Volume 21 Number 2
May 1990

Forest & Bird

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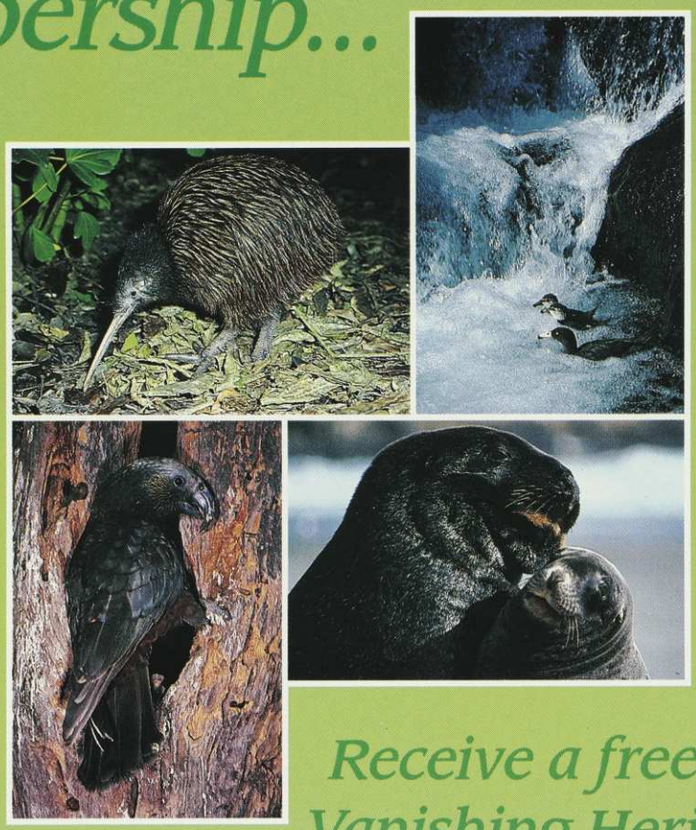

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Cover: *The kakapo, target of an intense campaign to rescue the world's largest parrot from extinction.*
Photo: Rod Morris.

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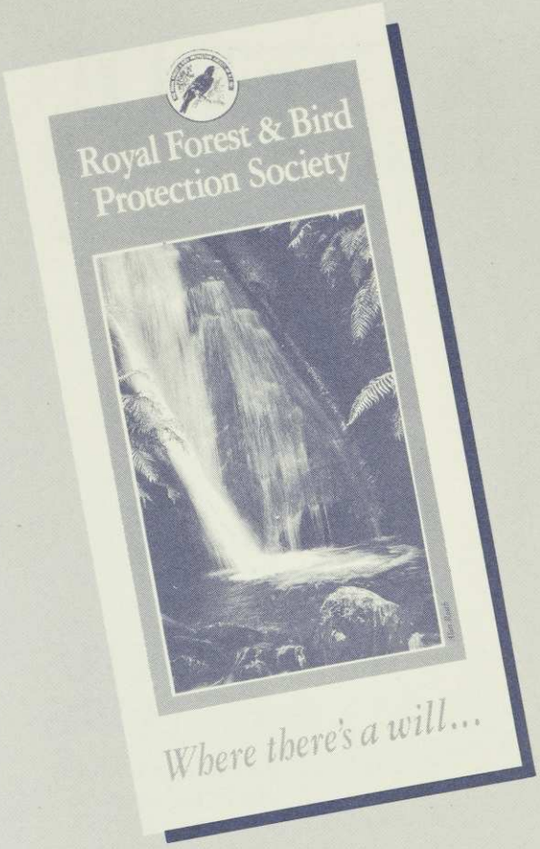

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Issue Number 256
May 1990
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Forest & Bird

C·O·N·T·E·N·T·S

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10 Years to Save the Planet

Norman Myers, internationally renowned environmental scientist, has pointed out that of all the world's resources, the one in shortest supply is time.

There are only 3,500 days to the year 2000, by which time the future of the planet will have been determined one way or another. Unless the political and economic log jam frustrating efforts to save the world is swept aside we will be passing onto our children a ravaged and increasingly hostile planet.

Already 4 percent of the decade has passed by. During this time, the world has been stunned by the unprecedented political reversals in eastern Europe. An environmental revolution is also sweeping across the world. Opinion polls show that the level of environmental awareness has never been higher. Yet, this has not been translated into meaningful actions. The environmental revolution has for most people been little more than a consciousness-raising exercise. Its most tangible manifestation has been the adoption by politicians of "ecospeak." This is a new political and commercial language characterised by frequent utterances of environmental platitudes but rarely backed up by decisive action to protect the Earth.

Nothing has been achieved on the environmental front to match the momentous collapse of the Berlin Wall. Conservation gains have been painstakingly slow, incremental and mostly inadequate. Yet Berlin Wall breakthroughs are desperately required on a host of issues such as ozone depletion, global warming, deforestation, species extinction, and population growth. Myers notes that "the space for action with the least investment and biggest dividend is limited to the next 1,000 days, a mere 3 years." After that Myers believes "we shall face the prospect of battling all the harder with less chance of success."

In New Zealand, those three vital years will largely coincide with the term of the next Government. The mantle of the green government is up for grabs with neither Labour nor National able to claim it as of right. The environmental track record of both parties is mixed. Geoffrey Palmer has championed environmental issues but often on a "think locally, act globally basis." Drift netting on the high seas has been condemned at international forums but pleas for the Government to intervene to prevent the death of hundreds of fur seals in our own deep water hoki fishery went unheeded. Worthwhile local initiatives such as the protection of South Westland's rainforests have been matched by development decisions that have rocked the conservation movement. These include the flawed Resource Management Bill, with its massive devolution of responsibility for environmental management to unsympathetic local governments and politically unaccountable planning tribunals. Calls for a sustainable energy policy have been ignored. Instead, state-owned Electricorp has splurged millions on advertising campaigns to promote energy consumption.

National's commitment to green issues has so far been lukewarm with the only highlights being support for a no-mining Antarctica World Park and for a nuclear-free New Zealand. Much more is required if conservationists are to be convinced that the party has turned its back on its previous disregard for conservation and its obsession with large industrial developments. Bill Birch's recent defence of the environmentally disastrous $1.2 billion Clyde dam white elephant will have caused unease amongst voters looking for a more enlightened vision from within National's ranks.

The New Labour Party, the Democrats and the new Green Independents have a chance to challenge the major parties' pursuit of market place solutions as a panacea to all New Zealand's ills. But the first-past-the-post electoral system places them at a great disadvantage. For conservationists the coming election is vital. Once elected, a modern executive government has all too often shown itself to be insensitive to the will of the people. Politicians feel vulnerable and therefore receptive to public pressure during the desperate months leading up to the election. It is important that this election year conservationists take their issues squarely to the politicians and ensure they commit themselves to saving the natural beauty, ecological wonders and life-supporting ecosystems of this fragile planet.

Kevin Smith, Conservation Director

Contributors to *Forest & Bird* may express their opinions on contentious issues. Those opinions are not necessarily the prevailing opinion of the Royal Forest & Bird Protection Society.

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Firth of Thames – Wetland of International Importance

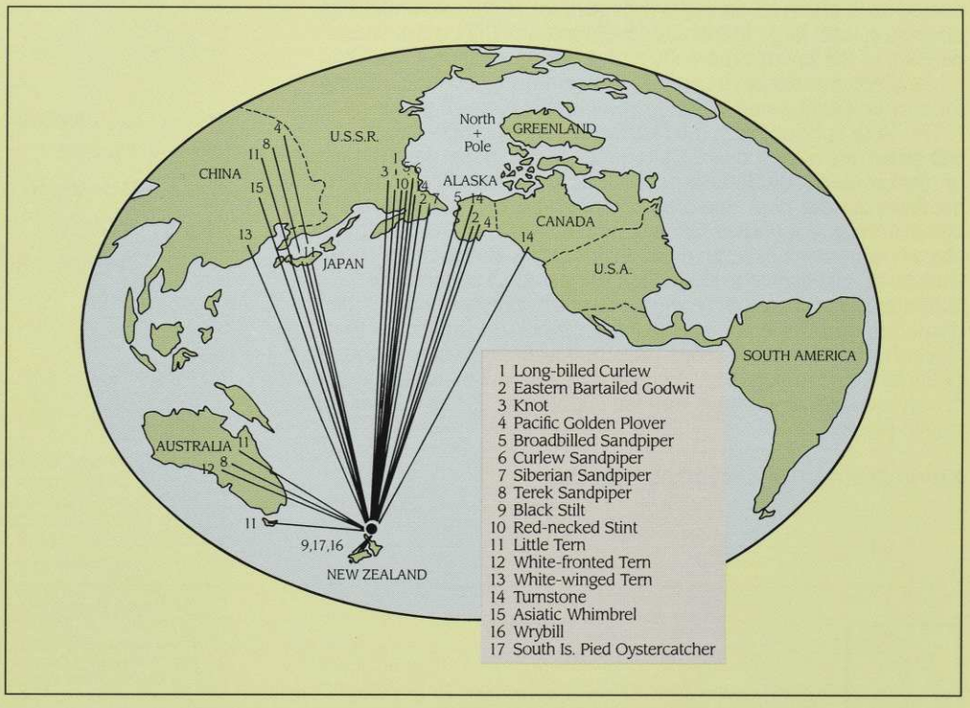
Thousands of wading birds at Access Bay, Miranda, Firth of Thames. Photo: Brian Chudleigh

FEW COASTAL AREAS in New Zealand offer a better habitat for wading and migratory birds than the Firth of Thames.

In recognition of its importance for such species as the sharp tailed sandpiper, the eastern bar-tailed godwit, grey and ringed plover, Mongolian dotterel, Terek and broad-billed sandpiper, and New Zealand's own unique wrybill, the Firth of Thames was recently gazetted as a Wetland of International Importance. It is New Zealand's fifth.

Much credit for gaining this recognition must go to Forest and Bird's former northern field officer Jan Riddick, who prepared the main part of the nomination. The Department of Conservation assisted.

It is estimated that the 8500 ha area of intertidal feeding grounds on the Firth of Thames is an internationally important feeding ground for about 30,000 birds.



Birds of a feather working together to save the Kakapo.

The Royal Forest and Bird Protection Society and the Department of Conservation. To many New Zealanders they're considered pretty much birds of a feather. Just one of the causes they're working together on is the campaign to save one of the world's most endangered species, the Kakapo.

At first Comalco might seem an unlikely partner in this campaign. But not when you consider that the deep south where most of the Kakapo live is also where Comalco's heart is.

Currently just 43 Kakapo remain. As they are flightless birds they are in constant peril from predators.

The Department of Conservation sees preserving and increasing the Kakapo population as a top priority in its work to protect New Zealand's endangered species.

You too can help. While Comalco has already contributed a substantial sum of money you can help increase their contribution. The more cans you recycle with Comalco, the more they contribute to the Kakapo cause.

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Harakeke – The Rene Orchiston Collection

FOR RENE ORCHISTON, each of the 60 varieties of flax she has collected over the last 30 years are personal friends. Tending each bush, she is reminded of the place where it grew, the person who donated it and the story that accompanied it.

She tells, for example, of walking in the high country and coming across an old Maori campsite. Three tired looking bushes of harakeke were lying in the sun with their roots exposed, dug up by pigs. Rene replaced them after taking a small piece from a rare variegated variety which she had not seen elsewhere. It was later identified by a Whakatane woman as Motu-o-nui. The other two bushes were Oue and the yellow striped Parekoretawa. As harakeke was not indigenous to the area, Rene knew any to be found would be of high quality, since it had to be carried there on the backs of travellers.

Rene, a Forest and Bird member from Gisborne, first started the flax collection after observing that many fine craftswomen in her area were using inferior material for their weaving – owing to an extreme shortage of the special varieties needed for different types of articles. She was saddened to note the lack of interest in aspects of Maori culture such as flax weaving among middleaged and younger folk. Special flax bushes had been neglected and had even died out in many areas.

Realising that in years to come there was likely to be a revival of interest in traditional arts and crafts, Rene visited many marae and individuals around the country, talking to elderly weavers and carefully recording information on names and uses of their special flaxes. Small plants would be exchanged for a different kind of flax or for the fruit and honey which Rene always carried in the car. She also investigated areas where early records suggested particular varieties had been grown, and found occasional remnants. Gradually a collection of some 60 of the most desirable varieties of harakeke and some whararikі was built up and looked after by Rene at her home.

As part of the Maori cultural renaissance there is now renewed enthusiasm for traditional crafts and Rene has received many requests from all over New Zealand for superior types of flax. Flaxes such as the tall, heavy duty Tihore types with fibres so strong that they can be drawn out easily into long strands; the short, straight, strong flax which strips easily and is used in piupiu making; the very long, bendy types for whariki and kete; and the long, blackedged, slightly droopy bluegreen flax which can produce long ribbons of soft fibre with the beauty and lustre of silk. As the bushes have grown and multiplied thousands of plants of these special varieties have been donated to marae, community colleges and schools throughout the country.

New Zealand flaxes are not 'true' flaxes – though their fibre is similar – but are endemic to New Zealand and belong in their own family Phormiaceae. Plants are highly variable in their characteristics. Botanists recognise two species: *Phormium tenax*, lowland or swamp flax; and *Phormium cookianum*, coastal or mountain flax. The Maori name for *P. cookianum* is whararikі. Its soft, droopy leaves are not commonly used today. Within *P. tenax* however, known as harakeke, are many dozens of different entities, each with its own characteristics, its own specific uses, and its own name.

Rene Orchiston and David Bellamy among flaxes at Mrs Orchiston's Gisborne home.

Varieties (or more strictly speaking, cultivars) were selected by Maori, probably over centuries, for their particular qualities such as strength, softness, durability, colour and quantity of fibre. They were cultivated and exchanged. However, since European arrival, there has been a loss of knowledge concerning particular varieties and their uses, and it is only due to the vision and determination of a few individual people such as Rene Orchiston that the knowledge and plants that exist now have been retained.

Sue Scheele and Geoff Walls

New Zealand to the Fore

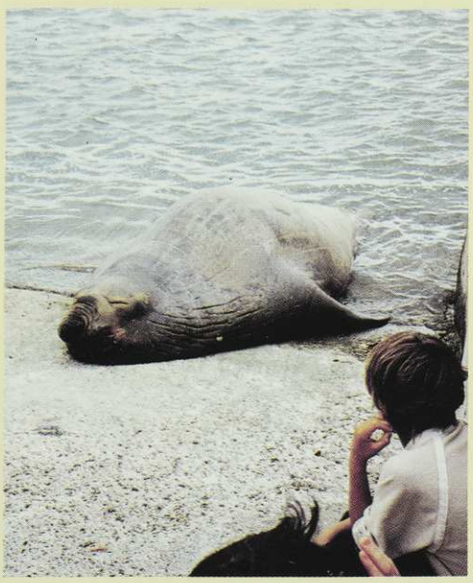
OUR MAY 1990 CALENDAR PHOTO has come in for high praise recently. Entitled "Odd Man Out", the Darryl Torckler image won best overall photo in the US International Underwater Photography competition. It is the second time in a row that Darryl has won the competition. Congratulations! Darryl Torckler's brilliant photos will be featured again in our 1991 calender and diary.

Minding Humphrey

A FOUR TONNE BULL ELEPHANT SEAL in a Tauranga carpark is a rare and wonderful sight, but all that blubber could cause a nasty accident if provoked. So when he came to town, Tauranga Forest and Bird set up a "Humphrey minder" to see that the people and Humphrey didn't get in each other's way.

Humphrey has been around the Bay of Plenty and Coromandel beaches for five summers now, at a time of year when elephant seals should be heading south to the sub-Antarctic islands to breed. He is an elderly bull, perhaps too old to defend a harem of cows from younger bulls, and seems to prefer summer in the warmer north. Despite his bulk and awesome mouth, an elephant seal eats only fish and shellfish and is unlikely to bite people, unlike the smaller and more dangerous leopard seal. However Humphrey could move very fast in a caterpillar-like motion, and the "minder" had to keep a path open to the sea should he retreat back to the water in a hurry.

After entertaining crowds over Christmas, Humphrey left the harbour at the New Year and has not been sighted since.



Humphrey minders Meg Graeme and dog Toby, and the subject of all that attention. Photo: Bay of Plenty Times

CRA – Turning Up the Heat

AS CONCERN about the greenhouse effect increases, governments around the world are increasingly questioning the need for developments which might add to the problem. In New Zealand, however, despite Geoffrey Palmer's and the Ministry for the Environment's rhetoric about the dangers of global warming, Australian giant CRA are proceeding with plans for a coal-fired power station at Marsden Point.

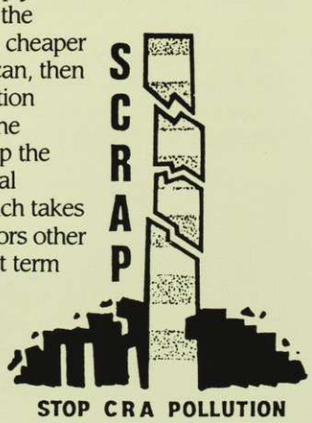
The effects of the 1000 MW proposal are major.

- 9 million tonnes per year of carbon dioxide will be released – an increase of 22 percent of the total released in New Zealand now.
- 90 million tonnes of coal will move through the site over 30 years, and at any one time there will be 700,000 tonnes of coal stockpiled.
- 200,000 tonnes of ash will be produced a year, requiring a dumping site of 42 ha over 30 years.
- Even if the station's filters are 99.9 percent efficient, 436 kg of fly ash would be emitted each day from the plant's chimney.
- 23,870 tonnes of sulphur dioxide will be released into the atmosphere every year unless CRA filter it out in a very costly process.

From a biological point of view the greatest impact of the station will be on the marine life of picturesque Bream Bay. Vast quantities of cold sea water – possibly 3 million tonnes per day – will be sucked in to cool the plant, and then discharged, but it will then be up to 7 degrees Celsius warmer than the surrounding sea water.

Marine ecologist Lou Ritchie says there will be massive marine life mortality, especially of the larval stages of fish such as snapper, trevally, kingfish, kahawai, plus shellfish and crayfish, when up to 3 million tonnes of sea water is pushed through the plant.

In Whangarei, locals have formed the group Stop CRA Pollution (SCRAP) to halt the proposal. Despite the enormous environmental risks attached to the project, and the apparent lack of necessity for such a massive plant when New Zealand is already oversupplied with power, the Government is adopting a hands off approach. Under the new de-regulated power supply structure, if CRA can supply energy to the Auckland market cheaper than Electricorp can, then the coal-fired station could proceed. The proposal points up the need for a national energy policy which takes into account factors other than just the short term cost benefits.



Kokako Rescue Bay of Plenty

HE MIGHT WELL BE SOME KIND OF BUSH AMADEUS.

Fingers poised, he considers the keys before applying his hands to them with dexterity, listening carefully to the results of his skill.

From selected corners of the darkened undergrowth, the kokako's clear notes resound, magically reproduced by some unseen bird. Surely any unwary kokako would be fooled.

Paul Jansen isn't so sure. He hunches over his tape recorder, playing the call again in a different sequence in an effort to musically summons the kokako known to be in this segment of the Rotoehu forest. And his patience is rewarded.

From high above, real song is returned. The single kokako whooshes through the tree tops, searching for its re-created companion. Paul frowns, adjusting the taped song to lure the kokako in the right direction.

It's almost too easy. The bird makes a high pass to our right and flies straight into the giant mist net strategically erected between two tall trees slightly doctored for the purpose. Caught between the 70ft net's fine double mesh, the kokako struggles slightly, confused about what has happened and squeaking pathetically. The net is lowered and Paul and his colleague, John Innes, gently untangle the bird.

Before much longer, the surprised kokako will be given a nourishing meal of Farex to restore its spirits before enduring the ordeal of having a transmitter attached to its neck and then being released. The kokako staggers off into the bush, shimmying up the nearest tree to escape before finally flying away.

The Department of Conservation (DoC) and the Forest Research Institute (FRI) are six months into a pilot research programme in Kaharoa state forest and Rotoehu forest near Rotorua to evaluate the relative roles of browsers and predators in North Island kokako decline.

Since 1980, predators have destroyed eggs or young birds in 11 of the 24 nests of known outcome and the considerable overlap between the diets of kokako and of possums, goats and deer is another factor which has to be considered if kokako are to survive. However as John Innes of FRI notes, the project doesn't assume either browsers or predators are responsible for the kokako's decline – and will rather accumulate data stacking the odds one way or another.

FRI's John Innes (left) and DoC's Paul Jansen attach a transmitter to a kokako.

He says the primary aims of the 15 month programme are:

To compare breeding attempts and outcomes on Little Barrier Island with those at Rotoehu, compare kokako condition and time spent feeding at both locations, identify predators, estimate kokako longevity, mean life expectancy, territory size and juvenile survival and to compare available food quantity at Rotoehu and on Little Barrier.

To do that a number of techniques have been employed to follow as many kokako pairs as possible through each breeding season and find out whether an attempt was actually made to breed.

"That's where the radio transmitters come in. We capture at least one of each kokako pair and put the transmitter on. That moults off after each breeding season and doesn't hurt the birds. It also means we have to recapture them again each year to re-attach the transmitters."

The kokako caught are also weighed, measured and colour-banded.

By early March 1990, four kokako pairs have been traced. The techniques have proved to work. John Innes is delighted.

But only one of the pairs had tried to breed – and the attempt failed badly. A nest containing three ravaged eggs was discovered in the forest in February, apparently preyed on by another species of bird. It was the first real proof of kokako breeding failure, with the eggs preyed on within a short time.

The study's success means it will now be expanded into the next breeding season to include up to 15 bird pairs and will extend to include the comparisons with predator-free Little Barrier Island – while work continues at Kaharoa with a different sort of survival programme.

Somewhat more "glam", the project is a joint effort between Tasman Forestry Ltd, the Royal Forest and Bird Protection Society and DoC, funded by a special $150,000 grant from Tasman as part of the landmark Tasman Accord which protects important areas of kokako habitat.

It also differs from the Rotoehu programme by aiming to actually control predators such as rats, stoats and wild cats and browsing animals in one of five research and management projects currently underway in the North Island. (The others are at Mapara, near Te Kuiti, Puketi Forest in Northland, the Cowan Wildlife Refuge near the Pureora Forest Park and the Pikiariki Ecological Area within the park).

The three year project is headed by Hazel Speed, an expert with extensive experience in New Zealand wildlife and kokako.

Sioux Bennett

NZ Dotterel Count

RESULTS from a New Zealand dotterel survey carried out last spring show that in northern North Island there are only 1312 known birds, underlining the threatened state of the species.

A separate population of approximately 200 NZ dotterel live on Stewart Island.

Volunteers from 17 Forest and Bird branches, the Ornithological Society and Conservation Department staff walked hundreds of kilometres of upper North Island coastline in search of the threatened bird. Exceptional organisation and individual dedication was required for the success of this important survey. The dotterel lives along sandy shorelines, where it breeds in rough depressions in the sand. In recent years it has failed to breed in many areas because of disturbance by humans and dogs.

The survey showed that many of the birds live on popular beaches, making breeding virtually impossible. Strategies are now being worked out to protect the species, including an extension of Forest and Bird's successful nest-minding programme (see *Forest & Bird*, August 1989).

Ann Graeme

	Number of Sites	Sites with NZ Dotterel	Number of NZ Dotterel	Number of breeding NZ Dotterel
N. Auckland	205	97	615	263
Auckland	60	34	275	116
Waikato/Coromandel	99	55	230	85
Bay of Plenty	43	29	192	79
TOTAL	407	215	1312	543

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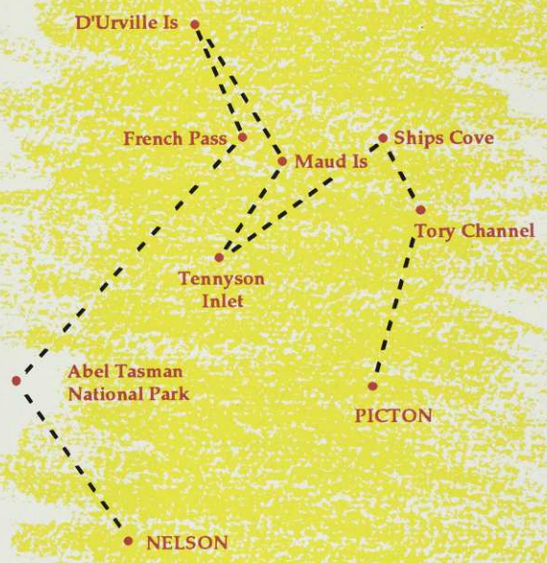

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Japanese Timber Demand Soars

THE U.S. STATE OF WASHINGTON is at present the site of a battle between conservationists and loggers over protection of one of the great temperate areas of rainforest left in the world. The arguments bear echoes of those carried on in New Zealand, relating to the definition of sustained yield. The U.S. Forest Service has interpreted it to mean large scale clearfelling of old growth forests, trees of which may be as old as 500 years.

At threat is the habitat of the rare northern spotted owl and other wildlife such as the grizzly bear.

Japan is the market for the most of the timber. However, rather than being chipped, the magnificent Douglas firs and cedars are shipped as logs for the Japanese building industry. In 1989 Japan built 1.68 million new homes, twice that of the U.S. which has double the population.

Audubon magazine says that the Japanese use prodigious amounts of timber in their homes because they are so fond of wood. A quality home can call for upwards of 30 tonnes of timber. Japan's wasteful and excessive demands for industrial plywood and for paper products similarly place enormous demands on the world's forests.

Malaysian Timber Ban a Veneer

THE RECENT ANNOUNCEMENT by the Malaysian Government of a proposed ban on the export of logs is nothing but a hollow sham, according to the Japan Tropical Forests Action Network. In a move praised by some conservationists, Malaysian Prime Minister Dr Mahathir bin Mohamad late last year announced there would be a ban on the export of logs from Sarawak and Sabah. Prime Minister Geoffrey Palmer has been given some of the credit for persuading the Malaysians to come up with a ban.

However it has become increasingly clear since the announcement that the Malaysian Government is using the ban proposal simply as a ploy to buy time while the forests are destroyed at an even faster rate.

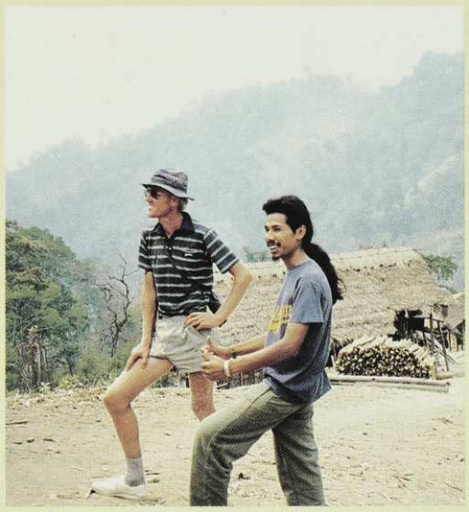
Nigel Hooper of JATAN says that logging is actually increasing so that all available timber may be extracted before the terms of the ban are enacted.

"Companies are entering some land for a fourth time. They are logging even small trees that are then thrown away, the purpose being to ensure that regeneration is impossible. The devastated forest is then converted to some form of mono-agriculture such as palm oil or rubber," he says.

His comments are supported by the *Utasan Konsumer*, published in Penang, which reports that Prime Industries Minister Datuk Seri Lim Keng Yaik has postponed the ban until 1995.

Comments the paper: "He forgot to mention that by 1995 there would hardly be any primary (virgin) forests left... Sabah's forests will be logged out by the early 1990s, while Sarawak's virgin forests are estimated to vanish in seven years."

Besides the wildlife and plants, what is also at stake in the forests is the survival of the Penan people. In a last desperate attempt to save their forest homeland, the Penan visited Japan in March to beg the Japanese Government to place an immediate ban on the importation of logs from Sarawak and Sabah.



Forest and Bird member David Lamb recently returned from Thailand where he witnessed the results of logging. The smoky atmosphere in the background of the photo was ever present as fallen forests burned. In a bold move, Thailand banned all rainforests logging last year.

Names of companies involved in the destruction have a familiar ring – the Marubeni Corporation and C.Itoh Ltd are of course behind rainforest destruction in New Zealand. JATAN is calling on the New Zealand Government to disallow commercial transactions between New Zealand companies and the loggers, and conservationists in this country are being asked to boycott the companies and their products.

Seal Cull Call

NEW ZEALAND is not the only country where seals are perceived by commercial fishers as posing a threat to the fishing industry.

In Canada, calls have been made for a cull of the grey seal population off the east coast of Canada, on the grounds that they eat large amounts of fish which would otherwise be caught by humans.

The demands for a cull of the 70,000 strong grey seal population coincide with a crisis in the North-west Atlantic fishery. Quotas have been cut and thousands of jobs lost in fish processing factories.

Overfishing has been identified as the major cause of the crisis, with over-optimistic assessments of stocks by scientists an important contributing factor.

Buyer Beware

GOING GREEN is not as easy as it first appears, as overseas experience is proving. The following example is an instructive one for beginners.

Recycled paper may not be what we usually understand it to be, that is, paper which has been used and re-processed. The Warmer Campaign (World Action for Recycling Material and Energy from Rubbish), recently complained of their experience with "recycled" paper in *Warmer Bulletin*:

"At no time were we told that "recycled" paper had probably never left the paper mill. Now that we are aware that the bulk of paper being sold as recycled is actually paper that was damaged in processing and simply reprocessed at the same mill, we feel a little foolish. Obviously mills cannot just discard damaged rolls, and it makes total sense to reprocess it in this way. We just wish that we, along with many thousands of other consumers, had not believed it to be recycled in the way that we all think of as recycled: post use. We feel conned."

One of the most galling things is that mills have placed a premium on recycled paper, on the grounds that it is more costly to produce.

The Baka – Forest Dwellers Under Siege

LAST YEAR New Zealand TV audiences were shown the moving story of the Baka people of the Cameroon, on the west coast of Africa. The Baka are one of the few remaining African forest dwellers. Altogether it is estimated there are about 200,000 people of different tribes in central Africa whose lifestyle depends on the forests.

The present generation of Baka may be the last of the tribe to live in the forest. Between them the World Bank and the UN Food and Agriculture Organisation (FAO) have hatched the Tropical Forestry Action Plan (TFAP) which will effectively put an end to the Baka people's way of life.

In Cameroon, the plan calls for a 600 km highway to be driven through the heart of the remaining forest in the south-east of the country. This will open up 11 million ha of forest, which will be divided up into industrial exploitation, agriculture, settlement or conservation.

At least 8 percent of the money involved in the project is earmarked for conservation, but the indigenous peoples will be banned from hunting, they will not be allowed to go into certain areas and they will be forcibly resettled.

Unfortunately governments around the world are pouring massive resources into the TFAP, a scheme which has been criticised by conservation groups as being a front for continued large scale destruction of tropical forests. The UK Government recently pledged 100 million pounds towards "saving the rainforests", with it all going to the TFAP.

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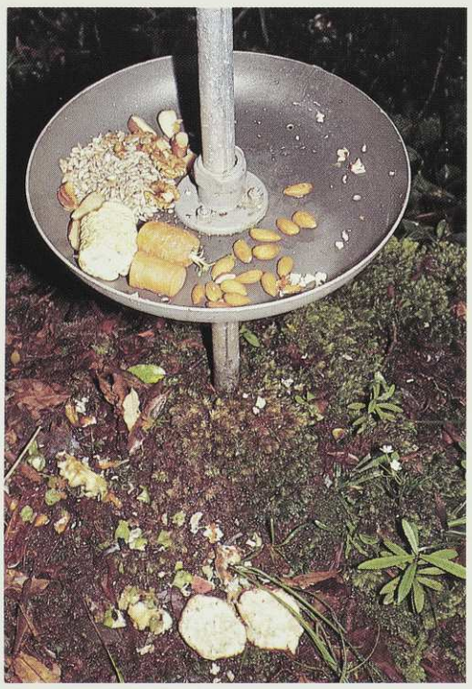
Threatened Species Trust: Conservation

A COMALCO KAKAPO! A Tasman Forestry kokako! What's happening? Has big industry highjacked New Zealand's threatened wildlife to serve its own ends?

Well, yes it has, but it is good news for the kakapo and kokako which will benefit from commercial sponsorship of the Department of Conservation's recovery programmes. The sponsorship is all part of Forest and Bird's new Threatened Species Trust Fund.

Commercialisation of New Zealand's threatened species is not new. The poor old flightless kiwi has been shamelessly exploited for years to help sell a multitude of goods from boot polish to sausages. This curious ancient bird, at its happiest when hunting for grubs in dank rainforest litter, has also been hijacked by sports promoters whose jingoistic chants urge our sports heroes to give the Aussies "A taste of Kiwi".

Needless to say, all this commercial and nationalistic obsession has never benefited the kiwi, whose range and numbers have declined dramatically this century. A recovery programme for all three kiwi species is long overdue as predation by pigs and dogs, along with habitat loss, contribute to its decline.



One of the kakapo feeding stations set up on Little Barrier. The native rat kiore has been attracted to the feeding stations, hence the need to elevate them. At the bottom of the picture is a chewed kumara; it appears male kakapo prefer kumara and brazil nuts, while females have a taste for almonds, peanuts and apples. Photo: Brian Lloyd

Big business and central government at the Threatened Species Trust launch: Comalco chief executive Kerry McDonald (left) speaking to Conservation Minister Philip Woollaston. Photo: Bruce Connew

Tasman Forestry have donated this 4 wheel drive vehicle as part of their sponsorship of the kokako. Left to right: Alan Saunders (Department of Conservation), Basil Graeme (Forest and Bird), Bryce Heard (Tasman Forestry) and Hazel Speed (Department of Conservation).

Becomes a Corporate Cause

by Kevin Smith

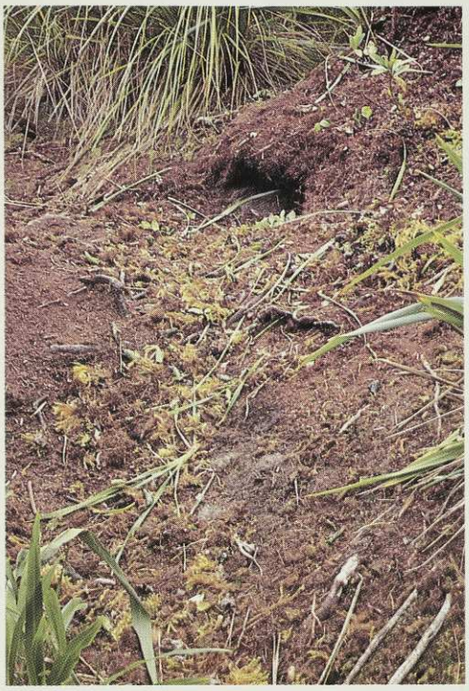
Public Captivated

Yet, ever since the seemingly miraculous rescue of the Chatham Island black robin from the brink of extinction, the public have become captivated by the dramatic struggle to save some of our critically endangered species. Don Merton, the Department of Conservation's endangered species specialist, has become a national hero.

But his ingenuity and the tireless efforts of his team of fellow workers can achieve little without adequate funding. Helicopter trips, pest eradication programmes, sophisticated radio telemetry, the servicing requirements of remote field stations, innovative research and so on place a heavy demand on the conservation budget – a pittance compared to a Clyde dam, a couple of frigates or any number of lesser government projects. But in these times of economic restraint, taxpayer funding of threatened species work will always fall short of the optimum.

Forest and Bird's deputy president, Gordon Ell, believes the role of the Threatened Species Fund is to supplement DoC's base level funding, enabling the department to tackle projects that would otherwise be delayed or never get off the ground.

A track and bowl system on the summit ridge of Little Barrier Island. This one belongs to a male kakapo dubbed Arab. Photo: Brian Lloyd



"Corporate New Zealand is awakening to the reality that it is to their advantage to support conservation in the 1990s. The public will expect and demand a meaningful commitment from big business towards conservation.

"Enlightened companies and their public relations consultants are looking for opportunities to contribute in a meaningful way to green projects.

"Forest and Bird welcomes this interest and has established the Threatened Species Fund as a vehicle to channel corporate sponsorship into DoC's recovery programmes," Gordon Ell says.

Critically Endangered

This novel concept became a reality in April when the Fund was launched by the Minister of Conservation, Philip Woollaston, coinciding with the announcement of Comalco's major sponsorship of the critically endangered kakapo. Sadly, just prior to the launch it was announced that the rescue programme had suffered a major setback with the death of a chick and abandonment of an egg on Little Barrier Island. The chick was the first hatched for nine years.

A Power of Good for Kakapo

Twenty years ago conservationists and industry were locked in bitter confrontation over the proposal to raise scenic Lake Manapouri, touted as "New Zealand's most picturesque lake."

The plan was to lift the lake level by 27 feet in order to provide more water to turn the giant Manapouri hydro station's turbines, which would in turn power the proposed Bluff aluminium smelter.

Even though the hydro station was finally built, along with the aluminium smelter, the conservation movement achieved a major victory in forcing politicians and power planners to scrap the lake raising proposal. In New Zealand the campaign has in retrospect been hailed as marking the birth of the modern environmental movement.

Today Comalco, the smelter company at the centre of the controversy, is one of a number of businesses keen to sponsor "green" projects. Over the next six years Comalco proposes to contribute $1 million to the rescue programme to save the kakapo, the world's largest and rarest parrot.

Kerry McDonald, chief executive of Comalco NZ Ltd, has a reputation for being a hardnosed businessman. He recently talked with *Forest & Bird* about why Comalco is prepared to sponsor a rescue programme for the kakapo.

F&B: How committed is Comalco to kakapo rescue?

Kerry McDonald: A concept was put to us by Forest and Bird and the Department of Conservation. They indicated a time period of five to six years within which they thought the project could achieve some significant success. So we have been willing to discuss an arrangement which envisages an involvement for that period. So, I think that in itself is a pretty substantial commitment on behalf of the company. The fact that there is a regional focus with kakapo, it's got a strong linkage with Southland or the south of the South Island, which is the centre of our operation, gives an added incentive to be involved with it.

F&B: What would you say to the sceptics who say you are just conducting a PR exercise and that you are going to give your company a green gloss at the same time as you are negotiating for the purchase of a share of the Manapouri power station?

KM: Well, any of the issues we have to deal with, such as negotiations on Manapouri and expansion of the smelter, they all stand alone. If we are going to have a substantial presence in New Zealand, if we are going to operate as a New Zealand company, then I regard all this as an important adjunct of our position here – that we are involved in sponsorship of the arts and community-related activities.

So kakapo is simply another facet of that. Now, I think there is likely to be a desirable spin off. Some of the problems we have had in the past we have found have been caused by poor communication, lack of knowledge by both sides, and that's one of the reasons why over the last couple of years we haven't just been adopting a higher profile in advertising – we've been providing a lot more factual information about the company, level of profit, tax paid and so on.

Now I'm hopeful that one of the spin offs of the sponsorship is that we will have an opportunity for contact and discussion. People who have a strong commitment to environmental issues will get a better understanding of our perspective, we in turn will get a better understanding of theirs. I think that will be a very positive process.

Save Cans – Save the Kakapo

There is added incentive now to recycle your cans as increases in can recycling will mean greater kakapo funding.

There is strong linkage between aluminium can recycling and kakapo sponsorship, besides the obvious symbolism, or "synergy" as Kerry McDonald puts it.

Comalco have agreed that, if can recovery can be increased significantly, they will increase their funding of the kakapo programme.

This offer should be added incentive to conservationists to return their cans to recycling bins. At present New Zealand has a can return rate of about 30 percent – a good base from which to start. It should not take much to improve that and in turn provide extra money for kakapo. Encourage children to collect cans instead of hitting their parents for pocket money. Ensure any cans discarded at your workplace or functions you attend, are recycled. The processing of a recycled can uses only five percent of the energy required to produce a can from raw materials.

The Trust Fund is a partnership between Forest and Bird and the Department of Conservation. Society director, Kevin Smith, DoC's director-general, Bill Mansfield and the chairperson of the New Zealand Conservation Authority oversee the operation of the fund. They have the power to co-opt a further trustee from the commercial sector. Administration of the Fund is the responsibility of Forest and Bird. For each sponsorship a project committee is established comprising representatives from Forest and Bird, DoC and the sponsoring company.

Sponsorships will not be limited to the glamorous bird species. Skinks, giant wetas, carnivorous land snails and a host of threatened native plants all need help too.

Credit for developing and successfuly steering the Trust Fund through the administrative and legal requirements lies mainly with DoC's former assistant-director, Gordon Shroff, Society solicitor David Hurley and Society staff.

Comalco have committed themselves to a $1,000,000 sponsorship for kakapo over six years. Additional funds will be contributed if aluminium can return rates increase significantly: a good incentive for Forest and Bird and DoC to promote aluminium can recycling which is a worthwhile endeavour in its own right. Comalco's sponsorship will enable DoC to fully implement the kakapo recovery plan.

Some of the projects include: close monitoring of the Codfish Island and Little Barrier populations, supplementary feeding to increase the chance of breeding success, development of captive breeding techniques in case the wild population continues to decline, rat control, further research into kakapo feeding and habitat requirements.

Tasman Forestry have committed $150,000 over three years to a management project designed to discover the key to maintaining viable kokako populations in mainland forests. Nest predation by rats and stoats and food competition from possums are serious problems for the kokako. Few chicks are successfully fledged.

The 3-year project will aim at controlling predators such as rats, stoats, and wild cats which attack nesting kokako and their eggs or nestlings. Browsing animals which have a detrimental effect on the kokako's habitat will also be controlled.

The project will be centred on forests in the Kaharoa area north of Rotorua. Heading the project will be Hazel Speed, who has recently spent three years studying kokako in Pureora and other King Country forests. Working with DoC staff, she will monitor the effects of the control programme on both predators and kokako to establish the most effective and efficient management techniques.

It is expected that the project results will have wide application for the management of other kokako reserves.

Bryce Heard, Tasman's chief executive, is right behind the project.

Working Side By Side

"Tasman Forestry's commitment to the project is an illustration of industry and the conservation movement working side by side with Government in a sensible, positive manner. We particularly support the active management principles in this project, which should help the kokako's survival," he says.

These projects will be implemented by DoC's newly formed Threatened Species Unit headed by Alan Saunders. Only projects approved by the Threatened Species Unit and forming part of a recovery plan (where one exists) will be considered for sponsorship. Forest and Bird has welcomed the formation of the Threatened Species Unit and we have been very pleased by their willingness to consult with Forest and Bird and seek our input into the recovery plans. Society field director Mark Bellingham is on the kakapo recovery committee and Kevin Smith is on the kokako committee.

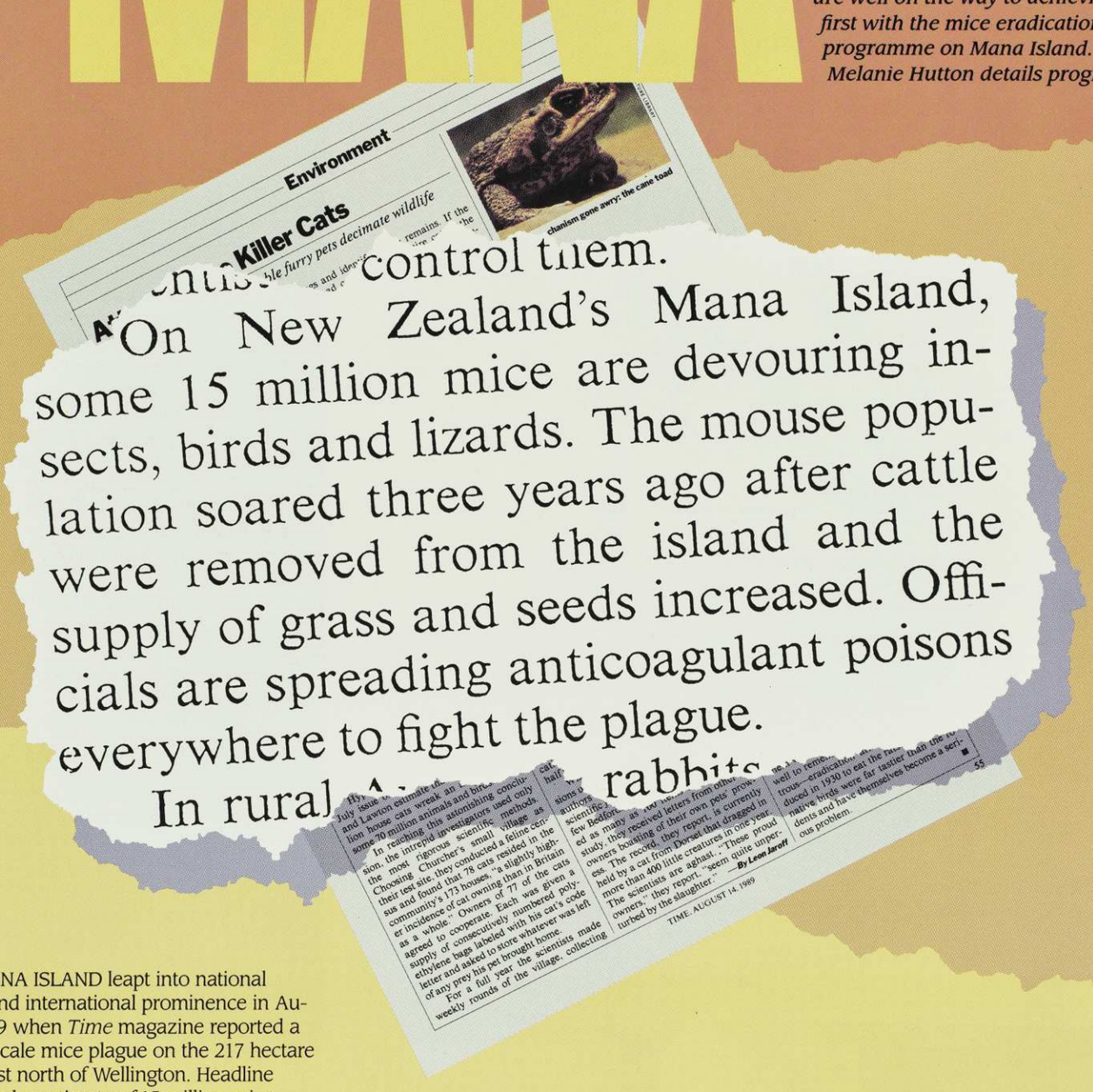
Cynics might suggest that Tasman and Comalco are buying off two of their potentially sternest critics to any future controversial developments they might be planning. To the credit of both firms, neither has even hinted that it expects a softening of Forest and Bird's or DoC's conservation advocacy on other issues.

Observes Gordon Ell: "It was made clear from the outset that the sponsorship will be completely separate from any other relationship we may have with the company. Any spillover to date has been to the benefit of conservation. The overwhelmingly positive response Tasman Forestry have had to their kokako sponsorship and their commitment to native forest protection in the Tasman Accord has convinced parent company Fletcher Challenge of the merit of the green approach. Fletcher Challenge's Tasmanian subsidiary, Australian Newsprint Mills, played a constructive role in a recent accord in Tasmania between conservationists and the timber industry."

The co-operative partnership forged between DoC, Forest and Bird and industry augurs well for the future of some of New Zealand's most special inhabitants. Only 43 kakapo managed to hang on till New Zealand's sesquicentennial celebration after surviving here on these isolated islands for millions of years. The kakapo will not be around for the bi-centennial celebrations without a great deal of help, nor might the kokako. Comalco and Tasman Forestry's investment in the future of New Zealand's native wildlife will hopefully be just the first of a number of threatened species sponsorships.

MANA
Island of Hope and Glory

New Zealand conservationists are well on the way to achieving a world first with the mice eradication programme on Mana Island. Melanie Hutton details progress.



MANA ISLAND leapt into national and international prominence in August 1989 when *Time* magazine reported a biblical scale mice plague on the 217 hectare island just north of Wellington. Headline grabbing the estimate of 15 million mice might have been, but *Time*'s figure was scaled down by the Department of Conservation to a still astonishing 5 million of this ubiquitous pest.

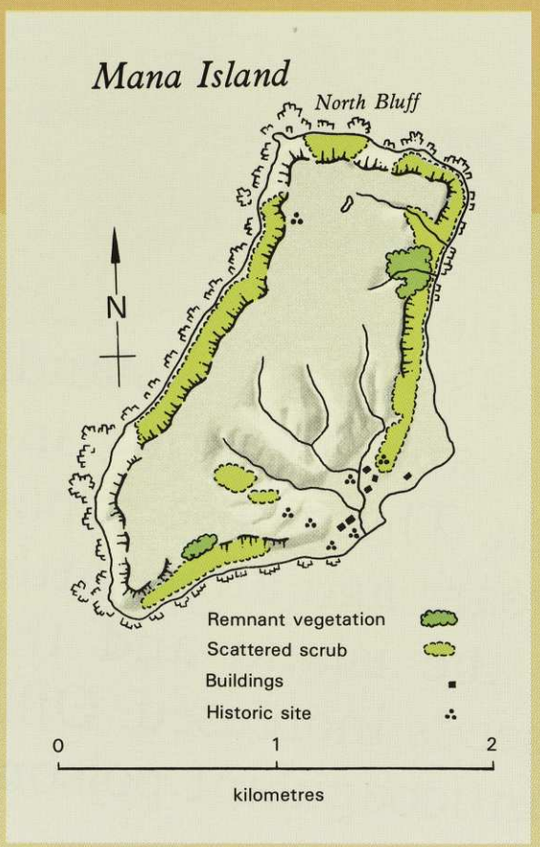
Of course, no-one had ever carried out a thorough rodent census. But Phil Todd, who has been on the island for more than two years, tells of going out on summer nights from the Mana island ranger station and seeing the back lawn and path covered with hundreds of mice.

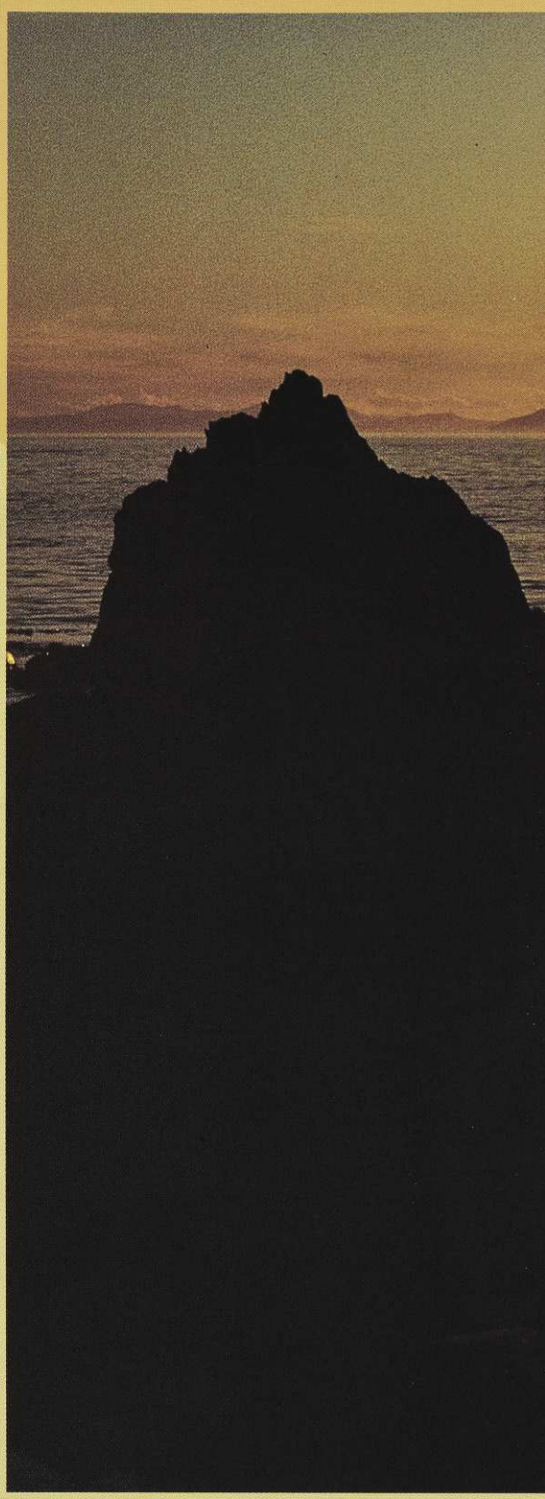
"They were attracted to the houses because of the food. During summer they were constantly in the ceilings and walls, spending a considerable time gnawing at the pinex and pink batts. If they got stuck in the hollows of the wall you could hear them for three days jumping up and down. When the poison was being laid, they gnawed through my ceiling into the cupboard in search for food," recalls Phil.

But now all that has changed. Over the last year Mana Island has been covered with poison bait to rid it of its huge mice population. Since August 1989 only one live mouse – a female which had not bred – has been discovered. Phil Todd and many others who took part in the eradication project are hoping it was the last of Mana's mice.

Although conservationists and DoC will have to monitor the island for mice for another 12 months, it appears at this date that the programme has been a success. For New Zealand this could mean another achievement in our internationally acclaimed island restoration programme. While mice have been cleared from other New Zealand islands such as the 2 ha Whenuakura Island off the Coromandel coast, Mana's 217 ha presented the exterminators with a massive challenge. Eradication of mice on an island this size had never been tried in the world before.

Lying 2.5 km distant from the mainland, Mana has so far been spared the depradations of noxious pests such as stoats and rats. Considering its farming history, Mana appears to have avoided rats through sheer good fortune. Rats are accomplished stowaways and numerous boats have visited the islands over the years, posing the threat of accidental introductions. Boats still travel to the island bringing workers, volunteers and visitors, but nowadays every precaution is taken by those authorised to take passengers, such as laying poison on the boats and anchoring away from the soon-to-be-demolished jetty.





Mana Island from the Wellington coast: the dream of a secure home for threatened species draws closer. Photo: Terry Fitzgibbon

Time *magazine was not far wrong in its description of the extent of the Mana Island mice plague. A simple bucket trap laid one night a year ago by Mana Island field staff saw a catch of 204.* Photo: Phil Todd

Mice vs Mana

Mana Island has been plagued by mice since they arrived with European farmers in 1834. After a long and chequered farming history which saw the virtual clearance of the original forest, the island then became an exotic sheep quarantine and breeding research station, and later a cattle research farm. Stock were removed from the island in May 1986. When the stock were removed the mice population exploded due to the increased food supply, especially of grass seed.

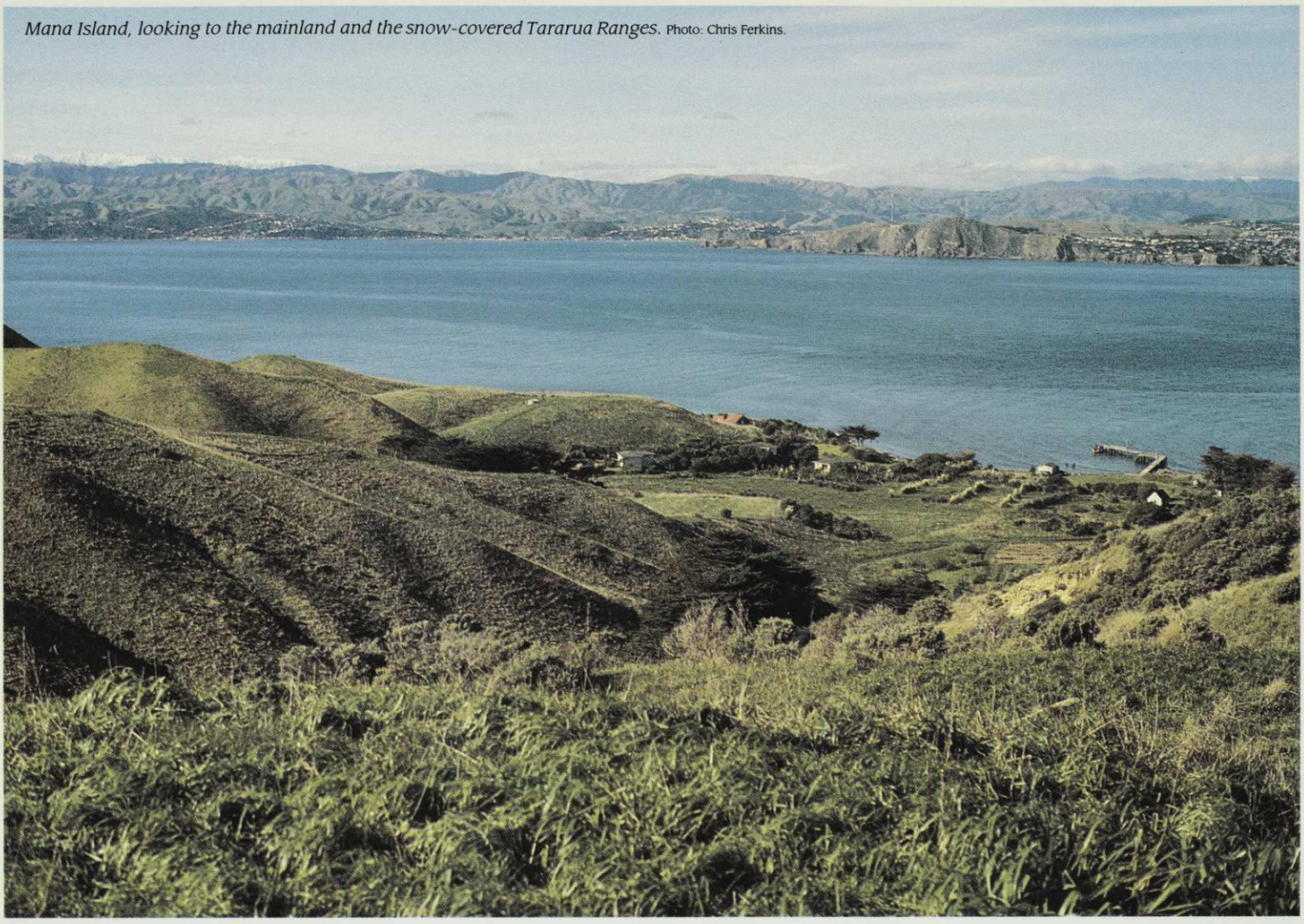
Action had to be taken swiftly to stop the burgeoning mice epidemic. Mice destroy the seed, fruit and seedlings of many native plants found on the island, inhibiting natural regeneration; they also clean out the poison bait set in case rats come ashore, compromising DoC's ability to keep the island rat-free; they eat bird and lizard eggs and about 75 percent of their diet is comprised of insects, which would otherwise be eaten by birds. Several rare and endangered animals were threatened: the Cook Strait giant weta *(Deinacrida rugosa)*, whose sole North Island refuge is Mana Island; McGregor's skink *(Cyclodina macgregori)* and the gold-striped gecko *(Hoplodactylus chrysosireticus)*; and a number of seabirds which nest on Mana such as the little blue penguin and sooty shearwater. Finally, large concentrations of mice can cause disease.

Mouse eradication could also open the way for Mana to become an important island refuge for other threatened species such as the North Island saddleback or the takahe, provided the newcomers are compatible with resident animals.

The Mouse Busters

Much of the credit for the Mana mice massacre goes to Colin Ryder, deputy chairman of Forest and Bird's Wellington branch. The spur to Colin was the February 1988 issue of *Forest & Bird*, which contained an article about rat eradication in Fiordland's Breaksea Island. While the notion of clearing Mana of mice had been discussed for some years, it was not until Colin took it up as part of a proposal for a Conservation Corps programme that it got off the ground. The Corps scheme is a personal development/work scheme funded by the Government and launched in October 1988 to provide conservation work for school leavers and young adults.

In late October 1988 the idea was discussed among Forest and Bird's five Wellington branches (Kapiti, Mana, Lower and Upper Hutt and Wellington), then floated before the Department of Scientific and Industrial Research (DSIR). They were asked to give an estimate of the cost of the ambitious project. Two weeks later a Conservation Corps application for funding the Mana scheme and 12 other local conservation projects was presented to the Department of Labour by Forest



Mana Island, looking to the mainland and the snow-covered Tararua Ranges. Photo: Chris Ferkins.

and Bird's Wellington regional branches.

Of the 150 project applications received nationwide, 19 were chosen, one being the Wellington proposal. With project co-ordinator Chris Ferkins at the helm, 15 keen young people were chosen for the 13 projects – among them weed control at McKays Crossing, on Somes Island and in Taupo Swamp as well as track work on Kapiti and Somes Islands.

However, the Mana Island mice eradication project was the largest and most important. Through the Conservation Corps application a grant was received, part of which financed the whole of the mice eradication. To date $57,000 in direct costs has been spent on the mice eradication project, considerably more than expected.

Once the Corps scheme was accepted, DoC's Don Merton was approached to devise the programme. Because it was an ambitious project never tried before on such a large scale, spacing and poison had to be tested for optimum kill. Most of the hard work was done by the 15 members of the Wellington Conservation Corps, with volunteers helping on two days and four DoC people involved for a month.

Management of the Corps on Mana was handled by DoC Mana Island Manager Trevor Hook and his associate Phil Todd. These two put in many hours of hard work to see the project to a successful conclusion.

The final ammunition against the mice came in the form of a donation by Shell Chemicals of a tonne of "Storm" bait (an

Mana Revegetation: Community Co-operation

The introduction of stock to Mana in 1834 had a severe impact on the island's plant life. When the last cattle were removed in May 1986, about 80 percent of the island was in short-cropped pastures with native coastal vegetation clinging to the cliffs and shore. Once the stock were removed, the mice population exploded, giving the native vegetation little chance to recover.

For the last three years there has been an enthusiastic revegetation programme occurring, supported by many individuals and organisations. Wellington Forest and Bird has financed the building of a shade house on Mana Island so that seedlings from plant stock growing in the local area could be raised on the island. The native plant seed stock has been gathered for the last four years by Tim Porteous of the QEII National Trust in his spare time.

He collects seeds from areas within 7 km of the island, with most of his collecting done from native plants in the Plimmerton area.

This is to ensure that only local genetic stock is used. The assistance of Gary Simpson of the Porirua City Parks Department has been invaluable to the project, with the seeds being germinated in Porirua City's nursery and than transported back to Mana Island. Once there, Trevor Hook and the Mana Forest and Bird branch work together on the planting programme.

For the Mana branch, the revegetation project on Mana Island has become a long term commitment with groups of 6 people going out 2-3 times in the summer to help repot and propagate. Work parties involving other Forest and Bird branches and community groups plant the seedlings out during autumn and winter. Last year over 40,000 trees were planted in gullies around the homestead with a healthy strike rate of 80 percent. It is hoped that these plants will provide seed stock for natural regeneration.

Plant trials are now occurring on the slopes and former pastureland although it is hampered by the rank grass smothering seedlings, necessitating occasional release work. Flax, taupata, manuka, akeake, ngaio and kanuka are some of the species planted.

The vision inspiring these dedicated people is of a pest-free Mana Island springing back to life as native shrublands and ultimately forests return. One day, perhaps, an island which was once the playground of millions of mice will resound to the calls of some of New Zealand's precious endangered birds.

anti-coagulant); the remainder was supplied at low cost. At a cost of $10,000 per tonne, and with 5 tonnes needed, this assistance was invaluable. The large oval pellets had a bitter additive making them unpalatable to insects and birds, but, curiously, not to mice. They were also dyed blue, a colour that does not attract birds.

Programme Underway

Winter, when the mice were hungriest and numbers were at a relative low, was the optimum time for bait laying. The island was closed for four months while the eradication programme was carried out, in the following steps:

- April 1989: 5,500 bait stations laid. The bait stations consisted of plastic tubes with a tray inside for the poison. These were laid in a 25 metre-grid pattern over the island.
- July 26th 1989: In one day, all 5,500 bait stations were laid with bait, with the exercise repeated on 11 August. A one day operation was crucial to the programme's success as it meant that there was no area where the mice population could avoid the bait. About 60 volunteers from the Conservation Corps, Mana College, Ornothological Society, Mana Forest and Bird and DoC clambered over the whole island in the difficult and energy sapping task of baiting the stations.
- 15th August 1989: A further 2 tonnes of a different poison (Talon 50WB – ICI) was spread by a top dresser. This was an added precaution in case any of the mice were bait shy.

Since then the 5,500 bait stations have been regularly checked by Conservation Corp workers for any mice, with only one found since August – a one-year-old female which fortunately had not bred.

For the Conservation Corps, Mana Island looks like being a successful project. Although the Corps was sadly disbanded at the end of January because of a lack of funding, two of the members are now working fulltime on Mana for DoC monitoring the traplines and checking the bait stations.

Mana College pupil Malcolm Priest was just one of scores of volunteers who helped in the Mana mice eradication programme. Here he places poison bait in one of the bait stations.
Photo: Chris Ferkins

Don Merton, of black robin and kakapo fame, is optimistic about Mana's future as an island sanctuary.

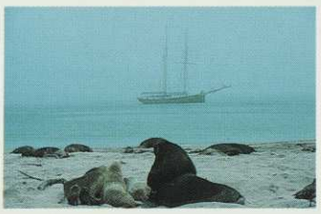
"If it is a success – and it will be a year to 18 months before we can get too jubilant – the programme offers one of the few options for rehabilitation of those native animals that are sensitive and have no future on the mainland. It's very exciting. It looked like degradation of our incredibly invaluable island resource was unstoppable, but now we have the ability to do something about it," he says.

The future for Mana as a sanctuary is looking good. As yet no plans have been made regarding the endangered native animals which might be relocated on the island. This will have to wait until the island is officially endorsed as being mouse-free.

In the meantime, the tree planting continues and conservationists wait anxiously for the all clear on a new island sanctuary.

Reference: *NZ Journal of Ecology* Vol. 10 1987 pg 57-68. Conservation Opportunities on a Highly Modified Island – Mana Island – Wellington, N.Z. S Timmins, I Atkinson, C Ogle.
Forest and Bird wishes to record its appreciation to the hardworking young New Zealanders who pitched in to help protect our unique wildlife. We wish them every success in the future. Many thanks to the following who were most closely involved with the project: Catherine Coles, Andrew Drumm, Peter Griffen, Bernard Kellett, Calum MacMillan, Keri Martell, Jonah Tu'uga.

Subantartic Voyages 1990-91



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GOING FOR GOLD

by Gerard Hutching

FOR THE MOMENT, Opito Bay on the Coromandel Peninsula near Whitianga is a typically peaceful coastal Coromandel hamlet.

For the moment, the threatened New Zealand dotterel nests among the pingao-covered sand dunes. Each year birds return to nest, sign that they continue to find this patch of coastline sufficiently tranquil to raise their young, which cannot be said for many other northern coastlines.

For the moment, pohutukawa, still relatively untroubled by possums in this part of the world, line the coast. Green pasture gently rolls to the sea, past ponds where the rare brown teal has recently made a home.

For the moment, for the moment. But soon the lives of the wildlife, the plants and the people who live at Opito Bay could be changed, perhaps forever.

Australian company Barrack Mining is pushing for a prospecting licence over 127 ha

of the Edens and Chapman families' farm, including sand dunes, wetlands, nine known Maori archaeological sites and productive farmland. Should their prospecting bear fruit, Barrack Mining are likely to apply for an open cast mine, rendering much of the area virtually unsuitable for farming and for wildlife.

Skipper Chapman is becoming a bit of a celebrity these days, although he would prefer to be out of the limelight. The mid-60s cow cockie and his wife Joyce have spent 40 years working on the formerly abandoned 450 ha farm. Today it supports them, their daughter Sue Edens, son-in-law Murray Edens and grandchildren Ross and Kim Edens.

Ever since Barrack and their New Zealand agent Applied Geology Associates descended onto the Opito Bay farm in 1988, the families' lives have been overturned. Skipper's rugged profile now adorns full page newspaper advertisements describing the threat to the area. The family have boned up on mining law to find out what their rights are and the young children are worried about what might happen to the fishing and their way to life.

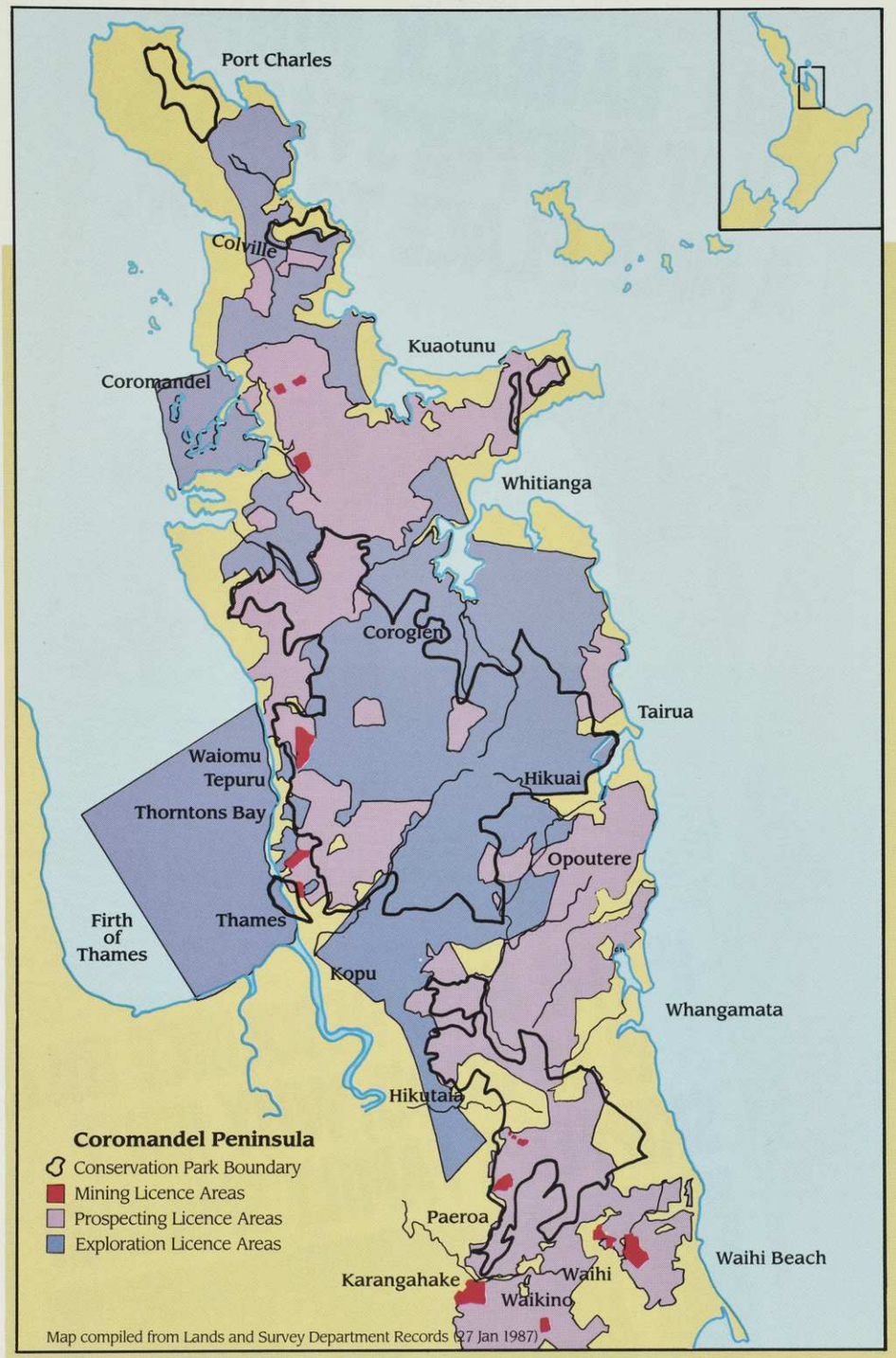
When Barrack decided to apply for a prospecting application, the Chapmans and Edens responded immediately, mailing to the 200 ratepayers in the area to arrange a meeting. An overwhelming 140 of the ratepayers backed the family and filed objections to Barrack's prospecting application. The Planning Tribunal was due to hear the case in March this year.

Sue and Murray Edens are Forest and Bird members. Sue in particular has a strong interest in the natural world, having spent nearly all her life on the farm. Skipper has over the years created a number of artificial wetlands on the farm that are now sanctuaries for wildfowl.

From left, Sue Edens with Kim (4), Joyce Chapman, Murray Edens, Skipper Chapman.

Opposite top: *Isolated Opito Bay on the Coromandel Peninsula, eyed by Barrack Mining for potential gold. The dunes, where the threatened New Zealand dotterel breeds, are in the company's prospecting licence application.*

Opposite bottom: *One of the ponds created by Skipper Chapman. Brown teal nest here.*



Anyone who doubted the Coromandel Peninsula was sought after by the mining industry need only glance at this map, showing that virtually the whole peninsula is covered with either prospecting or exploration licence areas.

"We don't want mining on the peninsula," says Sue.

Her mother Joyce enjoys the peace of the bay.

"I remember seeing the porpoises migrate twice yearly and the birdlife, with the bellbirds attracted to the bottlebrush and the dotterels nesting on the sand dunes," she says.

So far the families have spent $40,000 preparing for the case against the miners. But in addition to that cost is the cost of an uncertain future, of work not carried out on the farm because it might be soon undone by a miner's pit.

They are not impressed by the present mining laws. Thanks to the Mining Act, Barrack Mining can move onto their farm against their wishes. Their only recourse is to the Planning Tribunal, but the odds are heavily stacked against them as the legislation favours mining. Mining companies invariably persuade the Planning Tribunal to reject landowners' appeals.

Applied Geology Associates, the New Zealand agent acting on behalf of Barrack, believe that monetary compensation is the panacea for the Chapman's and Edens' ills.

"I know from their point of view it is an intrusion of lifestyle and privacy. They want to protect their land. Barrack has offered far more compensation than the law provides for, but they chose to refuse it," says Rob Owen of Applied Geology Associates.

And that, for the moment, is where the issue stands: Barrack and Applied Geology Associates perplexed over why someone should refuse an offer "generous to an extent which is unnecessary"; a family determined to refuse that "generosity" in preference for an undisturbed lifestyle in which dotterels, brown teal and porpoises continue to enrich their souls.

The Mining Legislation – What's Wrong With It

THE CHAPMANS AND EDENS would not be in the position they are if the law was framed more fairly.

When Geoffrey Palmer launched his resource management law reform he promised a major overhaul of the present mining legislation with its draconian provisions in favour of mining. But his Resource Management Bill, introduced late last year and at a select committee at the time of writing, has failed to tackle the major problems with mining legislation.

The Bill does not deal with the most basic concern of all: what if a landowner does not want mining on his or her land? No other land-use industry has this special privilege. The mining industry is also the only one that can force its way onto conservation land as the present power of the Minister of Conservation to veto mining has been removed. Mining industry pressure on Prime Minister Palmer has persuaded him to back mining minister David Butcher rather than Conservation Minister Philip Woollaston. However, the recent announcement by Mr Woollaston to ban mining from national parks and specially protected areas is a welcome first step in protecting conservation land.

Forest and Bird and other conservation groups are working with Federated Farmers to counter the mining industry lobby and persuade the Prime Minister to give landowners the right of veto for their own land. The Minister of Conservation must have the right to veto mining on other conservation lands.

New Zealand's conservation estate is under attack from overseas mining companies. Conservation values on private land are also under threat. To safeguard our remaining natural areas and the rural way of life, we need to give the right to say no to mining to those who have stewardship over the land. The mining industry is well known for its insensitivity to the values of natural ecosystems or to allowing landowners such as Skipper Chapman the right to undisturbed occupation of their land.

RED MOKI

Threatened Fish of the Rocky Reef

by Ann and Basil Graeme, Forest and Bird Central North Island conservation officers

Spear fishers make short work of red moki. This catch by two divers from a trip to Great Barrier Island would have set back the population of red moki in the area by at least a decade. Such catches are today generally a thing of the past because of the devastation caused to the species.

WE FIRST SAW A BIG RED MOKI while diving at our only mainland marine reserve, near Leigh. Head down, he was ponderously "bumping" though the kelp forest, sorting the sediment for crabs, amphipods and brittle stars. Typically he took little notice of us.

At more than 60cm this was a large male and therefore of great age, at least half a century or more. His size would have won him a large territory on this deep reef. At night he would sleep in a cave in his territory. At rest his eight bold red-brown stripes fade. Red moki spend more than half the time asleep, sometimes sleeping standing head down after feeding.

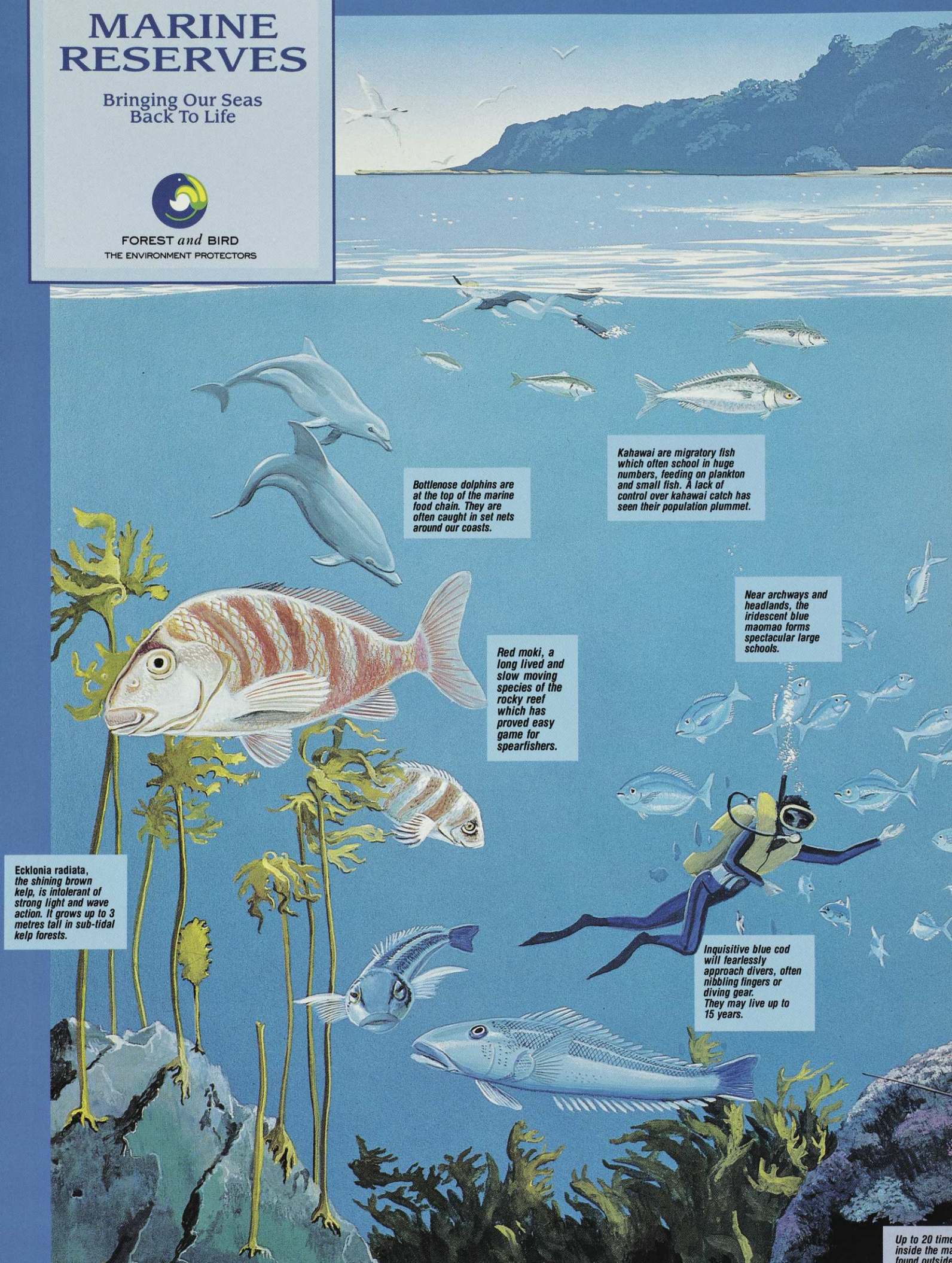
No respecter of marine life, inshore set nets are as harmful as ocean drift nets. Forest and Bird is calling for a ban on the use of set nets, particularly over coastal reefs.

ILLUSTRATION: RON COMETTI

MARINE RESERVES

Bringing Our Seas Back To Life

FOREST *and* BIRD
THE ENVIRONMENT PROTECTORS



Bottlenose dolphins are at the top of the marine food chain. They are often caught in set nets around our coasts.

Kahawai are migratory fish which often school in huge numbers, feeding on plankton and small fish. A lack of control over kahawai catch has seen their population plummet.

Red moki, a long lived and slow moving species of the rocky reef which has proved easy game for spearfishers.

Near archways and headlands, the iridescent blue maomao forms spectacular large schools.

Ecklonia radiata, *the shining brown kelp, is intolerant of strong light and wave action. It grows up to 3 metres tall in sub-tidal kelp forests.*

Inquisitive blue cod will fearlessly approach divers, often nibbling fingers or diving gear. They may live up to 15 years.

Up to 20 time
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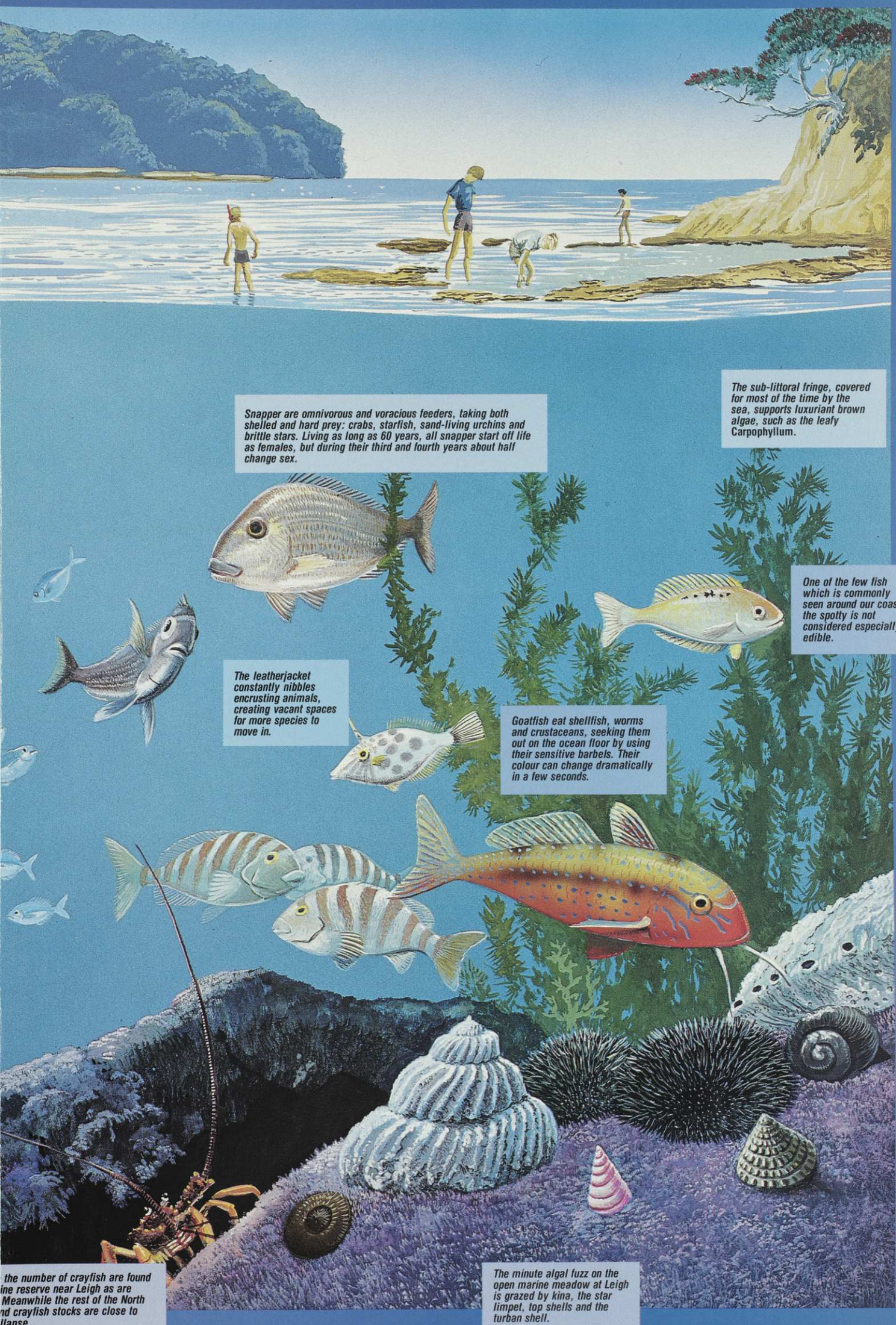
New Zealand's first representative marine reserve near Leigh, gazetted in 1975.



Snapper are omnivorous and voracious feeders, taking both shelled and hard prey: crabs, starfish, sand-living urchins and brittle stars. Living as long as 60 years, all snapper start off life as females, but during their third and fourth years about half change sex.

The sub-littoral fringe, covered for most of the time by the sea, supports luxuriant brown algae, such as the leafy Carpophyllum.

One of the few fish which is commonly seen around our coasts, the spotty is not considered especially edible.

The leatherjacket constantly nibbles encrusting animals, creating vacant spaces for more species to move in.

Goatfish eat shellfish, worms and crustaceans, seeking them out on the ocean floor by using their sensitive barbels. Their colour can change dramatically in a few seconds.

the number of crayfish are found ine reserve near Leigh as are Meanwhile the rest of the North nd crayfish stocks are close to llapse.

The minute algal fuzz on the open marine meadow at Leigh is grazed by kina, the star limpet, top shells and the turban shell.

ILLUSTRATION: RON COMETTI

Red moki, an easy target for spear fishers and set nets, have been decimated around New Zealand's coasts in recent years. This individual may be as old as 50 years.
Photo: Andy Belcher

Red moki are fish of the rocky reef. They are found all around New Zealand but are most numerous in the north.

In autumn the females, who live on the shallow reefs, swim down during the day to spawn with the males after dusk. Females prefer males holding territories with caves, so the older and bigger red moki attract many mates. Desirable territory also attracts rivals so the owner must drive off these challengers. If plain obstruction is not enough, the resident male will engage his rival in a joust, using his own superior weight to roll his opponent into the ground. If that fails he will bite the intruder. By the end of the breeding season an old male will have lost many scales and his tail fin will be tattered.

During the fighting the female may swim away so the male has to round her up, driving her back to his territory and biting her tail if she tries to escape. It is thought that spawning happens inside the cave. Nothing is known of the earliest stages of the red moki's life.

Their larvae presumably spend several months floating in the plankton. Between September and November juveniles 3 to 4 cm long appear in very shallow water or in rock pools. They can be recognised by their distinct bands, and are solitary and intensely territorial. Unlike the adults they feed diligently in the *Corallina* seaweed and grow rapidly to reach about 15cm after six months. They are approaching maturity at two years when the female is about 25cm long and the male about 30cm. Then they enter loose social groups on deeper reefs in 5 to 15 metres of water. From now on the red moki grow slowly and take several decades to double in size. Then territorial behaviour reappears and the oldest and largest males secure breeding territories on the reefs below 15 metres. They will defend their territories all year around.

Threats to the Red Moki

In many ways red moki are like our great flightless parrot, the kakapo. Like them, red moki are ponderous and non-aggressive. Their mating rites are akin to the "lek" behaviour of the kakapo, where the male defends a courting and mating arena. Again like the kakapo, before the coming of humans red moki had few enemies, and were unafraid and defenceless. Like the kakapo, this is their downfall.

Asleep a lot and seemingly half asleep even when awake, red moki are easy targets for spear fishers. A trigger-happy spear fisher can easily annihilate the large red moki around a reef, wiping out the breeding population. There is a pressing need to educate spear fishers. Some dive clubs already promote voluntary restraints. However, for red moki living on popular diving reefs, marine reserves will be the only sanctuary.

Red moki asleep – something this slow moving fish does more than half the time. Note the way in which the moki's stripes fade when it sleeps.
Photo: Kim Westerskov

Spear fishing is bad enough, but the wholesale slaughter of the set net is even worse. All the big red moki in an area can be caught in a single set net operation, killing the breeding fish and setting back the population for decades. Being sedentary and territorial, adults do not migrate quickly to the depleted reef, and the population must slowly re-establish from the growing juveniles.

And even the red moki's fondness for seeking shelter in caves may lead to disaster. Commercial fishers report that red moki are frequently trapped in crayfish pots, up to 30 in a single pot being recorded from the Hauraki Gulf.

Protection Measures

Outside New Zealand's two small marine reserves, red moki are fair game, with virtually no restrictions on their exploitation.

Red moki caught in set nets by commercial fishers are called "by catch". This means that the red moki were not the fishers' target but just an accidental catch. Although fishers are required to record their bycatch MAF has no statistics about the red moki catch, how many, how large, or where they are caught. This lack of basic data does not prevent the red moki being sold in fish shops.

The Wider Problem – Set Nets on Reefs

Red moki can be regarded as an indicator of the health of the reef system. Their decline is paralleled by that of other reef species – the coloured wrasse, the large grouper, porae and even the common and fearless leather jacket. Few accessible reefs now have natural

numbers of red moki, grouper and porae, and many reefs are now deserts, denuded even of smaller fish like demoiselles, maomao and leather jackets. The set net is appropriately called the "grab all" in Tasmania. Helped by the spear fishers, the set net is efficiently destroying the reef community.

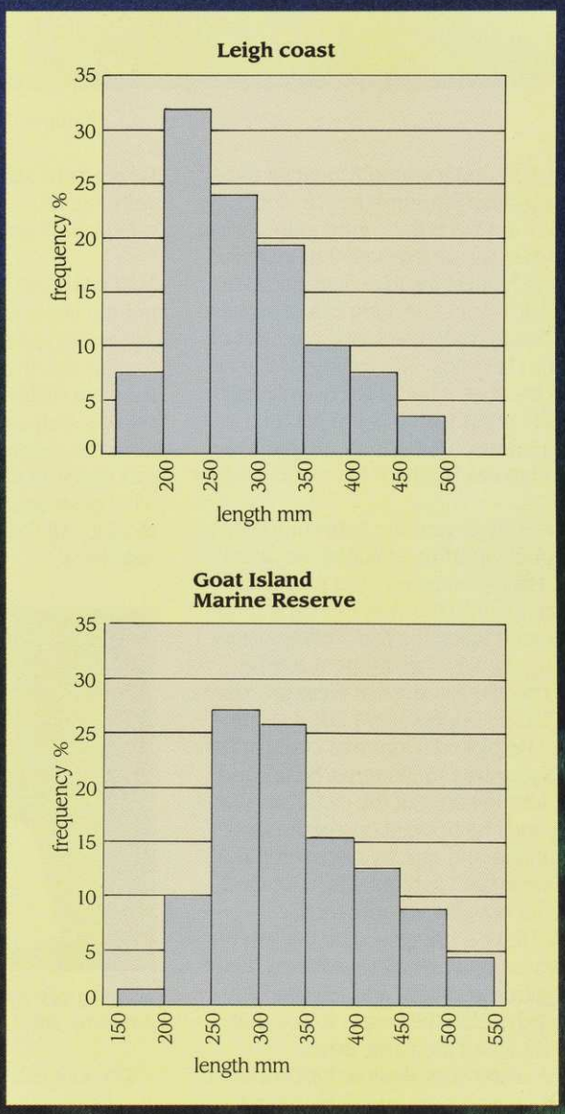
Prize winning underwater photographer Andy Belcher says: "Set netting has ruined Mayor Island reefs. They used to be alive with fish of all sizes. Now you can swim and swim and never see a big fish. It's a desert out there."

DoC Officer Allan Jones has just surveyed Mayor Island to produce a marine reserve proposal. His observations bear out Andy's comments. "Mayor Island was subject to heavy set netting, but there's not much netting now that the fish have gone. The only big red moki left are in places where the shape of the reef discouraged spear fishers and prevented nets being set."

A ban on set nets is essential to save the vanishing red moki and all the beautiful and varied fish of the reefs.

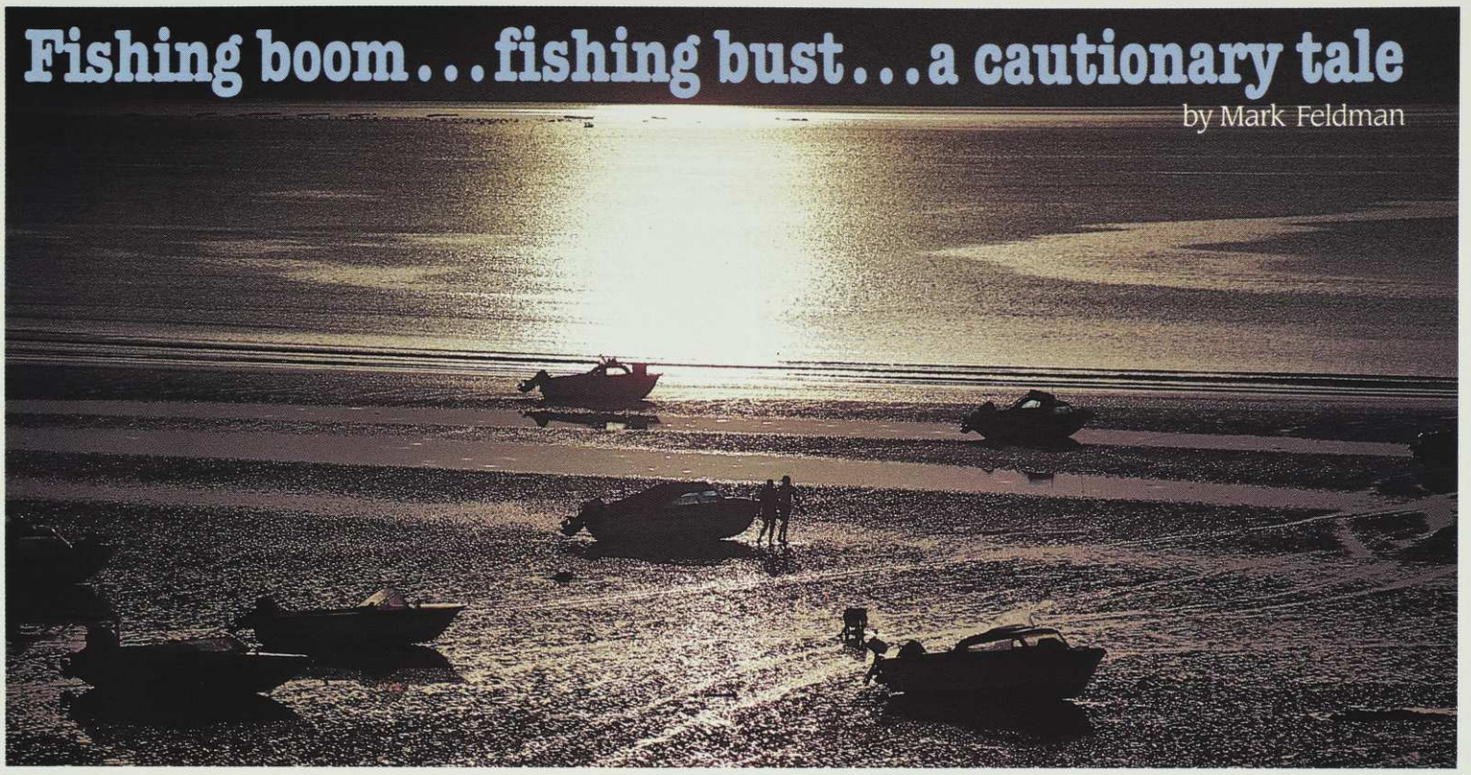
Why do we accept and even admire killing these restricted populations of native species, when we would deplore such killing of seagulls or even sparrows? It is time we took a more enlightened attitude towards our reef fish, which are just as much a part of New Zealand's natural heritage as our native birdlife.

Research shows that there are more large red moki in the population in the Leigh marine reserve than in the adjacent heavily fished coast. Not only were the red moki larger in the reserve than outside, but they were two to three times more abundant.



Fishing boom...fishing bust...a cautionary tale

by Mark Feldman



Mangonui Harbour. Photo: Terry Fitzgibbon.

IT WAS 1973 and a young American tourist was hitch-hiking around the Far North. On a fateful day in March the young man got out of a car in Mangonui, thanked the driver for the ride, and headed for the youth hostel at the "Old Oak". After checking in at the hostel he took a fishing rod, a reel, and a small box of lures from his pack. The fishing gear was well worn because it had been heavily used. Though only in his twenties the hitch-hiker was an experienced fisherman. He had used his little rod to catch fish for his meals all over the world.

As he walked around the harbour towards the Mangonui wharf he watched the water with care. His experienced eyes examined the terns diving into the water to capture tiny anchovy forced up by the fish feeding below. By watching the splashes in the water he could see that the feeding fish were probably less than 30cm long but were fast moving carnivores. He picked a lure that could imitate the anchovy he saw in the tern's beaks and cast it out into the area of the disturbed water. Within seconds he hooked one of the fast moving hunters and quickly discovered that these fish were hard fighters which jumped often and did not give up until totally exhausted. He was impressed by the fish but saw that it was quite small so released it and cast out again. He caught and released several of the fish before he began to see that they were all about the same size.

Since the water was shallow he concluded that the fish were young and there must be bigger ones about, perhaps in other schools outside the harbour. A local passing by told him that the fish he was catching were called "kahawai" and did, indeed, grow much bigger. The tourist continued on his way to the wharf to see what could be observed from a higher vantage point. Though no novice to fishing the young American was amazed by what he saw from the wharf. In the water below he could see small mullet and mackerel swimming in the tidal flows. The schools were bunched tightly, as if to protect themselves from attack by predators. The little fish were nervous and moved evasively every time a gull's shadow passed over.

Shimmering Geysers

But the show really started when the schooling mullet were attacked from the water underneath them. The young fish erupted from the water like living, shimmering geysers as they desperately tried to escape from the marauding fish below. The American gazed in awe as he watched the schools of kingfish slash through the hapless mullet, picking out the weak and unwary for their next meal.

Author Mark Feldman: Better fishing around most American cities than in Northland.

The kingfish were big. The ones travelling in schools ranged from 10 to 15 kgs. These were the fish that were hunting together to improve their chances of success. There were other, bigger kingfish which seemed to be travelling alone. They were much more experienced hunters and seemed to be able to feed on their own successfully. These solitary kingfish were much larger, some running up to 30 or 40 kgs in size. They were easily seen as they attacked the surface-feeding kahawai which the American had been catching with his lures.

The scene on the wharf made an indelible impression on the tourist from America. Not even Alaska or the Great Barrier Reef had ever produced such a display of sea life so close to shore. New Zealand had a resource of great value here. He could easily imagine sport fishermen coming from all over the world to pursue such large and powerful predators. But the next morning the hitch-hiker would see something even more impressive, something that would change his life forever.

At dawn he got up, grabbed his fishing gear and binoculars, and walked to the top of the Pa that looked out over Mangonui Harbour and all of Doubtless Bay. By the time he made his way to the top the sun was well up, shimmering in the early morning light. As he scanned the seemingly calm water he began to realize that there were flocks of birds everywhere. With his binoculars he saw that the whole inner bay was alive with fish. As far as he could see there were schools of kahawai feeding on the surface with flocks of gulls, terns and shearwaters filling the sky above them. The American was exhilarated by the tremendous concentration of living things within his view. Wouldn't it be wonderful, he thought, to be able to live in a place like this, that was so full of life and beauty.

Cries Unheeded

The years passed and the young man returned to America to resume his career. While he was away the New Zealand Government continued to encourage the commercial development of fishing. Because of cheap Government loans and tax incentives, both individuals and large companies took to the sea. By the late 1970s insightful scientists and fishermen were beginning to warn the Ministry of Agriculture and Fisheries (MAF) that the fishery was in rapid decline and needed to be protected, but their cries went unheeded.

Unfortunately, MAF's role had always been to accelerate the exploitation of New Zealand's limited supply of fish. With a mini-

mal scientific staff and a history of close relationships with the commercial sector, MAF was not interested in conservation. But the inshore fishery continued to decline and within a few years the majority of commercial fishermen were complaining of a rapidly declining fishery.

While the bureaucrats at MAF procrastinated, our American tourist was back at home developing his business and raising a family with his kiwi wife. During the long American winters he thought often of Mangonui and its glorious sea life. Finally, in 1980, he was able to take an extended vacation. The family packed their bags and headed for New Zealand. While his wife and children spent time with their grandparents in Auckland the American fisherman drove north to Mangonui. Doubtless Bay was as beautiful as ever and the kingfish still swam by the Mangonui wharf. Out in the bay the kahawai were schooling but some things seemed to have changed.

The first thing he noticed was the marked increase in the number of commercial fishing boats. Trawlers and long-liners seemed to be everywhere. The wharf was the centre of activity, with trays of snapper, kingfish, trevally, hapuka and school sharks being unloaded daily. There were changes in the water too. The kingfish swimming under the wharf were smaller in size than he remembered. Out in the bay the kahawai still fed voraciously on the anchovy but the schools were not so large and there were fewer of them. There were not so many birds around either.

Bribes Received

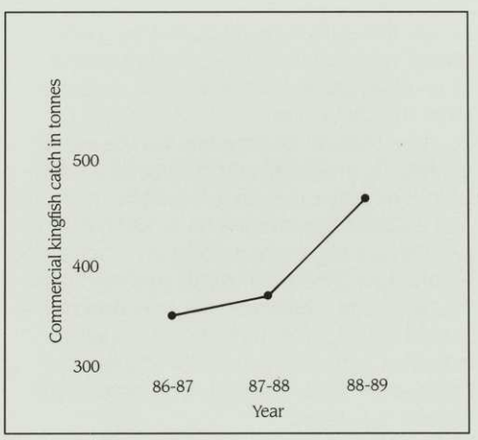
The visiting tourist was puzzled but decided it was just a trick of memory. After all, he was a young man full of imagination when he first visited Mangonui and his memories could have been coloured over the years. But he was very conscious of how rapidly a fishery could decline because of the unfortunate nature of the American experience. He remembered how the American fishery managers had allowed several of their most important species to be depleted because of the bribes they had received from commercial interests. The big fishing companies were not interested in managing the resource for the long term. They wanted to make big money now, get out of the fishery and invest that cash elsewhere. Paying off a few fishery managers was a minor expense considering all the fast money that could be made and invested for additional profit.

But the American naively decided that kiwis were different and were smart enough to have profited from the mistakes of other nations. Surely they would not allow greed and bureaucratic bungling to destroy their fishery. These discomforting thoughts passed quickly, just like his month of sport fishing in Mangonui.

The wonderful weather, beautiful countryside, delightful people and good sport fishing combined to give him an idea. Why not give up life in America, sell the business, and come to live in Mangonui? He loved fishing and surely life was too short not to take advantage of the joys fishing in the Far North had to offer. He returned to the United States thinking Kiwis were part of a society which put the long term management of their environment ahead of short term commercial greed. Unfortunately he was wrong, and events in Wellington were to prove it.

By 1983 fishermen all over New Zealand were complaining about the declining fishery. MAF clearly had to do something but it took until 1986 for the TAC (Total Allowable Catch) – ITQ (Individual Transferable Quota) system to be introduced. Under this system fishery scientists would determine the maximum tonnage of each species that could be safely harvested annually. This is the TAC. The TAC is then divided up into individual quotas. These quotas would be based on catch histories. So the fishermen who had caught the most fish in the past would get the most quota in the future. In other words, the fishermen who had made the most profit in the past and done the most to deplete the fishery would receive the largest share of the future fishery! The quotas would also be transferable. That is, the Government would give these quotas to the fishermen to be used, or sold, as they saw fit.

Kingfish like this were common around the Mangonui Wharf just five years ago. A commercial fisherman might get $20.00 for this fish. It would be worth hundreds more if caught by a tourist and would probably be released to fight another day!



The known commercial catch of kingfish has been rising steadily because of increasing use of gill nets. These figures do not include kingfish sold on the black market, which are usually caught in gill nets too.

The implications were obvious. The large fishing companies which had been operating the wasteful pair trawlers would get most of the quota. The individual long liners would get much less quota, usually not enough to stay in business. To reduce the total catch MAF then bought back quota from the commercial fishermen who were willing to sell it. Since many individual fishermen received too little quota to stay in business they sold what they had back to MAF and quit fishing. The bottom line was that the New Zealand taxpayer ended up paying off a lot of individual fishermen in order to reduce the competition for the big companies which had received most of the quota! Even the most naive observer could only conclude that MAF and the big fishing companies had a cozy relationship!

Four years before the Quota System came into effect our American tourist had moved his family to Mangonui and begun sport fishing in earnest. He bought an aluminium dinghy and spent at least three mornings a week fishing the waters around Doubtless Bay. He primarily fished for sport and close to shore so the powerful pelagic fish like kahawai and kingfish were his main interest. By the time the Quota System came into effect (1986) he was on intimate terms with the rhythms of the sea. Because of the time and effort he put into learning about the kahawai and kingfish he was able to catch fish on those days when most casual fishermen could not. Luckily for them, his family was almost always able to have a meal of fish in the evening.

Favourite Fish Declining

It was clear to the American that his favourite fish were declining in numbers at an alarming rate. Although the Quota System clearly worked to the advantage of the big companies, was difficult to enforce and would produce a lucrative black market, he was relieved to see some controls introduced. Because the Quota System would reduce the East Coast snapper catch by 34 percent, the use of wasteful pair trawlers would come to an end and most snapper fishing would be done by long liners producing a catch of higher quality and value. This meant that the kingfish, which were taken by pair trawlers in great numbers, would receive some protection. But there were flaws with the Quota System that outweighed this small advantage.

Many small fishermen who had small or even negligible quotas wanted to keep fishing. Since the Quota System only protected some species, the obvious targets were the unprotected kahawai, kingfish and other reef dwelling species. For the individual fisherman, gill nets were clearly the way to go. By laying gill nets around reef areas and harbour channels, commercial fishermen could take these species in large numbers. MAF actually encouraged the practice by issuing new licenses to just about anyone who wanted them! In keeping with their traditional inability to predict the obvious MAF was AGAIN encouraging boom-and-bust fishing.

The hapless kahawai were highly vulnerable to purse seiners as well as gill nets. Kahawai almost always feed and travel in large groups. During certain periods of the year and in certain areas very large schools form and these are easily seen by spotter planes. The purse seiners then steam out to the school, encircle them with their net and winch the kahawai in by the tonne!

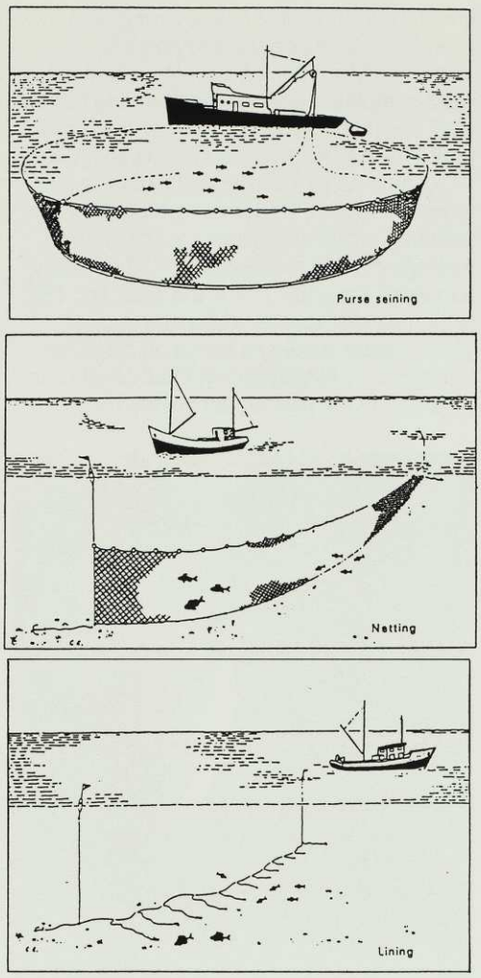
The executives who ran the big fishing corporations were no fools. They knew that MAF would bring kahawai into the Quota System within a few years. When they were made a

quota species the amount of quota any fisherman received would be based on the previous three season's catch. Basing quota on the previous three year's catch was a particularly insipid MAF policy that achieved nothing but considerable waste and false interest in the fishery. It would have been far wiser to announce, in 1986, that kahawai would be brought into the Quota System within a few years and quota allocation would be based on catch histories up to 1986!

Realizing how foolish MAF policy was, the executives at X, Y and Z companies knew that they could maximize their long term profits by securing the most quota. That meant they had to catch as many kahawai as they could until the time MAF declared it a quota species, even if it was not profitable! So by 1986 the race for quota was on. It did not matter to these executives or MAF that these valuable sport fish would end up as fish meal for pig food or Australian cray bait. All that mattered was the race for a quota!

Seen It Before

Because our American tourist had seen it all before he was able to predict all these developments with ease. Despite a multitude of letters to luminaries like Moyle, Moore and Lange, nothing was done. The press showed some interest in the problem. Warren Berryman did a series of investigative articles for the *Auckland Star*. His articles made clear what a financial boon the Quota System was for the big fishing companies. The *New Zealand Herald* wisely pointed out in an editorial that the Quota System had no hope of providing effective fisheries management without additional regulation. The *Top Half* show dispatched a team to Mangonui and did a show on the depletion of the kahawai in Doubtless Bay and the illegal commercial fishing in Parengarenga Harbour. But all this activity had no effect on the bureaucrats in Wellington.



How purse seiners, gill netters and long liners catch fish.

MAF officials did not seem interested in preventing depletion of the fishery. They dismissed the growing complaints of the recreational sector as unscientific hearsay. They also ignored the fact that recreational fishermen, using rod and reel, could detect the decline of a fishery long before their commercial friends who used mass fishing techniques like purse seine nets. MAF policy appeared to be to wait until the commercial fishermen were crying about the decline of a species and then do something. Or, in the words of a former director of fisheries research, Duncan Waugh, the actions of MAF are usually "too little and too late."

By 1988 other voices were being raised around the country. Even casual sport fishermen were able to see that the kahawai and kingfish were disappearing. Gill nets seemed to be plucking the kingfish off every reef on the North Island. Purse seiners were cleaning the kahawai out of the Bay of Plenty and even dared to invade the Hauraki Gulf: a move that infuriated Auckland-based sport fishermen. Conditions for shore-based and small boat sport fishermen had deteriorated from bad to worse.

The only bright spots were a slight improvement in the numbers of snapper and

What the tourist would like to see done

The National Policy for Marine Recreational Fisheries reflects New Zealand law when it states: "Where a species of fish is not sufficiently abundant to support both commercial and non-commercial fishing, preference will be given to non-commercial fishing."

MAF has not enforced the law or this policy. If it was, the following things would be done NOW to restore the populations of our kingfish and kahawai.

1. To avoid future mistakes MAF needs the maximum amount of information on the stocks of sport fish. Given financial restraints, the best way to get accurate information is by polling recreational fishermen. Studies around the world have shown clearly that recreational fishermen detect a declining fishery first and are almost always accurate in their assessments. These polls can be conducted at fishing contests, by phone and through New Zealand's two fishing papers.

MAF's history of relying on the data supplied by commercial sources is a grave error. These sources are highly biased for two reasons:

A. Financial executives of large fishing companies know that fishing out a highly valued species will lead to a maximum short term profit that can be invested elsewhere. Such profits make their corporate image look good but is a threat to our children's fishery. Information supplied by their lobbyists will be deeply biased.

B. Fishermen who use mass fishing techniques like purse seiners guided by spotter planes can actually fish out the last school of an aggregating species without realizing what they have done.

2. New Zealand needs a ban on the use of gill nets by amateurs and commercial fishermen. The only exceptions would be for mullet and flounder fishermen who would have to use nets no higher than about one metre, and for amateur fishermen using hand held nets to catch baits. Mullet and flounder fishermen should have to man their nets. Nets left for extended periods are wasteful and the by-catch of parore and trevally in nets left overnight is significant.

Banning gill nets would decrease the kingfish catch by about 50 percent, save birds and reef ecosystems from destruction, and help protect our kahawai too. Only a complete ban will be enforceable, given MAF's financial restraints.

3. 300,000 amateur fishermen land around 2,500 tonnes of kahawai annually. Most amateur fishing is in Zone 1 (see map). This is the Zone with the most marked decline in the kahawai population. Within this Zone there should be a daily limit of four kahawai per recreational fisherman until the kahawai populations are restored. This will stop recreational anglers from filling their boats with fish when they are lucky enough to find a school of kahawai.

4. Purse seining in Zone 1 should have been stopped before the season began this year, in April. This is the only way to effectively protect the remaining kahawai in that area since purse seiners catch almost 90 percent of the kahawai!

5. The kahawai should be brought under the Quota System immediately to end the race for quota. The maximum TAC should be less than the 5,200 tonne figure determined by scientists some years ago. This would allow recovery of the species. None of that TAC should be allocated to Zone 1 until amateur fishermen and scientists agree the kahawai have recovered.

6. There should be a total ban on commercial fishing for kingfish. Kingfish attract Japanese and American tourists to come to New Zealand. They spend an average of $5,000 EACH while they're here. It is insane to let commercial fishermen take them for a $1.50 a kilogram.

Most commercially caught kingfish are landed by a few operators who target them with gill nets and long lines. These people will try to label their kingfish a by-catch. There can be no exceptions for kingfish that are a "by-catch". Any kingfish brought into port should be forfeited to the Crown.

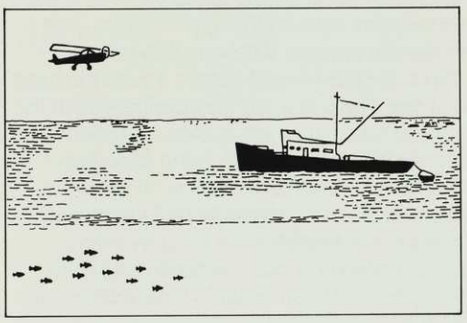
7. There should be a limit of two kingfish per day per amateur fisherman.

8. Attempts to increase the harvesting of anchovy, pilchards, mackerel and other baits must be stopped. Our sport fish require these species as food. If we turn these bait fish into fish meal we will lose the whole inshore fishery!

trevally because of the Quota System. Of course the marlin had made a tremendous comeback because of the ban on commercial bill-fishing (the smartest move MAF ever made) but this was relevant only to the tourist fishery and a limited number of kiwis with the gear to pursue marlin.

Bad News Travels Fast

No news travels as fast as bad news in the sport fishing world. The decline in the small game (kahawai, kingfish) sport fishery correlated well with the decrease in American tourism. The marlin fishing had been better in America than New Zealand for over 20 years so few Americans came here to pursue bill fish anyway. Their main interest was in light tackle inshore fishing. No one was writing glowing reports of sport fishing in New Zealand anymore because, by 1988, the saltwater fishing was better around New York City, Baltimore or Washington! Due to bad management the New Zealanders had lost most of their fish and their tourist income in one blow.

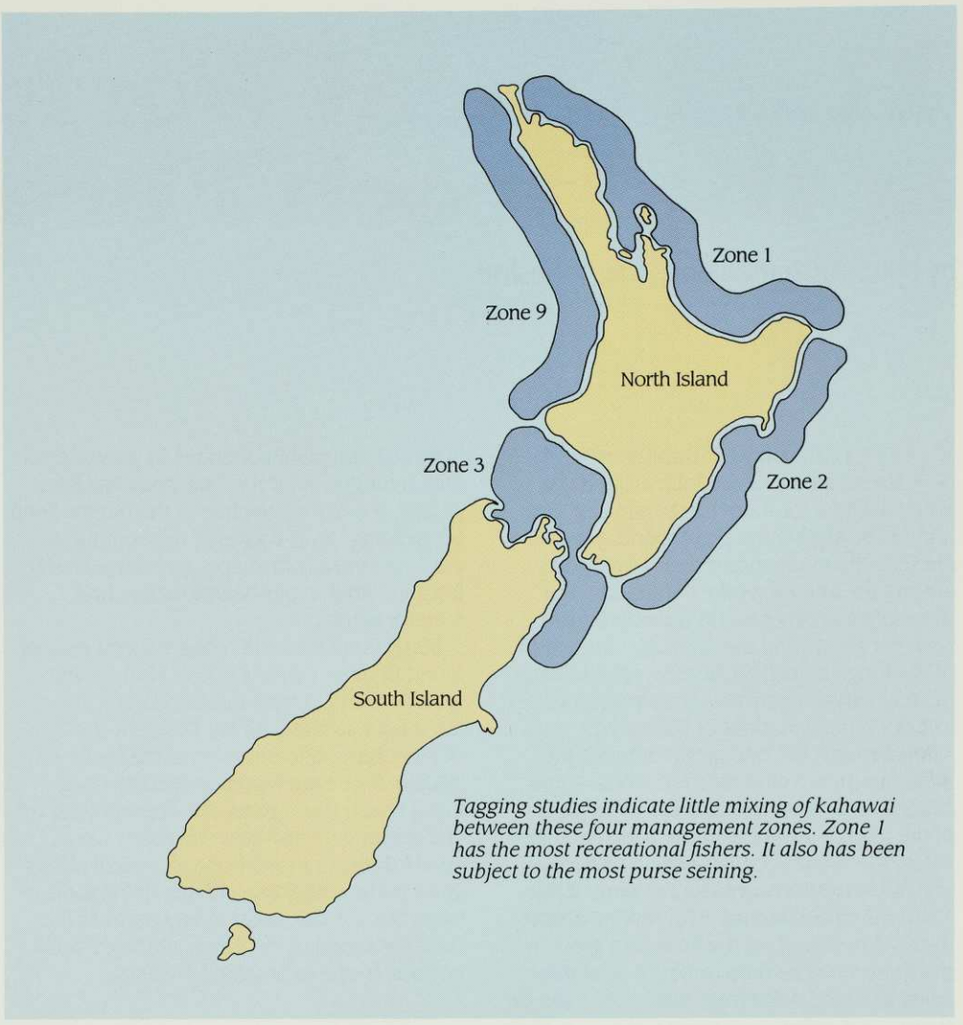


Purse seiners use spotter planes to find the largest kahawai schools over vast areas of water. This makes it possible for the purse seiners to keep working even when the kahawai are severely depleted.

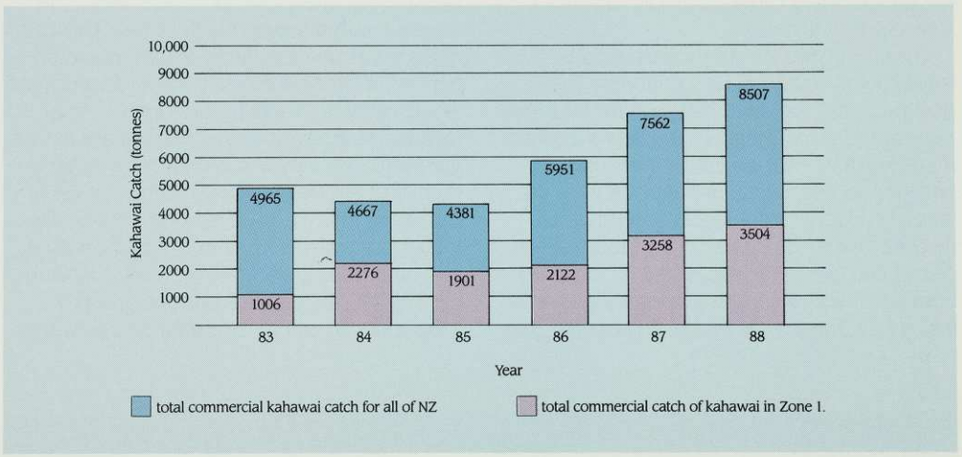
By 1990 the fishery in Doubtless Bay and Mangonui Harbour had deteriorated even further. The combined effect of the purse seiners scooping up thousands of tonnes of kahawai and the gill nets taking hundreds of tonnes of kingfish resulted in a pretty grim situation. For the first time in living memory NO kingfish schools came in to feed around the Mangonui wharf. There were also no juvenile kahawai to be found feeding in the harbour. Out in the bay things were not much better. In February and March a few small schools of kahawai were found feeding on anchovies but there were almost no other kahawai to be seen. Medium size kingfish were found sporadically in the bay but the only kingfish found in numbers were small juveniles that normally avoid reefs and so could evade the deadly gill nets. To add insult to injury, commercial long liners were now targeting these juvenile kingfish outside Doubtless Bay by using floating long lines, effectively eliminating any hope of the kingfish recovering in less than five years.

And what happened to our American sport fisherman who had come to Mangonui so impressed by New Zealand's sea life? He was forced to rethink his decision to come to New Zealand. He could no longer count on catching a meal for his family, let alone having a chance to hook big enough fish to make the day's sport worthwhile. Back in North America the fishery managers had realized the importance of recreational fishing and had been making real improvements in the control of the commercial sector throughout the 1980s. Where fishery managers had acted with courage the results had been spectacular. King mackerel and Spanish mackerel populations were booming in Florida, the salmon and bottom fish were doing well in British Columbia and the striped bass fishery was even coming back in the Chesapeake Bay in Maryland.

By 1990 better fishing could be had around most American cities than could be found in Northland. Though the environment around Mangonui was still beautiful and the people still friendly, the fish were gone. All the suggestions that the American had made to MAF had been ignored and even if they were implemented today it would take five to ten years before the fish populations achieved 1980 levels.



Tagging studies indicate little mixing of kahawai between these four management zones. Zone 1 has the most recreational fishers. It also has been subject to the most purse seining.



The rise in the kahawai catch in Zone 1 correlates well with reports of declining numbers caught by amateurs in that area.

On the other hand, people in New Zealand were becoming more and more aware of how badly the inshore fishery was being run. Maori and Pakeha were beginning to speak out in anger at the corporate greed and complacent management that had devastated their sea life. Maybe things would improve now that the Government realised that hundreds of thousands of voters were concerned about the sport fishery. Anyway, where there's life, there's hope...

Mark Feldman is an American physician married to a New Zealander. He spends New Zealand summers with his family in Mangonui, Northland. He has held over 30 world and New Zealand fishing records. Most of his writing for the past five years has concentrated on the need for fisheries conservation in New Zealand.

The Fungal World of the Beech Forest

by Peter Buchanan and Peter Johnston

NEXT TIME you walk through a beech forest, take a closer look around you. You will find a lot more there than just trees and birds. Among the plant world, you will also see the ferns, mosses, and liverworts; among the animal world, the insects. But there is yet another world separated from both the plants and the animals – the world of the fungi. In fact, so different are the fungi from all other organisms, they are considered to belong in a kingdom of their own.

Mushrooms are one group of fungi, but there are many other different kinds. Fungi occur in vast numbers and live in all parts of the forest, from high in the beech tree to below the forest floor. An individual fungus grows as a cottonwool-like network of fine filaments called hyphae. The hyphae absorb the food essential for the fungus to grow. A single hypha is so narrow that it is usually invisible to the naked eye. But hyphae can be clearly seen when they mass together to form the reproductive or spore-producing structure, called a fruit-body.

Common types of fruit-bodies include mushrooms, brackets, and puffballs. The fruit-body has the same function for a fungus (singular form of 'fungi') that a flower has for a green plant. Fruit-bodies enable fungi to produce spores, which are equivalent to the seeds produced in flowers of green plants. Just like seeds, the spores of a fungus can be distributed over wide areas and, when conditions are favourable, can germinate and grow into a new fungus. When the flower of a plant is picked, the plant continues to grow. So too with a fungus; after the fruit-body has been picked, the hidden hyphae of the fungus keep on growing. Fruit-bodies of different fungi vary enormously in shape, and range in size from less than a pin-head to about half a metre across.

Many fungi found in a beech forest are not found in other types of forest. Many of the species found in New Zealand beech forests are unique to this country. Different species of fungi have different roles in the forest ecosystem. Some are parasites feeding on a living beech tree, others (the saprophytes) are like scavengers and grow on fallen wood, dead leaves, or insect honeydew. Still others grow in the soil along with the living roots of trees, but without causing any harm to the tree. The world of the fungi, although rarely noticed, is one of amazing diversity.

Fungi Growing on Living Trees

Beech trees often look as if their trunks are covered with a lumpy, black carpet. This carpet is made up of millions of dark-coloured hyphae of many different types of fungi called 'sooty moulds'. Sooty moulds appear to be feeding on the bark of the tree, but are in fact growing on honeydew produced by scale insects that are themselves sucking sap from the beech tree. The sweet honeydew is also food for nectar-feeding birds, lizards, wasps and other insects (see *Forest & Bird* November 1987). Sooty moulds are one group of fungi that do not produce their spores within a visible fruit-body. Instead, their spores form amongst the carpet of hyphae, and are spread in the wind currents and by honeydew feeders.

The 'polypore' fungus, *Piptoporus*, produces a large fruit-body. This fungus causes a wood-rotting disease of beech trees, and has a fruit-body similar in shape to a horse's hoof, but measuring up to half a metre across. The fruit-body has a texture like cork, with a water resistant skin on the upper side, and an underside covered with very tiny pores. About 15 pores would stretch across the head of a pin. The pores are the openings from the vertical tubes in which spores are produced. The spores form on cells lining these tubes and fall out to be carried away in the wind. Because this fungus produces its fruit-body high up in a beech tree, it is rarely seen in fresh condition. It may be better known to trampers and bush walkers in its fallen state; a sodden, amorphous, white mass on the forest floor, reminiscent perhaps of the carcass of some odd albino animal.

Cancer-like swellings on trunks and branches of beech trees are caused by an unusual fungus called beech strawberry, beech orange, or more formally, *Cyttaria*. A tree infected by this parasite fungus shows a reaction similar to that of cancer in humans. Cells in affected parts of the tree grow and divide more rapidly than usual, and form hard, woody galls. In spring the fungus forms its pear-shaped or round strawberry-like fruit-bodies on these galls. Spores develop in pits

Reminiscent of a horse's hoof, the polypore fungus, Piptoporus portentosus, *occurs high up on beech trees.* Photo: J. Bedford

Opposite: The mushroom *Armillaria* sp, is common on wood in the beech forest, but it is also an important parasite of pine seedlings and kiwifruit vines. Photo: J. Bedford.

Two boletes, Tylopilus formosus *(bottom) and* Porphyrellus novae-zelandiae *(top), other mycorrhiza-forming fungi.* Photos: J. Bedford

on the surface of the fruit-body and after being released are dispersed by rain and wind. The often brightly coloured fruit-bodies are eaten by pigeons, possums, and insects. Different *Cyttaria* species are also found in beech forests of other parts of the southern hemisphere. In South America, some species are popular with the native Indians as food.

Fungi on Fallen Wood and Leaves

A quite different group of fungi live on fallen wood and leaves. These fungi are the decomposers. By decomposing dead plant parts, not only do the fungi grow and reproduce, but living plants can use the nutrients which are returned to the soil. Decomposer fungi are called saprophytes, as opposed to the parasites (or pathogens) that attack a living tree. Many species of polypore fungi, with fruit-bodies similar to those of *Piptoporus*, are saprophytes on fallen wood. They produce enzymes that break down parts of the plant cell wall, and in so doing cause the wood to rot. Depending on which parts of the cell wall

The fruit of the 'beech strawberry', Cyttaria nigra, *appear in spring, growing from the woody galls their parasitic hyphae have induced on the host branches.* Photo: P. Johnston.

are destroyed, the polypore fungi are divided into two groups, brown rot and white rot fungi. Brown rot species cause a rot in which the decayed wood becomes brown, cracked, and eventually collapses into a fine powder. White rot fungi are more common than brown rot fungi and cause the wood to become white to pale brown, often wet, and stringy.

Ganoderma is one of the most common white rot fungi in beech forests, and in other forest types. Its fruit-bodies are like shelves or brackets sticking out from the wood. Their

'Fungus icicles' Hericium clathroides.
Photo: J. Bedford.

appearance, especially when on a dead standing trunk, has led to a number of amusing popular names – in Stewart Island, for example, they are known as 'moa droppings' (although you have to believe that the droppings are carried aloft as the tree grows!), and in Japan as 'monkey seats'. The upper side of *Ganoderma* fruit-bodies is usually covered with a brown powder, a deposit of thousands, if not millions, of spores. The lower, pore surface, from which the spores are produced, is either white or dark brown, depending on the stage of growth. When the pore surface is white, it can be scratched easily to show the brown tissue beneath. Artists (graffiti and otherwise) can exploit this, and hence *Ganoderma* is also known as the 'artist's conk'. Each year, the long-lived, woody-hard fruit-bodies develop a growth ring, similar to the annual rings of trees, and in time the fungus can grow to a large size.

Many species of mushrooms are also saprophytes. Mushrooms are familiar to most people as a delicious vegetable bought at the supermarket, or as the object of expeditions across farmland on crisp autumn mornings. But the word 'mushroom' in a botanical sense refers to all fungi that have fruit-bodies with gills on the underside of a cap, including all those species popularly called 'toadstools'. A mushroom's spores are produced on the gills, and are spread by the wind. Many types of mushrooms are edible, but there is no simple rule to distinguish edible from poisonous types. Accurate identification of any mushroom is the first and most important step before thinking about eating it. For many species of mushroom in New Zealand, however,

Beech trees engage the help of fungi to draw in nutrients to their roots from the surrounding soil. In turn the fungi benefit by receiving food from the tree. This symbiotic relationship, termed a mycorrhiza, commonly occurs in beech forests. Some of the attractive mushrooms which play their part in this relationship include the green Russula atrovirens, *(bottom) the violet* Cortinarius *sp (middle), the red* Cortinarius *sp (right) and the orange-brown* Paxillus nothofagi (top).

Photos: J. Bedford.

there is no information about whether they are edible or not.

One common mushroom on wood in beech and broadleaf forest throughout New Zealand is *Armillaria*. It grows in tight clumps with several mushrooms arising from a single point. To the Maori it is known as 'harore' and is one of a small number of fungi eaten by the tangata whenua. The most common species of *Armillaria* has a slimy cap, and when cooked makes a tasty soup. Even if mushroom fruit-bodies of *Armillaria* are not found, its effect in the forest can often be seen in the unusual patterns left in rotted wood. Wood in a late stage of decay by *Armillaria* is black with many oval pockets, a so-called large pocket rot. Surprisingly, the same fungus outside of the beech forest environment becomes a damaging parasite of pine trees, and even of kiwifruit vines. In some parts of New Zealand, conversion of native forest to pine plantations has proved to be uneconomic due to the death of pine seedlings caused by *Armillaria* spreading from dead stumps and roots of the cleared forest. 'Fungus icicles' is the apt nickname for an intriguing looking, rare fungus called *Hericium*. The fruit-body, which forms on wood, is made up of fleshy lobes or branches with coral-like cascades of circular, pointed teeth. The spores are formed on the surface of these teeth. The fungus was known to the Maori as 'pekepekekiore' and was occasionally eaten.

On the floor of a beech forest, there is usually a thick layer of fallen, often brightly coloured leaves. If the upper layers of leaves are swept aside to reveal the older, partly decomposed leaves, fine stands of fungal hyphae may be seen binding the leaves together. Some of these hyphae will belong to mushrooms growing in the litter. Others may be from fungi with smaller, semi-microscopic fruit-bodies. With careful examination of the upper layers of leaves some of these fruit-bodies may be seen. One such fungus is the cup fungus, *Lanzia*, in which the spores form in a cup and are forcibly shot out like bullets into the wind currents. Another is *Hypoderma* which produces spores within enclosed sac-like fruit-bodies partly embedded in the leaf tissue. The slit-like opening of this fungus is marked by a line of bright red cells, and in wet weather the sides of the opening fold apart, like an opening mouth, to allow the release of the spores.

Fungi Growing Within the Soil

Walk through a beech forest in autumn and you can't fail to be impressed by the colourful array of mushrooms fruiting on the forest floor. Most of these will be fungi that are only able to grow in a close relationship with the roots of beech trees. Such a mutually beneficial ('symbiotic') relationship between plant roots and fungi is very common and is called a 'mycorrhiza'. Hyphae from the fungal partner of the mycorrhiza form a mantle surrounding the root, much like a sock covers

Opposite: *The hydnoid fungus has a series of teeth on its underside, rather than gills.*
Photo: J. Bedford.

a foot, and although the hyphae penetrate between the outer cells of the root, the root is not damaged. In this association between tree and fungus both partners derive benefits; the fungus takes organic compounds such as carbohydrates from the tree, while the tree uses the fungus as an extension of its own root system, to absorb minerals from a larger mass of soil. Mycorrhizas form only between certain tree/fungus combinations, and beech trees, along with tea tree, are the most prolific mycorrhizal forming trees in New Zealand. Many species of mushrooms are involved as mycorrhizas including species of *Amanita*, *Russula*, *Cortinarius*, and *Paxillus*. These mushrooms are often brightly coloured, such as the green *Russula*, violet and red *Cortinarius* species, and the orange-brown *Paxillus*.

Another closely related group of mycorrhiza-forming fungi are the boletes. With their stalked, mushroom-shaped fruit-bodies and pores instead of gills on the underside of the cap, they look like they might be a cross between a mushroom and a polypore. Among the boletes are some good edible species, including in France the famous 'cepe'.

Yet another group, the hydnoid fungi, has mushroom-like fruit-bodies but the underside is covered not with gills or pores but with pointed teeth. And then there is the elegant violet pouch fungus, *Thaxterogaster*, that looks a bit like a puffball, but is in fact a mushroom that has lost its way, forgetting how to open up its gills. Other fungi related to *Thaxterogaster* grow only below the ground, but such 'hypogeous' species are unlikely to be encountered except by kiwis and the most persistent fungal enthusiasts. In parts of Europe, it is the hypogeous 'truffle' that is so sought after, but so hard to find unless you own a pig trained to sniff out the delicacy. If the fruit-body is below the ground, how are the spores released to allow the fungus to spread? It would seem that in New Zealand where native fungus-eating mammals are absent, slugs, insects, and birds such as the kiwi and weka may eat and hence spread the fungus.

The tremendous variety of shape, colour, texture, and structure of fungi mentioned by no means exhausts the range. Within the beech forest live hundreds of other types of fungi, such as those growing on dead insects, on dung, and even in water. The fungi are a integral component of the beech forest. In number and diversity they far exceed the meagre range of green plants, and without them the forest could not survive.

Nothofagus (beech) forests are restricted to certain parts of the southern hemisphere, and their origins can be traced back to similar forests of 100-150 million years ago that grew on the giant land mass of Gondwanaland. The present distribution of both *Nothofagus* and of beech fungi provide evidence for the breakup of Gondwanaland and for continental drift. Many species of fungi in New Zealand beech forests have close relatives on beech in Tasmania and in South America.

For further information on fungi of New Zealand, consult the excellent illustrated guide: Mushrooms and Toadstools, *by Marie Taylor (1981), Mobil New Zealand Nature Series, A.H. & A.W. Reed.*

Peter Buchanan and Peter Johnston are mycologists employed by DSIR Plant Protection, Auckland to study identification and classification of New Zealand fungi. They work in the fungal herbarium, PDD, which contains over 50,000 dried specimens of fungi, in particular from New Zealand and nations of the South Pacific. The authors thank Mary Bedford for making available the transparencies of the late Jack Bedford.

Above: *The violet pouch fungus* Thaxterogaster porphyreum.

'Artist's conk', Ganoderma applanatum.
Photo: P. Buchanan.

WILDING PINES
A GROWING PROBLEM

by Mike Harding, Forest and Bird South Island Conservation Officer

WHILE NEW ZEALANDERS in their thousands protest at the logging of rainforests, and internationally the plea is heard for extensive reafforestation to combat the greenhouse effect, calling for the felling of trees may sound like a cry from the wilderness. And indeed in a sense it is, because scattered throughout the country are forests that pose a significant threat to wilderness areas and to native plant communities. These are forests that no one wants and in some case forests that are costing the country money in lost agricultural production.

The spread of self-sown, or wilding, exotic trees affects something like 10,000 hectares in the South Island and 30,000 hectares in the North Island. From the open tops of Mt Tarawera to the hillsides around Queenstown, and at dozens of other locations in between, are self-sown forests standing stark on the open landscapes. In places it may be only the odd pine that has seeded from a shelter belt or roadside planting, but in others it involves thousands of wilding trees at densities of over 100 trees per hectare gradually advancing over areas of protected native vegetation or productive grazing land.

Members of conservation groups are not the only people oppposed to wilding pine spread. High country farmers recognise the threats to their livelihoods from wilding pine spread across the open tussock grazing lands. High country Federated Farmers chairman, Hamish Ensor, believes those who have planted exotic trees should be responsible for controlling their spread.

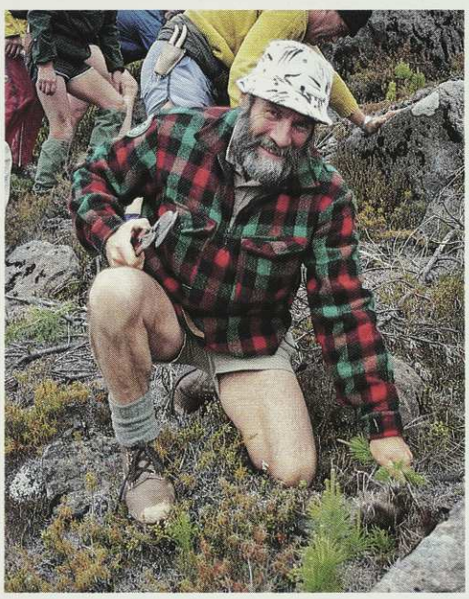
Few would dispute the importance of exotic trees in the New Zealand context for shelter and amenity purposes, and for many other values, not to mention their significance as an economic resource. But these are benefits gained from planned and managed plantings. While trees that establish themselves in the wild may be ideal in some circumstances, unplanned exotic afforestation rarely results in a harvestable plantation. Trees tend to be of different ages and sizes and yield timber of inferior quality. Management of a self-sown forest is more difficult and less financially rewarding than a plantation. Even if the site is in fact a preferred site for forestry, it makes far better economic sense to plant the trees at the desired density and in the most appropriate pattern.

Aggressive Colonisers

Exotic trees, particularly those planted at higher altitudes, are usually far more competitive than the existing native vegetation. Several species have been used widely in plantings in hill and high country and the more successful of these have shown themselves to be aggressively capable of colonizing the open country of grass and shrubland communities. They can displace or overwhelm slower growing native species and therefore have seriously threatened protected native plant communities and unique landscapes.

The hardier exotic species such as lodgepole pine *(Pinus contorta)* will grow at higher altitudes than native woody species, posing a significant threat to herbfields, grasslands and screes. Even native beech forests are not spared from this alien invasion. The shade tolerance of Douglas fir, a species commonly planted in the South Island high country, enables its seedlings to establish themselves within existing natural forest.

The problem of wilding tree spread is not new. It was first recorded in the South Island at the turn of the century. But because the species involved are common pines, firs and larches and because the most dramatic infestations, with one or two exceptions, are in remote hill country far from the public eye, we have been slow to recognize the implications of wilding spread. Trees that were planted for shelter or amenity are now spawning vast plantations, and trees that were hand planted or aerially sown in afforestation trials on steep lands have successfully established and threaten to spread like a carpet across broken mountainous country, crowding out the existing native vegetation.



Without volunteers pulling pines on Mt Ruapehu over the last 20 years, the work would probably never have been done. Here Allan Vaughan, a Forest and Bird member from Wanganui, joins the Wanganui Tramping Club on a weekend trip.
Photo: Gerard Hutching.

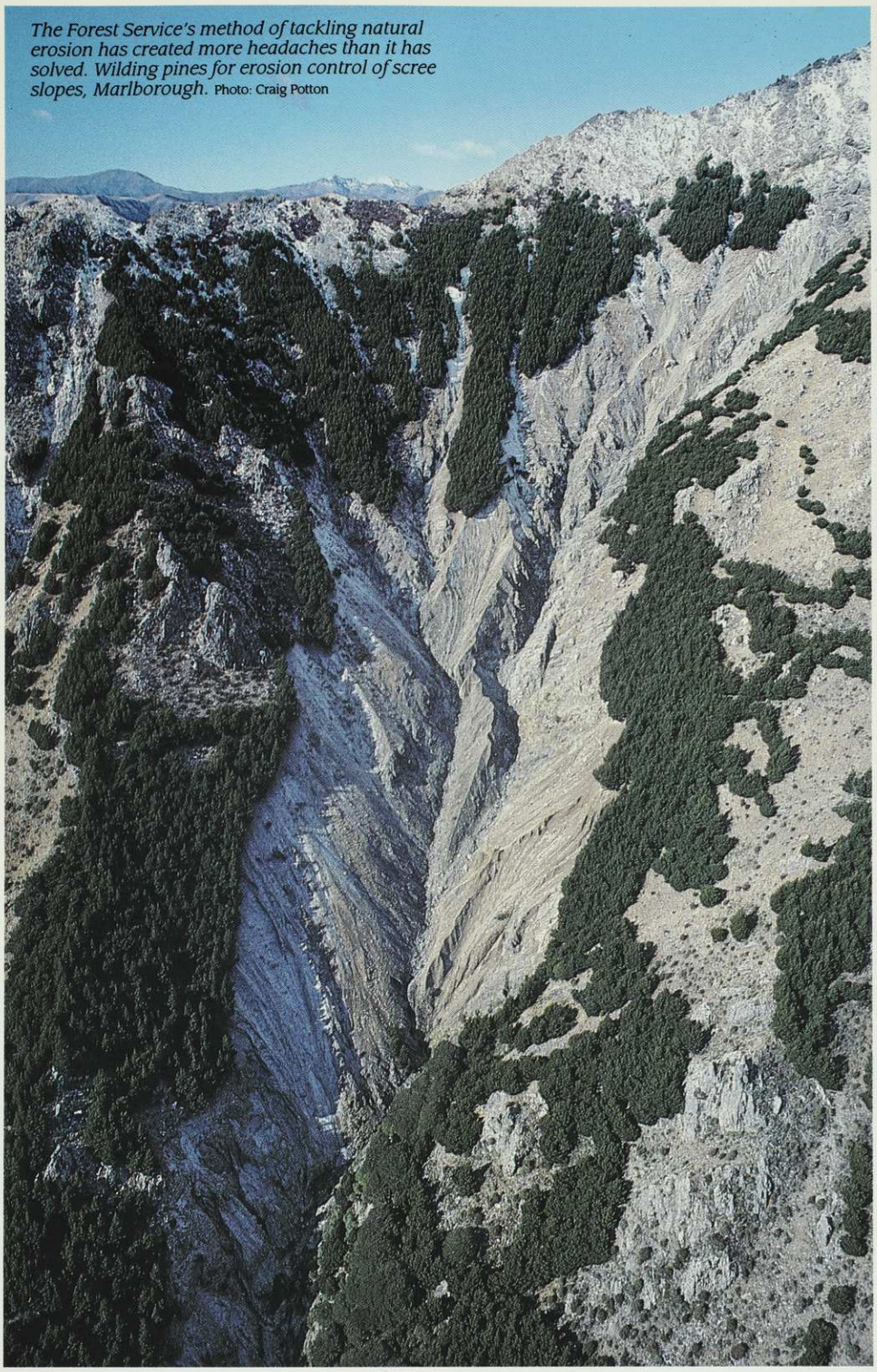
Take the case of *Pinus contorta* in the central North Island, where wildings occur in Tongariro National Park, the Waiouru Army land, the Ruahine, Kaimanawa and Kaweka Conservation Parks. (see accompanying box on Tongariro National Park).

Another good example is the spread of Corsican pine *(Pinus nigra)* on the Amuri Range near Hanmer Springs. Seedlings were first noticed around 1940, next to forests planted at the turn of the century. However it was the change from sheep to cattle farming on the adjacent pastoral run country in 1974 that really boosted the spread of pines. By 1976 landholders were expressing concern at the invasion of Corsican pine which in places had formed a closed canopy completely eliminating the grassland cover beneath. In 1979 Corsican pine was declared a Class B noxious weed in the Amuri Range area and fire was used to remove stands of unwanted trees. This was only effective when followed by pasture improvement and grazing. Where oversowing with pasture species did not occur, and where stock pressure was light, re-establishment of seedlings was prolific, with densities of 8,575 per hectare recorded – seven times that of a plantation forest. Now Corsican pine covers about 6,000 hectares of the Amuri Range and six other species of wilding trees are also present. The only areas that will remain free of pines are those already covered in beech forest and those potentially productive areas where the expense of tree removal can be justified for pasture establishment. Meanwhile local farmers bemoan the loss of grazing land and the local authorities ponder the difficulties and expense of continued control work.

Research Plots

Another source of wilding tree spread is the research plots established by the former New Zealand Forest Service to determine which species were most suitable for high country revegetation. These plots have spawned untidy downwind forests and threaten to overwhelm huge areas of native grassland or shrubland. Many are hidden from the public gaze, such as that in the Jolliebrook Catchment of Lake Sumner Forest Park where Douglas fir patches are too dense to walk through despite the removal of 20,000 trees in 1987.

Some Forest Service plantings were a little more ambitious. In the Branch and Leatham Catchments of inland Marlborough over 700,000 conifer seedlings were hand planted on steep country and, as if that were not enough, the steeper more inaccessible country was covered by sowing 2 tonnes of conifer seed from the air. Today sparse but healthy pines emerge from regenerating manuka and beech while at higher altitudes stunted twisted pines grow from precipitous rock bluffs and scree slopes. When questioned about wilding spread from trial plots at lower altitudes in Marlborough the Forest Service promised to de-cone the trees to prevent seeding!



The Forest Service's method of tackling natural erosion has created more headaches than it has solved. Wilding pines for erosion control of scree slopes, Marlborough. Photo: Craig Potton

The success of these introduced trees rests on their ability to shed large quantities of wind-borne seed and to grow in harsh conditions that our woody native species are less able to tolerate. In the mountains of New Zealand frequent and strong winds favour wind dispersed species such as conifers over species that do not normally spread far from the parent tree as with native beech trees. Pines are generally regarded as a pioneer species, favouring bare sites or sites with low grass or shrub cover. The hardier of the pines thrive in dry cold conditions, growing faster than natives and producing seed at an early age, a mere 5 years in the case of *Pinus contorta*.

Control Problems

The control of wilding spread will not be an easy task. The first problem is perhaps one of awareness. Wilding trees are often well established and already seeding before people recognize that they pose a problem. By this time control is usually time consuming and expensive. The obligation of individuals and agencies to meet cost recovery targets engenders a cautious reluctance to commit funds to what is potentially a very expensive exercise.

Advocates of exotic trees insist that careful siting of plantings and choice of species, and appropriate management of downwind areas, will limit wilding spread. Using less aggressive species and avoiding "take-off sites" such as ridge tops or exposed slopes are suggested strategies. However, in the harsh climate of the mountainous areas where tree spread is a problem the most successful trees are also the most aggressive invaders. One seed can lead to the establishment of a tree that grows on to be a prolific seeder. Most seed falls near the parent tree but seedlings have been recorded 10 kms from the nearest seed source and winged seeds of pines aid in wind dispersal. Accurately predicting the direction and occurrence of strong winds or storms is impossible, making the identification of downwind areas for management very difficult. Suggested management includes mob-stocking with sheep and pasture improvement or cultivation. The many areas of uncontrolled wilding spread in the South Island high country testify to the failure of this management technique.

Seeding trees know no boundaries. Many wildings originate from plantings on adjoining properties or lands administered by different agencies or government departments. This makes effective management and control of wildings extremely difficult. Farmers with tree spread problems and agencies with conservation or weed control responsibilities are becoming increasingly concerned at the implications of wilding spread on conservation and agricultural land. At a recent planning hearing considering a proposal to plant Douglas fir in the Rangitata Valley, the Strathallan County Council insisted on the lodging of a $30,000 guarantee by the applicant to ensure wilding control work would be undertaken and required that this guarantee be recorded on the title of the property.

Sweeping high country vistas such as this at Molesworth in Marlborough are now interrupted by an ever spreading carpet of wilding pines. Photo: Craig Potton

Top: *The chainsaw treatment for* Pinus contorta, *Flock Hill Station, Canterbury. Note in the background the seed source of the pines, Forest Service research plots in Craigieburn Conservation Park. High country farmers are as unhappy as conservationists about the spread of such pines.* Photo: Mike Harding
Middle: Pinus contorta *grows prolifically on the slopes of Mt Ruapehu. If these seedlings are not removed, the pines will soon crowd all the other plants out.* Photo: Gerard Hutching Bottom: *Volunteer removing tall* Pinus contorta *from Castle Hill Station, Canterbury, well known for its limestone rock-studded landscape.* Photo: Mike Harding

While agencies and individuals debate the spread of trees and who should be held responsible, we live with a legacy of past New Zealand Forest Service zeal which established exotic species trial plots throughout the country. Many of these plots are the seed sources of current wilding spread and, now that the Forest Service no longer exists, no one is willing to take responsibility for cleaning up the mess. And, to accentuate the problem, the ideology of the Forest Service has re-emerged within the new Ministry of Forestry where some staff are actively promoting afforestation of high country lands.

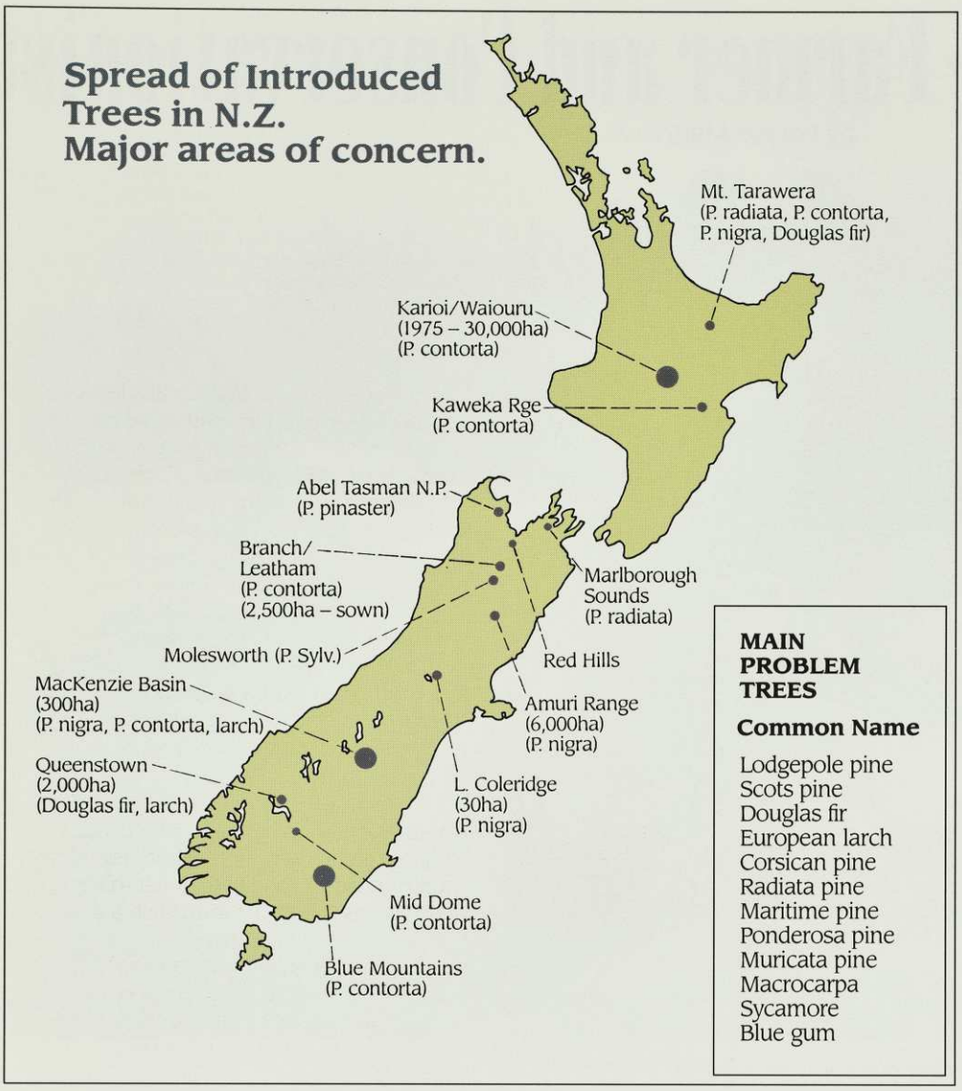
Tussock Grasslands Threat

Foresters continued advocacy for exotic tree planting, particularly in the South Island high country, poses a continued threat to the open tussock grasslands that form such a distinctive part of this landscape.

Concern over wilding spread has been expressed by botanists and conservation agencies such as the Nature Conservation Council for many years. Control efforts by volunteer groups such as Forest and Bird continue but in most cases have only a local effect on what is an extensive problem. While the arguments rage over who is responsible, the trees continue to grow and produce seed, the seedlings grow into seeding trees themselves, and the spread slowly advances across scenic landscapes, overwhelming vulnerable native plant communities and important agricultural land.

It is important that the concern over wilding spread is not seen as an anti-tree campaign. The planting of trees is obviously a worthy activity especially while the removal of forest cover continues throughout the world and atmospheric carbon dioxide levels increase. The debate is not about the planting of trees but rather about the type of trees, the appropriateness of the site, and the subsequent management of the plantings. Managed plantations are a resource. Unwanted and uncontrolled trees are weeds.

Identifying a problem is one thing; finding a solution is another again. While there have been some successes in controlling wilding pines, most notably Tongariro National Park, the area involved was relatively small and the commitment by park staff and volunteers was high. However, an entirely different approach is required in areas not perceived as important, or difficult of access. Former Forest and Bird executive member David Appleton, recently remarked on the problem in the Kaweka Conservation Park: "Our members attempted to totally clear *contorta* from several hectares of ridges but were leaving many small onés behind as they moved up. On bare tops they were creating mini avalanches as small trees were pulled from the



soil, the surface ripping away. The entire exercise seemed pointless."

Mob stocking and management of downwind areas are often cited as the best ways of controlling wilding spread. However mob stocking (the concentrated grazing of large numbers of animals) is just as likely to threaten the ecological values of native grassland or shrubland communities as is wilding spread. In such areas control is often limited to the physical control of trees. This has been carried out by volunteer groups from Forest and Bird branches for many years and involves pulling out seedlings by the roots. If the trees are so large that they have to be cut, all the green needles have to removed and the bark should be stripped to ground level. Sites should be checked again for at least five years for seedlings.

Tree age can be estimated from the number of whorls of branches. All wilding control efforts should be documented and landowners and local authorities lobbied to accept responsibility for wilding control. In some areas exotic conifers have been declared noxious weeds; funds may then be available for control.

Efforts to conserve the unique habitats that make this country so special are fraught with many difficulties. The introduction of exotic plants and animals has already wreaked havoc amongst vulnerable indigenous communities. The high mountains, forested hills, native grasslands, lakes and rivers, and scenic coastlines make up the landscapes that people see, the visual character of the land that makes this country distinctive from any other. The uncontrolled spread of exotic trees is one influence we can control – if we care enough.

Tongariro – A Case History

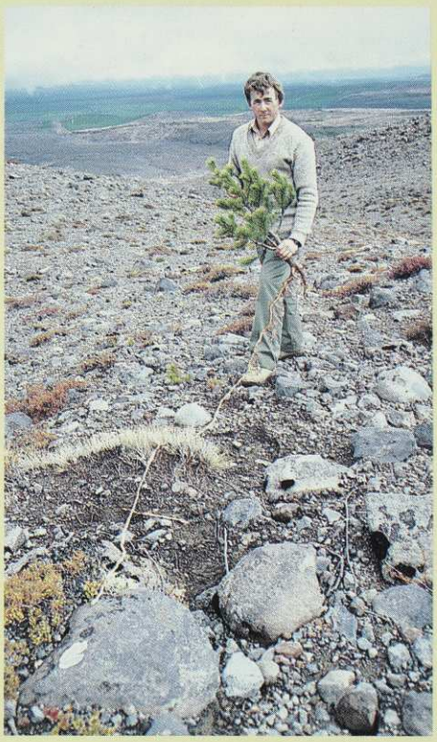
THE BEST documented case of wilding pine infestation in New Zealand is that of Tongariro National Park. Between 1927 and 1935 *Pinus contorta* was planted in Karioi Forest, on the southern slopes of Mt Ruapehu. Every summer – and this still occurs – seeds can travel 12 kms from the parent tree, aided by the fact that *Pinus contorta* seeds are very light and winged.

DSIR botanist Dr Ian Atkinson first alerted park staff to the magnitude of the problem in 1962. Unless action was taken, he said, most of the upper slopes of Mt Ruapehu between 1300 and 2000 metres would be covered by pine forest by the end of the century. Despite the opposition of foresters, park staff began an eradication programme; in 1967 volunteer pine weeders began arriving on a regular basis, usually either tramping groups or from conservation organisations. One tramping club's record would be hard to beat: it has not only supplied volunteers for weekends, but the club sets aside a week each year when its members carry out weeding. They have been doing so for the last 20 years.

Thanks to these efforts, the problem within the park has been contained. However, on the slopes below the park towards Karioi forest is a substantial area of Maori land which has also been infested. All the work in the park will be for nothing unless this other area is cleared. It is here that volunteers are now operating.

Pinus contorta's spread has not been confined to the park and its immediate environs. To the east, the military have also been learning to live with the weed. Some scientists view the military-controlled land around Waiouru as ecologically more significant than the park itself. This huge landscape of open vegetation – almost 100,000 ha – is much older than the area in the west, and is able to tell us about the evolution of New Zealand's plants and animals.

When *Pinus contorta* initially spread into the Army land, it was welcomed by some officers because of the shelter and shade it provided. However, once tanks found it difficult to move through the by-now dense pine shrub/forest, the Army saw the sense of eradication. But eradication is an expensive business. In 1987 the Army spent almost $500,000, and the programme is destined to go on well into the 1990s. One area providing a headache is the 2500 ha firing range, where the presence of live ammunition makes it dangerous for soldiers to enter by vehicle or on foot. Here, for the moment, *Pinus contorta* flourishes.



Tongariro National park ranger Rob McCallum with a juvenile Pinus contorta, *showing the long root system it produces to cope with the arid conditions on the eastern slopes of Mt Ruapehu. Contorta grows up to more than 2000 metres above sea level, higher than the natural treeline in the park.*
Photo: Gerard Hutching

Maurice Yorke - Farmer and Conservationist

by Louise Matthews

Catlins farmer Maurice Yorke: a closet Forest and Bird member. Photo: New Zealand Herald

FARMERS AND CONSERVATIONISTS do not always see eye to eye.

And the way Maurice Yorke talks, albeit with a twinkle in his eye, about his various run-ins with "the greenies" he would, at first sight, appear to be another farmer to whom conservation is a dirty word.

However, Mr Yorke, aged 51, with a proud settler and pioneer ancestry, whose family has given its name to part of the South Island's south-east coast, is a closet member of the Royal Forest and Bird Protection Society.

"I don't boast about it. It would cause a heck of a lot of arguments with my friends on the West Coast," he says.

He also does not boast about his part in ensuring the safe future of the yellow-eyed penguin's biggest single reserve on the Catlins Coast.

Until recently the 123 ha section of bush at Falls Creek was part of Mr Yorke's farm in Progress Valley.

In a sale taking six years to "get through red tape" the land passed to the Forest and Bird Society, which will ensure that land clearing stops at the boundaries, enabling the world's rarest penguin to carry on nesting there.

The land, although in trust for his two daughters, passed out of the Yorke family to "outside fellas," – fishers – about 12 years ago, but Mr Yorke bought it back.

Fergus Sutherland, a Forest and Bird executive member and past chairperson of the Southland Forest and Bird branch, and Mr Yorke's "sparring partner" on green issues, was quick to point out the significance of the land.

"Fergus was round like a shot actually to make sure I wasn't going to clear it," said Mr Yorke.

"I would have sold it to the Department of Conservation but that's run by the Government and you never know when they're going to start selling off their assets.

"The people in the department are dedicated but it's the Government who pulls the strings and my main wish was that the penguins would be safe forever there.

"Forest and Bird are close to the action and more democratic. I knew they'd look after it – now they own it outright," he said

Although good farming land, it was sold to the Society for the same price Mr Yorke paid for it six years ago.

Mr Yorke says he joined the Society to "stir things up a bit," but is also keen to "put something back."

The Haldanes were the first European settlers in the area, giving their name to the nearby town. In 1858 they set up a sawmilling business "where we live now".

From a prosperous family, with tutors and governesses, they saw their business collapse and themselves destitute.

The Yorke ancestor was a 16-year-old Irishman, a bullock driver, who married one of the Haldanes and settled down to farming.

The farm passed to Mr Yorke's father, who died tragically when he was hit by a crop-spraying aircraft, but it was only in Maurice Yorke's lifetime that a fairly comfortable living was to be had from the farm.

"When I was growing up we had no heating and it was bitterly cold," he said.

Now the family, which includes his wife, Meree, daughter Tracey, a keen farmer, and daughter Megan, a keen conservationist, has about 300 sheep and 500 cattle on "about 1,400 acres" (573 ha) although he does not know for sure how big the farm is.

"But all my ancestors and myself were bush clearers, chopping everything down in sight whether to sawmill or to farm. It didn't matter so much then, there was so much bush still left.

"Now it's nearly all gone and ideas change about what's important, like saving that bit for the penguins and knowing about erosion.

"It's silly really that there's still fighting between the conservation camp and the farmers because over here we're all working to the same end," he says.

Apart from being the biggest single yellow-eyed penguin reserve on the mainland, the land is strategically important for the Forest and Bird Society because of the possibilities of expansion.

About 30 pairs of penguins nest there, but most of the large acreage acts as a "buffer zone" between encroaching farmland and disturbance by cattle and the secluded bush which the birds need.

Louise Matthews is a journalist working for the New Zealand Herald. *The article has been reproduced with kind permission of the* Herald.

Obituary: Robbie

Many conservationists will miss Sir Dove-Myer Robinson (Robbie), who passed away recently at the age of 88. He was instrumental (with Prof. Ken Cumberland) in founding our Central Auckland branch 43 years ago, and was in many ways a far-sighted and effective conservation activist.

Both before and during his many years as Auckland City councillor and mayor, he led the 10-year battle to stop the proposed scheme for discharging bulk sewage into the Waitemata and to bring about instead the Mangere treatment works (advanced for that time, though now needing improvements). To quote from two standard books on the specific and the general histories: "Robinson and his confederates were conservationists almost before the term was dreamed up . . . All of the organised protest movements which have subsequently intervened either in Auckland affairs or on environmental issues derive some of their skills from Robinson's and the (Drainage) League's campaigns."

A very early and vigorous opponent of fluoridation, Robbie also showed earlier judgement than most in opposing nuclear power. He paid for the distribution of many copies of the best book on the subject to leading citizens in 1972. But in addition to resisting wrongful technology, Robbie also worked hard to affirm right living. Through the Soil Association and in other ways he promoted composting – domestic, and in the (only recently shut-down) Auckland City rubbish-composting plant. Robbie was the inaugurator and first chairman of the Auckland Regional Authority whose finest achievement may be the creation of many outstanding regional parks. He campaigned long for a rapid rail system, because of his concern over fuel wastage and pollution by cars. This concept is, in 1990, at last being seriously considered by Auckland authorities.

His eldest daughter is a member, and a niece is a former secretary, of our branch.

Robbie was on the right side of more environmental issues than any other politician of similar rank.

Bob Mann, Chairman Central Auckland

Annual General Meeting

The 66th Annual General Meeting of the Society will be held on June 23 1990, at the Airport Hotel, 16 Kemp St Kilbirnie, Wellington at 8.30 am. The agenda will be as follows:

1. Declaration of Councillors
2. Confirmation of minutes
3. Annual Report and Statement of Finances
4. Remits
5. Appointment of Auditors

This will be followed by the National Council Meeting.

The Annual Report is enclosed with this magazine.

Obituary: Dr C. Hughes-Johnson

Dr Cuthbert Hughes-Johnson's death last December will be keenly felt by the Wanganui Branch and the Society.

One of Wanganui's oldest members, whose early enthusiasm and energy contributed to the promotion and formation of the Wanganui Branch, he served in many capacities over the years. An active committee member at his death, he had been both Branch Chairman and Councillor, having represented it last in 1982. Following his retirement from medical practice in 1985, he devoted even more of this time to local conservation issues, which included mounting of displays at local shows. He headed a subcommittee involved with Conservation Week activities, and personally distributed material to schools in the greater Wanganui area. Actively involved in replanting programmes, he led an annual pilgrimage to Westmere Lake, and at other locations including the Wanganui Riverbank and seaside reserves.

Bushy Park, from its inception, was another of his loves, and for many years he served on the park's management committee. More recently many hours were spent with others carrying out voluntary work at the park.

His early contribution to the cause of conservation, both locally and nationally, earned for Dr Hughes-Johnson Distinguished Life Membership of the Society. By his tireless efforts, he enthused many.

Ian Bell

J.S. Watson Conservation Trust Grants

The Trust invites applications from individuals or conservation groups for financial assistance for conservation projects over the 1990-91 year.

The criteria for assistance are:

1. The conservation of plants and animals and natural features of NZ.
2. The advancement of knowledge in these matters by way of research, literary contribution, essay or articles, or other effort.
3. General education of the public to give them an understanding and love of the earth in which they live.

A total of $10,000 is available and at the sole discretion of the trustees this may be awarded in whole or part to one or more applicants, or held over for a subsequent year.

For further details and application forms, write to PO Box 631, Wellington. Applications close July 31, 1990.

Correction

In our November 1989 magazine we incorrectly stated that bellbirds had become extinct north of the Waikato. In fact they occur on the Coromandel Peninsula.

Bird and Mammal Rescue Wellington

The Department of Conservation's Wellington Conservancy proposes to hold a meeting to discuss a volunteer programme to treat and care for sick, injured and young birdlife.

The mammal unit will be staffed independently.

If you are interested, please write to: Wellington Conservancy, Department of Conservation, PO Box 5086, Wellington.

Forest & Bird Magazine

Members often ask questions about the production of *Forest & Bird* magazine. Bascands of Christchurch, who have recently taken over printing of the magazine, boast an environmental record that no other New Zealand printer can match.

The ovens on the printing presses emit waste gases, which are fed into a combustion chamber fuelled by LPG and ignited at 700° celsius. The recirculating hot water system surrounding the chamber provides 80 percent of the company's heating. Gases are purified upon combustion and the 99.6 percent cleansed air filters invisibly into the atmosphere.

Because so much paper is wasted by printers, Bascands installed a recycling system. Large pipes extract paper excess from the ends of the presses and bindery units. Suction draws the paper up to a cyclone drum where rotary knives slice up the wastage. Paper clippings then spiral down to the baler, and are compressed and strapped for transporting.

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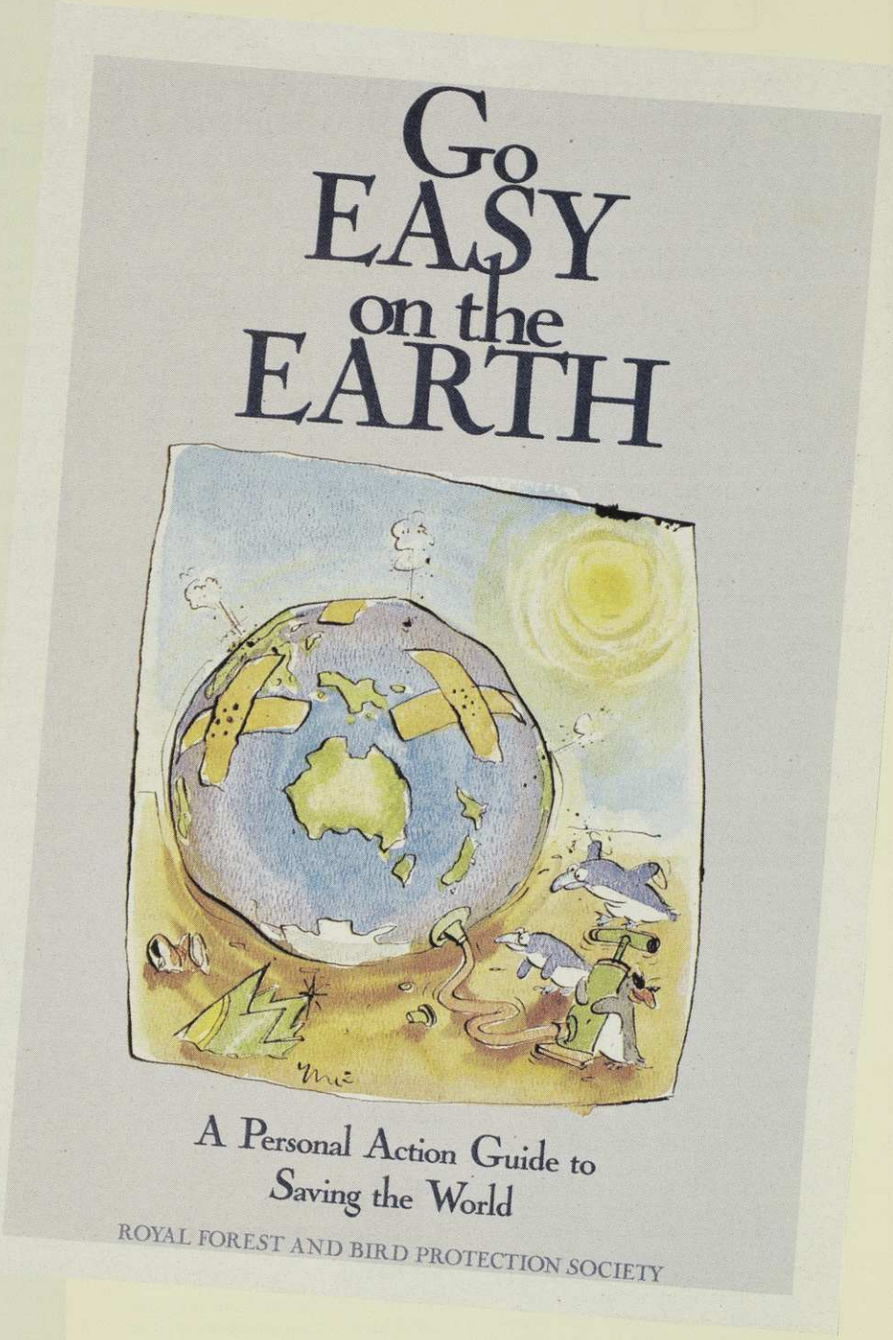

So much has been talked about being "green" in the last year that Forest and Bird decided to do something about helping people look after the environment. The result is **Go Easy On the Earth**, written by education and extension officer Andrea Lomdahl with cartoons by Mike Yule.

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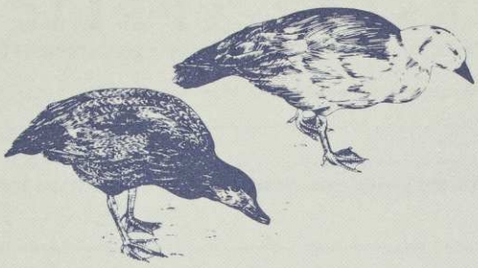

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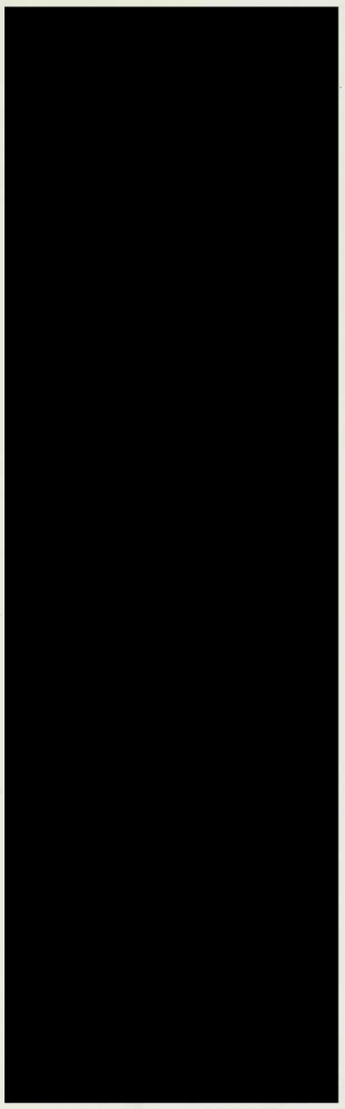
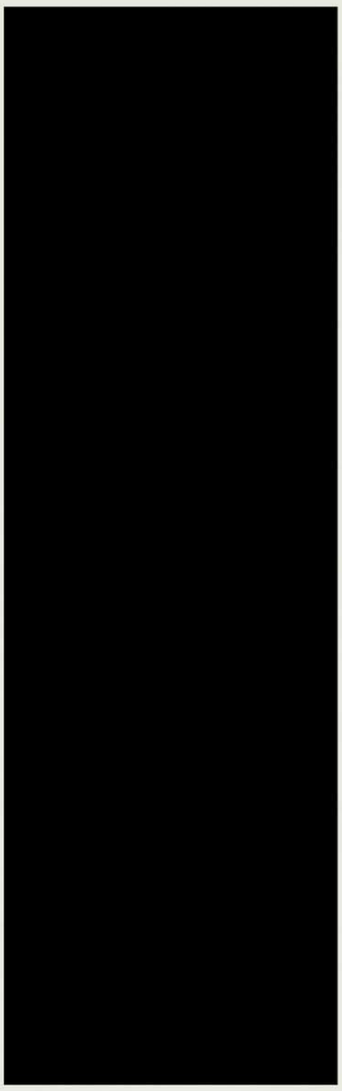
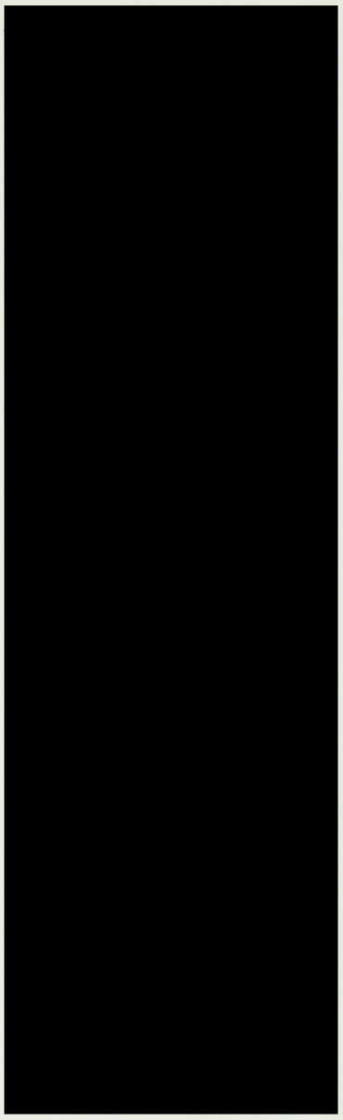
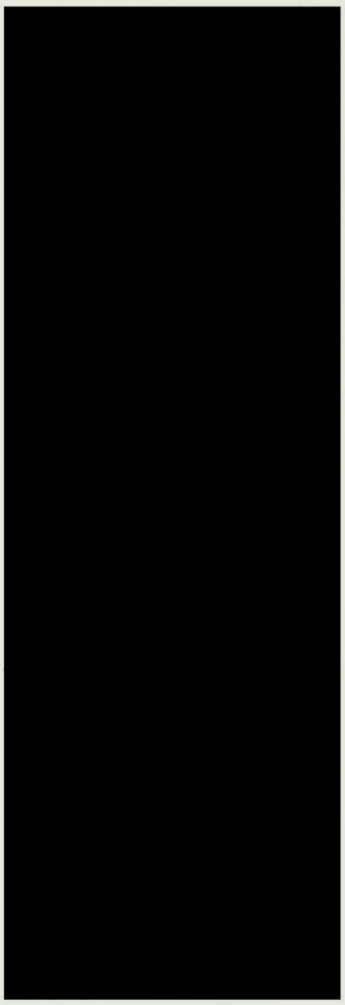





SOCIETY'S LODGES AND HOUSES

Ruapehu Lodge, Whakapapa Village, Tongariro National Park

Set in a privileged position within the National Park this lodge is available for MEMBERS ONLY, and is an ideal location for tramping, skiing, botanising and exploring.

The comfortable lodge holds 32 people in four bunk rooms, and provides all facilities. You need bring only food and bedding. Private parties are restricted to 10 members.

Bookings and enquiries should be made from P O Box 631, Wellington (04) 728-154. 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.

Turner Cottage, Stewart Island

Turner Cottage, is on Stewart Island and is a two-roomed dwelling furnished for three people. For details write, enclosing a stamped, addressed envelope, to: "Turner Cottage", C/- Mrs M. Tait, P.O. Box 48, Stewart Island, Telephone (021) 391-396.

William Hartree Memorial Lodge, Hawke's Bay

The lodge is situated 48km from Napier on the Puketitiri Road and 8 km past Patoka, amid the 14ha William Hartree Memorial Scenic Reserve.

The Lodge accommodates 10 people. Extra mattresses and pillows are available to sleep up to 20. The lodge has a fully equipped kitchen, including refrigerator.

Visitors supply their own linen and cutlery. The nearest store is 8km away. No animals are permitted.

For rates send a stamped addressed envelope to the Booking Officer, Mrs Colleen MacKay, 3 Plunket Street, Tamatea, Napier, Telephone (070) 444-219.

Tautuku Lodge

Tautuku State Highway 92, South East Otago. Situated on the Royal Forest and Bird Protection Society's 550 ha Lenz Reserve 32 km south of Owaka. In a bush setting, and many lovely beaches nearby providing a wonderful base for exploring the Catlins. 3 well appointed buildings, the Lodge, the Coutts cabin and an A-frame sleep 10, 5 and 2 respectively.

Information and rates on application to the caretaker: Miss M. Roy, Papatowai, Owaka, R.D.2. Phone (0299) 58-024. Stamped addressed envelope with inquiries please.

Tai Haruru Lodge, Piha, West Auckand

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

The lodge is fully equipped and sleeps six to eight persons. It has a large lounge with open fire, dining area, and modern kitchen.

You will need food supplies, 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 Road, Henderson, Auckland. Telephone 836-5859.

Waiheke Island Cottage, Onetangi, Waiheke Island

The cottage has comfortable bunk accommodation for eight people and has a stove, refrigerator, and hot water. Adjacent to a 49ha wildlife reserve, belonging to the Society 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 are permitted.

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. Telephone Waiheke 6494.

Bushy Park Lodge

Kai Iwi, 24km northwest of Wanganui on sealed road off S.H.3.

Historic homestead, fine grounds and view. 89 ha of virgin bush with tracks and trees identified.

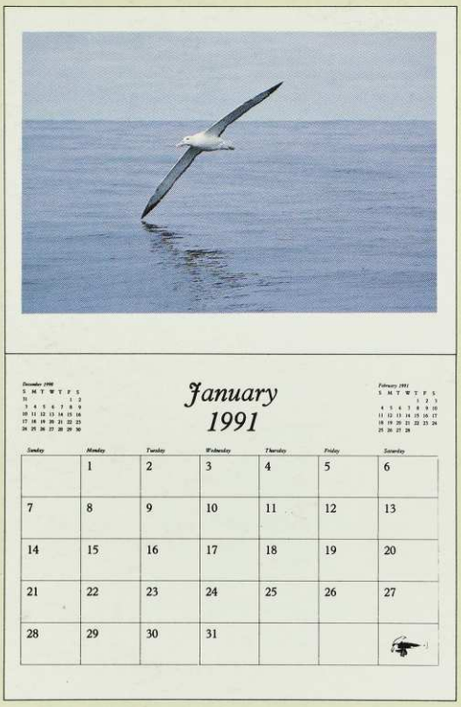
Accommodation: for 16 in six bedrooms, single and double beds, electric blankets, heaters and vanity units. Six extra folding beds. Bedding, linen and towels supplied. Showers, drying cupboard, kitchen with electric stoves, microwave, refrigerator, deep freeze, cutlery and crockery. Bring own rations. Milk may be ordered.

Reduced adult rates Sunday to Thursday nights except long weekends and school holidays (GST included). Open 7 days a week.

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

Bookings and Information leaflets: Manager, Bushy Park Lodge, Kai Iwi, RD8 Wanganui. Telephone Kai Iwi 879. STD (064) 29-879.

Forest and Bird's 1991 Calendar



New Zealand's Natural Heritage

FOREST AND BIRD'S 1991 CALENDAR features outstanding wilderness landscapes, plants, birds and coastal photographs.

Buy now and ensure that your calendar will reach friends and relatives overseas in plenty of time. Calendar will be available August 1.

Order now and don't miss out.

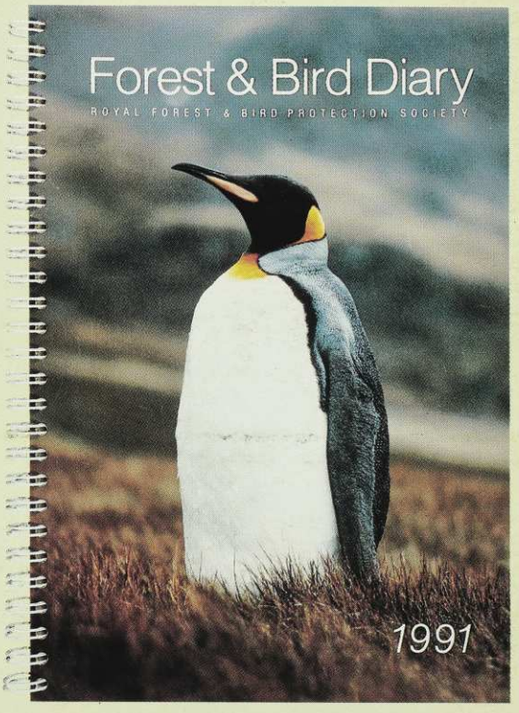
Retail price $13.95. Special price to members $12.00 (includes postage and packaging).

Forest and Bird's 1991 Diary

Forest and Bird's 1991 Desk Diary

Now into its third year, the Forest and Bird diary has become a popular choice with many of our members. No other New Zealand diary matches it for quality. Features include:

- 52 images of NZ's wildlife, wilderness landscapes, underwater scenes, sub-Antarctics.
- NZ's finest photographers: Paddy Ryan, Nic Bishop, Brian Chudleigh, Rod Morris.
- Plenty of room for entries.
- Spiral bound.
- Special conservation anniversaries and phases of the moon.



Retail price will be $24.95. Special price to members $17.00. (includes postage and packaging).

Order Form

Yes, I would like to order ..... copy/ies of Forest and Bird's 1991 calendar at the price of $12.00.

Yes, I would like to order ..... copy/ies of Forest and Bird's 1991 Diary at the price of $17.00.

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