island was colonized by the Ngati Koata, a subtribe of Te Rauparaha's tribe (10).

At one time Maori settlement in Port Hardy [also known as 'Paraore' or as Wakefield recorded 'Ngawanga'] and along the west coastline to Cape Stevens must have been extensive. Archeologists have recorded 100 sites in the harbour area of which there were: 31 pits, 40 middens, 11 terraced areas, 9 ovens, 8 habitation sites, 1 wall, 4 quarries, 1 fortified pa, 1 garden area, and 4 flaking sites (36).

By the time European colonists arrived in the 1840's, D'Urville Island, like most of the north end of South Island, was sparsely populated by Maori people. Colonel Wakefield recorded a village of 200 inhabitants south of Garden Bay on the north-east peninsula and extensive 'potato' grounds on the upper flats of the island. The introduction of iron tools to the Maori culture destroyed the value of argillite and perhaps the incentive to repopulate D'Urville Island.

The southern end of the West Arm was inhabited by Maori families in the early 1900's (40).

The pre-European size of the Maori population was apparently very high. Oral history through the Elkington family records that... "if you put the canoes bow to stern they would go around the island [D'Urville] three times"(40).

3.2.8

EUROPEAN HISTORY

[extracted from Baldwin (1)]

Both Abel Tasman in 1642 and Captain Cook in 1770 anchored off D'Urville Island but neither entered Port Hardy. Whalers in the early 1800's knew of Port Hardy's existence as did a Mr. Guard

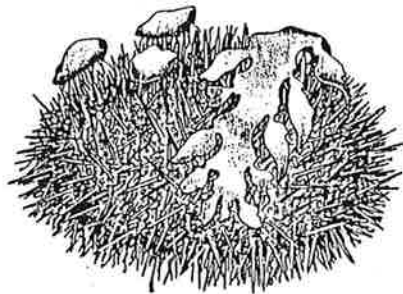
who as a result of an incident on the Taranaki coast put the harbour on the map. Guard's wife was being held for ransom by a group of Maoris living on the coast near Mt. Egmont. Two vessels, the 'Isabella' and HMS 'Alligator', loaded with British troops, anchored off shore while a negotiating team tried unsuccessfully to secure the release of Guard's wife and child. Bad weather forced the two boats to weigh anchor. Guard piloted the boats across Cook Strait to a well protected anchorage known as 'New Harbour' later renamed 'Port Hardy' by Captain Lambert after Vice-Admiral Sir Thomas Hardy; Flag Captain at the Battle of Trafalgar. Eventually the vessels and military crew returned to North Island and safely rescued Guard's wife and child. While in 'New Harbour' the troops went ashore for the first time in New Zealand. There was time for a little target practice and picnicking on local seafoods and birds. They also surveyed the harbour and produced the first official chart of Port Hardy which was sent back to England.

Five years later, Captain Wakefield of the New Zealand Land Company used the charted Port Hardy as a rendezvous destination for immigrant ships to New Zealand. From here the ships were dispatched to Port Nicholson [Wellington]. Wakefield arrived at anchorage in Port Hardy on January 11, 1840 on his vessel the "Tory". Preceding him was a load of immigrants on the "Cuba" [late December 1839]. The "Aurora" [17 January 1840]; the "Oriental" [22 January 1840]; the "Duke of Roxburgh" [7 February 1840]; the "Bengal Merchant" [10 February 1840]; the "Adelaide" [1 March 1840]; and the "Bolton" [12 April 1840] all arrived at Port Hardy and received their orders to follow Wakefield to Port Nicholson.

Sighting land, after a long time at sea, can be a beautiful experience. A passenger on the "Aurora" described Port Hardy as "...without exception one of the most splendid harbours you can conceive. It is in fact a large lake and is completely land locked. The tide rises and falls; the ships have perfect shelter; the lake is surrounded with splendid hills covered with evergreens and the whole forming a most picturesque scene. It is in fact quite a fairyland. Whilst in Port Hardy we took cod with a hook and line so fast as we could pull them out....We went ashore and obtained all sorts of shellfish and brought them on board. The coasts abound with lobsters, crabs, oysters, mussels and a variety of other fish"(1).

After April 1840, immigrant ships no longer visited Port Hardy.

The harbour returned to its tranquil existence remaining so until the early 1900's when logging and farming converted the wild landscape into its present form.



SECTION IV

4.1 DISCUSSION

4.1.1 INTRODUCTION

Port Hardy and the coastline north to Cape Stevens, part of the "Outer Sounds Coastal Ecological District"(34), is a highly rated marine environment. Numerous groups realize its importance and have recommended protection of all or parts of the area. The interested parties include the New Zealand Underwater Society, Ministry of Agriculture and Fisheries - Fisheries Research and Management Divisions, New Zealand Forest and Bird Society, and the Marlborough Sounds Maritime Planning Authority [see: APPENDIX 1 - Marine Protected Area Proposals]. These protection proposals cite the areas superb scenery; excellent fishing, diving and cruising; diversity of marine habitat and recreation opportunity; its remote 'wilderness' quality; its safe anchorages and its scientific value.

The exposed coastal habitats north to Cape Stevens and the marine habitats contained within Port Hardy should be quite different from each other.

The three 'Arms' of Port Hardy will likely have a marine environment similar to the inner reaches of Pelorus and Queen Charlotte Sounds. Port Hardy is the northernmost harbour on the Island offering a safe entrance and safe anchorages. South Arm's native forest surroundings is especially attractive and popular. The coastline of Port Hardy is a mixture of beaches and rocky headlands. The surrounding landscape, while steep in places, generally slopes fairly evenly from sea edge to ridgetop.

The sea coast north to Cape Stevens, in contrast, is exposed and weather-beaten. Steep cliffs that drop straight into the sea provide excellent diving and fishing. It is claimed that some of the best crayfishing in the Sounds can be found here (30). The marine environment may be similar to other exposed coasts of the outer Sounds. More information needs to be collected to gain a better understanding of this outer Sounds marine environment.

Commercial pressure on the marine environment of northern

D'Urville Island is at present minimal. With new economic or technological changes, pressures to develop this fishery could change. Expressed interest in the area by conservation and recreation interests suggests that there is a need to consider this part of northern D'Urville Island for Marine Protected area as soon as possible.

4.1.2 Possible Actions and Implications

The boundaries chosen for this investigation, Port Hardy and the coast north to Cape Stevens, is for information gathering purposes only. Much more discussion is necessary to establish if and where Marine Protected Areas might be located. In addition to Port Hardy and the coast north to Cape Stevens consideration could be given to the coastline southeast of Cape Stevens, the waters surrounding Stevens Island and even the coastal area south of Nile Head.

The marine environment, recreation use and commercial use of this part of New Zealand is not well understood. Even so, at this early stage it is apparent that the marine environment of northern D'Urville Island is rather special. Proper management of this relatively pristine marine environment, to protect it from damaging commercial or recreational activity, is most important.

Reliable information that describes the marine environment adjacent to the north end of D'Urville Island is very limited. Even so it is possible to comment, somewhat generally, on the possible effects of Marine Protected Area classifications.

Marine Reserve

The scientific value of all or parts of northwest D'Urville coastline is not yet known. It is quite possible that certain marine habitats are of significant scientific value and are ideal study areas. If sections of this coastline were classified Marine Reserve, existing commercial and recreation use of the area would be restricted to non-extractive activity. Existing users might find the restrictive Marine Reserves difficult to accept if the areas were too large. The remoteness of the northern D'Urville coast would make it difficult to enforce the regulations. Ideally Marine Reserves would be surrounded by a buffer zone of either a Marine Park or a Marine Habitat Reserve.

Marine Park

The protected waterways of Port Hardy and the nearby exposed coastal environments seem to be important marine récreation areas and have the potential of becoming even more so in the future. Northwest D'Urville's scenic, well-protected anchorages located close to some of the best diving and fishing in the Marlborough Sounds is an attractive asset for most marine recreationists. The value of such a place can only increase with over use of more accessible areas elsewhere in the Sounds.

Marine Park status for all or part of the coast of northern D'Urville island, can help to preserve its recreation values. It may also draw more attention and more users to the area and thus perhaps require some controls over recreation activities particularly fishing. Establishment of a Marine Park might require reassessment of some types of commercial fishing where commercial and recreation interests are incompatible. The possibility of conflict between recreation and commercial interests is likely to be less inside Port Hardy than outside as little or no commercial fishing is known to take place inside the harbour. Marine Park status for all or part South and Wells Arms should fit comfortably along side existing Marlborough Sounds Maritime Park scenic reserve lands.

Marine Habitat Reserve

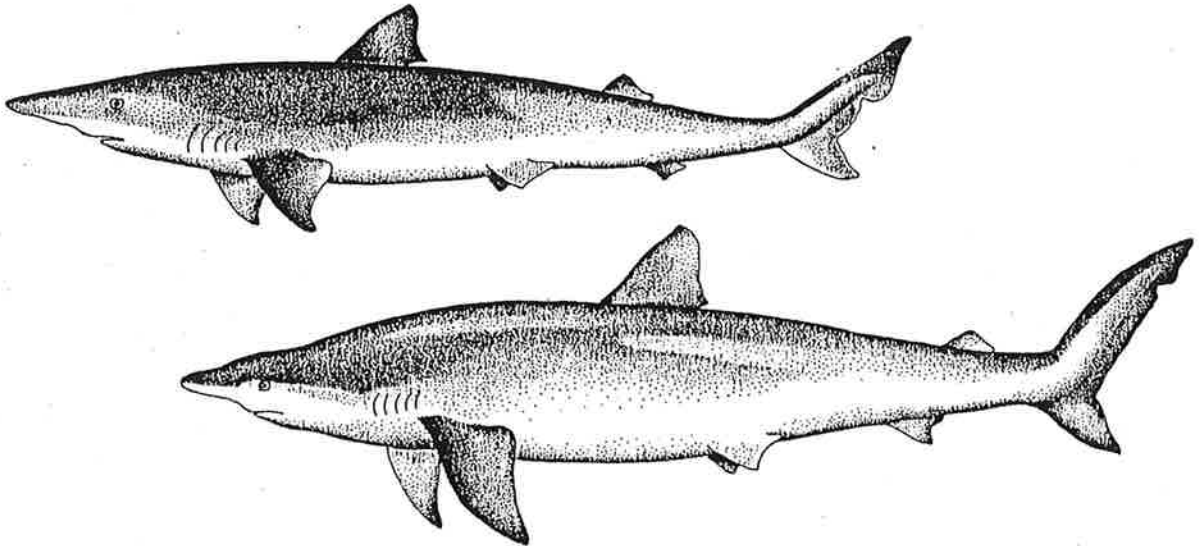
Although little is known about workings of the marine environment of this part of New Zealand, it is likely that certain rare or economically important habitats and marine creatures will be found. Marine Habitat Reserve status may suit some areas along this coast. No knowledge exists that would suggest that important habitats are threatened. While this might seem comforting, lack of information rather than lack of threat could be the reason for this favourable comment. A proper inventory of the coastal habitat would help to identify important sites and would provide a base of information to use in human impact studies.

Commercial and recreation fishing can take place in Marine Habitat Reserves as long as the fishing does not compromise the purposes of the Reserve. Presently, outside of Port Hardy, commercial and recreation interests compete for some fish species.

4.1.3 Aquisition and Management Potential

Information so far indicates that the sea bed to Mean High Water Spring tide in Port Hardy and on the coast north to Cape Stevens belongs to the Crown. Mean High Water Spring tide level is also the low boundary of private lands in this area. Unless there was agreement from land owners public use of the foreshore might have to be limited to Crown lands. Similarly, special permission might have to be obtained for the public to use Maori land and surrounding waters. Certainly the traditional rights of the Maori people must be investigated fully.

Northern D'Urville Island's isolation could make it difficult to enforce Marine Protected Area regulations.



SECTION V

5.1

ACKNOWLEDGEMENTS

This report has benefited from the contributions of many people. First and foremost I would like to acknowledge the significant contribution of the Department of Agriculture and Fisheries - MAFFish. Of special significance has been the support of Allan Kilner [Regional Fisheries Management Officer] and Malcolm Anderson who initiated and helped edit this document.

Fisheries officers Frank Saxton and Joe Bell also deserve credit for their assistance in providing information, contacts and transport to the proposed Marine Protected Areas. Other staff members Mike Bull, Kim Drummond, Philip Kirk and Alex Johnston assisted greatly in providing information while Bill Newsome, Rosie Thompson, Tony Adamson and Helen Batt guided me through the files and paperwork. Richard Cade helped with my struggles on the computer.

Libraries are the life blood of information investigations. Special thanks are due to Dave Wescott and Alan White for their guidance and free access to the Lands and Survey Library - Nelson: to the staff of the D.I.S.R. Library - Nelson; to Chris Grant of the Cawthron Library; to Dawn Smith of the Nelson Provincial Museum Library; and to Janet Campbell of the Fisheries Research Centre Library at Greta Point, Wellington.

The New Zealand Oceanographic Institute were very helpful. Special thanks goes to Jack Irwin for the detailed sounding and bathymetric data.

Unpublished information either in the files or in the heads of knowledgeable individuals has enhanced the information base for this report. I am grateful to Pip Aplin, Neil Jackson, Bob Ryan, Mike Bradstock, Bill Cash, Lorraine Moleta and to numerous other contributors for their personal assistance.

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G.E. Rushton

5.2

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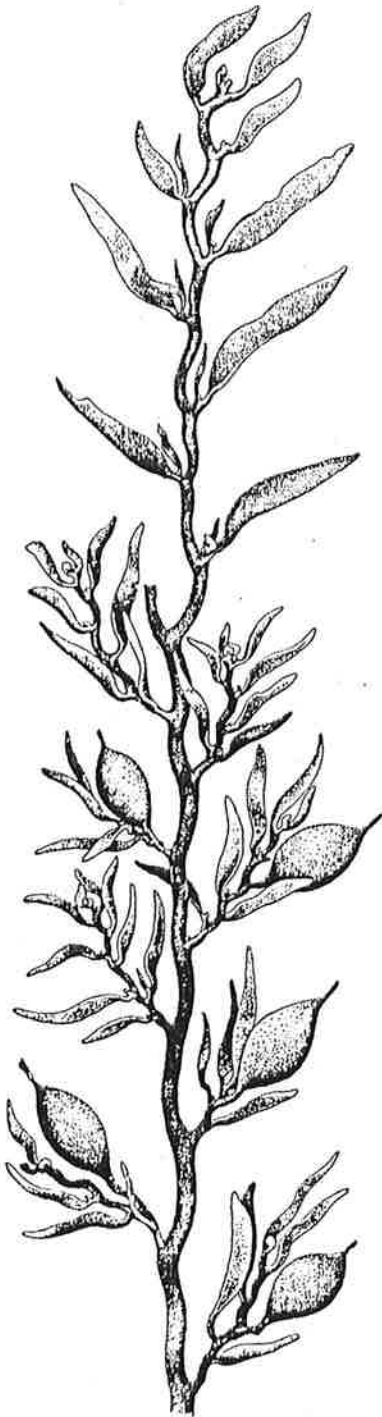
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APPENDIX I

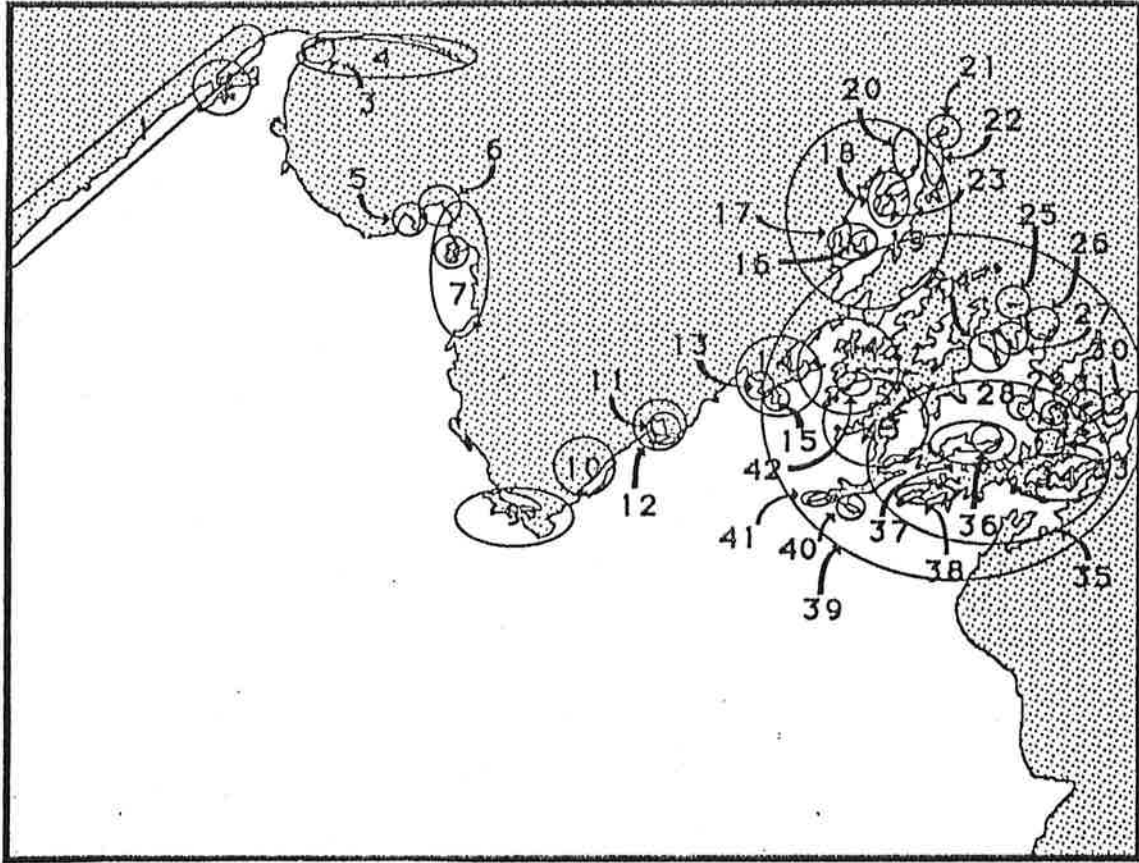


Fig. 2

MARINE PROTECTED AREA PROPOSALS

Located on the map above are numerous Marine Reserve proposals that have been recorded by the Ministry of Agriculture and Fisheries. The submissions are:

PROPOSALS

LOCATION	POSSIBLE FUNCTION	PROPOSED BY*
1. Northwest Nelson Coast - Kahurangi Point to Farewell Spit.	Recreation/Habitat Protection	N+M-MAF

2.	Whanganui Inlet	Recreation/Habitat Protection	FRD-MAF MB-MAF DS-NEC NBUC
3.	Pupunga Point	Habitat Protection	DS-NEC
4.	Farewell Spit	Habitat Protection	N+M-MAF FRD-MAF
5.	Wainui Inlet	Habitat Protection	N+M-MAF
6.	Seperation Point	Habitat Protection	N+M-MAF
7.	Abel Tasman National Park	Recreation	NBUC NZUS
8.	Awaroa Inlet	Habitat Protection	N+M-MAF
9.	Waimea Inlet	Habitat Protection	NZUS N+M-MAF
10.	Nelson Boulder Bank	Habitat Protection/ Recreation	NZUS N+M-MAF
11.	Delaware Bay/Pepin Island/Cable Bay/ Delaware Inlet	Habitat Protection/ Scientific Study/ Recreation	N+M-MAF NZUS MB-MAF KB DS-NEC
12.	Delaware Inlet	Scientific Study	NBUC
13.	Whangarae Bay	Habitat Protection/ Recreation	MSMPB
14.	Croisilles Harbour	Recreation/Habitat Protection	N+M-MAF FBS MSMPB NZUS
15.	Okiwi Bay	Recreation/Habitat Protection	MSMPB
16.	Greville Harbour-Mill Arm	Recreation/Habitat Protection	MSMPB
17.	Greville Harbour	Recreation	MSMPB
18.	Port Hardy	Recreation/Habitat Protection	WWT MSMPB
19.	D'Urville Island	Recreation	N+M-MAF
20.	Northwest D'Urville Island	Recreation/Scientific Study/Habitat Protection	NZUS FRD-MAF
21.	Stevens Island	Recreation/Scientific Study	NZUS
22.	Northeast D'Urville Island	Recreation	NZUS
23.	Port Hardy-South Arm	Recreation	FBS MSMPB
24.	Anakoha Bay	Recreation	MSMPB

24. Anakoha Bay	Recreation	MSMPB
25. Titi Island	Recreation	MSMPB FBS
26. Waitu Bay	Recreation	NZUS
27. Titirangi Bay	Recreation	MSMPB FBS
28. Big Bay/ Camp Bay	Recreation	MSMPB FBS
29. Ship Cove	Recreation/Habitat Protection	MSMPB FBS
30. Onehunga Bay	Recreation	RJM
31. Long Island	Recreation	RJM
32. Resolution Bay	Habitat Protection	MB-MAF
33. West Blumine Island/ Spencer Bay/ Dryden Bay	Habitat Protection/ Recreation	MSMPB FBS
34. Tory Channel	Recreation	FBS
35. Queen Charlotte Sound	Recreation	MSMPB
36. Kenepuru Head	Habitat Protection	MSMPB
37. Kenepuru Sound	Habitat Protection	FBS RJM RJM
38. Okiwa Bay/Onahau Bay/ Lochmara Bay/Double Cove/Torea Bay	Recreation	RJM
39. Marlborough Sounds	Recreation	N+M-MAF NZUS
40. Mahakipawa Arm	Habitat Protection	MSMPB
41. Pelorus River estuary	Habitat Protection	MSMPB
42. Ngawahakawhiti Bay	Recreation/Habitat Protection	MSMPB
43. Pelorus Sound	Recreation	FBS
44. Tennyson Inlet	Recreation	FBS

*KEY TO THE CODED NAMES

NAME	CODE
Tasman Bay Aquanauts	TBA
Mike Bradstock - Ministry of Agriculture and Fisheries	MB-MAF
Marlborough Sounds Maritime Planning Authority	MSMPA
Nelson Bays United Council	NBUC
New Zealand Underwater Society	NZUS

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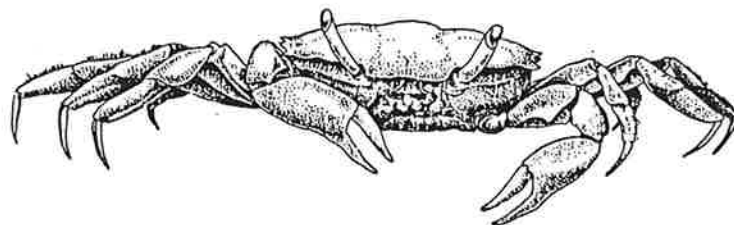
N+M-MAF

WWT

DS-NEC

KB

RJM



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