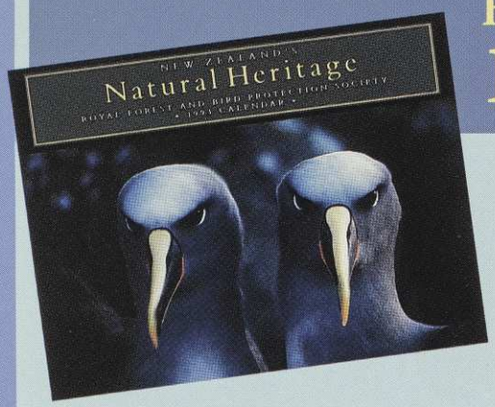
August 1992

Forest & Bird

are New Zealand's seas being overfished? • *secretive bats*

Paterson Inlet • *importing rainforest timber*

basking sharks • *tea tree and firewood*



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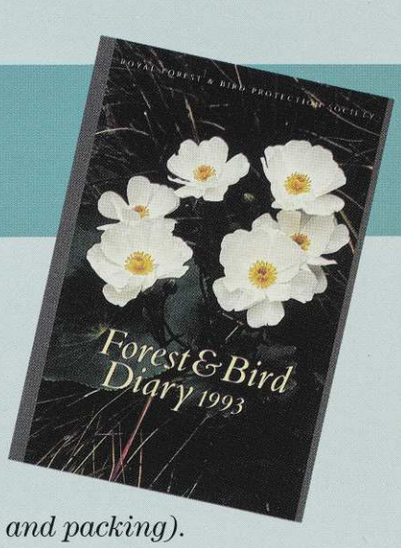

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What gift can you give to a child that's fun, educational, doesn't need batteries or doesn't break after the first week?

There aren't many today, but a gift membership to the Kiwi Conservation Club is one. The KCC is a Forest and Bird initiative for children from 5 years upward that encourages them to take part in practical, positive conservation activities.

- **Positive**

With problems such as deforestation, global warming and the hole in the ozone layer, it's easy for children to become worried about the future of their planet. Through the KCC they learn that by taking personal action they can make a difference.

- **Active**

All over New Zealand KCC members meet regularly to take part in walks to the coast and bush, replanting projects, and conservation activity days.

- **Informative**

Every KCC member receives a quarterly newsletter full of news, information and their own poems, pictures and letters about conservation.

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Complete the membership insert in this journal and return it to:

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Membership only $10!
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COVER

The clown toado or sharp-nosed puffer is found around reefs in the Kermadecs and from North Cape to East Cape. Forest and Bird aims to have ten percent of New Zealand's coastal areas included in marine reserves by the year 2000 so that the wide diversity of marine life can be preserved and observed.

WARREN FARRELLY

Issue Number 265
August 1992

Forest & Bird

The costs of tourism

IN ITS ARGUMENTS for saving our native forests from the timber industry, Forest and Bird has often made the point that wilderness attracts tourists. We have argued that forests can be saved and still be profitable if preserved for visitors, who take nothing but photographs and leave nothing but piles of foreign exchange. Yet there are already signs that the burgeoning tourist industry is affecting some of our natural gems.

The character of Milford Sound is changed as tourists bus, fly and ship about this wilderness traffic jam. The Abel Tasman coastal walk is under such pressure that walking passes are now required, as they will be shortly on another eight of the "great walks". With the country hosting a million tourists this past year, how will wilderness fare if we reach the target of three million tourists annually, in eight years time?

Conservation lands are an obvious attraction to foreign visitors. Eighty-four percent of our incoming tourists have said they want to experience a national park. So offering our wilderness parks is part of the promotion of New Zealand's clean, green image. To the urban Asian, American or European, the native forests and other wild landscapes of New Zealand appear a natural paradise.

New Zealand, arguably, should be able to take three million tourists without damaging its conservation estate, accounting as it does for some 30 percent of our landmass. What is at issue is how we are going to open the gates without destroying the very qualities that attract the tourist and without damaging the environment and species we set out to protect. The answer is going to be an investment in providing the tracks and facilities which allow the visitor, and the New Zealander, into the conservation estate without damaging it.

The Minister of Tourism, Mr Banks, has suggested a necessary investment of $6 billion on accommodation, transport, attractions and facilities, if we are to cope with three million tourists annually by the year 2000. He should consider his colleagues in conservation when the funds are divvied up.

The Department of Conservation is already short of funds to maintain existing walkways and huts. It is also becoming the target of those New Zealanders disgruntled by the introduction of track passes, increased hut fees and over-stretched facilities, as foreign backpackers add their load to a system built in better times for a more local traffic.

Forest and Bird has been a keen advocate of environmental tourism. As the tourist boom takes off we must ensure there is parallel investment in the conservation estate, both to protect it and to provide the framework of new facilities which growth in tourism requires.

Having partly justified protecting our forests for their tourist value, we shall now need to work with tourist promoters and official agencies to see that the footprints left by travellers don't destroy the fragile nature of our wilderness.

Gordon Ell
National President

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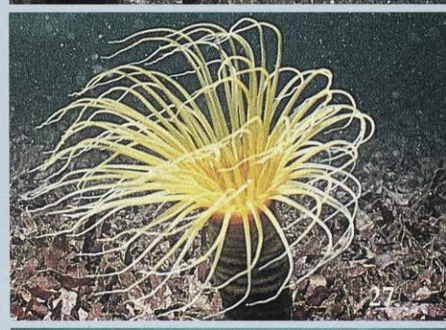

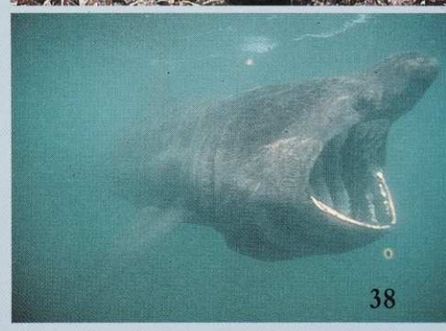

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The society's aims are to protect New Zealand's native species, natural ecosystems and landscapes and promote an appreciation of these.

The Royal Forest and Bird Protection Society is a member of the World Conservation Union (IUCN) and the International Council for Bird Preservation (ICBP).

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Conservation update

Black stilt even more endangered

THE RECOVERY of the endangered black stilt population may be set back a number of years because of the critically low levels of Lakes Tekapo and Pukaki this winter.

The plight of the stilts has become extremely serious this winter as their feeding grounds on the edge of Lakes Tekapo and Pukaki have dried up. This was the case even before the Electricorp-sponsored bill, giving the SOE the right to lower Lake Pukaki another five metres, was rushed through Parliament in early July.

The black stilt is one of the world's rarest wading birds. It is endemic to New Zealand and its wild population stands at only 72.

Black stilts feed mainly on aquatic insects. Of the 39 birds that normally winter on the deltas of Pukaki and Tekapo many were forced by the poor food supply this year to move to other feeding areas. Most of these birds later turned up in the regular mid-winter count carried out by DoC in late July. It was clear from observations, however, that at Pukaki and Tekapo the birds were under stress and were finding food in short supply.

C.R. VEITCH/DOC

The black stilt has been in decline for most of this century, as a result of predation by introduced mammals and the loss of habitat. The only breeding population in the world is in the upper Waitaki basin.

Forest and Bird has been troubled by the Department of Conservation's inertia over the plight of the bird and its reluctance to argue against lowering of the lake below the agreed legal minimum.

This is in spite of the evidence presented by the department's own black stilt expert David Murray to the select committee inquiring into the Bill.

Mr Murray said that lowering Lake Pukaki could well cause a population decline in black stilts. He said there were six possible scenarios for the stilts following a lowering of the lake, and four of them would lead to a loss of birds.

He said that impacts may be evident in next year's breeding season if not in winter deaths.

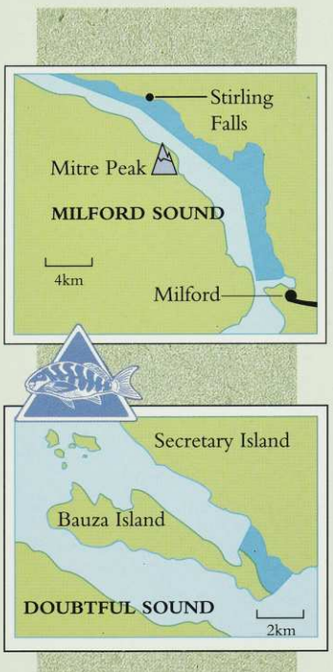
Forest and Bird appeared before the select committee and strongly opposed the hastily-drafted legislation overriding the Resource Management Act to facilitate a further lowering of the lake.

The society's energy spokesperson, Keith Chapple, argued that Electricorp should conserve its way out of the national electricity shortfall rather than generating its way out, possibly at the expense of the black stilt.

New marine reserves

FIORDLAND and Coromandel will soon host new marine reserves, bringing the number of marine reserves in New Zealand waters to seven.

The two Fiordland reserves are a first in that they were formally proposed by the Federation of Commercial Fishermen and Fiordland fishing interests rather than a conservation body. The reserves are located on the northern side of Milford Sound (7.4 square kilometres), and an area (0.7 square kilometres) known as The Gut in Doubtful Sound. Both areas are rich in marine life such as the famous black corals and sea pens. Fiordland marine life lives largely in the first 40 metres of water and, being so accessible, is at risk of serious over-exploitation. Neither reserve area was used by commercial fishers.



The gazettal of the first marine reserve on the Coromandel Peninsula is being held up by Fisheries Minister Doug Kidd. The proposed reserve, at Cathedral Cove off Hahei on the eastern side of the peninsula, was approved by Conservation Minister Denis Marshall in May.

This area of 9 square kilometres includes high-quality kelp forests, red algae, sponge gardens and sandflats with dense scallop populations. The reserve still requires the formal approval of Mr Kidd. Commercial fishers and MAF are pressing for boundary changes to reduce the size of the reserve. Any such reduction would seriously weaken its ecological value.

The Kaikoura marine reserve nomination by Forest and Bird (see *Conservation News* February 1992) now awaits formal approval. The 2.3-square-kilometre area at the tip of Kaikoura Peninsula attracted 609 supporting submissions and 14 objections. Supporters included the local business community and local dive clubs while opposition has come from MAF and a few local lobster and paua fishers.

New giant weta

A NEW SPECIES of giant weta has been discovered in the Southern Alps. "The discovery gave us a sense of the excitement experienced by the 19th-century naturalists when they first found our gigantic insects," said Dr George Gibbs, leader of the search party from Victoria University. "It was something you would not expect to happen in the 1990s."

The party was following tip-offs from trampers and found the weta under rocks at two widely separated sites, both in tussocky country at quite high altitude bordering the mountain ranges.

The first site was at Prices Basin, east of Harihari and the other, 250 km away in the West Matukituki Valley, west of Lake Wanaka.

The new giant weta – quite different from the seven recognised species of this extremely large insect – is plain brown, with big spiny rear legs and a wide shield behind the head. It grows up to 7 cm long and weighs up to 12 grams.

"One might think that insects as large as New Zealand's giant weta, among the heaviest of all insects, would be well known by now," said Dr Gibbs. "But not so. Seven different kinds of giant weta are described in the scientific literature but we know of at least three more which still await formal scientific naming."

Giant weta used to be common in many parts of New Zealand but have been wiped out in most lowland areas by introduced predators such as rats and stoats. They survive mainly in alpine country or on remote islands.

"Although this species has only just been discovered, it is not so much rare or threatened but simply inaccessible," Dr Gibbs said. The new species seems to live in very high rainfall areas on the main divide or to the west of it. This is in contrast to the well-known giant scree weta which is found to the east of the main ranges on much drier mountains.

The new, as yet unnamed, giant weta.

"Alpine weta of various kinds live under stones by day and come out to feed on the vegetation at night. Hence, unless we specially look for them, they will tend to pass unnoticed despite their size."

The discovery of such a large and distinctive insect shows how little is known about large slices of natural New Zealand. While both finds were made on DoC stewardship land these areas are outside the formal park system. The major threat to the weta is the degradation of its alpine habitat by introduced species such as thar. DoC has adopted a thar management policy that will inevitably result in higher thar numbers than could be obtained under a strict control policy. A lax approach to the control of introduced animals in the Southern Alps will lead to a loss of diversity in New Zealand's unique alpine biota.

Marron saga ends

ENVIRONMENTALISTS breathed a sigh of relief on hearing final notice that the farming of marron crayfish in New Zealand would not be approved.

The government decided in April that the potential risk that marron posed to New Zealand's native freshwater fauna was too great.

The decision signals the end to an unnecessary and costly saga. Marron were first imported from their native Western Australia in 1987. An environmental impact assessment was carried out but it was heavily criticised as inadequate by Forest and Bird, the Federation of Freshwater Anglers and the Parliamentary Commissioner for the Environment.

Nevertheless, the Labour Government approved the licensing of a marron farm at Warkworth.

Then in 1990 with the election of a new government, Fisheries Minister Doug Kidd acted on the growing environmental concerns. The government began negotiations to buy the farm, and a committee was set up to evaluate properly the risks marron posed to freshwater ecosystems.

The committee reported on the research requirements for an environmental impact study on marron, concluding that there was potential for serious damage but that there was a dearth of information on the full effects. Because of these concerns the committee recommended a major research programme.

The research proposal raised many questions about the suitability of farming marron in this country and the government, it seems, decided against farming after realising that a long and costly research programme was likely to result in a recommendation against it.

The end to marron farming and the similar 1990 decision against channel catfish are a credit to the vigilance of environmental groups and freshwater anglers. These are historic decisions that will hopefully be a turning point in the battle to stop more potential pests being imported. New Zealand has enough of these to worry about without adding to the list.

Alan Tennyson

More rats on the way out...

ULVA ISLAND, in the centre of Stewart Island's Paterson Inlet, is the latest island to be targeted for rat eradication. The poisoning of Norway rats, the only introduced mammals on the island, began in July and will continue over three 25-day periods.

If the operation is successful, Ulva Island, at 270 hectares, will be the largest island in New Zealand cleared of rats. The project co-ordinator, DoC's Lindsay Chadderton, said the techniques would differ from those used successfully on Fiordland's Breaksea Island in 1988. Bait stations would be set further apart, on a 100-m square grid, and rebaited only every second day. A third of the island will be poisoned at a time – a technique known as a rolling front. Three workers will complete the whole operation.

TIM HIGHAM

Rat-buster Lindsay Chadderton with one of his bait stations on Ulva Island.

Scientists Rowley Taylor and Bruce Thomas will use radio tracking equipment to study the home ranges of rats and their behaviour before and during the poisoning operation.

Mr Chadderton said the techniques were being tried out on the island as a possible forerunner for the important large sanctuary islands of Codfish, Kapiti and Little Barrier. Ulva is renowned for its abundant weka, kakariki and kaka, and is a regular tourist boat stop on cruises of Paterson Inlet.

Weka were banded before the operation, to assess any ill effects from the scavenging of dead rats and of baits removed by rats. Weka could be re-introduced from neighbouring islands if their numbers were significantly reduced. Mr Chadderton said South Island saddlebacks would probably be re-introduced to the island when it was predator-free, and kiwi, riflemen and weta may also be considered.

Ulva Island will remain an open sanctuary and DoC will run an education campaign among boat owners to help reduce the risk of rodent re-introduction.

Tim Higham

Dances with MAF

THE CONSERVATION work done by Forest and Bird often depends on a lot of hard and painstaking research. Obtaining information from government departments for this research is not always simple. Particularly from some departments.

A recent decision by the Ombudsman upholding a Forest and Bird complaint against the Ministry of Agriculture and Fisheries closes one chapter in a drawn-out saga and highlights the often long and tortuous path to obtaining information that all New Zealanders have a right to.

For more than 30 years the old Official Secrets Act placed severe restrictions on public access to government information and made the unauthorised disclosure by state employees of even the most trivial piece of information a criminal offence. In 1982 this all changed with the passing of the Official Information Act which gives the public the right to government information, unless there are sound reasons for not releasing it. Requests need to be met within 20 working days and the Ombudsman has the power to review departmental decisions and rule on whether a decision is in line with the Act.

In August 1990 Forest and Bird requested a list from MAF of the names and sizes of all squid fishing vessels. Over 100 Hooker's sea lions were drowning in the nets of trawlers each year around the Auckland Islands, and Forest and Bird had suggested the industry change to using jiggers, which use sea-lion-safe lines, to catch squid. Part of the argument hinged on whether or not jiggers were large enough to work in rough subantarctic seas.

MAF replied that they would not release the information because it was "commercially sensitive". Forest and Bird complained to the Ombudsman and the information on vessel sizes was eventually released. The information showed that there were many jigging vessels considerably larger than some of the trawlers working around the Auckland Islands. It strengthened the case for changing to jiggers in this area.

However, for supplying the information MAF billed us for $259.20. On protest they agreed to waive the charges, but advised that they would charge Forest and Bird for all future requests.

Meanwhile the West Coast hoki fishery had begun, and the society requested weekly updates from MAF on the number of fur seals caught by the fishing fleets. MAF agreed to supply the information at a cost of $20 per week. Forest and Bird regarded this charge as outrageous as the information was being prepared for government officials anyway. So the society laid another complaint with the Ombudsman.

Then in August last year MAF agreed, as a result of a "review of charges and procedures", not to charge for the information on seal captures.

Earlier this year the saga finally seemed at an end. The Ombudsman advised Forest and Bird that MAF had produced a policy statement on the release of information. MAF's new policy was that each request would be assessed on its own merits.

Although many Official Information requests from the society to MAF Fisheries are dealt with quickly and courteously, there still seems to be reluctance among some staff to comply with the spirit of open government. Currently Forest and Bird has a further four complaints with the Ombudsman about the refusal of MAF Fisheries to release information.

Remember that it is your right to obtain government information. The government is obliged to provide you with information about its activities. If your request is not satisfied you can appeal to the Ombudsman for a review of the decision.

Alan Tennyson

Rarer than the kakapo

THE MARLBOROUGH chalk cress *(Cheesemania* sp.*)*, a plant believed to have been extinct for the last 15 years, has been rediscovered. In a search earlier this year, staff from the Department of Conservation found 45 chalk cress clinging to steep bluffs on private land in the Chalk Range in eastern Marlborough.

Previous searches to the north and south by Forest and Bird and DoC staff over the past three years had failed to locate the cress.

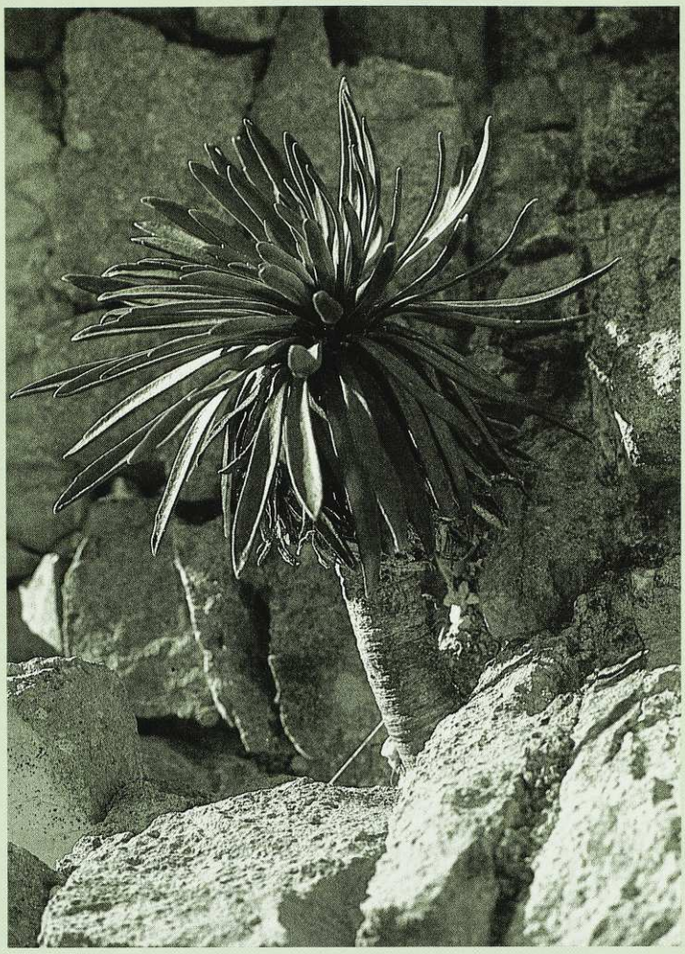
The Chalk Range and sites in the nearby Isolated Hill Scenic Reserve were the only known locations of the cress which was first discovered by DSIR scientists in 1953.

There are seven known species of *Cheesemania.* One is restricted to Tasmania while the rest are endemic to the South Island. This particular species is unusual in appearance with leaves that come back to a single point on a large root which extends from the ground. The plant is highly palatable, and introduced browsing animals such as goats, possums, sheep and hares were thought to have eaten the plant to extinction by the 1970s.

Ecologist Shannel Courtney of Nelson, whose hunch that the cress was still surviving led to the search, said plants such as the chalk cress were an important part of New Zealand's distinctive natural character.

"Plants are often overlooked in our efforts to save endangered species because they don't engender the same human empathy as rare animals," he said.

DoC staff have since returned to the range to collect seed from flowering plants. These have been successfully propagated in an effort to ensure the survival of the species. DoC will also look at ways in which the habitat of the plant can be protected. The plant is even rarer than the kakapo and is critically endangered.



SHANNEL COURTNEY

Looking a bit like a miniature palm tree, the chalk cress grows up to 10 cm high before flowering and up to 25 cm while in flower.

A walk on the wet side

UNDER the boardwalk in the heart of Tauranga city is a protected wetland which has recently become accessible to the city's residents.

Snaking along the edges of the Waikareao estuary, the 2.8-km boardwalk was completed in April. It joins up with a conventional walking track along the harbour foreshore. The idea to take the walk beyond dry land, across valuable saltmarsh and mangrove wetlands – habitat for birds and marine life – was an ambitious one. And the means of its construction were imaginative too.

Tauranga District access training manager Don Stewart said the boardwalk was constructed by young job experience workers employed under Taskforce Green. "Protection of the fragile wetland environment had to be considered at all times," he said. "It is a credit to those involved in the construction that only minimal disturbance was created to the area's natural ecology."

Access to the construction sites was not always easy and at one stage a helicopter was used to bring timber to the workers.

The project has been the result of co-operation between the local Maori people from the Hurea marae, a number of government departments and the Tauranga District Council.

Elaine Fisher

BAY OF PLENTY TIMES

Taskforce Green workers in the early stages of building the boardwalk.

The TYPHOON PARKA

The Typhoon Parka is the latest addition to the W.K. Backhouse range of original wet weather wear, and is designed to offer strength and reliability to those who love the outdoors.

This specialised parka is available in either high quality lightweight oilskin or dryproof fabric.

Design features like the full length slide fasteners covered with a double layered storm flap, large patch pockets with storm flaps and a storm cape specifically designed with arm straps and extended in size to cover a day pack, make this garment ideal for the casual tramper.

A. *Toggle adjusted draw cords.*

B. *Extended storm cape with arm straps to cover day pack.*

C. *Waist draw cord.*

D. *Large patch pockets with storm flaps.*

E. *Recessed elasticised cuffs, snap adjusted.*

F. *Single layer, snap fastened storm flap.*

G. *Full length slide fastener.*

H. *Hood with extended neck protection.*

I. *Peaked hood.*

NEW ZEALAND'S ORIGINAL WET WEATHER WEAR

World watch

Of seals and fish

IT IS NO SECRET that Mrs Gro Harlem Brundtland, the prime minister of Norway, wants to be known as the "mother of the environment".

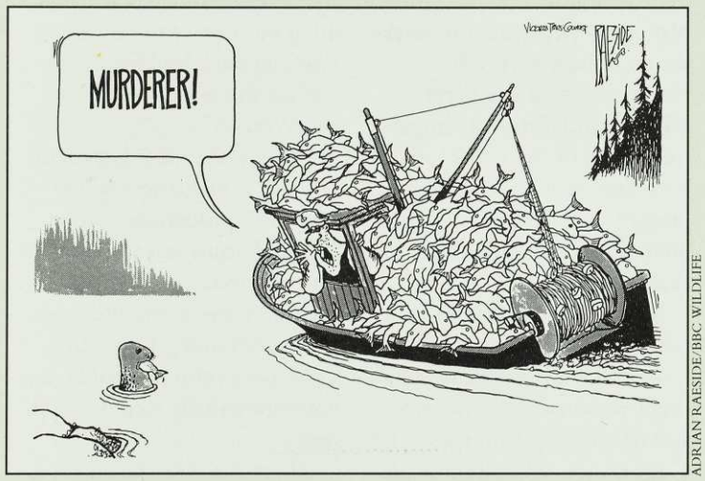
In 1987, she headed the UN panel that wrote the influential *Our Common Future,* also known as the Brundtland report, and she has continued to spread the gospel since. Earlier this year she told a world congress of trade unions that "sustainable development" meant "the exploitation of resources . . . consistent with present as well as future needs".

It seems, however, that no one in Norway, present or future, needs seals. Even as Brundtland spoke, Norwegian vessels were steaming towards regions of the Arctic where harp and hooded seals bear their young. The Norwegians killed 20,000 of the animals this season, despite warnings that the seal population is already down to only a sixth of its natural size and still falling.

The Norwegians don't even use the seals for anything. Since the European Community banned imports of sealskins, there is no market, and Brundtland's government has to subsidise the seal killers.

So why do they bother? Because what Norway does need is fish. Seals eat fish, so Norway says seals must be reduced to an "optimum" number to enable humans to continue exploiting declining fish populations.

Source: New Scientist.



ADRIAN RAESIDE/BBC WILDLIFE

Conserving biodiversity

IN JUNE the International Council for Bird Preservation launched *Putting Biodiversity on the Map: priority areas for global conservation.* This publication is the first comprehensive attempt to identify the most significant areas for biodiversity on a global scale.

The project mapped the distribution of all birds with restricted ranges (less than 50,000 square kilometres) – a quarter of all the bird species in the world.

The results pinpoint 221 areas (termed Endemic Bird Areas or EBAs) that are home to two or more endemic bird species each.

These areas in total make up less than five percent of the earth's surface, but by protecting them, the future of a quarter of the world's birds would be secured.

The value of the project has been to draw attention to areas of endemism previously little known, for example in Southern America and Asia, and to highlight those areas where there is no or little protection.

The Pacific region, with its many small islands each with their own unique avifauna, has 30 EBAs in total.

Source: International Council for Bird Preservation

More people

THE UNITED NATIONS has predicted that the world's human population will increase over the next 60 years from the current 5.48 billion to 10 billion people. This is faster than previously thought.

"We are faced with dual crises," said the director of the United Nations Population Fund, Ms Nafis Sadik in May. "World population is growing faster than ever before . . . and so is human consumption of resources. Together they heighten the possibility of future economic and ecological catastrophe."

The world's population is now expected to reach 6 billion by 1998, two years earlier than previously estimated. The estimated average annual increase will be 97 million people over the next decade and over half of this will occur in Africa and south Asia.

Whaling to resume?

ICELAND announced it was leaving and Norway said it would unilaterally resume the commercial harvest of minke whales in 1993.

These were the big news events to emerge from the meeting of the International Whaling Commission in Glasgow last month. But probably the most worrying outcome for conservationists was that the IWC, a body set up to regulate the killing of whales not to protect them, adopted a Revised Management Procedure (RMP). This included a complicated computer formula for setting catch quotas which supposedly takes into account, in decreasing order of priority: minimising the risks to depleted whale stocks, maintaining a stable quota, and maximising long-term yield.

However, the official moratorium on commercial whaling achieved in 1986 remains in place. If it were lifted the most likely populations to be hunted under the new RMP formula would be minke whales in the Antarctic, the north-east Atlantic and the north-west Pacific. New Zealand along with a minority of other members on the IWC opposes all commercial whaling.

One positive proposal that got held over was a French plan for a whale sanctuary south of 40°S. This proposal will be a useful counterweight to the expected push to lift the moratorium at the next IWC meeting in Japan in April.

Demolition of a dam

DEMOLITION of the notorious Kara-Bogaz-Gol dam in Turkmenistan began earlier this year. The dam which was built 12 years ago has been estimated to have created environmental damage costing well over 100 billion roubles.

The dam was built to separate the land-locked Caspian Sea from the Kara-Bogaz-Gol, a huge shallow bay over 200 kilometres wide which acted as a giant evaporation pan. It was thought that this would help maintain the level of the Caspian Sea which by 1976 had dropped to 90 metres below sea level due to huge irrigation schemes on the inflowing rivers such as the Volga. Build a dam to isolate the bay and let it dry out, said the experts in Moscow. Evaporation would be greatly reduced and the Caspian would rise again.

Within two years of construction the bay had dried out as planned. But salt began to blow inland contaminating agricultural land up to 200 kilometres away. The Caspian Sea rose but by more than expected. By 1991 it was up almost two metres, enough to have the Turkmenistan coast declared a flood disaster area.

With the breakup of the Soviet Union, one of the first acts of the new Turkmenistan government was to order the demolition of the dam.

Report from Rio

"A GREAT SUCCESS", "a complete failure", "a spirit of compromise and goodwill", "a giant step", "the work has just started", and "UNCED rhetoric will not change the world". The conclusions are almost as diverse as the 40,000 people who travelled to Brazil and Rio de Janeiro for the Earth Summit.

The Rio Centro, a huge convention centre reconstructed for the twelve day event in June and dubbed the "capital of the world", was home to the United Nations Conference on Environment and Development (UNCED). There the diplomats parleyed, UN officials organised, and the heads of state delivered their speeches.

Across town, under marquees in Rio's Flamengo Park, representatives of 14,000 non-government organisations (NGOs) met for their own gathering, the Global Forum.

Canterbury Regional Councillor, Labour Green and Forest and Bird member Diana Shand was one of two NGO representatives on New Zealand's 22-member delegation to the Earth Summit. She attended both the official UNCED conference and the Global Forum.

She says many NGO representatives came away from Rio disappointed "in the lack of strength in government positions and the compromises that were the final outcome". The Convention on Climate Change, presented for signing at UNCED, has been sharply criticised for its imprecise language and its failure to establish specific measures, targets, or a timetable to limit carbon dioxide and other greenhouse gas emissions.

The United States' failure to sign the Convention on Biodiversity was seen by many, including an umbrella group of around 100 Latin American NGOs, as completely undermining the convention's efforts to regulate the activities of biotechnology firms and commercial access to and ownership of genetic material.

UNCED's statement of forest principles, which was developed when negotiations on a Forest Convention stalled, is very much a compromise between North and South. The statement calls for a recognition of the vital role of all types of forests in maintaining ecological processes but it is non-binding, and weaker in some areas than existing guidelines drawn up by the International Tropical Timber Organisation.

Shand says she was "incredibly impressed by the extraordinary depth of knowledge" displayed by NGO representatives. "At UNCED the diplomats and politicians were debating legal terms and technicalities while down at the Global Forum people were arguing about the realities and implications, often from first hand knowledge. . . . That's where all the expertise was gathered and where all the intense debate and analysis was going on."

EUGENIE SAGE

Diana Shand.

The Global Forum produced around 30 "alternative treaties" on themes which included racism, fisheries, consumption and lifestyle, sustainable agriculture, poverty, the regulation of trans-national corporations, and food security. The treaties contain specific action plans for NGOs to implement on their home soil.

"Business and governments are being challenged by NGOs," says Shand. "NGOs are saying 'we are not going to trade off the future for short term profits and trade off social and environmental concerns for economic returns'. They're saying that government and business currently don't measure up, and a change in direction and consumption patterns is required."

She sees some governments and businesses taking fright at the professionalism, power, and knowledge base displayed by many NGOs. This could lead to the involvement of NGOs in such gatherings being more restricted in future.

Shand says New Zealand should take a lead in "insisting on citizen participation, consultation, and partnership" in the work of the Commission on Sustainable Development and not allow it to become simply an "inter-governmental agency". The Commission is to be established by the United Nations in September to oversee compliance with the pledges made at the Earth Summit and direct the implementation of Agenda 21, the 800-page plan of action to protect and preserve the global environment into the 21st century.

Agenda 21 sets the political basis for the transfer of resources for sustainable development between industrialised and developing countries. The Commission will monitor this process, reporting through the United Nations Social and Economic Council. Agenda 21 contains some powerful rhetoric but the 128 developing nations of the "Group of 77" and UNCED Secretary General Maurice Strong were among those who expressed "disappointment" at the lacklustre commitment by industrial countries to financing it.

New Zealand has certainly made a feeble start. In 1991-92 our foreign aid budget was $147 million, equivalent to 0.18 percent of gross domestic product (GDP), well short of the United Nations guideline of 0.7 percent of GDP. Despite a pledge at Rio that New Zealand would work towards achieving the UN target, National's July Budget cut overseas development aid by $7 million to $142 million for 1992-93.

In an open and supportive international economic climate with more trade access, developing countries should be able to earn more through exports than they now receive in official development aid.

Shand says her commitment to the "think global, act local" maxim was reinforced by attendance at the Rio Summit. "It is the sum total of individual action which is going to save the Earth. What we do with CO_2 emissions may be infinitesimal in the eyes of the world, but New Zealand has a part to play in a global partnership. A partnership is only as strong as it weakest link. I would hate to see New Zealand ever considered as anything but one of the strongest links, taking a lead for peace, and for the oceans and biodiversity."

Perhaps the most important political achievement of the UNCED process and the Global Forum was to bring the issue of environment centre stage and give a renewed sense of urgency and purpose to work for a more equitable and environmentally sound world order.

There is a widespread recognition that the patterns of consumption and production and lifestyles of those in the industrialised countries are not sustainable, and that these must change to be a less onerous burden on the world's finite resources and the capacity of an already degraded environment.

The success of efforts here will be the real measure of the achievements of both UNCED and the Global Forum.

Eugenie Sage

Forest and Bird is a member of the International Council for Bird Preservation and is the ICBP's delegate in the South Pacific.

Branching out

Reports on some of the campaigns and conservation projects undertaken by Forest and Bird branches and field officers.

Clucky bantam saves weka chicks

WITH FOREST and Bird's weka captive breeding programme well underway, breeding has begun at members' aviaries with at least one unexpected result.

King Country breeder June Lamont received two weka who weren't keen on the idea of parenthood. They ate their first two eggs and abandoned the second clutch. However, June saved the day by her quick thinking the third time round when it looked as if that batch were also at risk. She whisked the eggs away from the weka and placed them under a clucky bantam hen.

The chicks hatched but it wasn't all plain sailing. Although bantams are exemplary mothers, they expect their chicks to peck from the ground, whereas weka chicks take food from their parents' beaks. June had to help feed the young weka with grubs and maggots until they learnt to take food from the ground.

NEW ZEALAND HERALD

Weka breeder June Lamont with the two weka chicks and their foster mum.

New branch at Franklin

AT FOREST AND BIRD'S June Council meeting the Franklin section was upgraded to the status of a full branch. Established as a section of the South Auckland branch only three years ago, Franklin now has 168 members.

Chairperson Jan Butcher said that as a branch, Franklin will be tackling urban environmental issues such as increasing coastal subdivision around the Manukau Harbour and establishing a full programme of field trips.

The new branch will be Forest and Bird's fifty-sixth, and all other branches wish it the best in its conservation activities.

Native vegetation in Marlborough

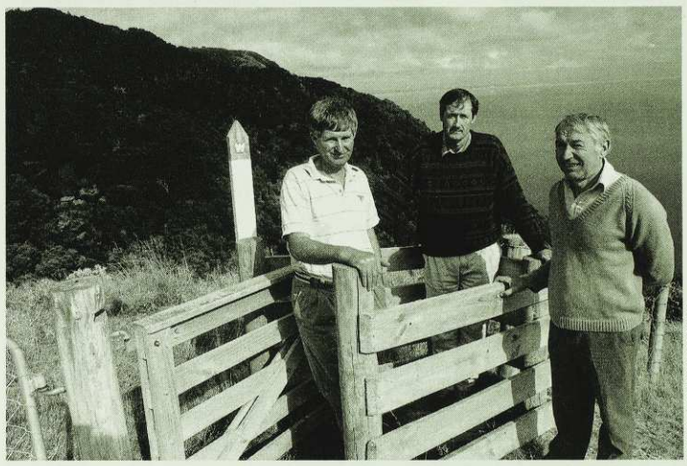
THE MARLBOROUGH Branch recently helped finance the printing of a booklet identifying remnant native vegetation in the Wairau area. The 60-page booklet, *Characteristics, Condition and Conservation Needs of Indigenous Vegetation in the Lower Wairau Catchment,* was written by Dr Philip Simpson from the Department of Conservation. Branch secretary Barbara Jurgenson said the branch felt the information was important in encouraging the community to take urgent action to protect remnant areas of native vegetation.

A number of species described are not found outside the Marlborough region. The booklet is illustrated with maps and colour photographs.

The branch contributed $300 and a branch member put up the same amount. Members plan to use the booklet to find suitable areas to start replanting programmes.

The booklet is on sale for $7 (including postage) from the Treasurer, Forest and Bird Marlborough Branch, 24 Gascoigne Street, Blenheim.

Nelson bush protected



NELSON EVENING MAIL

Cable Bay farmer Ian Stuart, QEII representative Martin Conway and Nelson branch secretary Earle Norriss at the northern entrance to the new reserve.

AN IMPORTANT piece of coastal forest near Nelson has been saved because of a joint effort between Forest and Bird's Nelson branch, the Queen Elizabeth II National Trust and the landowners.

The 120-hectare block of native forest which stretches around the coast from the Boulder Bank to Cable Bay had been used as a walkway for many years, and the farmers who own the land, Ian and Barbara Stuart, wanted to protect it. Earle Norriss from the Nelson Branch had met Barbara the year before and they discussed the idea of placing a covenant on the land.

The new reserve hosts a range of plant communities including beech and kamahi forest on the drier slopes, and podocarp and tawa forest in the gullies. There is not much forest in Nelson along the coast and this block is easily accessible to Nelson residents.

The trust agreed to place a covenant against the title, thus protecting the bush in perpetuity. The major cost involved fencing three sides of the block. This is normally paid half by the trust and half by the landowner. In this case the Nelson Branch came to the party, providing $7,000 to cover the Stuarts' share of the costs.

Compiled by Lisa Rae

Kiwi habitat in east Taranaki saved

CONGRATULATIONS to the North Taranaki branch and their chairperson, Peter Winter, who have succeeded in their 15-year campaign to end forest clearance at Aotuhia in the east Taranaki/Wanganui hill country.

Helped by the work of Forest and Bird's conservation staff and the Wanganui Conservancy of DoC, the branch has been able to protect another 1,000 hectares of important kiwi habitat. The three areas involved have one of the highest densities of North Island brown kiwi and are uneconomic as farmland. They are also surrounded by land proposed for addition to Whanganui National Park.

In 1983-85, Forest and Bird publicised the unnecessary destruction of prime wildlife habitat and forests on erosion-prone lands in Aotuhia. At that time extremely steep lands and native forest areas identified as reserves on the original land-use study were being cleared. But in the Crown land allocation in 1988, the government accepted Landcorp's assertion that the blocks were potential farmland. Since then Forest and Bird has continued to call for protection of the shrublands for their kiwi population and other wildlife, and hundreds of members wrote to the Prime Minister asking for his support for the area's protection.

Landcorp has now sold the last areas in contention on the Aotuhia and Poarangi farm blocks to DoC. Along with Waitotara forest and thousands of hectares of conservation stewardship land, these blocks are now proposed for addition to the Whanganui National Park. You can get details on the national park additions from DoC, Private Bag, Wanganui (closing date for comment is 30 September).

ROD MORRIS/DOC

The Aotuhia blocks contain forest and shrubland, and a population of 80-100 North Island brown kiwi.

Arethusa Reserve

IAN WILSON

Far North branch members at the new Arethusa Cottage.

ARETHUSA RESERVE at Pukenui on the Aupouri Peninsula is Forest and Bird's most northern reserve.

Over the last two years the Far North branch has built a cottage and other facilities as a centre for members and to provide accommodation for those who wish to stay over and explore the north. Attractions nearby include Rarawa with its pohutukawa and white sandy beach, and Kowhai Beach, frequented by many waders and a nesting place for dotterels, gulls, terns and oystercatchers. Ninety Mile Beach, Cape Reinga, Cape Maria Van Diemen, Spirits Bay, Te Paki Bush and the Parengarenga Harbour (see last issue of *Forest & Bird*) are all within easy distance for day trips.

The 14-ha reserve itself is a wetland area developed over the years as the once-shifting sand dunes on the Aupouri Peninsula have been stabilised. The area sustains a healthy wetland ecosystem that provides food and shelter for an increasing bird population. Branch members have been planting native trees and shrubs in the surrounding areas.

For booking details see Forest and Bird *Lodges and houses* on page 52.

Test case in Far North

IN WHAT IS SEEN as a test case for the protection of native forest on private land under the Resource Management Act, a Far North farmer has been refused permission to clearfell 100 hectares of regenerating native bush.

The landowner, Maurice Hodgkinson, sought planning approval to clear an undeveloped section on his farm at Umawera to plant exotic forest. This application met stiff opposition from the Far North branch of Forest and Bird and the Department of Conservation, as the area was habitat to threatened species and had been accorded an "outstanding wildlife classification".

In April, the Far North District Council refused consent and Mr Hodgkinson is now appealing the decision to the Planning Tribunal. He criticised DoC for using planning mechanisms to place obstacles in the way of economic development. Forest and Bird will be supporting the council in fighting the appeal.

The case would have been unnecessary if the government had delivered on its election promise to "end the clearfelling of native forest". Sadly, the proposed native forests legislation promises controls in two to four years on logging for timber, but not on clearance for farmland.

Wekas for Karangahake

THE KARANGAHAKE gorge may ring again with the call of the North Island weka, gone from the area for 70 years. The Department of Conservation has given permission for Forest and Bird to release weka from the society's captive breeding programme on the outskirts of the Karangahake community, near the Kaimai Mamaku Conservation Park. The long-term programme is a collaboration between DoC and Forest and Bird with sponsorship from Trilogy Business Systems.

Karangahake was chosen for the release because of the variety of natural habitat and food it offers, and because of the support of the local community. Guns and dogs have probably contributed to weka decline, so friendly residents are essential to the success of the release. Weka may benefit from contact with people, particularly when food is scarce, as the birds forage in compost heaps and accept hand-outs.

This winter, aviaries have been built to house the young weka from the breeding programme before they are released. The aviaries will be on the property of Forest and Bird breeders Gary and Elaine Staples.

New Zealand papers are leading the way, leaving competitors in their wake.

New Life Paper On A Wave

The tide has turned. Consumers are showing increasing concern for the environment - a stance reflected not only in consumers' general attitude but in their demand for, and use of, recycled product.

Paper in particular has impacted the imagination of consumers. They have caught the recycling wave and for them the only acceptable products are locally manufactured, 100% recycled brown Sandow and white Ecolade.

There is a fashion opportunity which expresses an environmental sensitivity ...boutique bags from recycled paper.

"We are experiencing very active interest in the consumer product area. There is a swing towards nostalgia. Designers and creative directors are choosing Sandow and Ecolade both of which have an environmental significance. Upmarket boutiques have recognised the fashionable market response to non plastic packaging and exclusive carry bags"- John Bradley, Managing Director, Uni Bag Limited of Wellington.

"Ecolade is an off-white paper with a rustic appeal. I would definitely use it again." - Chris Prebble, Publications Editor with the Ministry of Transport, Wellington, who used Ecolade for posters in the Ministry's drink/drive campaign.

"The characteristics of recycled paper are well suited to the manufacture of computer line flow." - Scot McArthur, Operations Manager at International Business Forms.

"Brown recycled paper Sandow has been available in envelope form for some time. Now we are converting right through the range to Ecolade" - Barry Cairns, General Manager of Domino Marketing, Auckland.

McDonald's Family Restaurants switched to recycled Sandow and Ecolade for placemats and takeaway bags.

"The recycled paper products reflect McDonald's pro-active environmental initiatives in relationship to our product packaging. Corporate awareness of environmental issues is an area of very real significance to us all." - Mark Jenkins, Director of Purchasing/Vice-President, McDonald's System of New Zealand.

Graphic designers and printers are showing a keen interest in Mataura Mill's Ecolade and Sandow.

If you want urgent information, use the Mataura Mill Hot Line 0-25-975 169

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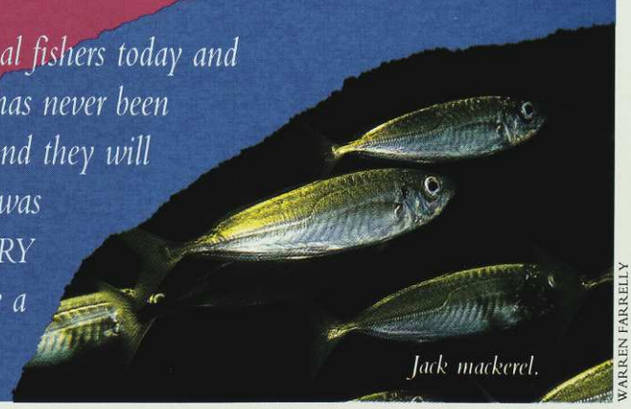
NEILSON 716 6

A school of trevally, a major inshore commercial species in the Bay of Plenty and around Northland. The species is thought to live well in excess of 40 years although little research is being done on it at present. Stocks were overfished in the mid-1970s.

Are we Fishing to the Last Bite?

Ask any recreational fishers today and they will tell you the fishing has never been worse. Ask the commercial operators and they will say that since the quota management system was established the fishing has never been better. BARRY WEEBER casts his line and explains why fisheries are a major conservation issue.



Jack mackerel.

WARREN FARRELLY

JUST 16 YEARS AGO, New Zealand fishers operated in small boats within 20 km of the shore, fishing to depths of around 200 metres. Orange roughy was unknown and the industry was dominated by owner-operators who caught traditional species like snapper, school shark, trevally, groper, flat fish and rock lobster. Apart from rock lobster, fish were mainly sold for local consumption.

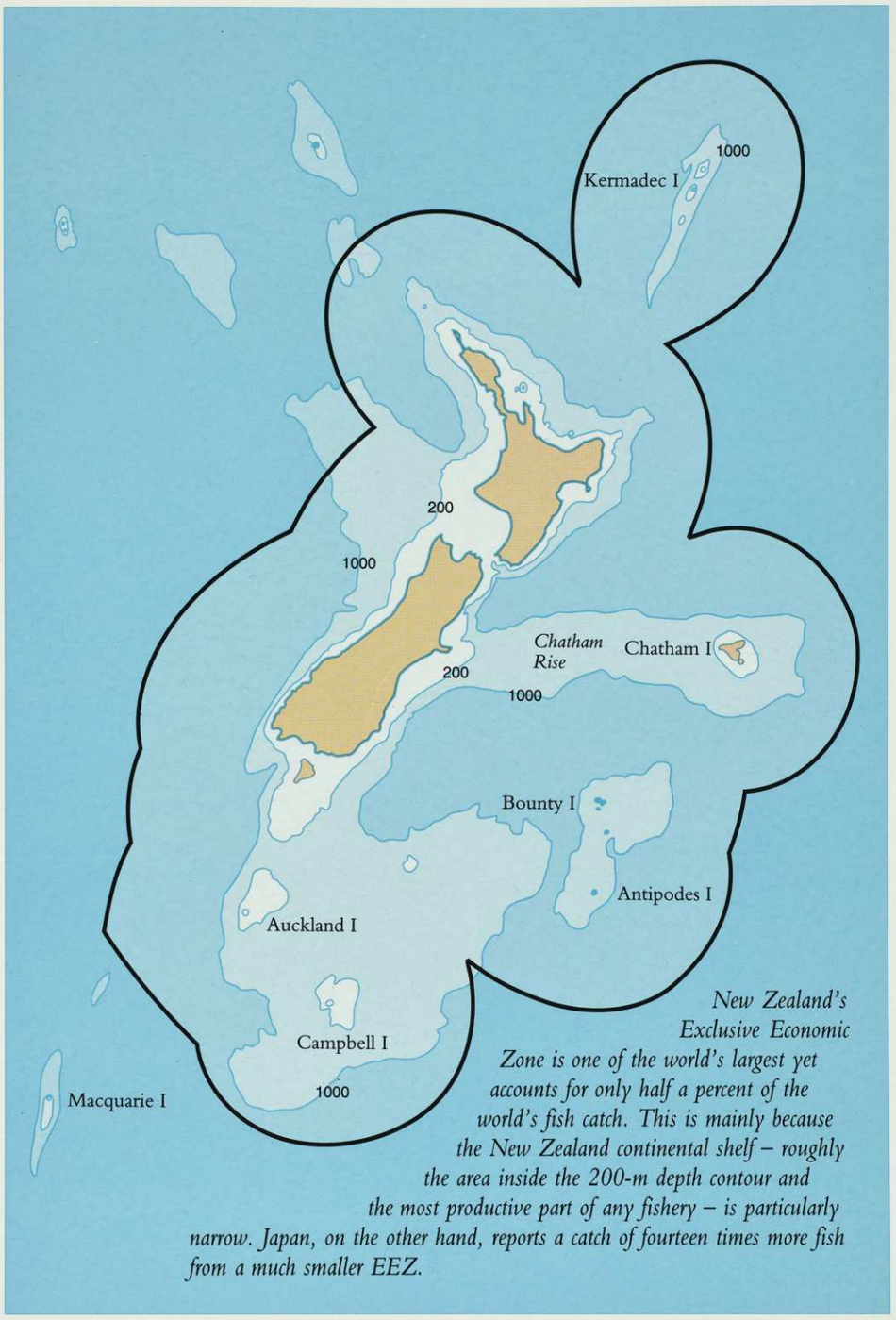
Today all that has changed. In 1978 New Zealand extended its fisheries management control out to 200 nautical miles [370 km] as part of the international consensus on changes to the law of the sea. The enclosed area of water is the fifth largest Exclusive Economic Zone (EEZ) in the world and is over 15 times the land area of New Zealand. Fish is now a billion dollar export industry.

The catch from the EEZ area over the last 20 years has increased from 225,000 to 565,000 tonnes – a small catch in international terms. By comparison, the current reported world catch is around 100 million tonnes, up from the 70 million tonnes reported in 1976. The actual catch could be 30 to 50 percent higher.

For the first few years after the declaration of the New Zealand EEZ, foreign-licensed vessels from Japan, the Soviet Union and South Korea dominated the fishery. But from the early 1980s New Zealand companies began investing in vessels or chartered foreign vessels to catch fish on their behalf. This was promoted by the government through tax incentives on the boats and through increasing restrictions on foreign vessel catch.

Since 1986 there has been little increase in the percentage of the total catch taken by New Zealand owned vessels. About 180 foreign vessels – trawlers, squid jiggers and long liners from Japan, Korea, Russia and Norway – are now chartered each year by New Zealand companies for fishing throughout the EEZ.

Today the fishing industry is dominated by a decreasing number of large New Zealand companies. The three big companies, Sealords, Talley's/Amaltal and Sandfords, control over half the total quota. These companies are the major players in a large industry lobby, the Fishing Industry Association. The owner



New Zealand's Exclusive Economic Zone is one of the world's largest yet accounts for only half a percent of the world's fish catch. This is mainly because the New Zealand continental shelf – roughly the area inside the 200-m depth contour and the most productive part of any fishery – is particularly narrow. Japan, on the other hand, reports a catch of fourteen times more fish from a much smaller EEZ.

John Dory is a northern inshore species but is a by-catch rather than a target fish. This means it is caught incidentally of the fish being sought, in this case snapper and trevally. Conservationists have long been concerned at the poor reporting of by-catch species by commercial fishers.

operators who dominate the paua, rock lobster and some inshore fisheries are mostly members of the Federation of Commercial Fishermen.

OVER-FISHING in the late 1970s and early 1980s placed the inshore fishery under stress. Too many fishers were chasing a diminishing number of fish. Major inshore fisheries such as trevally, tarakihi, snapper and rock lobster were particularly in trouble.

The 1963 de-licensing of the fishing industry and limited management controls were the main causes of this over-fishing. Anyone could get a licence to go fishing and there was no limit on the amounts that could be caught. Sustainability was not a consideration.

To deal with this problem, MAF and sectors of the industry promoted the introduction of a quota management system for major New Zealand fish stocks. Deepwater species such as orange roughy, hoki, oreos, squid and hake had been managed by individual quotas since 1983.

In 1986 the 26 major commercial species were placed under the quota system, and since then paua, rock lobster, squid and some jack mackerel fisheries have been added.

The system originally allocated fishers a tradeable commercial property right which guaranteed them access to a set tonnage of the Total Allowable Catch (TAC) for each fishery or fish stock. This fixed tonnage could not be reduced without the government buying back quota from fishers at the current value of traded quota.

In introducing the quota system the government enforced major reductions in fishing effort in the inshore fishery. The snapper and school shark catches, for example, were reduced by a third nationally and rig (another shark) was reduced by two-thirds.

Fisheries researchers advised against a fixed tonnage quota system because of the uncertainties in catch levels caused by inadequate information and the natural fluctuation of fish stocks. Another cause for concern was that the government in tight financial times would not have the resources to buy back quota. The system created an incentive to overfish, as fishers would benefit financially from any TAC reductions caused by overfishing. Reductions in the TAC would increase the monetary value of a quota.

Treasury and some MAF economists had argued that fisheries researchers were too conservative and that fish stocks were more likely to increase than decrease. So the potential revenue gain from tendering

Case 1

Orange roughy – older than your grandmother

ALISTAIR MACDIARMID

Orange roughy at 1,000 metres on the floor of the Ritchie Bank off Hawke Bay. With a water pressure many times that near the surface it is impossible to reach this depth with conventional diving equipment. The picture was taken with a robot-operated camera.

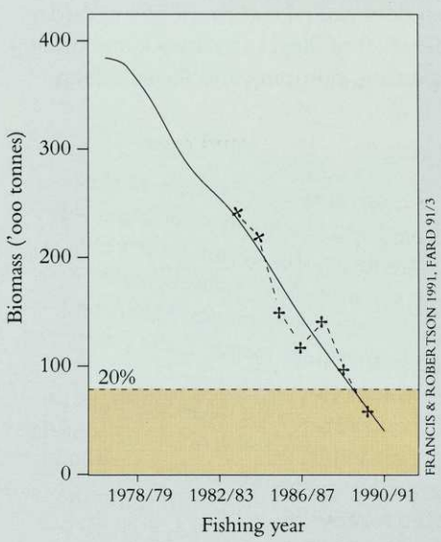
ORANGE ROUGHY being eaten around the world today could have been spawned when the Treaty of Waitangi was signed. They are a very slow-growing fish living at great depths (700 to 1,500 metres) and feeding on deepwater prawns, squid and other fish. Research in Australia indicates the oldest fish could be well over 150 years old. It is one of the world's deepest fisheries.

Concern over the sustainability of the orange roughy fishery has been expressed since about 1986 but reductions in the TAC have been extremely slow. The current exploitation of orange roughy stocks on the Chatham Rise (the main roughy fishery in New Zealand waters) can only be described as mining. Only one of the five known stocks has a TAC set at the long-term sustainable level. In addition, no consideration has been made of the effects on natural predators of orange roughy such as sperm whales.

The government has reduced the TAC from 34,000 tonnes in 1988 to 24,000 tonnes in 1990 and maintained it at that level for 1991-92. Yet, over that period MAF scientists were saying that this was not sustainable and were recommending catches at less than a third of this level.

In 1992 MAF scientists again reviewed the evidence and concluded that to have a greater than even chance of rebuilding the stock in the 1992-93 fishing year the TAC would have to be set at "no more than 6,100 tonnes".

Again we wait to see whether the Minister of Fisheries will finally take on the industry and reduce the TAC to a sustainable level or will ignore the evidence and continue to allow the mining of this fish.



Decline in the Chatham Rise orange roughy population since fishing started in the late 1970s based on model (solid line) and trawl survey results (dotted line). The horizontal line represents 20 percent of the virgin biomass (or total pre-fishing population) of the stock. This is considered the absolute minimum of safety by fisheries scientists yet the roughy are now well below this level.

out new quota from new stocks or increased quota from old stocks should more than cover the cost of buy-backs.

But by 1989 the government finally realised it had a problem. The orange roughy TAC on the Chatham Rise was far too high and needed to be reduced by over 75 percent. To do this, the government would have to pay out over $80 million. It was also likely that other orange roughy stocks were in a similar state and that the hoki TAC would need to be reduced. It was likely that several hundred million dollars would be needed to correct the structural flaws in the initial system.

Negotiations between the government and the industry led to an agreement on the introduction of a proportional rather than a fixed tonnage system. Under this system each quota is set as a proportion of the total catch. The total catch itself may be varied from year to year. And as part of the 1990 introduction of a proportional Total Allowable Commercial Catch (TACC) came a taxpayer-funded $47 million compensation pool.

IN NEW ZEALAND, despite the hype from ministers and fishing industry leaders, the quota management system by itself has not resulted in sustainable fisheries. The current catch in the New Zealand EEZ of around half a million tonnes is near the likely long-term sustainable yield from the zone, but many of the individual stocks are fished at unsustainable levels. The reported catch also does not take account of a considerable level of illegal activity such as under-reporting, dumping and illegal selling.

If TACs are set too high, as they have been for orange roughy or rock lobster, then the quota management system will fail to deliver.

The current decision-making system on TACs leaves too much power in the hands of the Minister of Fisheries with precious few criteria on which he can base his decisions. Fish stocks were the only major resource excluded from the Resource Management Act and are therefore not subject to the sustainability principles set out in that Act.

The industry itself has been unwilling to manage fisheries sustainably. It has selectively used information to support TAC increases and then ignored similar information in order to oppose TAC reductions.

New Zealand is not alone in having problems managing its fish. According to a report prepared by the United Nations

> "... virtually every fishery in the world has been criminally overfished for years. We know this because, for years, fisheries scientists have politely recommended to their governments that they should not let their fishing fleets catch quite so many fish next year.
>
> Canada has severely reduced the numbers of cod on what was once the world's richest fishing grounds, the Grand Banks of Newfoundland. European ministers are trying to reform a Common Fisheries Policy that is causing the imminent collapse of fishing in the North Sea. Norwegians, North Africans and Thais puzzle over their dwindling catches.
>
> None of this is surprising. Fish is a finite resource. You can run out of them. The world is doing just that. And this will be serious for the large number of people who rely heavily on fish for protein."
>
> *Editorial in* New Scientist *11 April 1992*

Case 2

Rock lobster – slow progress to end overfishing

CONCERN ABOUT the state of the rock lobster or crayfish fishery has been raised by MAF scientists since the early 1970s with little response from ministers. In 1990 an assessment by MAF stated that:

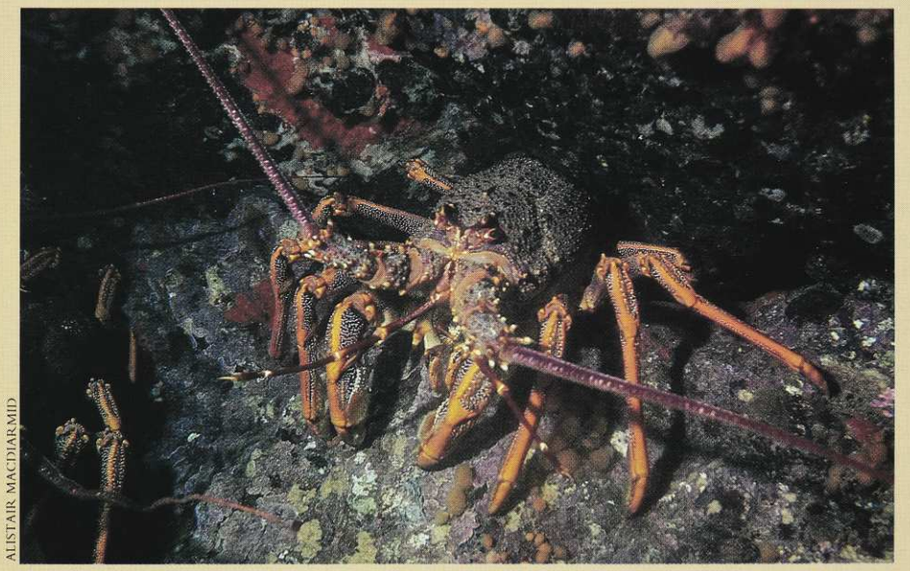
> For at least ten years effort has been two to three times higher than optimal for this fishery. As a consequence the stock is smaller than the optimal level. Further consequences are that the catch is less than the potential maximum sustainable yield, economic yields are small compared with their potential, and the fishery may decline further and be in some danger of collapse.

In 1990 rock lobster was added to the quota management system. A particular problem with rock lobster is that the total catch includes a large illegal and recreational catch as well as the reported commercial catch.

To deal with the continuing debate over the sustainable rock lobster catch the Minister for Fisheries established a committee of representatives from the fishing industry, Maori, recreational and conservation groups to come up with a plan to rebuild the population within ten years. The committee met for five months and, although its report last October made progress in the area of integrating catch limits, enforcement, and size controls, it failed to agree on any catch reductions.

Last November MAF's Dr Paul Breen reported that "at the present catch levels, the risk of collapse is very high: 29 percent over four years and 78 percent over the next ten years". Extrapolation from Dr Breen's figures means that to rebuild the stock within ten years the TACC would need to be reduced to under 1,500 tonnes.

Under pressure from the industry Mr Kidd made only a modest reduction to the TACC for 1992-3 taking it down from 3,000 to 2,700 tonnes. This was against the advice of his own department, the Department of Conservation, Ministry for the Environment and conservation groups.



ALISTAIR MACDIARMID

Rock lobster are caught in baited pots and have been a major fishery for over 30 years. The lobsters start breeding when they are between five and nine years old and can live up to 30 years or more.

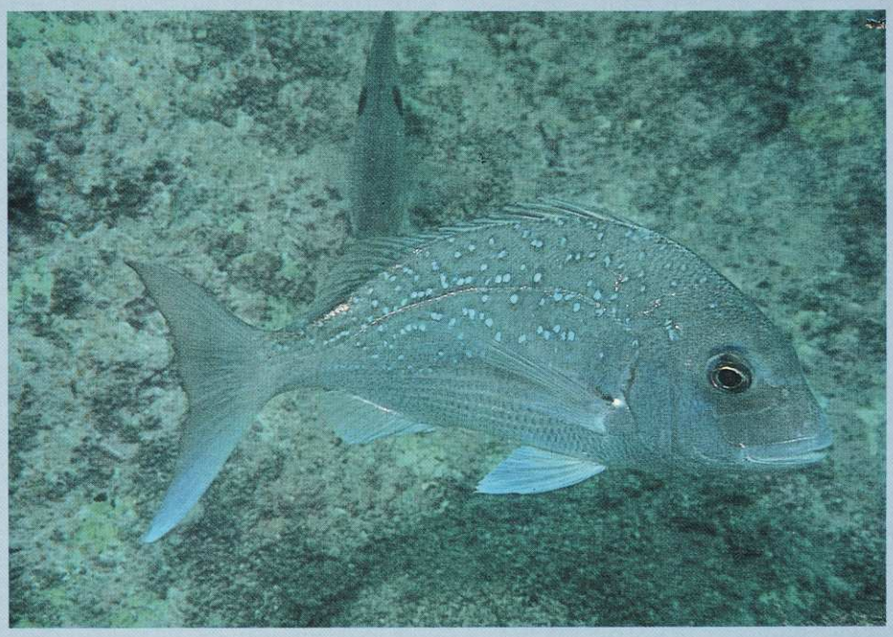
Case 3

Snapper – down to ten percent

FISHING for snapper around New Zealand goes back many years and is an important recreational and traditional fishery as well as a commercial one. In northern New Zealand the recreational and traditional component has regularly made up between 20 and 30 percent of all snapper caught.

Yet there are now only ten percent of the snapper that there used to be around New Zealand. Even this level is the result of two good recent spawning years. According to a recent MAF report the population will decline further unless catch limits are reduced, particularly in the area east of Auckland where a 30 percent reduction is needed.

The major problem has been decisions of the Quota Appeal Authority which was set up to deal with allocations which did not match the actual catch or the changing circumstances of a fisher. But sustainability of the total fishery is not one of the criteria on which the authority makes its decisions. Thus the authority has increased the TACC for the area east of Auckland by 27 percent (to 6,002 tonnes) since 1986, and by 20 percent west of Auckland, despite the decline in snapper stocks.



Snapper are long lived fish – up to 60 years – and are found throughout inshore waters of northern New Zealand. They are an important member of northern inshore fish communities and are most abundant down to 60 metres, but can be found as deep as 200 metres.

This year major decisions may be made on getting snapper back to a sustainable level. Twenty percent of virgin biomass is usually seen as the absolute minimum by fisheries scientists. Ten percent is extreme danger territory. At current catch levels it will take 60 years for the west Auckland fishery to rebuild and east Auckland is likely to decline further.

The fishing industry is currently opposing any catch reductions.

for the June Earth Summit, marine fisheries internationally face mounting problems including "local overfishing, ecosystem degradation, over capitalisation and excessive fleet sizes, [and] insufficiently selective gear".

FISHERIES LEGISLATION in New Zealand at present tends to deal only with fisheries on a stock by stock or species by species basis. All other species in the sea can be fished. This creates problems for sustainable fisheries management. New arrivals can strip-mine coastal areas for species previously not harvested, long before management measures can be implemented. Regulation and controls can take years to put in place.

On land we manage species differently. Under the Wildlife Act there is a list of species that can be taken and species with partial or complete protection. The same principle should exist for the marine ecosystem. There should be a list of species that can only be taken by commercial fishers and another for recreational fishers. All other species should be protected. A consultative process of moving species between categories, as there is in the

Guide to fisheries jargon

Exclusive Economic Zone (EEZ) the area between the edge of the territorial sea (12 nautical miles off-shore) to 200 nautical miles [370 km] off-shore. The figure of 200 miles was agreed during the negotiations on the Law of the Sea in the mid-1970s.

Total Allowable Catch (TAC) is the catch that can be taken from a fish stock. Since 1986 when the quota management system was introduced, it includes the Total Allowable Commercial Catch (TACC) along with recreational and traditional Maori catches.

trawlers are vessels that fish with large netted bags (trawl nets) dragging behind them. These nets are used particularly in fishing for deep water species and can be up to several hundred metres long with a mouth up to 70 metres high.

long liners are vessels setting one or several long lines (often up to several kilometres long) with hooked branch lines.

jiggers are squid fishing vessels using multi-barbed hooks on many lines (sometimes over 100).

sustainability Maintaining a population at levels so that exploitation does not affect its reproductive ability and genetic diversity. For fish stocks this level is thought to be somewhere in the range of 30 to 60 percent of the original stock.

Working this out is more complicated for fish than it is for the generally less fecund land animals. Fish populations are notoriously difficult to count and there is no clear relationship between the size of a population and the number of juvenile fish that a population can produce. What we do know is that the likelihood of stock collapse increases as the population gets smaller.

Wildlife Act, could be managed in a similar manner.

Fisheries legislation needs principles similar to those in the Resource Management Act. New Zealand should also be looking at one useful international model for integrated fisheries management. Under the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) the fisheries south of the Antarctic Convergence are managed as a whole ecosystem. This means that the impact of fishing on marine mammals and sea birds is considered when fish catch limits are set.

Unlike New Zealand's fisheries legislation which focuses just on the maximum sustainable yield of individual stocks, CCAMLR considers the impact on other species, fish predators and the impacts of harvesting on the general marine ecosystem. The information required for such decision making is more detailed and the scientific committee of CCAMLR has only started to grapple with these issues.

New Zealand should be adopting a precautionary approach to fisheries management. The long-term economic and environmental consequences of over-optimistic and unsustainable catch levels based on inadequate biological data dictate this. The boom and bust nature of New Zealand's fisheries is a major blight on the country's environmental record. In the absence of most of the biological information required to manage a fishery, the fishing effort should be limited only to a research catch or a carefully monitored small-scale exploratory commercial catch. Catch levels should not be increased before going through a process of environmental assessment.

LAST YEAR Fisheries Minister Doug Kidd launched a major review of the Fisheries Act and associated legislation.

The task force set up by the minister released its final report in April. It suggested greater industry and less government involvement in fisheries management, a suggestion that alarmed conservationists. While the task force agreed on the need for clear purposes and principles similar to the Resource Management Act, it failed to establish a clear decision-making framework for these.

The response from fishing interests to the report has been mixed. While the larger companies have welcomed proposals for a greater decision-making role for quota-holders' associations, the Federation of Commercial Fishermen criticised the proposals and has instead promoted the idea of a round table of representatives from all interests to negotiate management plans for each fishery. The problem remains, however, that fishers have refused to reduce catch limits to sustainable levels.

Forest and Bird has suggested to the minister that the process of managing fisheries should be closer to the principles of the Resource Management Act. Further, there should be a list of species that can be fished commercially, recreationally or traditionally. Any species not on these lists could not be taken. Such a process would help to control the problems of coastal areas being depleted of marine life.

The minister requested submissions on this report by the end of May. By the time this article is published we should have a better idea of the government's response to the recommendations of the task force. ❖

Barry Weeber is a researcher for Forest and Bird. He specialises in fisheries, energy and resource management issues.

PEKAPEKA

New Zealand's secretive bats

At one time there were four bat species in New Zealand. Today only two survive. Yet, despite their unique status as this country's only land-living native mammals, very little is known about what they do and even whether they are endangered. TIM HIGHAM reports on how some of the mysteries are being unravelled.

ROD MORRI

Lesser short-tailed male bat at his lek hole in a totara on Codfish Island. With a sound audible to some humans, bats sing and warble for up to eight hours a night, over several months, to try and attract females into their holes.

DUSK in Fiordland's Eglinton Valley, even in late February, brings a chill to the air.

The wind dies away and with it our conversation. We prefer momentarily the company of high, dark hills and paling sky. Then silhouetted against the last of the day's light is what we came to observe. Suddenly close by, it flutters like a magnificent butterfly above the stream. Darting, changing direction and speed in strange, staggered flight, it forages on mayflies hatching from the water.

The object of our curiosity is a long-tailed bat which, along with its lesser short-tailed cousin, is New Zealand's only native terrestrial mammal.

Surprisingly little is known about bats by the general public. Their habits of being active only at night and of covering large territories using multiple roost sites, have not helped the very few people who have attempted to study them.

Of the four species known to have existed, the long-tailed bat is the most common and is widely distributed through the North and South Islands, Stewart Island, Little Barrier and Great Barrier Islands and Kapiti Island. The lesser short-tailed bat is found only in a few scattered North Island forest sites, North-West Nelson Forest Park, and on Little Barrier Island and Codfish Island. The greater short-tailed bat became

extinct in about 1965 when ship rats reached its last refuge on Big South Cape and Solomon Islands off south-western Stewart Island.

Recently a fourth, as-yet-unnamed species, identified from sub-fossil and skeletal remains, has been added to the list. From its teeth, skull and foot bones it appears it was the largest of the short-tailed bats and had evolved furthest along the path toward a terrestrial habit. It probably became extinct some hundreds of years ago after the arrival of the Maori and their Polynesian rat, kiore.

Maori did not differentiate between bat species and called all of them "pekapeka", a diminutive of "peka", the name given to the fruit bat of their Pacific island homeland. In an ancient Maori proverb bats were associated with the mythical, night flying bird hokioi and were meant to foretell death or disaster.

MUCH of our current knowledge about bats is due to the work of Mike Daniel, a recently-retired DSIR ecologist, whose research has spanned 20 years. During the late 1970s and early 1980s his work on bat distributions was helped by the public who sent in nearly 300 responses to appeals for information about sightings.

For the last 11 years Daniel has conducted the only long-term behavioural studies on bats – on the lesser short-tailed populations on Codfish Island and in Omahuta kauri forest in Northland.

On Codfish Island he has used mist nets to capture bats and then attached tiny transmitters weighing only one and a half grams (but ten percent of the weight of the animals). He found that the bats flew 30 to 40 kilometres in a night and alternated roost sights between favoured trees.

Also useful in his research were ultrasonic bat detectors which pick up the sounds – inaudible to humans – emitted by bats during echolocation.

Infra-red night-vision telescopes and binoculars, the latter used by the British in the Falklands War, have enabled him to observe bat behaviour. Lesser short-tailed bats burrow into leaf litter and humus in search of food and can excavate tunnels for roost sites in rotting trees.

Such behaviour is unique among bats, and the species has evolved wings which can be tightly folded into a protective pouch formed by leathery wing membranes and a skin flap on the side of the body – adaptations which make it much easier to hunt on the forest floor.

ROD MORRIS

▲ *Because they spend a lot of time on the ground, lesser short-tailed bats are particularly vulnerable, like New Zealand's flightless birds, to introduced predators such as stoats, rats and feral cats.*

J.L. KENDRICK/DOC

A. H. WHITAKER

The long-tailed bat. Both this and the lesser short-tailed bat are about the size of a sparrow. The long-tailed bat is slightly smaller with rounded ears and a distinctive long tail almost as long as its body.

Daniel has found that despite their relatively heavy feet, lesser short-tailed bats still retain impressive powers of flight. On Codfish Island he has watched them flying at night through tightly-packed forest at around 20 km an hour. Even in rain they are able to receive the echoes of rapid pulses of high frequency sound emitted from the mouth, and cruise comfortably through the maze of twigs and branches to catch flying insects.

Over the past five years Daniel has discovered that the Codfish Island bats are lek breeding, a courtship behaviour shared among bats with only two African species. Like Codfish Island's other lek breeders, the kakapo, male bats gather

at display sites which females visit for mating.

The lesser short-tailed bat feeds on a variety of foods: fruit, insects, meat and nectar. Muttonbirders on the islands off Stewart Island used to smoke bats out of caves and kill them because they occasionally chewed on the fat and meat of hanging muttonbird carcasses.

This omnivorous feeding behaviour enables the short-tailed bat to remain active all year round, unlike the strictly insectivorous long-tailed species which hibernates in cooler regions over winter, when insects are less active.

THE ANCESTORS of the long-tailed bat were probably blow-ins from Australia. Daniel says it is surprising that New Zealand has only one bat derived from Australian stock, considering that country's 60-odd species and the prevailing westerly winds.

Bat genealogy

Bats form the order **Chiroptera** (from the Greek "hand-wing"). With almost 1,000 species they are the second largest order of mammals after rodents. There are two sub-orders:

Megachiroptera (fruit bats or flying foxes) 1 family, 173 species in tropical and sub-tropical areas worldwide. Navigate by sight alone and eat nectar and fruit. None in New Zealand.

Microchiroptera 18 families, 2 of them in New Zealand.

Family **Vespertilionidae** 320 species. Genus *Chalinolobus* 6 species in the west Pacific region including the New Zealand long-tailed bat which is probably descended from bat(s) blown across the Tasman Sea about a million years ago.

Family **Mystacinidae** (short-tailed bats). Endemic to New Zealand. Only 1 living species, the lesser short-tailed bat, *Mystacina tuberculata*, and 2 extinct species. These bats are thought to be distantly related to three families of South American and Central American bats. They possibly arrived in New Zealand via a forested Antarctica about 35 million years ago.

there are 16 other families.

The lesser short-tailed bat spends more time on the ground than any other bat in the world. Its strong hind legs have adapted it for hunting on the ground as well as on the wing, while the stout, heavy feet and spurs (unique in the bat world) on the claws of the toes and thumbs probably also assist with burrowing and climbing.

ROD MORRIS

Despite the regular appearance of Australian birds, butterflies and moths only one vagrant bat has been reported in New Zealand in European times: a little red flying fox, found electrocuted under powerlines after a storm in Hamilton about 1928.

Daniel believes his studies of skeletal and subfossil remains from around the country show there have been only four bat species in New Zealand since the last Ice Age, about 15,000 years ago.

Surprisingly, despite being the more common of the two extant species, there have been no long-term studies carried out on long-tailed bats. Even the location and scientific study of a nursery roost would be a first.

In Fiordland's Eglinton Valley, where bats are relatively abundant, Department of Conservation scientist Colin O'Donnell aims to rectify this situation. He plans to sample different habitat types through the year to establish their seasonal use and importance. By measuring temperature, wind strength, cloud cover and moonlight each night he hopes to build up a picture of factors effecting activity.

O'Donnell is also trying out a bat detector. He hopes to be able to correlate the ultrasonic clicks of the bats with population density.

ROD MORRIS

Long-tailed bats have been reported in native forest from sea level to the bushline, usually near the bush edge. Occasionally they are seen in exotic pine forest, shelter belts and buildings. They feed along forest margins and over farmland, streams and lakes, solely on small aerial insects.

They are the bat species most likely to be seen by the public and can be confused with large puriri moths, welcome swallows or fantails because of their rapid, darting flight.

DoC is now starting to move on the problems of bat conservation. The department has recently contracted Daniel to produce a draft recovery plan.

A lesser short-tailed bat eating a weta inside a petrel burrow on Codfish Island.

Bats and bat flies

IN 1973 when Kopi, the legendary giant kauri of Omahuta Kauri Sanctuary, toppled over a remarkable discovery was made.

Lesser short-tailed bats killed during the tree's collapse were found to have unknown spidery-looking flies crawling through their fur. The mouthparts of the flies, rather than being modified for piercing skin, were suited to eating guano and their claws were adapted for moving over fur.

Subsequent work by the DSIR's Beverley Holloway saw the flies described as the sole representative of a new family, Mystacinobiidae, a distant relative of the vinegar flies, *Drosophila*.

Assisted by the fall of a second bat roosting tree in 1975, Holloway found the bat flies were totally dependent on the short-tailed bats for their survival. Wingless and blind, they fed entirely on yeasty droppings and required the constant 30° C incubator-like conditions of the bat colony.

Female bat flies lay two batches of eggs in the guano-coated walls of the colony and die shortly afterwards.

ROD MORRIS

The wingless bat-fly on the back of a lesser short-tailed bat.

Males act as a guard caste producing high-pitched sound through vibrating membranes near where their wings should be. The noise prevents the bats from interfering with the community or from eating the flies during grooming.

When bats change roosting sites a new colony of bat flies is started by those adults clinging to the fur of departing bats. Those that remain die with the cooling of the colony and depletion of the food supply.

The greater short-tailed bat is thought to have had its own bat fly which became extinct with its host.

ROD MORRIS

Mike Daniel examines a lesser short-tailed bat caught in a mist net on Codfish Island.

He says the lesser short-tailed bat is currently classified as vulnerable, but with rodents, feral cats and stoats present in its North Island localities he believes it will soon be endangered. Cyanide and 1080 poison baits for possums may constitute an additional threat.

The north-west Nelson population, the only known South Island population, is already endangered, he says. Only

Records of confirmed bat sightings in New Zealand 1980-92.

From DEPARTMENT OF CONSERVATION DRAFT RECOVERY PLAN

Strange relationships 2

Bats and woodrose

FOREST Research Institute scientist Chris Ecroyd has recently made an important ecological discovery. He has been able to confirm that the parasitic woodrose, *Dactylanthus taylorii*, is pollinated by lesser short-tailed bats.

Ecroyd says he had long suspected the flowers of this rare plant were adapted to bat pollination. Their dull colour, strong scent and large quantities of nectar were characteristics consistent with bat-pollinated flowers described in overseas literature.

He also knew that Mike Daniel had reported traces of *Dactylanthus* pollen in bat droppings from Omahuta kauri forest. He also thought that the terrestrial behaviour of short-tailed bats enabled them to pollinate flowers on the forest floor.

Proving this theory, however, wasn't easy. He first studied the timing of nectar flows and flower opening to see whether they correlated with the night-time activity of bats. There was no difference in the characteristics of the flowers between night and day.

Next Ecroyd went to Little Barrier Island where *Dactylanthus* and lesser short-tailed bats were still known to co-exist. He borrowed and set up sophisticated night-vision video camera gear funded by the Lottery Board for kokako research.

Instead of recording bats visiting *Dactylanthus* flowers, the video tape revealed kiore or Polynesian rats destroying them. In April this year Ecroyd had all but given up on proving his theory and turned his attention to filming the effect of possums and ship rats on *Dactylanthus*. He set up the video gear in Pureora Forest, west of Lake Taupo, where there had been no confirmed sightings of short-tailed bats. When Ecroyd took the recorded tape home to watch during a lunch break it began much as expected, with ship rats visiting the flowers.

CHRIS ECROYD

An historic photograph. The first record of a lesser short-tailed bat supping on Dactylanthus *nectar. If the compound in the nectar attractive to bats can be synthesised, it could become much easier to find and study these elusive animals.*

Half an hour into the tape he nearly dropped his lunch. A short-tailed bat appeared, the first of 40 visits in a night. While thrilled with the discovery, Ecroyd's first reaction was a rational one – to remove the recording tab from the tape. By analysing the tape Ecroyd found all the visits were probably by the same bat, identifiable by tiny markings.

Dactylanthus plants, he believes, could play an important role in shaping the territories of individual bats and their foraging habits. In the North Island, *Dactylanthus* and short-tailed bat distributions are very closely correlated. In the South Island, outside the known range of *Dactylanthus* today, fossil records overlap.

He believes *Dactylanthus* flowers evolved over millions of years in New Zealand's forests to become dependent on short-tailed bats for pollination.

Today ship rats may carry out the pollination, but they are destructive in the process. The biggest threat to *Dactylanthus* is possums, but Ecroyd's discovery means at least some plants can be protected by wire netting with the mesh size large enough to allow the passage of bats.

He says *Dactylanthus* nectar is likely to have been an important food source for short-tailed bats in the North Island, particularly over autumn, and the increasing scarcity of the plant may be a contributing factor in the decline of the bats. Short-tailed bats are likely to have been present in New Zealand in much higher numbers than even Maori realised, because of their night-time activity which is confined to thick forest. They were also likely to have played a much more important part in forest ecology than is currently realised.

Kiekie, *Collospermum*, nikau, rewarewa, rata and pohututkawa are other plants Ecroyd believes are pollinated at times by bats. In the forest ecosystem, bats probably fulfilled the roles of insect predators, prey for moreporks, hosts for flies and pollinators of plants.

Codfish Island and Little Barrier Island appear to have healthy populations, despite the presence of kiore.

Even the relatively common long-tailed bat has declined markedly in European times through forest clearance and predation. Last century roosts were reported to contain hundreds and even thousands of bats. Few large roosts have been reported in the last 30 years and the majority contain between one and 50 animals, and average only about ten.

Daniel says bats pose unusual conservation management problems, and methods which have proved successful for birds are probably not applicable to bats.

In the vast North Island forest tracts the most immediate problem would involve location of roost sites. On 1,359-hectare Codfish Island many of the 15 large, periodically-used roosts were found only after considerable effort.

Bats are very susceptible to roost disturbance and if transferred to island refuges would probably try to fly back. Even if roosts could be located the only currently available option is protection of that site from predators and from disturbance by humans.

The only hopeful sign Daniel offers is that the lesser short-tailed bat has to date shown a propensity for "hanging on".

Meanwhile regional DoC offices want to hear from the public about bat sightings, particularly in the lesser short-tailed bat areas of Northland kauri forests, the volcanic plateau and East Cape, Tararua Forest Park and North-West Nelson Forest Park. All bats are totally protected by law and if found dead should be sent to the nearest DoC office with information about where and when they were found.

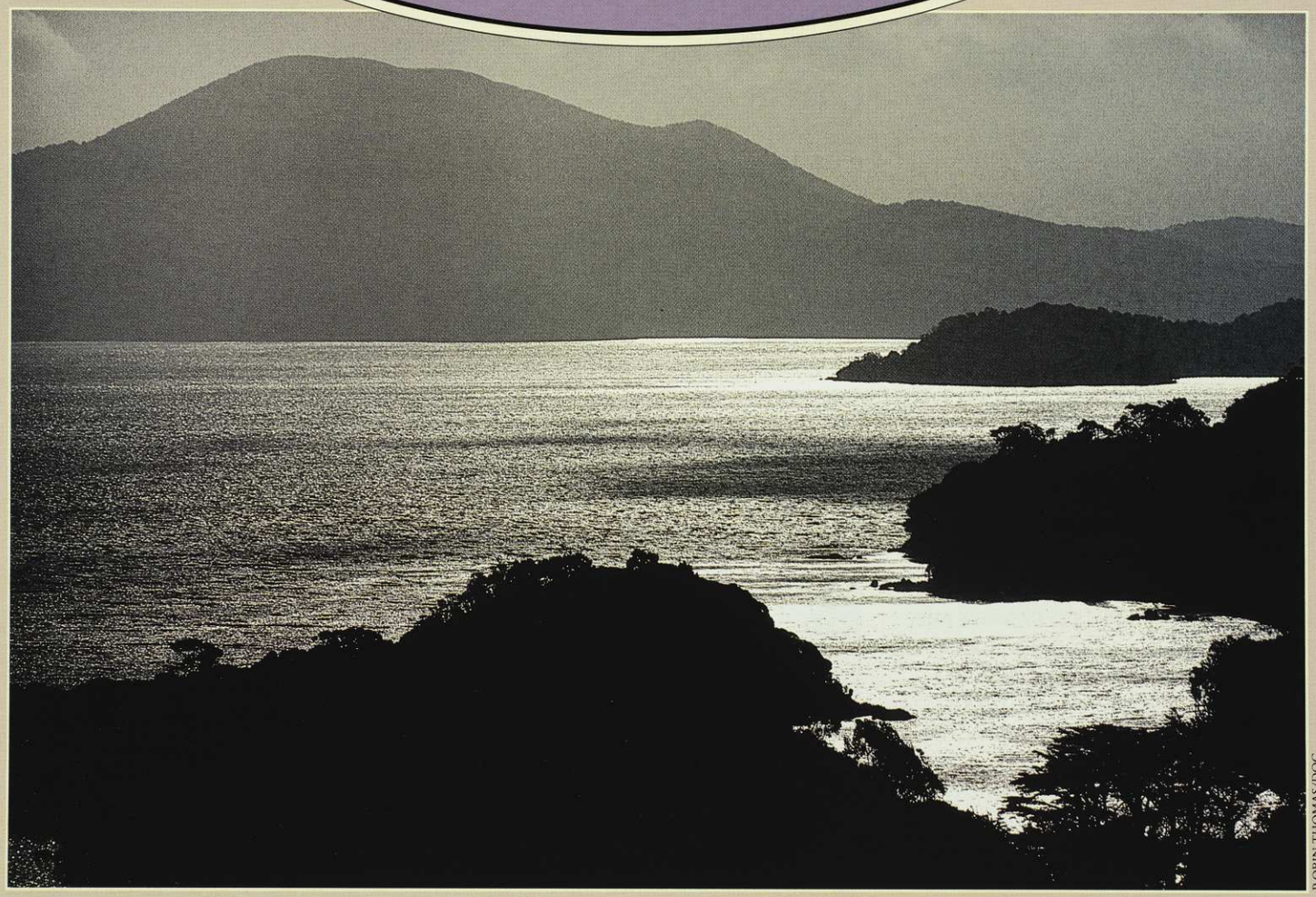
A lot more work and some lateral thinking may be required before the draft recovery plan, about to be circulated among conservation managers and scientists, reaches its final form. ❖

Tim Higham is a journalist specialising in natural history. He currently works for DoC in Southland.

Paterson Inlet

A NATIONAL TREASURE

Stewart Island's Paterson Inlet is one of the jewels of New Zealand's marine world. SUE MATURIN takes us to Stewart Island to look at the natural features of the inlet and to find out what's happening about protecting it.



ROBIN THOMAS/DOC

Looking across Paterson Inlet to Pryse Peak.

TEN OF US were tightly buckled into our seats, ready for the half hour flight across some of New Zealand's roughest waters to Stewart Island. In front of me sat two people with briefcases, and I guessed from their conversation they were fisheries officials and would be heading to the same place I was – a public meeting to discuss options for protecting Paterson Inlet.

We caught tantalising glimpses of the inlet, a drowned river valley stretching 16 km inland from its a narrow island-cluttered entrance to the broad mudflats of the Freshwater and Rakeahua Rivers. Unbroken forest down to the water's edge surrounded most of the inlet's convoluted bays and long arms. As we got out of the plane a flock of kakariki flew up and we could hear the chuckling of kaka.

This is what much of New Zealand must have been like when Maori first arrived – a huge expanse of forest and the air filled with bird song.

It is the forest still covering the catchment of Paterson Inlet that makes the inlet one of the least spoilt harbours in New Zealand, and one of the country's marine treasures.

The topsoil has stayed on the land and hasn't been washed into the inlet to smother marine life, and sunlight can penetrate further into the depths, unhindered by sediment-laden water. There are no agricultural chemicals here and no superphosphate nor industrial discharges. Salmon farms in one of the large bays are the only intrusion where wastes from the cages are covering the marine life beneath.

Apart from these farms, the main disturbances to marine life in the inlet come from recreational fishers, divers and a small number of commercial fishers.

Stewart Island is renowned for its

plentiful fish. Dame Cath Tizard in a visit there earlier this year saw them as "suicidal", so easy were they to catch.

Scallops, which used to be plentiful, have also been easy targets for divers and are now becoming increasingly difficult to find. Islanders tend to blame the decline on mainlanders and charter boat operators who bring scores of divers to the prime sites.

Paua, according to one diver, used to be like "stones on the bottom" but not now. Crays too used to be so common that in the evening you could go out and see them covering the sand in one of the bays. Now the large crays here are almost gone.

Margaret Hopkins, a local member of the Southland Conservation Board, says the inlet is a special place for recreation and inspiration for most Stewart Island residents and visitors. "Even on days when gales funnel down the inlet and the wild windswept waters set the heart racing, a boat can nearly always be found sheltering in a quiet bay somewhere," she says.

But the inlet's fish and shellfish are coming under increasing pressure. Too many people, and the inevitable greedy few, are taking a toll on the inlet's marine life.

It is this concern which has prompted the community to respond to the call by the Department of Conservation (DoC) for a public meeting to discuss ways of protecting the inlet.

PROTECTION for Paterson Inlet is not a new idea. It first arose in the mid-1980s when the Ministry of Agriculture and Fisheries (MAF) put out a discussion paper on marine reserves for the whole southern region and identified the inlet as a potential marine park.

But fears that the whole inlet may be turned into a reserve galvanised the community against it, and the idea was dropped.

Now DoC is trying again, and to kick the process off they have organised two public meetings.

When I arrived, the small town of Oban, with its resident population of about 400, was abuzz with the prospect of a fiery debate. Bets were laid as to how many people would turn up.

DoC's tiny visitor centre was crammed full and more chairs had to be found. Various faces were pointed out to me as belonging to paua divers, commercial fishers, recreational fishers, ratepayers, plus a smattering of Forest and Bird members.

DoC's Geoff McAlpine opened the meeting by describing marine reserves as places where people can enjoy marine life in a protected environment. According to Geoff, New Zealand needs marine reserves for research, so we can look at how a marine community functions without exploitation, and also for insurance purposes. A marine reserve could provide the stock to re-stock areas in the event of a collapse in fisheries. Marine reserves would be useful for nature tourism. "Just look at Leigh on a mid-summer weekend," he said. "The area is packed."

The blue cod is an underwater entertainer known to steal pencils from marine surveyors. It is also the main target for recreational fishers and fishing pressure means that the numbers of this inquisitive species have declined. ▶

DEPARTMENT OF CONSERVATION

The wide mudflats of Freshwater River at the head of the inlet are nursery areas for many fish species and important feeding grounds for migrant waders and other native birds. Eel grass, which is exposed at low tide, can be seen on the mud beds. These are some of the least spoilt estuarine areas of New Zealand.

SUE MATURIN

Looking west across the maze of twisted arms and coves of the inlet. The mudflats of Freshwater are in the background.

"That's what we're worried about," calls one islander. "We came here to live in peace and quiet."

"We don't want the whole of Paterson Inlet locked up," calls another.

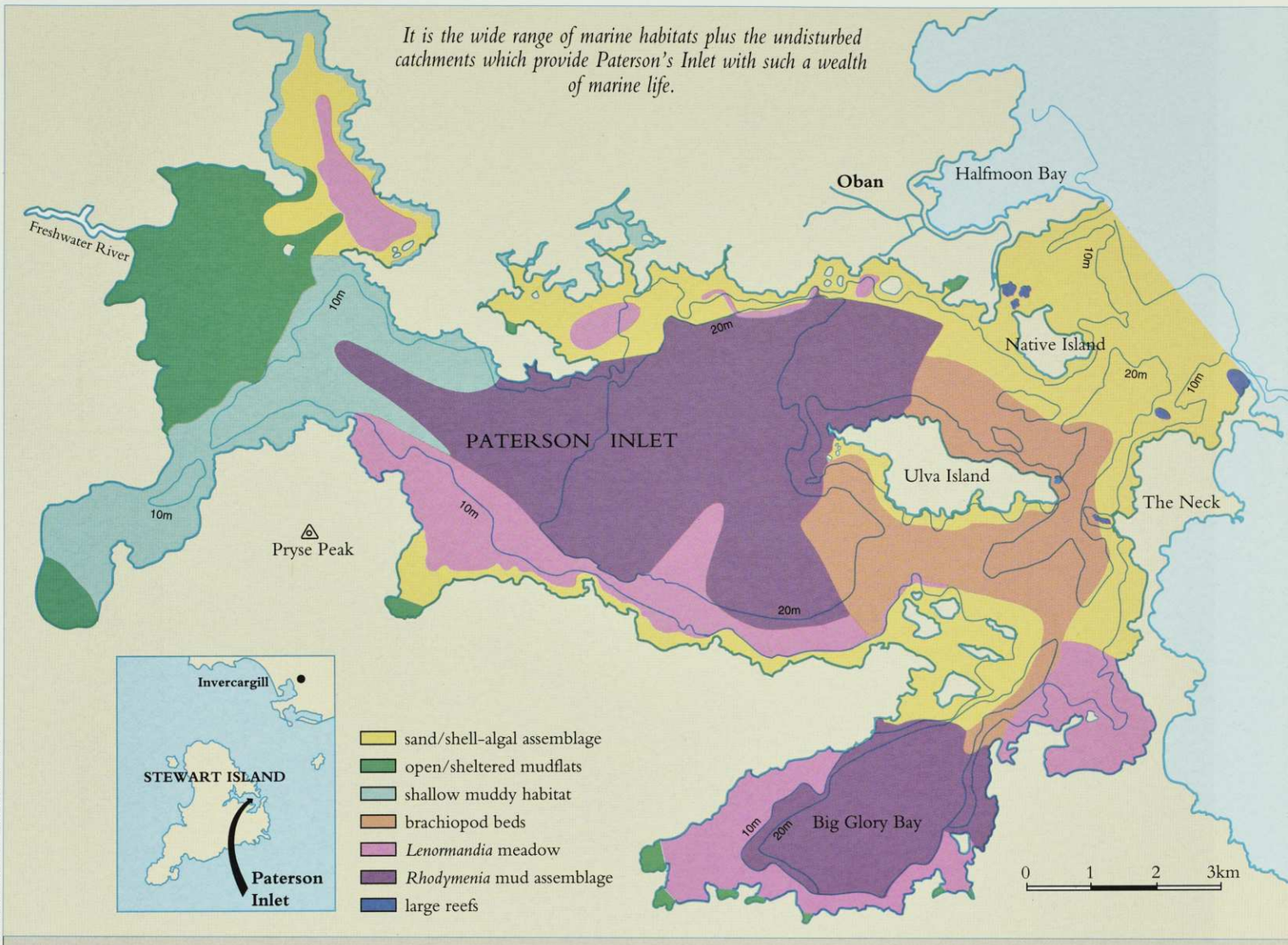
"No-one is saying the whole of Paterson Inlet should be reserved," explains Greg Lind, DoC's Stewart Island Field Centre Manager. "We're here to get the community's response, to find out what this community wants," he reassures some of the critics.

Then it was MAF's turn for some stick.

"The limit on fish and shell fish is far too high. Take, for example, some of the charter boats – they can have, say, ten divers who come in here for a few days and they each take ten scallops every day they're here. That means they go home with heaps of scallops which they sell to pay for the trip. You MAF guys know about it but you don't do anything to stop it."

MAF's Anthony Brett replies that the bag limits are under review.

Then Phil Clarke from the Fisherman's Association speaks up. He thinks



Nationally and internationally significant

DESPITE the intrusion of humans the tall podocarp forests surrounding Paterson Inlet have remained relatively undisturbed. The largely pristine catchment results in very low rates of sedimentation which may explain why a variety of brachiopods (sometimes called "lampshells") are common on the floor of the inlet.

Brachiopods have a long fossil history, first appearing over 500 million years ago. Abundant up to about 70 million years ago there are now only 300-odd species world-wide, about 30 of which live in the seas around New Zealand. While superficially resembling bi-valve molluscs such as scallops, brachipods represent an unrelated group.

Paterson Inlet is of special interest to scientists because here the brachiopods are within easy diving depths, compared with almost everywhere else where researchers have to dredge for them. Two species in Paterson Inlet, unlike the vast majority of brachiopods which are permanently attached to a hard substrate, become free-lying on the sea bed. In the words of one palaeontologist, the Paterson Inlet brachiopods are "the closest thing in today's world to the Palaeozoic". The study of these living brachiopods provides clues to life in ancient seas and changes in past marine environments.

Seaweeds grow in a great profusion of colourful gardens in the inlet – about 270 species altogether – making it one of New Zealand's richest and most diverse seaweed communities.

Massive bull kelps and luxuriant submarine *Macrocystis* forests cling to the rocky shores of the outer inlet and islands. Among these forests the blue cod, blue moki and greenbones along with many other reef fish hide and feed. In the more sheltered middle sections of the inlet bright red *Rhodymenia* seaweeds cover the muds, stabilising them and providing suitable habitats for several brachiopod species.

In shallower waters unusually extensive meadows of another red algae, *Lenormandia*, provide homes for a wide range of worms, shellfish, sea squirts and sponges. Scallops too are often found buried in the mud amongst the red algal fronds. Their young recruits find refuge on the seaweeds.

Why is there such a diversity of seaweeds in Paterson's Inlet? The answer lies in the many different habitats from reefs and various types of rocky shores, beaches and sand dunes, to clean sandy bottoms and open mud flats. An almost completely unmodified range of vegetation types stretches from the highest slopes of the catchment down to the shoreline into the inlet through a diverse group of communities on the sea floor and out into Foveaux Strait.

Estuarine mud flats at the head of the inlet and around the upper reaches of its bays and arms are some the of the few in New Zealand still in their natural state. They are vital for the functioning of the entire inlet. They are nursery areas for many fish species, and feeding grounds for the many wading birds which come here to feed on the cockles, crabs and worms. One oystercatcher alone can eat more than 350 cockles in one day; over a year a large flock might eat millions.

Rare New Zealand dotterels feed

ROGER GRACE

Cerianthus *anemone growing on red seaweed beds of* Lenormandia.

KEN GRANGE

Neothyris lenticularis *brachiopod in Paterson Inlet. Unlike bivalves such as molluscs, brachiopods have a pair of tentacled "arms" which create the feeding current and maintain the supply of oxygenated water. These can be seen inside the shell opening.*

here too, resting at high tide with other waders on the dunes of The Neck taiapure areas.

Paterson Inlet not only has many unusual and scientifically important features but it also has habitats once typical of New Zealand's many harbours. Protected, it could become a focus for marine education and tourism.

Nature tourism has already given Stewart Island a unique night life, with "After Dark" glass-bottom boat adventures, twilight tours for bird watchers and Philip Smith's never-fail kiwi spotting trips.

Who knows? There could be further dusk delights such as crayfish tours. With a marine reserve, cray may in time, once again come out in great numbers to feed across the sandy bottoms.

Paterson Inlet is worthy of protection but a marine reserve isn't the whole answer. "The inlet could have its own bag limits, and we need to protect people's traditional interests. Virtually everyone here goes fishing on the inlet. We need a working party," he finishes.

This puts the ball back into DoC's camp and Greg Lind takes the cue. He suggests that they could set up a working party as a committee of the Conservation Board. It would be an independent body and DoC and MAF could act as official advisers.

There is general agreement with the idea and a huge list of groups that should be represented are drawn up.

THAT WAS IN November last year and a committee was very quickly established with local representatives from recreational and commercial fishers, marine farmers, charter boat operators, ratepayers, Forest and Bird and the Southland Conservation Board.

The terms of reference were to advise

SIMON HAYES/DOC

Looking towards The Neck across Paterson Inlet. Ulva Island, possible focus for a marine reserve and current site of a major rat eradication campaign (see Conservation Update*), is in the foreground.*

the Director-General of Conservation on proposals for protection of the natural marine values of the inlet.

The committee has met several times, but Margaret Hopkins, who chairs it says little progress has been made.

The problem seems to be that DoC and MAF see themselves having different and competing statutory roles and different consultation processes. DoC is an advocate for marine protection and MAF for fisheries management, although DoC also has statutory responsibility for marine reserves and MAF for taiapure areas. In places like Paterson Inlet all these functions may be relevant. The committee needs the help and support of both departments who should be giving it information and advice.

Current legislation does not easily provide for a range of protective mechanisms such as no-take and restricted-take areas, although the Mayor Island model shows that it can be done. In that case DoC was asked to investigate a specific reserve proposal by the Maori owners of the island. A working party, similar to that on Stewart Island, but with wider regional and national representation was set up, and recommended not only a marine reserve but also the establishment of a restricted fishing area to be implemented through regulations promulgated by MAF.

Despite the conflict between officials, the Paterson Inlet committee generally supports a marine reserve, as well as wider protection, possibly through a package of fishing restrictions, for the inlet's fisheries.

Merv Whipp, a marine farmer says there is general support for restrictions such as no netting, no trawling, no commercial shellfish harvest and no dragging for scallops. There is also substantial support for taiapure areas. Opinions vary on the siting of a marine reserve with some wanting to start small, and others wanting to ensure that all the marine habitats are represented.

Phil Clarke, who represents the commercial fishers says that "it's not likely that the group will recommend a reserve of an ideal size from the conservation perspective, but that a reserve combined with a set of fishing restrictions will afford a pretty high degree of protection for the inlet".

Stewart Islanders don't seem to suffer from the nimby (not-in-my-back-yard) syndrome that afflicts many mainland communities. Nevertheless there is a danger in setting up a predominantly local group with conflicting interests to advise DoC on how and what they want to protect. For, although conservation by local community consensus is an ideal goal, it may not result in protection for easily accessible areas, which have a rich diversity of marine life, or areas large enough to represent a wide range of habitats. The process also risks disenfanchising the wider regional and national community by giving locals a disproportionate influence in shaping marine reserves.

We may also be in danger of establishing reserves only in areas where there is least conflict – a bit like our national park system, which has proved so inadequate in protecting habitat and species diversity.

Our generation has missed out on knowing what the oceans once looked like without exploitation. Marine reserves are an opportunity to make sure the next generations are better off. To succeed in establishing a comprehensive network of marine reserves, DoC and conservationists may need to be stronger and more professional advocates.

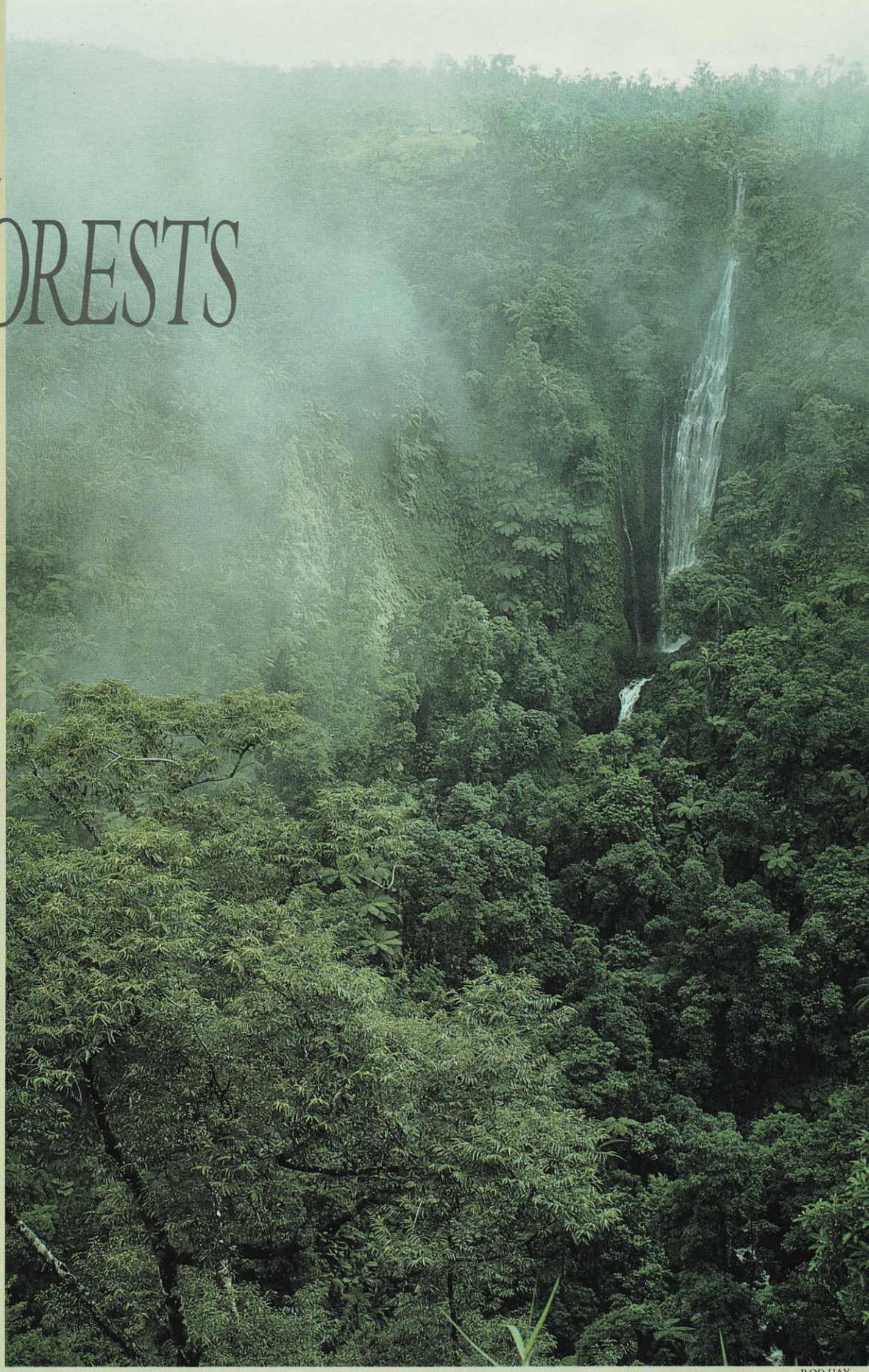
For Paterson Inlet, the process has begun thanks to DoC's initiative. It will be a challenge for the local community to prove that conservation by local consensus is possible and to come up with proposals which will not only meet the islanders' approval, but also those of the wider national community.

Acknowledgements
Thanks to Dr Daphne Lee, Otago University, for information on brachiopods. ❖

Sue Maturin is Forest and Bird's Otago/Southland field officer. She is based in Dunedin and previously worked for the Otago Fish and Game Council.

Trading in RAINFORESTS

The Rio Earth Summit in June saw governments dodging the issue of global deforestation. Developed countries suggested re-greening the earth with planted forests as an easy option, while governments of tropical timber producing countries claimed it as their sovereign right to exploit their forests as they wish. GRANT ROSOMAN examines New Zealand's role in the rainforest timber trade.



ROD HAY

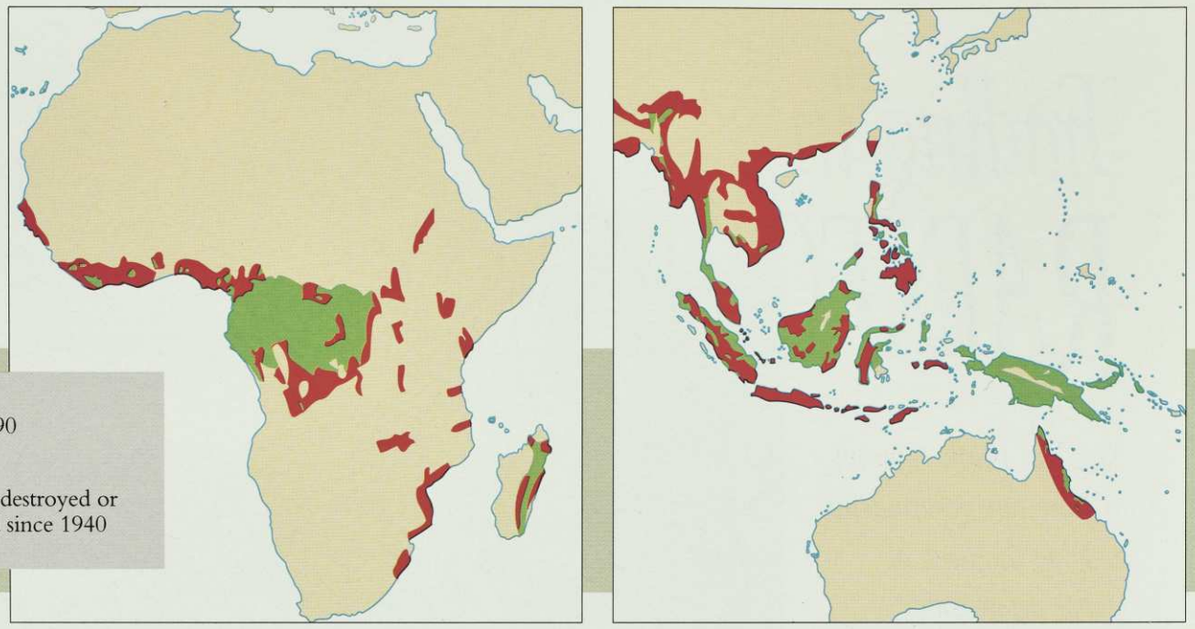
Rainforest on Upolu, Western Samoa. Tropical rainforests are the most complex living structures on the earth. A mere ten hectares of rainforest in Sarawak, for example, may support 700 tree species – more than the total of tree and shrub species found in New Zealand.

TRADING in rainforest timbers probably started in Mesopotamia over 4,000 years ago, with timbers shipped from India. Now in the late 20th century, the exploitation and destruction continues. Wood is today the world's most widely traded wild product. Whether it be the temperate rainforests of Canada, Chile or New Zealand, or the tropical forests of Sarawak, Fiji or Ghana, current logging practices are mining rather than sustaining the resource.

This is particularly so in tropical rainforests where the complex and diverse plant and animal relationships within the forests cannot withstand present commercial logging practices. Logging has been a major contributor to the virtual exhaustion of forests in Thailand, the Philippines, West Africa and Central America over the last 30 years, with Burma, Malaysia and parts of Indonesia following close behind.

In the year to June 1991, New Zealand imported 13,408 cubic metres of tropical timber worth $22 million. Ninety percent comes from South-east Asia and the Pacific, where commercial logging is

The destuction of tropical rainforest since 1940. Almost half of the world's tropical rainforest has been lost in this time.

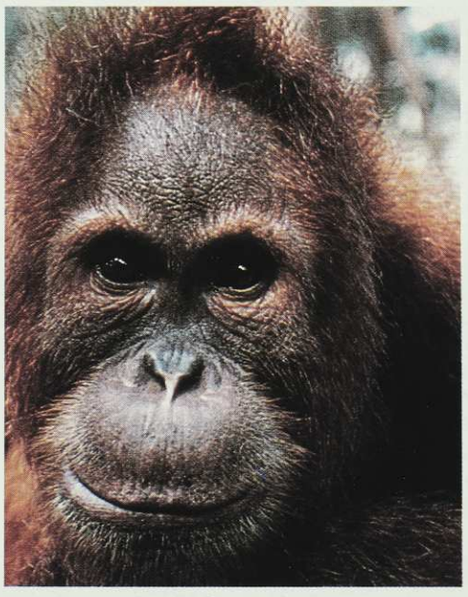


the primary cause of forest destruction. Out of a $US6 billion international trade in tropical timbers, New Zealand's imports are tiny compared with those of Japan, the United States and Europe. However, this in no way excuses our involvement in a destructive trade, and the social and environmental catastrophe that follows in its wake.

These tropical timbers plus western red cedar logged from temperate rainforests in western Canada – in other words timber from unsustainable rainforest sources – now make up almost 80 percent of New Zealand's timber imports by volume. Not a good record for a country which prides itself on being "green" and environmentally conscious.

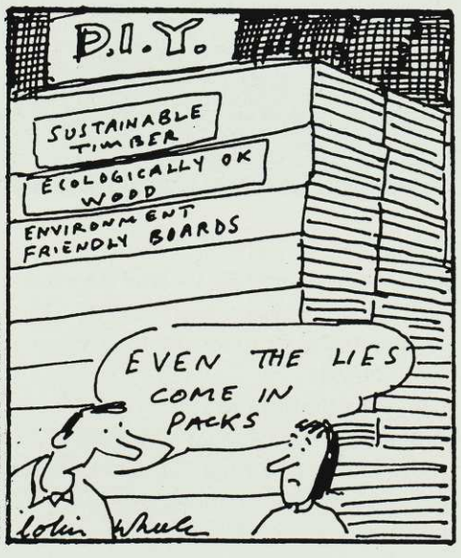
WHY are tropical rainforests so special? Firstly, they are the richest source of life on earth. Even though they cover only six percent of the land area, they are home to most of the estimated 10 to 50 million species found on this planet. Scientists currently estimate that 50 different wild species become extinct every day. The long-term consequences of this loss of biodiversity are incalculable.

The rich gene pool of tropical forests is a valuable source of raw materials other than timber. Pharmaceuticals, medicines, organic insecticides, fruits and nuts, fibres, resins, oils and craft materials are important to both the local and international community. For example, 70 percent of all plants identified by the US National Cancer Institute as useful in cancer treatment, are found only in tropical rainforests. The trade in rattan and other non-timber products in South-east Asia is valued at over US$3.5 billion, without even considering the importance of the products to the domestic economies.



WWF-NZ

The orang-utan, literally "person of the forest", inhabits the rainforests of Borneo and Sumatra. It is dependent on the integrity of these forests and is now seriously threatened by loss of its habitat from logging and forest clearance. Currently it is estimated that about 50 species of plants and animals become extinct each day around the world, most of them in tropical forests.



COLIN WHEELER/NEW SCIENTIST

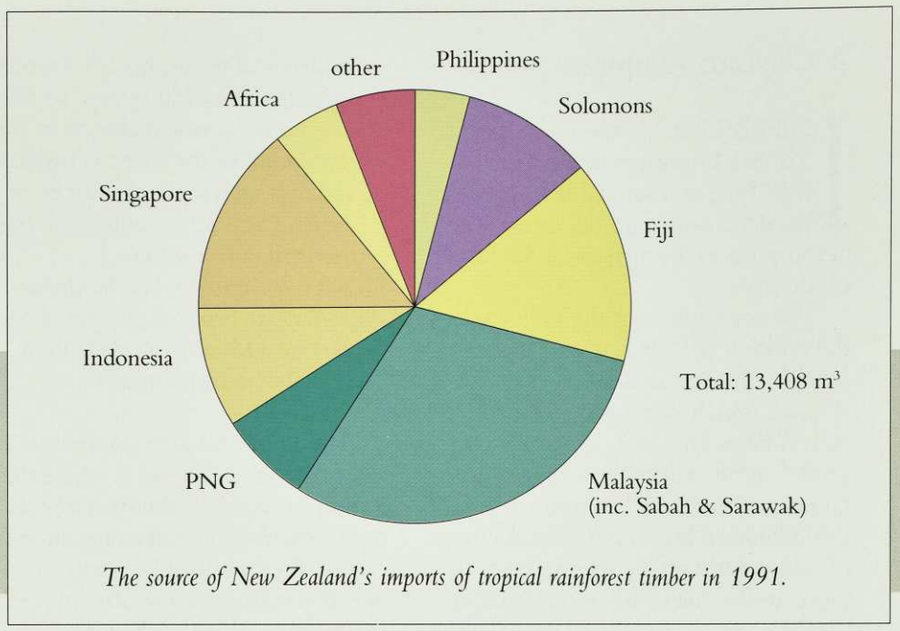
Tropical rainforests provide a home or a livelihood to over 500 million people around the world. There are over 30 million people living in or on the edge of rainforests in South-east Asia and the Pacific Islands. Commercial logging and the subsequent degradation is threatening these traditional lifestyles and cultures.

MARK BELLINGHAM

A member of the nutmeg family from the rainforests of Samoa. The rich gene pool of tropical forests has many other present and potential uses apart from timber, including foods and medicines.

In some areas, such as Sarawak, Burma and parts of Indonesia, serious human rights abuses are connected to the logging. The Penan people of Sarawak, for example, continue to be arrested and threatened with violence by the Sarawak government for defending their customary forests from logging (see *Forest & Bird* May 1991).

Rainforests have a major stabilising influence on global, regional and local atmosphere and climate and their destruction is second only to the burning of fossil fuels as a source of greenhouse gases. On a local and regional level, tropical rainforest loss causes water shortages, droughts and floods. Deforestation was blamed for severe water shortages in seven out of eleven Peninsular Malaysian



The source of New Zealand's imports of tropical rainforest timber in 1991.

Alternatives to rainforest timbers

THERE IS no present use of rainforest timber (both temperate and tropical) that cannot be met by some other available timber species.

Plantation-grown eucalypts (various species) and macrocarpa (and other cypress species) are becoming more widely available, and are very suitable. New Zealand's huge resource of radiata pine could also be used as a replacement for structural, decking and, to some degree, furniture and finishing timbers. Other sources include tropical plantations overseas, northern hemisphere hardwoods (for example oak and birch) and low-impact portable mill operations carried out by the customary landowners in the South Pacific and South America.

There has been considerable criticism by those in the timber trade, of the campaign to use alternatives to rainforest timbers. A common call is that there are no adequate substitutes available. Without doubt, complete substitution is not easy and it often involves compromises in appearance and quality. However, the alternative timber sources are improving and expanding rapidly. A newly established Auckland company, NZ Hardwood Timber Ltd, is processing and supplying high-quality eucalypt hardwoods. These are naturally durable and are suitable for replacing virtually all rainforest timbers. The excuses for continuing to use rainforest timbers are becoming steadily more feeble.

In recent years there has been a huge increase in consumer awareness of the link between rainforest timbers and rainforest destruction. As a timber buyer you are in a powerful position to steer the timber trade towards more environmentally sound sources. Before buying timber, question the source and forest management, and ask for documentation.

Timber suppliers and retailers must be held accountable for the products they are selling. By buying with a new environmental sensitivity, you can save rainforests.

	Rainforest timbers commonly used in New Zealand										
	Balau, Giam, Chengal, Kempas		Kwila, Balau Kamarere, Teak Vitx, NZ Beech		Kiolo, Chengal, Western red cedar	Kiolo, Lauan, Ramin, Tuan, Jelutong, Salusalu, Erima, Sapele, Rimu, Kahikatea, Tawa, NZ Beech			Fijian Kauri		
	USES										
Alternative timbers	Structural	Decking	Exterior joinery	Weather-boarding	Furniture	Interior joinery	Panelling flooring	Finishing work	Mouldings	Marine ply	Other plys
Locally grown											
Radiata pine	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Douglas fir	✓					✓					
Eucalypts	✓	✓	✓	✓	✓	✓	✓	✓			✓
Macrocarpa	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Oak			✓	✓	✓	✓	✓	✓			
Customwood					✓	✓	✓		✓		
Recycled timber	✓	✓	✓	✓	✓	✓	✓	✓			
Imported											
Hoop pine									✓	✓	✓
Rubberwood					✓	✓		✓	✓		

A Claytons rainforest policy

IN FEBRUARY the New Zealand Timber Importers Association (NZTIA) announced their much-heralded policy on rainforest timber imports as the answer to the future of the trade.

The centrepiece of the policy was the concept of "sustainable management". This was defined as "harvesting at a rate which keeps pace with the time it takes for a new generation to grow", or in other words simply sustained timber yield. Unfortunately, this definition leaves out considerations of soil and water, the maintenance of biodiversity, the value of non-timber products, and the uses and rights of the customary owners. It reduces a complex forest ecosystem to a standing crop of timber.

According to the World Bank and other organisations, there is not a single example of sustained yield logging of a tropical rainforest anywhere in the world, let alone management that maintains the myriad of other forest functions. As World Bank environmental officer Lee Talbot points out:

> In practical terms, no commercial logging of tropical forests has been proven to be sustainable from the standpoint of the forest ecosystem, and any such logging must be recognised as mining, not sustaining the basic forest resource.

So what are the sources the timber importers are proposing? They have yet to cite a forest that meets their "sustainable management" requirements.

The importers give no indication as to when they intend to make the transition to sustainability. They also omit how they intend to monitor and certify this "sustainably" sourced timber. It would seem that the importers believe that their timbers already come from sustainable sources. The large number of unanswered questions that remain undermine the credibility of the new policy.

Problems with the importation of tropical timbers are, of course, not confined to New Zealand. In Britain (the largest importer of these timbers in the European Community), a survey last year of over 600 companies by the World Wide Fund for Nature found that virtually all "green" claims about tropical timbers were unsubstantiated. Most of the claims centred around "sustainability" of the source.

GRANT ROSOMAN

Seats made from balau in Wellington's Frank Kitts Park. NZTIA President Bruce Nimmo wrongly claimed in 1990 that the balau "was sourced from sustainably managed forests in Malaysia". Wellington City Council has subsequently banned the use of tropical rainforest timbers.

To the New Zealand importers' credit, they have recognised the unsustainability of timber from Sarawak, and have consequently chosen to not "knowingly" buy from there. At present, however, there is no way of knowing whether timber processed and then exported from

states last year, as well as the catastrophic floods which killed thousands in the Philippines and also in Thailand in recent years. Protecting rainforests and replanting deforested areas is essential if climate change is to be slowed or averted.

HOW LONG can the timber trade and human demand for wood keep on desecrating these precious forests? Recent estimates by international rainforest ecologist Dr Norman Myers suggest that by the year 2000, apart from areas already protected, the only significant areas of tropical rainforest remaining will be in Irian Jaya and Papua New Guinea, the Zaire basin, the Guyanan countries of South America and the western Brazilian Amazon. South-east Asia, where a quarter of the earth's tropical moist forests are found, accounts for 30 percent or 42,000 square kilometres annually of world-wide tropical forest loss.

Commercial logging isn't the only *direct* cause of tropical rainforest destruction but it is a major *primary* cause.

WWF-NZ

Logging not only causes direct damage to tropical rainforests, it opens them up to agricultural development and fire.

The UN Food and Agricultural Organisation calculated that over half of global deforestation is in already logged-over forest land (70 percent for South-east Asia). Logging opens up a forest to secondary factors such as encroachment by landless settlers, agricultural development and to fire.

THERE IS SOME HOPE on the horizon with concern from many in the timber and building trade. For the past year the New Zealand Rainforests Coalition (including Forest and Bird) has been meeting with timber

What you can do

- Use the alternatives to rainforest timbers.
- Write to the Ministers of Conservation, Environment, Forestry, and External Relations and Trade, calling for restrictions on the import of rainforest timbers, pointing out the contradiction in marketing pine overseas to save rainforests while still importing rainforest timbers ourselves.
- Support the planting of special-purpose timber species in New Zealand, such as eucalypts, cypress species and others that do not require chemical preservation treatment.

Singapore, Taiwan, South Korea or Hong Kong, originates from Sarawak. Also, since June this year, the importers are not buying timber from either Sabah or Brazil. They claim to have alerted their suppliers in the tropics as to their policy and the change to "sustainable" sources. All very encouraging steps.

Conservation groups have urged them to buy timber from small-scale, low-impact portable sawmill operations in the Solomon Islands and elsewhere, plantation tropical timbers such as rubberwood from Malaysia, teak from Java, hoop pine from Australia, and New Zealand plantation-grown alternatives such as eucalypts and macrocarpa (see panel).

The policy claims that commercial logging plays a minor role in global rainforest destruction, citing a 1981 FAO figure of 6.6 percent. This much-quoted but out-of-date figure has been discredited by the World Bank, World Resources Institute and the *Ecologist* magazine, who give global estimates of 18 to 50 percent. The FAO notes, furthermore, that in Asia over two thirds of the forest cleared by landless cultivators, fire or for agriculture, had already been logged over. This again highlights the primary role that logging plays in deforestation, especially in Asia, the source of 75 percent of New Zealand's tropical timber imports.

Finally, many of the tropical timber species the policy lists as being necessary for specialist uses, such as merbau, meranti, hopea, keruing, chengal, sapele, iroko and ramin, have been listed as endangered, vulnerable or requiring conservation measures by the World Conservation Union (IUCN) and the International Tropical Timber Organisation (ITTO). Many have become commercially extinct where they were once common, due to exhaustive harvesting. Two species commonly used in New Zealand, merbau and ramin, were very nearly included on the CITES (Convention on International Trade in Endangered Species) appendices earlier this year, only being withdrawn after pressure from Malaysia and Indonesia.

The trade seems totally unwilling to respond to these concerns, preferring to "mine" species to extinction and then move on to another species or a new area.

retailers and importers. Considerable progress has been made towards working out avenues for the phase-out of rainforest timbers from destructive sources.

As a first step, the retailers Benchmark, Carter Holt Building Supplies and Placemakers have agreed to end all advertising of tropical timber decking. The retailers and the New Zealand Timber Importers Association have fully supported the growing and use of special-purpose timber species such as eucalypts and macrocarpa as alternatives to rainforest timbers.

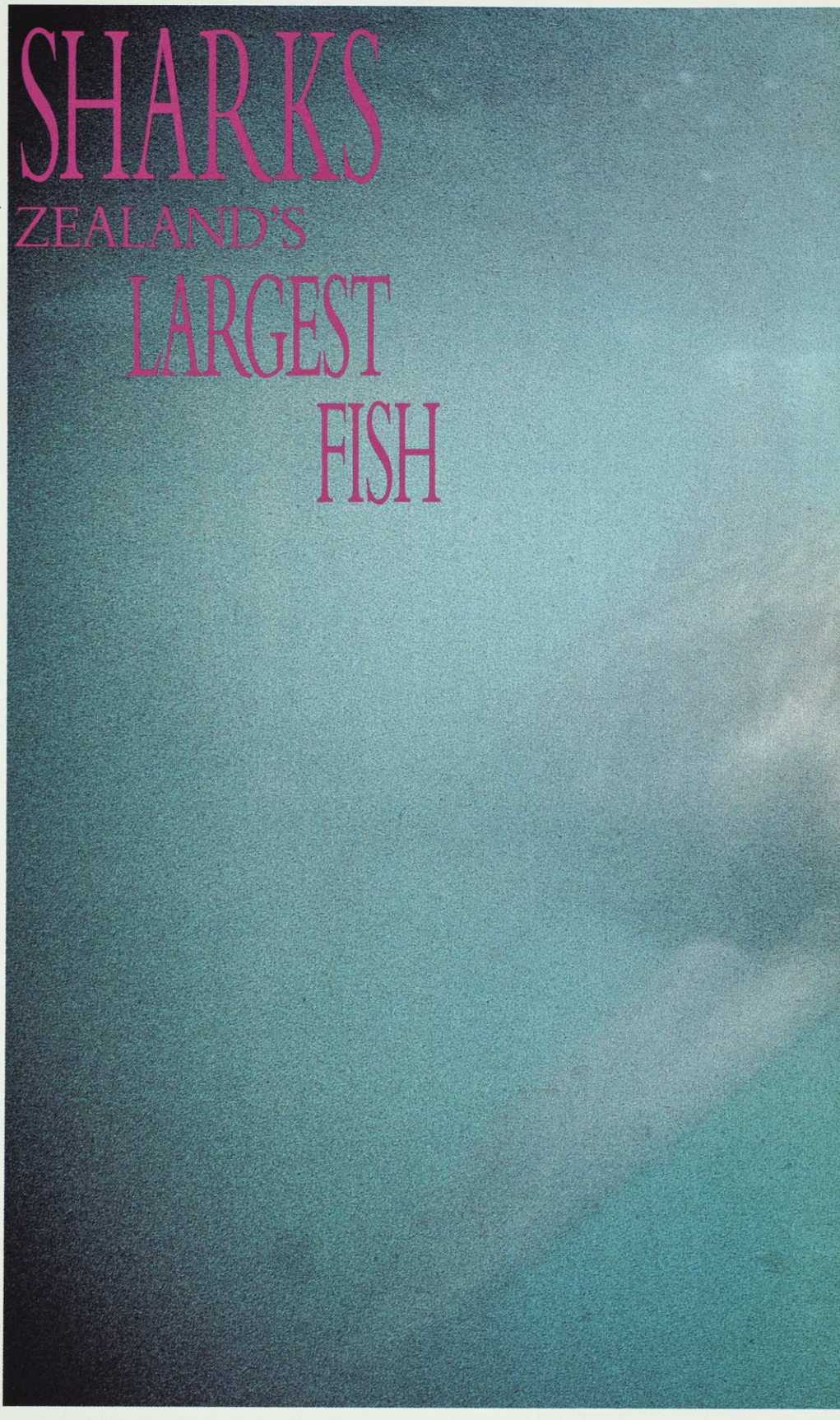
But is the reform of the trade fast enough? Where is the New Zealand government's response to deforestation? It seems the government is promoting plantations as the answer to deforestation: a strategy that could see more rainforests being cleared and indigenous people dislocated to make way for plantations. Other governments are making efforts to restrict the tropical timber trade. The Austrian government, for example, has placed a 70 percent levy on unsustainable sources and required all tropical timber to be labelled.

The plight of the earth's remaining rainforests and their management is a matter of extreme urgency. The New Zealand Rainforests Coalition in its recent "Tropical rainforest policy for New Zealand" has called for trade restrictions on timber imports, especially those from South-east Asia logged without customary landowner approval. The coalition has also urged the adoption in Pacific nations of comprehensive forest reserves, low-impact extraction methods that minimise damage to the forests, and for plantations to be established without further forest clearance. It has called for a phase-out of all unsustainable imports from these countries within two years.

The global rainforest timber trade is now at a point where it can help mould the future of the world's remaining rainforests. New Zealand is ideally placed to lead the world in changing to alternative timber sources such as our extensive plantation resource and to timber milled by low-impact methods in the Asia-Pacific region. It is time for the world to cut loose from a "sunset" industry and a history of rainforest desecration, and move to a future where forests are treasured for the life-supporting systems that they are. ❖

Grant Rosoman works for the New Zealand Rainforests Coalition and is based in Christchurch.

BASKING SHARKS
NEW ZEALAND'S LARGEST FISH



At twelve metres long, the basking shark is one of the most extraordinary of marine creatures. Its size and its filter-feeding habits are more like those of a whale than a fish. Little is known about them yet they are still hunted for their fins and livers. ALAN TENNYSON examines these gentle giants and looks at moves to give them greater protection.

THE PUBLIC IMAGE of the basking shark, *Cetorhinus maximus,* is pretty lousy. Few people have heard of them and when "shark" is mentioned, most people are likely to conjure up an image of a great white shark in attack mode. People fear sharks because they are one of the few animals, apart from the large cats, that can hunt and kill humans.

Being a shark, particularly a big one, has meant that the basking shark has received more than its fair share of fear and loathing. Many stories of "monsters" or "sea serpents" were sparked by sightings of this much-maligned animal. And despite some maturing in our view of sea creatures, inflated and fanciful stories about basking sharks have continued into the 20th century.

An article in *The Dominion* of 16 May 1932, headlined "17-foot monster shot at Makara", continues:

> Shortly before 9 am it was seen cruising quietly round the bay enjoying the sun on top of the water . . . Mr Charles Smith . . . went out in a dinghy . . . Mr Smith had a .303 rifle with him, and put a bullet through the back of the head, following this up with further shots which were effective in disabling the monster. One bullet hit the jaw and split its nose . . . Later in the morning Mr W.J. Phillips, the museum specialist on fish, . . . identified the monster as a basking shark.

References in newspaper files describe basking sharks in terms such as "ugly monster", "an unwelcome visitor", "an enormous, ugly looking thing". They are commonly described as dangerous. To this day large sharks near swimming areas are hunted and shot by authorities such as police without any attempt being made to separate harmless from dangerous species.

Yet basking sharks are quite unlike the ferocious great whites. They are plankton feeders with only tiny teeth, and are as harmless as the plankton-feeding whales.

IN ADDITION to their huge size, basking sharks look strange. They have five huge gill slits (as do most sharks) which almost completely encircle the head, a bulbous nose with tiny eyes at its base, and a vast, cavernous mouth. In young basking sharks the nose is more elongated and can resemble a short trunk. Each gill slit is lined with thousands of filters called gill rakers, similar to the baleen screens of large whales. Feeding and breathing are combined.

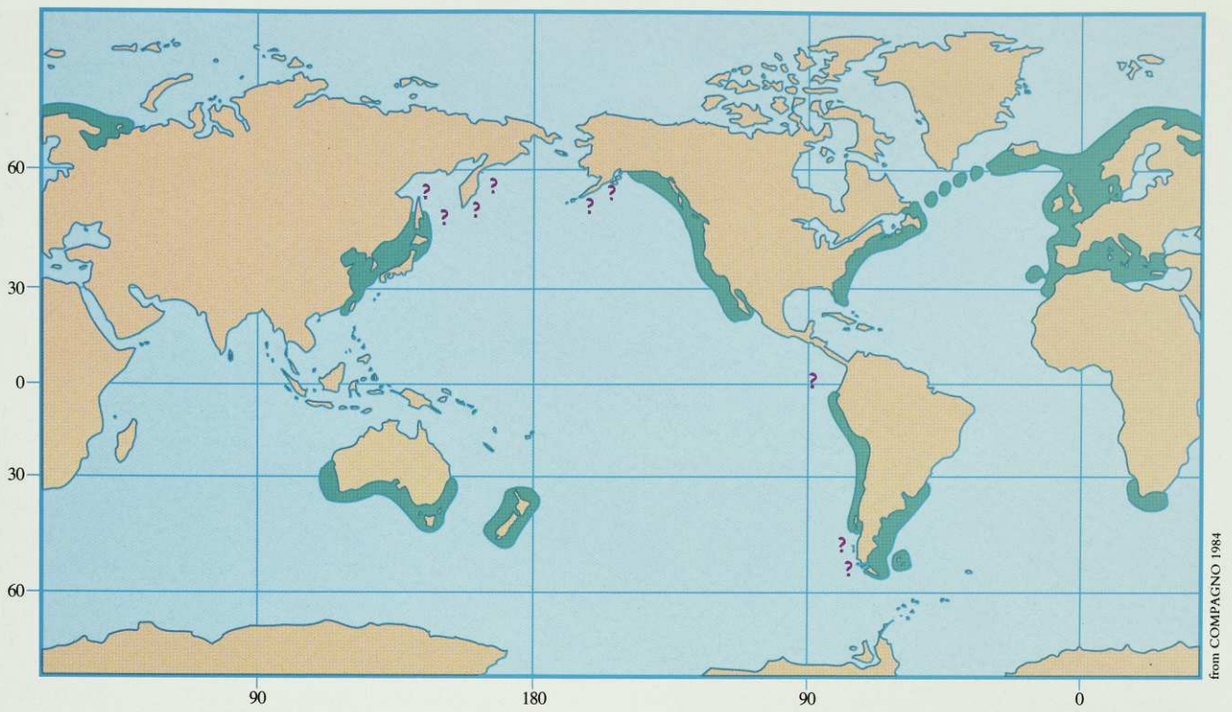
MICHAEL GLOVER/BRUCE COLEMAN LTD

A basking shark feeding in water cloudy with plankton. As the shark swims – at about 2 knots with mouth wide open – the water passes through the gills which retain the plankton. Oxygen is absorbed from the water at the same time.

Copepods, barnacles, decapod larvae and fish eggs are their main food and their enormous mouths allow them to filter more than 2,000 tonnes of water an hour.

Sharks are one of the most ancient vertebrate groups roaming the planet. Along with skates and rays they are mainly distinguished from other fish in having a cartilaginous rather than a bony skeleton. The earliest known sharks date from rocks about 400 million years old. Fossil basking sharks have been found in Cretaceous rocks 70-100 million years old. The basking shark was first formally described by scientists in 1765 from a specimen taken near Norway.

The species is found worldwide, particularly in higher latitudes. It is widespread around New Zealand, including the subantarctic, but it is most commonly seen around Cook Strait and down the east coast of the South Island as far as Timaru. Most New Zealand sightings are between September and January.



Basking sharks occur in many oceans, but primarily in the cooler temperate waters of the North Atlantic, and the North and South Pacific. They are rarely seen in tropical or polar regions.

Sightings at sea in the spring or summer are often of large schools. These can be a spectacular sight. One evening in January this year, the LPG carrier *Tarahiko* reported sighting a large school south of Banks Peninsula. The skipper of the ship reported "fins as far as we could see" and it took him an hour to steam through the school at a speed of 11 knots. A dense school off Britain was described as being "like a herd of submerged elephants".

Worldwide, little is known about the seasonal movements of basking sharks. Sightings are mainly on the continental shelf, both coastal and well offshore. In most areas they are seen at the surface in the warmer months. Off California, however, basking sharks are more common in the cooler months when the water is rich with plankton.

Around New Zealand and Britain sightings are much less common in autumn and winter and it is assumed most of the sharks go into deeper water. Their biology during this time is virtually unknown. It has been speculated that some hibernate when food supplies are scarce because, on rare occasions, basking sharks without gill rakers have been taken. It is argued that since they could not feed without this apparatus, they may periodically fast, perhaps hibernating or becoming inactive, while the gill rakers are replaced.

Migration may account for appearances and disappearances of basking sharks at some localities. Off the Atlantic coast of North America, they appear in the south in spring (March-May) and apparently shift north in summer (June-August), disappearing for the rest of the year. Off the Pacific coast of North America, basking sharks appear in their greatest numbers in autumn and winter (September-February) in the south, shifting further north in spring and summer.

Basking sharks are caught as by-catch by large trawlers fishing off the New Zealand coast. This shark was caught in a trawl net in the West Coast hoki fishery. The giant gill slits through which the shark filters water can be seen almost encircling its head.

Satellite tracking using transmitters attached to the sharks is already underway in the north-east Atlantic. This should help unravel some of the mysteries surrounding the movements of this giant fish. The sharks are no doubt capable of making very long journeys, travelling hundreds or even thousands of kilometres through coastal and international waters.

Basking sharks can reach 12 metres in length, and can weigh up to six to eight tonnes. Most are less than ten metres long. As in most shark species, the females grow larger than males. Out of about 400 species of shark worldwide, the basking shark is the second largest after the whale shark. It is also the only filter-feeding shark known to occur in New Zealand waters.

THE BREEDING HABITS of basking sharks are largely a mystery but, like other sharks, they probably have a very low reproductive rate. Most sharks are long-lived (12-70 years), grow slowly, and produce small numbers of young (2-50) each year. By comparison, most bony fish produce thousands of eggs each year.

The way young sharks develop varies considerably. Some are hatched from eggs enclosed in horny capsules laid on the sea

MICHAEL GLOVER/BRUCE COLEMAN LTD

A basking shark surfaces near a diver. There are over 300 species of shark ranging in size from the 18-metre whale shark to the 10-centimetre spined pygmy shark. Only a few of these species pose any threat to humans. The only possible damage that a basking shark could inflict on a diver is through a brush against its very coarse skin.

bed, some hatch inside the mother fully developed and feed on other eggs or developing young before birth, and others are nurtured by the mother through a placenta before birth. Basking sharks are thought to fall into the second category (where embryos cannibalise their siblings), but there are two cases, where captured females gave birth to five and six young, suggesting the possibility of placental development.

Juveniles smaller than three metres and pregnant females are virtually unknown, which suggests that they rarely come to the surface. Gestation for basking sharks may take as long as three and a half years. The smallest basking shark captured was 165 cm long, which is thought to be near to the size of a new-born pup. Growth rings on vertebrae indicate that males mature at six or seven years when four to six metres long.

Commercial basking shark fisheries off Scotland and Ireland have taken 18-25 female sharks for each male. Most of the females caught around Britain are sub-adult, while most of the small number of basking sharks caught in winter are males. This indicates that at least in some parts of the world, the sexes have markedly different habits. Off Scotland and Ireland, males may be more solitary, tend to occur at greater water depth or further offshore, or occupy a different geographic area to females. It has been suggested that dominant males may have harems which they defend from other males.

Unfortunately the history of most shark fisheries is one of boom and bust. Sharks are easily over-exploited because of their low breeding rates. Basking sharks have long been targeted by fishers, yet because of their especially low reproductive rate, they may be more vulnerable to over-fishing than most commercially sought sharks.

FOR CENTURIES basking sharks have been the object of small-scale, sporadic harpoon fisheries from small boats off the coasts of Norway, Ireland, Scotland, Iceland, California, Peru and Ecuador. In the 1940s, spotter planes were used to locate the sharks off California. The Norwegians in 1960 caught an incredible 4,266 sharks, but by 1987 their entire quota was 400 tonnes of liver (about 800 sharks). In recent years the number of basking sharks off Ireland has declined so much that biologists are worried about the future of the species. Currently basking sharks are being heavily fished around China and Japan by harpoon.

Fishing for basking sharks has primarily been for their huge and valuable oil-rich livers. Unlike many other fish, sharks do not have air-filled swim bladders to give them buoyancy. They compensate for this by having a large, buoyant, oil-filled liver. The livers are about 20 percent of their total body weight, sometimes weigh more than a tonne, and yield up to 2,000 litres of oil.

In New Zealand, there has been sporadic commercial interest in the oil from shark livers for the last 50 years. At one time basking sharks were hunted by harpoon off Kaikoura. Today, basking shark and other shark livers are still regularly boiled down at Kaikoura by a local company for the Japanese market. The company receives sharks, which have been caught mainly as a by-catch in gill nets set for ling and groper, sent in from fishers around the South Island.

The main lipid or fat in the rich oil of shark livers is a vitamin rich substance called squalene. Squalene has been used extensively in the manufacture of skin moisturisers, sunscreen lotions, lubricants, pharmaceuticals, aromatics, steroid hormones and some health foods. The liver oil was formerly used for tanning leather and for lamp oil. These days the oil is not so valuable because substitutes can be produced synthetically. However, more recently there has been a growing market for natural skin care products.

Basking shark fins are used for shark fin soup, and sometimes the meat is used for human consumption or fishmeal, and the skins for leather.

Basking sharks are regularly caught in New Zealand waters as by-catch in gill nets or by large deep-water trawlers. The gill net problem seems to have been greatest at Kaikoura. A local fisherman was quoted by the *Kaikoura Star* in 1974 as saying that "these sharks can be a great nuisance when they become entangled in the nets, not only for the time involved in untangling, but also the damage caused, and sometimes the loss of a net." This seems to be a common problem wherever gill nets are used within the range of basking sharks. Salmon gill netters off the North American Pacific and Atlantic coasts, for example, regularly catch these sharks, and Irish fishers used to hunt basking sharks because they damaged their salmon nets.

However, not all incidental basking shark captures may be regarded as a nuisance. Sometimes when one basking shark is caught by a large trawler, targeted fishing for more basking sharks may occur. The bellies of the sharks are slit open to remove the large livers and the bodies discarded.

THE HISTORY of human attitudes to wild animals is generally one of increasing awareness and concern. In New Zealand nearly all the larger native land animals now have absolute protection. Yet we have always treated marine life differently from terrestrial life. Nearly every marine creature can be taken by amateur or commercial fishers. No thought is given to whether a fish caught is a rare or threatened species, and the wider effect of catching fish on the marine ecosystem is seldom considered. Yet many marine

CHRISTCHURCH PRESS

A seven-metre basking shark wrapped up and washed up on North Beach, Christchurch in 1990. Basking sharks are regular victims of set nets.

ecosystems are being stripped of life and several species of fish are likely to be threatened.

What is needed is a change in attitude towards marine life. Under current law only turtles, black coral, red coral, toheroas and one species of fish – the black spotted groper – have been given total or near-total protection under the Fisheries Act within New Zealand waters. Marine mammals, on the other hand, are protected under the Marine Mammals Protection Act, and seabirds, out to 12 nautical miles [22 km], under the Wildlife Act.

Under 1991 Fisheries Regulations, it is already illegal to commercially target any fish, including basking sharks, not subject to a quota. However, plenty of non-target fish still get caught. It is virtually impossible to police this law because no-one can prove that a non-target species was being targeted. Most species caught as by-catch are allowed to be sold commercially, so often there is financial incentive to fish non-target species.

What should be done?

- Basking sharks deserve full protection under the law, so that the capture, harassment and selling of any parts of this species is illegal, and all captures are reported. New Zealand should be pushing for an international treaty protecting this species.
- Shark "finning" should be banned.
- Gill netting should be phased out. This fishing method is indiscriminate and wasteful and catches many basking sharks.
- Attitudes to sharks need to change – very few sharks attack people. Officials sent out to shoot sharks for the safety of swimmers should be educated about the different types of sharks.

WHY SHOULD basking sharks be given protection? Firstly, very little is known about their biology. It can be safely assumed that they have a very slow reproductive rate and, because of this, it is likely that they have already been overfished by direct hunting and incidental catches. In New Zealand there is evidence of local depletion – numbers at Kaikoura, for example, appear to have declined in the last 20 years. Large and visible schools of basking sharks belie the probable small size of populations worldwide. This species may be threatened, but the long-term effects of fishing on populations are unknown.

Secondly, basking sharks are a potential tourist drawcard. While they may not have as much appeal to the public as whales and dolphins, they are spectacular creatures because of their size. In Scotland tour companies advertise basking sharks as an attraction around the Hebrides and the Isle of Mull. In future, if protection leads to an increase in basking shark numbers, tourist trips could be organised in New Zealand. The Kaikoura whale watching ventures would almost certainly benefit from increased numbers of these marine giants.

Finally there is the moral issue. Worldwide there is a growing awareness that basking sharks are creatures to be cherished. In New Zealand they are perhaps our most impressive fish. Should they be treated like spotties and anchovies or do they deserve protection similar to that we give native birds and marine mammals?

Certainly there is some government support for the idea of extending more protection to fish. In 1991 the Department of Conservation, in a submission to the fisheries legislation review, singled out basking sharks and manta rays as species that it should be illegal to kill, injure, capture or otherwise harass.

Overseas, campaigns for protection are mounting. The Marine Conservation Society of the United Kingdom has been running a campaign to promote conservation of the basking shark for the last five years. Last year the Joint Nature Conservancy Committee in the UK recommended that the species be given full protection, although this is being opposed by some government agencies.

In other countries threatened shark species are already gaining legal protection. In Australia the grey nurse and smalltooth sand tiger shark are now totally protected off the New South Wales and Queensland coasts. The killing of great whites is now banned in South Africa, as is the trade in their jaws and other souvenirs. The killing of great white, tiger, hammerhead and lemon sharks is also to be banned in United States waters.

Recent changes in legislation regarding shark finning should reduce the commercial incentive to catch basking sharks. "Finning" is the practice of removing shark fins and discarding the rest of the carcass at sea. It is to be banned in the United States and a code of practice has been introduced in Australia to curtail the custom there.

In New Zealand, what have we got to lose by protecting basking sharks? A few commercial fishers would lose revenue from selling the fins or liver of the occasional one that gets caught in their trawl net or tangled in their gill net. No-one would lose their livelihood.

Giving basking sharks absolute protection would assist international conservation efforts to preserve and enhance the populations of this giant and mysterious fish.

Acknowledgements

Thanks to Larry Paul, Diana Pipke, Clinton Duffy, Margaret Palmer and Barry Dunnett for providing information. ❖

Alan Tennyson is a researcher with Forest and Bird specialising in marine conservation issues.

Kicking the TEA TREE FIREWOOD habit

Tea tree is by common consent a clean, hot firewood. It is so good it can burn out the back of your stove if you are not careful. But, as DON CHAPPLE explains, it is an important feature of the native vegetation cover and even conservationists use it, unaware of its ecological values.

E. K. CAMERON

Manuka firewood stacked for sale

SUCH a hot firewood as tea tree fetches high prices. Loopholes in the resource management law plus the old Kiwi habit of "getting away with it" encourage landowners and contractors to meet the market and perpetuate demand. Fuel merchants and retailers become willing partners. Consumers complete the cycle from rapidly diminishing resources to wood ash under the home burner.

New Zealand is paying dearly for this practice as precious stands of kanuka *(Kunzea ericoides)* and manuka *(Leptospermum scoparium)* fall to the chainsaw. Both species are found in most districts of New Zealand. Both are colonisers of bare earth, burnt or barren sites and poor pasture land, their extremely fine seed being wind-borne for considerable distances. Both are denigrated as "scrub".

It is scrub which is important in the early stages of what is called forest "succession". This is the natural process whereby cleared areas are revegetated over a number of stages climaxing in mature forest. Kanuka and manuka provide shelter for seedlings of the slower-growing later canopy species such as totara, rimu, beech and broadleaf trees. These seedlings eventually grow large enough to dominate the forest and force out the early scrub species.

It is impossible to plant a native forest. We can approximate, crudely, the natural process of creation; we may even speed up the early or "nurse" phases. But we cannot duplicate the myriad variables and the intricate interrelationships. We cannot match either nature's amazing prodigality or its monumental patience. It is more thorough, and much cheaper. At best we can assist by reducing alien threats – invasive exotic weed plants, feral animals, destructive machines.

C.R. VEITCH/DOC

Manuka flowers often cover the tree in profuse sprays. Kanuka flowers also appear in great numbers but are about half the size.

MANUKA – the smaller-growing of the two tea tree species – is hardier and more versatile. It has specialised spongy, air-filled root-tissue which enables it to grow in sour, nutrient-deficient and waterlogged soils. With this advantage it is invaluable for revegetating flood-scoured stream banks, establishing as a shrubland in its own right on permanently wet, sour or badly drained and depleted soils (for example, northern "gumlands"). The same species, however, is also xerophytic – able to thrive on very dry, exposed sites.

Kanuka, with its softer foliage, masses of tiny flowers and seed capsules is the aristocrat of the two: rather more particular as to soil and site, and destined for lordly height (up to 16 metres) and spread. Where it shares the first succession stages with manuka it usually outstrips the latter. Kanuka, as "nurse" to secondary succession and the emergence of future broadleaf and podocarp climax forest, is an impressive tree in its maturity (at 50 to 75 years).

E. K. CAMERON

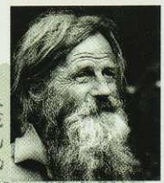
Kanuka is an important "nurse" tree in sheltering slower-growing forest species.

Not surprisingly, the larger diameters, many stems and high-crowning of kanuka make it profitable for the firewood contractor. It is also cleaner to handle, more even in quality. Not that manuka is immune; where it predominates it is likely to offer up to 6 metres of branchless stem with convenient diameters of 10-15 cm – no splitting required. Whichever species happens to be targeted when chainsaw, bulldozer and winch start operating, 30 to 70 years of growth is soon destroyed with companion broadleaf and fern species crushed and torn. In the older stands, seedlings of future canopy trees meet the same fate. Bird, insect and reptile habitat is lost. It is unlikely that any but a small proportion of the hundreds (perhaps thousands) of hectares cut annually will be allowed to recover its former vegetative balance and completeness. Protective bush is being depleted in water catchments and around the margins of streams and wetlands. The folly goes unchecked, it seems, by either national legislation or local ordinance.

RESOURCE management law in general, and soil and water conservation law in particular, is still skewed toward maximising commercial opportunity; the wider and long-term ecological context of land use tends to be honoured only in preambles. Section 10 of the Resource Management Act is already notorious for its "existing use" clauses.

The first of these clauses gives licence independently of local body ordinance. The second clause places certain limits upon the "use" claimed but in words which should keep lawyers (on both sides of the disputed case) arguing until the rivers run dry. As one of the many kinds of rural "users", firewood contractors are likely to be able to keep cutting until that part of the law at least, is thoroughly revised. If and when that happens it will be up to each local body via its district plan to ensure that protection of natural assets has top priority.

Surviving kanuka and manuka communities may yet enjoy respect – for their own sake and for what they are nurturing, that is, native forests of the future. ❖



Don Chapple is a gardener and retired teacher. He lives on Waiheke Island.

The alternatives

INTRODUCED tree species offer firewood alternatives and have done so for many years. Some people are fortunate in having ready access to a number of species, much of it "rogue" growth. Gorse, wild cotoneaster, old pussy willow and black wattle are among my favoured exotic wildings.

Macrocarpa sapwood thoroughly dried is excellent kindling and good for a quick hot flame. The tough stringy heartwood of brush wattle *(Albizia lophantha)* is clean-burning, with good embers. But my favourite is the common wattle *(Acacia mearnsii)* which has the qualities of tea tree – clean-burning, very hot and with good embers. It is faster growing than manuka and kanuka and also coppices vigorously.

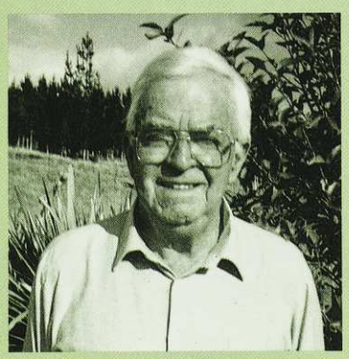
There are many other choices. These include almost all the acacia species with *A. decurrens* having the highest thermal rating, several of the eucalypts including *E. saligna* for warmer climates and *E. nitens* for the colder, and *Salix matsudana* (a species of willow) for wetter sites.

Two less well known species with a high thermal rating are the rapid-growing tagasaste or tree lucerne *(Chamaecytisus palmensis)* and the slower-growing but versatile and frost-hardy black locust *(Robinia pseudacacia)*. Then of course, there is the old stand-by, radiata pine, cheap and easy to obtain but not so high in thermal value.

There are other species for use as firewood, especially other acacias and eucalypts. For detailed information get hold of *The Firewood Venture* (FRI Bulletin 137) from the Forest Research Institute, Private Bag 3020, Rotorua.

More on Sheep and Forests...

Mike Harding's article on grazing in national parks and reserves in the last issue referred to a debate that continues to rage in Southland about the Eglinton Valley of Fiordland National Park. LES HENDERSON, retired farmer, a founder of Forest and Bird's Southland Branch and distinguished life member, put the case for the forest rather than the sheep in a recent letter to the Southland Times.



FROM MY observations in the Eglinton Valley over many years, the bush can only deteriorate further if grazing continues. What is advancing is pasture and weeds as would be expected in the presence of stock in this area of part-bush, part-clearings and open flats.

Although over the long period of utilisation by stock many species of trees on the margins have disappeared save for the odd relict specimen, most will return naturally.

With protection from stock and fire, effective restoration occurs and in many instances in New Zealand there have been spectacular results over 15 to 20 years. The mention of reserves in the context of national park grazing can be misunderstood. While grazing continues in some national parks as a transitional measure under special conditions, no bush reserves are approved or managed without appropriate fencing protection from stock. Even bush covered by QEII conservation covenants (that is privately-owned bush) is subject to strict requirements for provision of fencing. This official policy, in existence for many years, confirms the obvious that there is no point in having a reserve unless it is secured against destruction by stock.

On this matter, Federated Farmers' intemperate, convoluted rhetoric in the press is incomprehensible and certainly overdone. We know as farmers that good planning and alert practices are necessary to ensure that stock do not get where you don't want them especially in young plantations or shelter belts which can be severely damaged or even wiped out by stock well into the post-establishment stage. What then is so different in a national park?

Fiordland's appeal lies in the dramatic land-forms, the lakes, rivers, and abundance of pure clear water and the bush and birdlife. Most would know that the mature trees are 300 to 400 years old and not threatened by stock. The critical aspect, however, is the total disruption of the regeneration cycle and the species composition of the bush edge. Our custodial responsibilities to future generations demand that we correct this. The area in question is large. How large is hard to quantify, because the sheep penetrate up many of the side streams and well into the bush, but it must be several thousand hectares, a sizeable and important habitat for native animals.

Herbivores in general find most New Zealand native plants palatable. Those most avidly taken are the most important, especially in bush margins where they dominate unless suppressed by stock or deer. These are the flowering, nectar-yielding, fruiting, quick-growing range of sub-canopy species which have been a vital component of the habitat for countless millenia. Nectar, pollen and foliage, while taken direct by some native birds and probably by geckos and bats, support a vast range of native insects. A continuous supply of these is vital to nestlings of most native bird species and the total life support at all times for others.

The whole ecological fabric from the soil, vegetation, insects to birds, reptiles and bats has been an interdependent whole and damage to any part can gravely threaten a natural system. Just as the animals depend on the vegetation, many plants have evolved in response to their environment in such a way that they depend entirely for effective survival on pollination by insects and the distribution of seeds by birds. The whole robust dynamics of the bush edge, where ample light, moisture, space and shelter ensure relatively rapid change and vitality is being destroyed by sheep.

On the removal of sheep there will be some immediate response in seedling occurrence, local at first, then progressively over the whole area freed from grazing but excluding initially those areas where pasture grasses are established. It will take many years to achieve anything like healthy natural restoration. By the time the tree and shrub seedlings are joined by the fresh growth of ferns and the smaller plants, a significant further bonus will merge.

At present the furry predators, rat, stoat and ferret, have free range throughout with much less obstruction than they would encounter without browsing in the bush. As regeneration gathers momentum a damp micro-climate develops, at times dripping with moisture, which is an important natural deterrent to these foreign raiders. At present 90 percent of South Island robin nests are predated and the yellowhead is in serious decline. Obviously all native birds need any life they can get as soon as possible as well as the progressive restoration of their habitat with its attendant food resources.

The purpose of national parks is to protect important features and wildlife habitats along with the wide range of natural values involved. New Zealanders and visitors alike, in great numbers, seek out these areas for relaxation, recreation and in the pursuit of hobbies but expressly to enjoy the unspoilt natural environment. We are immediately seen to be insincere if we carelessly ignore the world-wide criteria, also embodied in our own National Parks Act "to as far as possible remove the exotic and as far as possible . . . protect native flora and fauna.

This magnificent valley deserves the best we can do for it. It demands that a well-planned vigorous course of restoration be adopted. The other option, continued grazing, offers an unthinkably dismal prospect – progressive deterioration and a horrifying weed problem already well advanced due to stockings.

It is my hope as the general health and attractiveness of the vegetation in the valley improves in the absence of stock, visitors, by merely stepping off the road into the bush margin, may experience that flash of insight at the beauty of tree, flower or bird which sets alight the soul and gives meaning and joy to life. We need this inspiration more than ever today. Sheep will never enhance the magic of our Fiordland, only destroy it. ❖

Book reviews

The Forest and Bird Book of Nature Walks

by David Collingwood and E. V. Sale, revised by Joanna Wright (Reed) $29.95

When the first edition of Forest and Bird's walks book was published in 1985 it was a great success as it was one of the few such guide books available that covered all of New Zealand.

That first edition, in setting out the favourite walks of Forest and Bird members around the country made great use of the depth of local knowledge of those members.

Since then the range of walks has increased and today there is a proliferation of walk and tramping books for parts or all of the country. But this new edition is still a leader in its field, extensively revised and upgraded and describing 154 walks from North Cape to Stewart Island.

Joanna Wright who updated the book is well known for her *Tramping in South Island Forest Parks* and has done a fine job of distilling the essentials of each walk into a short description but retaining particularly interesting features. The walks range in length from a 15-minute stroll to a full day hike. The new edition also maintains the strong emphasis on the flora and fauna which can be found on each walk.

It is now in a smaller size that fits easier into the car glovebox or a daypack pocket. The maps are much clearer and the descriptions are simple and easy to follow. The new edition has a number of new nature walks, at the expense of a few arduous walks and tramps as the latter are now described in some of the tramping books. I am sure this will not be the last edition of this popular book. Excellent value.

Mark Bellingham

NIC BISHOP

The world's rarest plant grows on the Three Kings Islands off the northern tip of the North Island. The small tree, Pennantia baylisiana, *has been reduced by goats to one wild specimen – a female. Goats have now been removed from the islands but the survival of the species depends on the success of a number of seedlings currently being grown from a recent freak self-fertilisation. From* Natural History of New Zealand.

Which Native Tree?

by Andrew Crowe (Viking Pacific) $19.95

This is the best short guide yet to the 50 or so most common New Zealand trees. The book combines simple descriptions, clear photos of leaves and fruit, line drawings of the full tree plus distribution maps and altitude graphs of where the tree grows in the wild.

The centrepiece of Crowe's guide is a number of well thought out graphic "leaf keys" to guide the reader through the options for the identification of any species. For example, if you follow the path of "leaves toothed", "over 5 cm long", then "under 10 cm long", "whitish underneath" but no "curled edges" you will correctly arrive at kotukutuku, *Fuchsia excorticata*. You can then turn to a full description of that species. If there is a criticism of the descriptions it would be an overemphasis on the human "uses" of the tree rather than its natural values.

A useful addition would have been the family name of each species – a help for those who want to understand more about plant relationships.

Ian Close

Natural History of New Zealand

by Nic Bishop (Hodder & Stoughton) $59.95

New Zealand has long-needed a good up-to-date and well-illustrated overview of this country's natural world. Nic Bishop has come up with the goods.

Bishop begins by explaining why New Zealand's natural world before the late arrival of humans was so different from anywhere else, and then takes us through New Zealand, habitat by habitat, concentrating on the processes that bind ecosystems together.

The book's strength is in the details and examples of the natural interactions and processes which Bishop provides.

The book shows how organisms have adapted to live in their own particular part of the world – the mountains, the inland waters, geothermal pools, caves, the coast, islands and even farmland and exotic forests. A chapter on the sea takes a welcome look at the world's last great wilderness, one whose workings we still only poorly understand.

Of course the sad thing is that the more New Zealanders learn about their natural history the more they find out what has been lost and what is in the process of being lost. As Bishop says:

> A growing understanding of the importance of ecology has laid the basis for the wide concerns, not just for rare plants and animals but for the continued welfare of this planet's environment. We are now starting to realise that we have been consuming the very environment we need to survive.

Financial assistance from Tasman Forestry as part of the Tasman Accord project has helped to keep this beautifully produced and copiously illustrated book at a reasonable price.

Ian Close

Bulletin

AGM and Council meeting

FOREST AND BIRD'S 69th AGM and mid-year council meeting were held at Kaitoke, Upper Hutt over the weekend of 12-14 June.

The current executive members were all re-elected.

Old Blue awards for outstanding contributions to conservation in this country were presented to Ivan Green (Kapiti), Helen and Adrian Harrison (Eastern Bay of Plenty), Doug Heighway (Wairoa), Christine Henderson (Southland), John Staniland (West Auckland), and to Hugh Barr from Federated Mountain Clubs. Hugh is a long-time friend of Forest and Bird and was recognised for his major contribution to forest, high country and wilderness conservation.

Two ministers addressed councillors during the weekend. Conservation Minister Denis Marshall spoke on the Friday evening and Fisheries Minister Doug Kidd delivered a provocative speech on marine mammal and sea bird issues as the annual Sanderson Memorial Address on Saturday.

Forest and Bird staff together for a rare moment outside head office following the June Council meeting. Front row: Chris Wratt (education officer), Mike Harding (Christchurch field officer), Sue Maturin (Dunedin field officer), Julienne Beek (information officer), Alan Tennyson (researcher), Ian Close (editor). Second row: Robyn Harding (membership secretary), Charlotte Shipman (mail order manager), Catherine Hanham (publications coordinator), Felicity Gifford (marketing manager), Allison Scholtens (assistant accountant), Mark Bellingham (field director). Back: Kevin Smith (conservation director), Barry Weeber (researcher), Anne Graeme, Basil Graeme (Tauranga field officers), Fran Gould, obscured (receptionist), Alan Hemmings (Auckland field officer). Absent: Rosemarie Owens (national secretary), Lisa Rae (conservation director's assistant).

New policies

THE COUNCIL meeting adopted five new policies which had been developed by the executive in consultation with branches:

The **transport policy** has two main goals: the reduction in New Zealand's total pollution emissions including greenhouse gases through a reduction in fossil fuel use for transport, and secondly to ensure that the country's transport network does not make any further significant encroachments on protected areas and natural habitats.

The **fisheries and marine policy** aims to promote the conservation of indigenous marine life in New Zealand waters and in the open ocean, and to develop a comprehensive network of no-take marine reserves amounting to ten percent of the coastal marine area by the year 2000.

The goal of the **high country policy** is to ensure that the plant communities, natural landscapes and indigenous flora and fauna of the South Island high country are adequately protected in a comprehensive network of parks, reserves and permanent covenants.

The **international tropical and temperate forest policy** aims to reduce market pressure on the world's rainforests by promoting controls on the imports of timbers from these forests, to encourage the government to become a leading international advocate for forest protection and conservation, and to ensure that forest conservation and ecologically sustainable development are a priority for New Zealand's overseas aid programmes in the south Pacific and South-east Asia.

The **protection of native plants and animals policy** contains a detailed list of objectives to improve the level of protection of native species and their habitats.

If any members want a copy of the full version of the above policies please write to Lisa Rae at head office. The new policies plus those already adopted will be consolidated soon into a booklet which will be sent to all branches and made available to members.

Subscription rates

FOR THE SECOND YEAR in a row there will be no increase in the society's membership fees. Despite an increase in costs the Finance Committee believed it was important to maintain a broad base to the membership by keeping fees at a level that most people could afford. So your subscriptions will continue to fund the society's professional conservation work plus provide you with four issues a year of *Forest & Bird* and six of *Conservation News*. Membership of Forest and Bird continues to be the best value investment you could make for the future of natural New Zealand.

Membership privacy

WE GET INQUIRIES from members from time to time about the confidentiality of our membership records. Unlike many organisations we do not make our membership information available to other groups or commercial organisations, despite regular (and sometimes lucrative) requests. Members can be assured that their names and addresses are strictly confidential to the society.

Summer camps

CENTRAL AUCKLAND branch is running a tour around the top end of the South Island from 26 December to 9 January. Details from Mrs Nancy Payne, 61 Kurahaupo St, Mission Bay, Auckland 5.

Horowhenua branch will be holding a summer camp at Otaki from 17 to 24 January next year. A trip to Kapiti Island will be included. Contact Barbara Douglas, 15 Ngaio Street, Otaki.

Otago and South Otago branches are organising a camp in the Catlins from 15 to 20 January. Details from John Dawson, 118 London St, Dunedin.

Tauranga branch is holding a camp in kokako country, in Pureora Conservation Park from 4 to 10 January. Contact Reg Janes, 364a Waihi Rd, Tauranga.

A Forest and Bird seashore study camp is being organised at **Waihi Beach** from 16 to 20 January. Learn about reef life, mangroves, sea birds, sand dunes and coastal forest. For details write to Ann Graeme, 53 Princess St, Tauranga.

Please include a stamped addressed envelope with all inquiries.

North Canterbury branch scholarships

APPLICATIONS are invited for a Stocker Scholarship grant for a conservation project over the 1993 year.

The research or project undertaken must have special reference to the needs of the South Island and the objects of Forest and Bird. The grants are open to individuals or groups and $3,500 is available which may be awarded to one or more applicants.

Applications and inquiries to Forest and Bird, North Canterbury branch, PO Box 2389, Christchurch. Applications close 30 September.

Correction

THE ITEM in last issue's *Branching Out* on pingao planting referred to the wrong beach. It should have been Foxton Beach, not Waikawa.

classifieds

R C BRUCE TRUST
Applications for 1992 Grants

R C Bruce was a Scottish born New Zealander with a love for the forests and trees of New Zealand. When he died at Wanganui in 1917, he left money in trust from which grants could be made for research and special projects directly related to forests and afforestation. Applications are now invited from the public by the trustee, The New Zealand Guardian Trust Company Limited, for grants from the Trust. Information about the Trust and grants can be obtained by writing to:

The New Zealand Guardian Trust Company Limited
PO Box 628
Palmerston North (ph 06-358 4012)

Applications will close on Wednesday, 30 September 1992, and must be submitted on the approved application form.

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Bookings and inquiries should be made to PO Box 631, Wellington (04) 385-7374. The lodge is very popular, and bookings may be made six months in advance, if secured with a 20% deposit. The rates are reasonable, and fluctuate seasonally.

Full payment is required four weeks prior to occupation, after which time there is no refund for cancellation.

Arethusa Cottage

An ideal base to explore the Far North. Near Pukenui in wetland reserve. Six bunks. Fully equipped kitchen. Separate bathroom outside. Inquiries and bookings to Howard Ockenden, Waipapa Rd, Kerikeri, (09) 407-9457 or John Dawn, Doves Bay Rd, RD 1, Kerikeri, (09) 407-8658.

William Hartree Memorial Lodge, Hawke's Bay

Situated 48 km from Napier, 8 km past Patoka on the Puketitiri Road, the lodge is set amidst the 14-ha William Hartree Memorial Scenic Reserve, and close to many varied walks in the area including the Kaweka Range, as well as hot springs and a museum. Information sheets are available.

The lodge accommodates up to 20 with 10 bunks and 10 mattresses, has fully equipped kitchen including microwave, refrigerator and stove plus hot showers and an open fireplace. Visitors supply own linen. The nearest store is a Patoka (8 km). No animals.

For rates send a stamped addressed envelope to the booking officer, Mrs Colleen Mackay, 89 Rogers Road, Bayview, Napier, (06) 836-6836.

Tautuku Lodge

Tautuku State Highway 92, South East Otago. Situated on Forest and Bird's 550-ha Lenz Reserve 32 km south of Owaka. A bush setting, and many lovely beaches nearby provide a wonderful base for exploring the Catlins. The Lodge, the Coutts cabin and an A-frame sleep 10, 5 and 2 respectively.

For information and rates please send a stamped addressed envelope to the caretaker: Miss M. Roy, Papatowai, Owaka, RD2. Phone (03) 415-8024.

Tai Haruru Lodge, Piha, West Auckand

A seaside home situated in Garden Road, Piha, 38 km from central Auckland. Eight minutes' walk from the Piha store and close to bush reserves and walking tracks in the Waitakere Ranges.

The lodge is fully equipped and sleeps six to eight people. Large lounge with open fire, dining area, and modern kitchen.

You will need food, bed linen, towels, and tea-towels.

Different rates apply for winter and summer. For rates send a stamped, addressed envelope to the booking officer, Mrs B. Marshall, 160 Valley Rd., Henderson, Auckland, (09) 838-5859.

Waiheke Island Cottage

The cottage at Onetangi has comfortable bunk accommodation for eight people and has a stove, refrigerator, and hot water. Adjacent to a 49-ha wildlife reserve, it is in easy walking distance from shops and beach. It is reached by ferry from Auckland City (two or three returns daily) and by bus or taxi from the island ferry wharf. Everything is supplied except linen and food. No animals.

Different rates apply for winter and summer. For rates send an addressed envelope to the booking officer, Mr D. McLean, 55a Queens Drive, Oneroa, Waiheke Island, (09) 726-494.

Bushy Park Lodge

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Open 7 days; reduced off-peak rates.

A bunkhouse for 12 is available for group bookings. It has kitchen facilities, mattresses and pillows. Toilets and showers are in the adjacent building.

Bookings and information leaflets: Manager, Bushy Park Lodge, Kai Iwi, RD8 Wanganui, (06) 342-9879.

Turner Cottage, Stewart Is.

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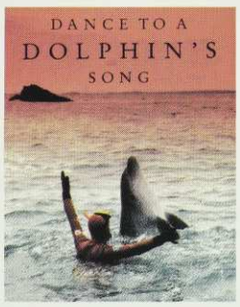

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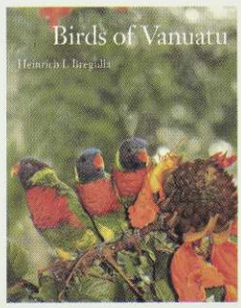

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(Hector's Dolphin. Endangered species "Cephalorynchus hectori")

OUR COMMITMENT IS TO HELP PROTECT THE HECTOR'S DOLPHIN.

The dolphin species you see here is found only in New Zealand coastal waters.

It's one of the world's smallest, reaching just 1.4 metres in length. The total population is similarly small: 3,000 to 4,000. As you might expect, such limited numbers are vulnerable to man's activities*. Research has shown that they are prone to the pollution flushed into the ocean from nearby rivers.

But there are other hazards. In recent years many Hector's Dolphins have perished from entanglement in fishing nets. The result is their mortality rate is higher than their birth rate.

If this continues they will eventually become extinct.

But thankfully their plight is not being ignored. Dr Stephen Dawson and Dr Elizabeth Slooten of Otago University are researching ways to protect and save the Hector's Dolphin.

Reckitt & Colman, makers of Down To Earth, are sponsoring this project. Our commitment is to help preserve this endangered species, and you'll be supporting us in this whenever you use Down To Earth products.

Together we can take action to help save the Hector's Dolphin for future generations. If you would like to know more about Hector's Dolphins, contact 'Save the Hector's Dolphin Project', Private Bag, Symonds Street, Auckland. Telephone (09) 358 3022.

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