FOREST & BIRD

NUMBER 296 • MAY 2000

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Thank you for assisting the Society to protect New Zealand's natural heritage.

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FOREST & BIRD

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FOREST & BIRD

Features

Regulars

Cover: Banding wading birds on the Firth of Thames to help trace their annual migrations to Arctic lands. See page 25. PHOTOGRAPH: GORDON ELL, BUSH FILMS

comment

An Ancient Law of Conservation

Listening to mini speeches, delivered in the guise of questions at a public meeting, is an interesting pastime.

Rarely is a question simply asked. Oh no! There is a ritual, which must be observed. First, there is the 'speech minor', then the peroration and only then, sometimes, the question.

I fondly recall such a 'question' delivered in Shakespearian tones by a property rights group (for which you may read 'loggers') who were pleased to base their raison d'etre on the Magna Carta. I didn't understand a word of it (and if glazed expressions are anything to go by, neither did anyone else), but by crikey, it sounded good!

The Magna Carta was the great charter which the English barons forced King John to sign at Runnymede, on June 15, 1215. Traditionally, it is interpreted as guaranteeing certain civil and political liberties. Just what the charter has to do with freedom to log indigenous forests escapes me. However, one day I might be in the hot seat, so it seems prudent to prepare a reply.

I think I might couch my answer on what is understood to be New Zealand's oldest law: the Statute of Marlborough (of 1267). Conveniently, this ancient planning law is partly about logging. The language is wonderful.

'...It was provided and established and with full consent ordained that, (whereas the realm of England having been of late depressed by manifold troubles and dissensions, standeth in need of a reformation of the laws and usages, whereby the peace and tranquillity of the people may be preserved, whereto it behoveth the King and his liege men to apply an wholesome remedy) the provisions, ordinances and statutes underwritten should be firmly and inviolably observed by all people of the realm, for ever.'

The reference to logging is clearer.

'Fermors shall make no waste. Fermors, during their terms shall not make waste, nor exile of house, woods, men or of anything belongeth to the tenements that they shall have to ferm, without special licence had by writing of covenant, making mention that they may do it: which thing if they do, and shall thereof be convict they shall yield full damage, and shall be punished by amerciament grievously'.

What are we to make of this? What, was the nature of the of the 'manifold troubles and dissension?' Why was the realm so depressed? More to the point, what did the King and his liege men hope to achieve for the better state of the realm?

One explanation could be that the King was simply a conservationist. He and his barons understood and accepted the value of living woods. No doubt they received jolly good advice from officials, the botanists and ecologists of the day. (Pesky questions from the Treasury were not really a problem because the King owned it and was his own adviser.) Having weighed the evidence, it seems an indigenous forest policy was formed and law enacted.

And they didn't mince their words. People shall not cut down trees without permission or they will be fined: grievously! Clearly, the King and his liege men were able to do this by virtue of the authority derived from the Magna Carta itself.

The Statute of Marlborough is evidence that that caring for the environment and conservation has been enshrined in our law for a very long time.

It also proves that those who believe they have a right stemming from the Magna Carta to harvest forest are barking up the wrong tree.

— *Keith Chapple*

KEITH CHAPPLE *is national president of Forest and Bird*

mailbag

Unwelcome Visitors

A promotional paper published at Christmas encourages people to visit the new Pohatu Marine Reserve at Flea Bay, Banks Peninsula.

Flea Bay is a unique mainland nesting site for white-flippered penguins and hoiho (yellow-eyed penguin). They have survived there relatively undisturbed, protected by a difficult road and a farming family who have made a science of predator control.

Recently the site became the property of the Department of Conservation and clearly a very different style of management is in operation.

I live in a similar bay a little further north. Within living memory, it had a large population of white-flippered penguins. An elderly man recalls happy childhood days hunting the birds at night by torchlight. Hoiho attempt to nest here from time to time but are defeated each year by predators and human invasion. Overfishing by professionals and amateurs is common every summer and near-impossible to police.

For its protection a place like Flea Bay needs inaccessability and anonymity. This should be obvious from the most cursory survey of the area.

What on earth is the Department of Conservation doing promoting it as a place to visit?

Fiona Farrell, Otanerito, Akaroa

Weka in Town

As you probably know, weka are few and far between in the Gisborne district now. When we lived in the country, we fed seven or eight — out of our hands — on our back lawn. Now I'm in a section in town (I'm 81) and am so thrilled to be able to look after and feed a pair of weka again. They come up from the river at the back of my section. About

RENE ORCHISTON

A weka fed by Rene Orchiston in her Gisborne garden.

three weeks ago, they appeared with two little chicks which were growing fast, but alas one has gone missing; I guess due to the odd cats that prowl along the bank at night. I suggested they might be taken to the safety of the new enclosure built at Mrs H. B. Williams's property on the coast at Turihau Station, but they don't like removing a breeding pair from their habitat. It seems a pity if they have offspring each year which are then killed while young.

Rene Orchiston, Gisborne

Robins Remain

I was interested to read your story 'Robins return to Waikato'. One bird species that remains common on the northern West Coast is the South Island robin. During the six days we walked through Kahurangi National Park, one appeared almost every time we stopped. How they have hung on in the presence of stoats and rats is a mystery, as they spend a lot of time on the ground. Otherwise native birds were scarce. We saw one falcon, heard one kaka and one kea, saw a pair of blue ducks, and heard bellbirds but never saw one. Another bird that thrives here is weka. In the Westport area it is sometimes more common to see dead weka on the roads than possums.

Pete Lusk, Westport

Forest & Bird welcomes comments, up to 200 words in length, on items in the magazine or on environmental matters generally. Letters may be edited for length or clarity. Deadline for the August issue is May 31.

Sandra Lee: Fresh Perspectives on Conservation

Ten years ago, Sandra Lee was a member of Forest and Bird's national executive; now she is Minister of Conservation. Her concern then, that Forest and Bird should recognise the Treaty of Waitangi in its constitution, is matched today with a real concern that Maori should have an appropriate role in conservation.

Politically, Sandra Lee is leader of a Maori sovereignty party, Mana Motuhake; but she allies herself with New Labour and the Democrats in the political Alliance, itself an element in the coalition Government. Elected to Parliament in 1993 as Mana Motuhake member for Auckland Central, she is now an Alliance list MP and deputy leader of the Alliance. Her senior ranking as number seven in the Cabinet reflects both the status of conservation in the coalition Government and her further duties as Minister of Local Government, and as an Associate Minister of Maori Affairs.

Sandra Lee has a reputation for successfully combining a political career with a personal commitment to conservation. She was a founding member of what is now the Hauraki Islands branch of Forest and Bird, advocating conservation issues while a member and latterly chair of the Waiheke County Council from 1983 till 1989. When Waiheke was merged with Auckland City she was elected the island's ward councillor for two terms. A high profile in local politics won her support far beyond the constituency of Mana Motuhake (she was already deputy co-leader of the Alliance) — in 1993, Sandra Lee became the first Maori woman to be elected by a general electorate, unseating her Labour opponent, Richard Prebble (now leader of the ACT party).

In Parliament, Sandra Lee has often taken up the cause of conservation. Her first achievement as Minister was to guide the Hauraki Gulf Marine Park Bill into law, with a hugely supportive majority. (The Bill fell off the National Government's last-minute order paper after unexpected set-backs relating to the return of public land at Takapuna Head, North Shore City. The land, long occupied by the defence forces, is now to be returned to public ownership, benefiting a burgeoning city short of local parks and reserves.) She gives much of the credit for the park to the advocacy of National's Minister of Conservation, Denis Marshall, and the forum ideas of his successor, Dr Nick Smith. (See Conservation Briefs, page 6).

The conservation policies of the Alliance and Labour both make reference to possible forms of management for conservation land involving Maori and the Crown. Sandra Lee says such policies shouldn't be read in isolation from the parties' Treaty of Waitangi policies.

'The sky doesn't fall in if we have joint management between the Crown, the public and tangata whenua,' she says. ('The public is part of this joint management process,' she confirms.) 'Treaty settlements need to be made on a case-by case-basis, consulting local people.

'The previous Government's model was funadamentally flawed. It was very much focused on the fiscal approach.

'No one opposed it as vociferously as I did, particularly over the Ngai Tahu settlement.

'There are significant cultural isues to be addressed in these settlements,' she says, instancing protection for Maori waahi tapu (sacred sites) on public land. 'But there are over-arching issues to be settled too. We want to create jobs, and close the economic gaps. Limiting claim settlements solely to conservation land in recompense for Treaty breaches is not the best solution. That way Maori are likely to end up as "lone park rangers" with a huge management problem. Instead, money needs to be spent acquiring land which is economically viable. The key test is whether or not the settlement land provides a real economic resource base, which doesn't have to mean DoC land would be alienated.'

And this needs to be done locally. The Ngai Tahu settlement did nothing for her tribe, the Poutini Ngai Tahu, according to Sandra Lee. Its concentration on wider South Island issues overrode their regional West Coast concerns.

'Treaty settlements need to be made with local people, and hapu in particular. Sometimes this may mean passing all management of a reserve to Maori. More often it's simply a matter of recognising Maori have a clear stake and interest in the place.'

'Joint management does not necessarily have to be about 50:50 control of an area between Crown and Maori. The Hauraki Gulf Marine Park (which has six iwi representatives on its guiding forum) is an excellent model. It requires tangata whenua and all agencies to be proactive in protecting the gulf, not reactive.'

Improved funding for the Department of Conservation is part of both Alliance and Labour policies. Sandra Lee talks about 'clawing across funds' from other sources to build up conservation funding. 'I'm hopeful the outcome of the biodiversity strategy will help pull across additional resources.... Regional development funds and employment schemes, and the developing visitor industries are possible resources which can benefit the environment too.'

— *Gordon Ell*

PHOTO CREDIT: DAVE HANSFORD, ORIGIN NATURAL HISTORY MEDIA

The Minister of Conservation, Sandra Lee, at the first Cabinet meeting of the Labour-Alliance Government. Ranked seventh in Cabinet, Sandra Lee also holds the portfolios of Minister of Local Government and Associate Minister of Maori Affairs. She is leader of the Mana Motuhake Party, a list MP, and deputy leader of the Alliance. While well-known as an Aucklander, Sandra Lee is active in the affairs of the Poutini Ngai Tahu of the West Coast, South Island. She also has tribal links with Ngati Toa Rangatira and Ngati Kahungunu. She has two adult daughters, two granddaughters and a grandson.

Northland Couple Honoured

Val and Arthur Dunn have been stalwarts of the Mid North branch of Forest and Bird since the mid-1980s, but their receipt of Queen's Service Medals also recognises wider community service in the Puhoi district, just north of Auckland. As farmers they have also gifted two valuable reserves.

The Dunns bought their Puhoi farm in 1972, and immediately became involved in a range of activities including sports administration, (particularly rugby), the local domain board, the A&P show, and the centennial hall. They have also been active in pest control, Puhoi Landcare and beautification groups, growing thousands of native plants for replanting projects, and to raise funds for Forest and Bird.

Arthur Dunn served on the Mid-North Forest and Bird committee from 1987-99, Val for a year less. During this time Arthur also served as branch vice chairman and as a national councillor.

Their gift of 11.4 hectares of forest created what is now Remiger Bush Scenic Reserve, a forest dominated by taraire, with kahikatea, titoki, a few totara and northern rata. Dunns' Bush was gifted to the Queen Elizabeth II National Trust to protect 92 hectares, again dominated by taraire but including 160 tree and plant species.

Being farmers has helped them in persuading the community and local councils to protect nature. 'Submissions on resource consents are important ways in helping to restore our natural environment,' they say.

GORDON ELL, BUSH FILMS

Arthur and Val Dunn of Mid North Forest and Bird both received the Queen's Service Medal.

Hauraki Gulf Marine Park

Initially, some people dubbed it the Clayton's park — the park you have when you're not having a park — recalling the advertising campaign for an unsuccessful, non-alcoholic drink substitute. Yet, there is now a strong belief that the beefed up Hauraki Gulf Marine Park Act should bring something more satisfying in the way of protection for a million hectares of water and land off Auckland and the Coromandel.

The concept is bold: all land which drains into the Hauraki Gulf and the western Bay of Plenty is to be managed to protect the surrounding waters. So people up to 80 kilometres inland — dairy farmers round Tirau in the southern Waikato, for example — have to accept responsibility for what they do with their slops.

In a first for conservation management, the Hauraki Gulf Marine Park is to be managed by a forum of territorial local authorities, along with representatives of Crown ministers, and Maori. They will use provisions of the Resource Management Act to give effect to their decisions. There'll be no dedicated staff; in fact the park doesn't even have an operational budget. Each contributing authority will provide its own resources and pay a share of any costs.

Early criticism of the park bill centred on the degree to which it was to encourage the active protection of the gulf: while conservation groups argued for stronger environmental clauses, some local authorities opposed the idea.

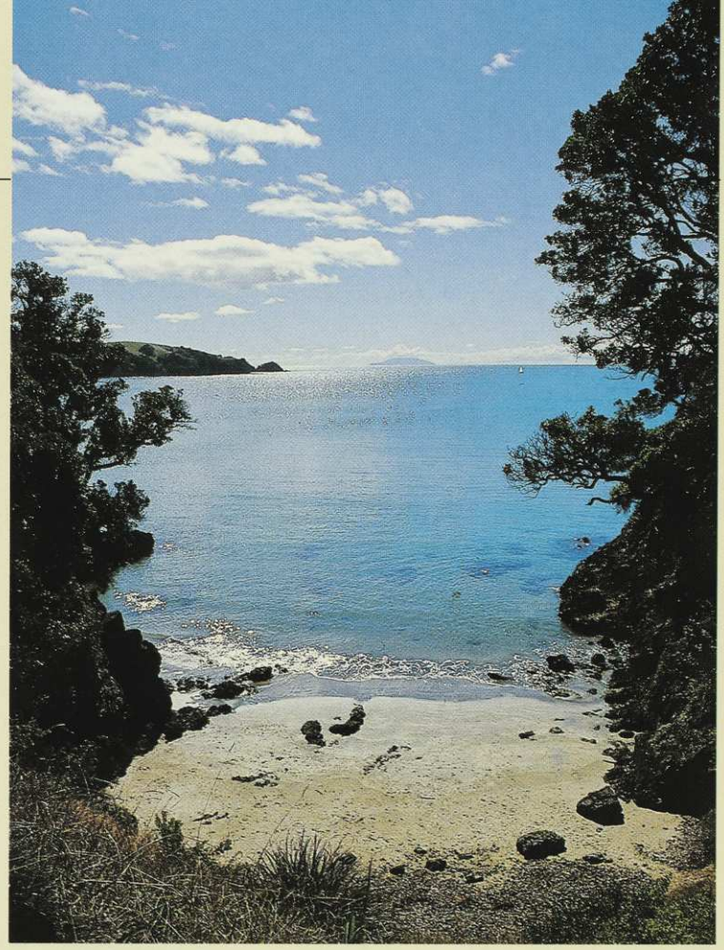
The purposes of the Act now draw on other conservation laws — 'to recognise and protect in perpetuity, the international and national significance of the land and the natural, historical and physical resources within the park'. Also to protect in perpetuity 'scenery, ecological systems, or natural features that are so beautiful, unique or scientifically important to be of national significance, for their intrinsic worth.' The park should also 'sustain the life-supporting capacity of the soil, air, water and ecosystems' of the park.

The park forum is charged by statute to prepare a strategic list for actions in the park and keep it under review. It should also encourage co-ordinated financial planning by local authorities. Every three years it is bound to report to the Minister of Conservation on the state of the environment, and progress toward 'integrated management' of the Gulf.

The new park has been 10 years in gestation; more if you count an earlier proposal to form a regional park around the inner islands, under the Auckland Regional Authority. Over time its form has suffered a 'sea change'.

As Minister of Conservation, Denis Marshall in 1991 instigated a technical working party to look for options. These included possible boundaries, and special recognition for both the islands and the waters of the gulf. The working party, led by Jim Holdaway, a former chair of the Hauraki Gulf Maritime Park, recommended a marine park covering the whole gulf. Maori opposition (born of unresolved claims) led to protracted negotiations with iwi.

The proposal for a park was energetically pursued by Dr Nick Smith who, as a new Minister of Conservation, saw the potential for involving territorial local authorities using the Resource Management Act to clean up onshore effects on the Gulf. His proposal was to give statutory powers to the Hauraki Gulf Forum, which had been set up by the local authorities in the meantime. It is from this initiative that the present shape of the park emerges.



GORDON ELL, BUSH PRESS

The sparkling waters of the Hauraki Gulf, looking from Waiheke toward Little Barrier Island on the far horizon. A new Act of Parliament creating the Hauraki Gulf Marine Park, protects its waters and other values, and also the islands and coastal waters of the eastern Coromandel Peninsula.

The initial stages of the Bill were shaky: much of the confusion arose from the use of the word 'Park'. What was proposed was more a bill to recognise the cooperating local authorities for the good of the Gulf, rather than a park in the traditional sense. The Department of Conservation would put in its conservation islands (including the sanctuary of Little Barrier, and public islands including the landmark Rangitoto just off Auckland) but it still retained management. When legislation was refined to allow coastal land to be added, the Department of Conservation also put in some landward reserves, but the Auckland Regional Council, which owns hundreds of hectares of coastal reserves, did not.

The big advances were made at the late stages of the bill when Parliamentarians acknowledged that the marine park had to include the waters of the Gulf if it were to have any substance.

The interests of the Crown are to be represented by nominees of the Ministers of Conservation, Fisheries and Maori Affairs. Maori interests (there are several powerful tribes claiming this as their territory) have been further recognised with six representatives. The users and residents of the gulf — boaties, fisherfolk, conservationists — are not directly represented.

Yet getting local bodies to plan together is a major step forward. For the first time, local government is expected to be proactive towards preserving the values of the gulf, rather than continuing the frustrating and damagingly reactive way in which the gulf has previously been treated.

— *Gordon Ell*

Stewart Island/Rakiura National Park Proposal Advanced

Moves to establish a national park on Stewart Island are in their final stages, with 'approval in principle' already agreed by the New Zealand Conservation Authority. The proposed park will cover most of the island, excepting the township and hinterland of Half Moon Bay, 'buffer zones' and areas of Maori-owned land.

The Conservation Authority, which has the responsibility for conducting any public enquiry into national park proposals, has found the island meets the exacting standards demanded by legislation. The Authority will now forward its recommendation to the Minister of Conservation for the declaration of a national park, New Zealand's fourteenth.

The outstanding values of Stewart Island include extensive forests and natural features which deserve 'protection in the national interest'. The island is home to a number of endangered birds and plants, and is notably free of mustelids, such as ferrets and stoats, which have devastated birdlife in mainland forests.

The investigation for the Stewart Island national park extended over 163,000 hectares, about 93 percent of the main island, but excluded all private and Maori land. A large number of coastal islands were also included, but not the nature reserve of Whenua Hou/Codfish Island which is subject to the special joint-management provisions of the Ngai Tahu Maori lands settlement.

GORDON ELL, BUSH FILMS

Stewart Island/Rakiura may become New Zealand's fourteenth national park following 'approval in principle' by the New Zealand Conservation Authority, which found the island meets the criteria for national park status. The investigation was begun at the behest of the former National Minster of Conservation, Dr Nick Smith, but any recommendation must go to the current Government for approval.

The national park investigation revealed that a number of offshore islands and rocks are actually unallocated Crown lands — essentially ownerless — and the inclusion of these has to be negotiated with Maori. Most of these islands support outstanding populations of lizards and seabirds, particularly those sufficiently far offshore to be rat free.

The ownership of some of the riverbeds has also to be negotiated with local Government and the Commissioner of Crown Lands. Further questions relating to the management of the tidal zone have also to be determined with the Southland Regional Council — the area is important because of the shelter it accords birds and seals.

As landward boundaries are vague in places, a buffer zone required by law presently separates Crown reserves from lands which are set aside for Maori under the South Island Landless Natives Act of 1906. The Authority found these buffer zones, amounting to some 13,000 hectares, also contain forests deserving of national park status. It suggests that such remaining areas could be included later, when legal boundaries between Crown and Maori lands have been established.

Much of Stewart Island was formerly protected with the status of 'nature reserve', to protect the habitat of rare and endangered species such as the New Zealand dotterel and the kakapo. Because national park status downgrades this (by allowing people to visit these areas), special protection zones will be created within the national park so endangered birds and plants remain undisturbed.

Two offshore nature reserves, Bench Island and Whero Rock, will retain their special status, however, so their important tidal zones remain protected places where seals can haul up.

The Conservation Authority has recommended that the park be named Rakiura National Park, recognising that it extends offshore and includes a larger area than just Stewart Island, while also acknowledging its dual heritage of Maori and early European settlement.

— *Gordon Ell*

A more detailed report on the natural and scenic values of Stewart Island may be found in the May 1999 issue of Forest & Bird.

Protecting the Coasts of Golden and Tasman Bays

Marine farmers have targeted the shallow, sheltered waters of Golden and Tasman bays near Nelson, as a prime site for a major expansion of the aquaculture industry. The provision of coastal space for spat-catching and marine farming has become a major issue in the evolution of the regional coastal plan for the Tasman District.

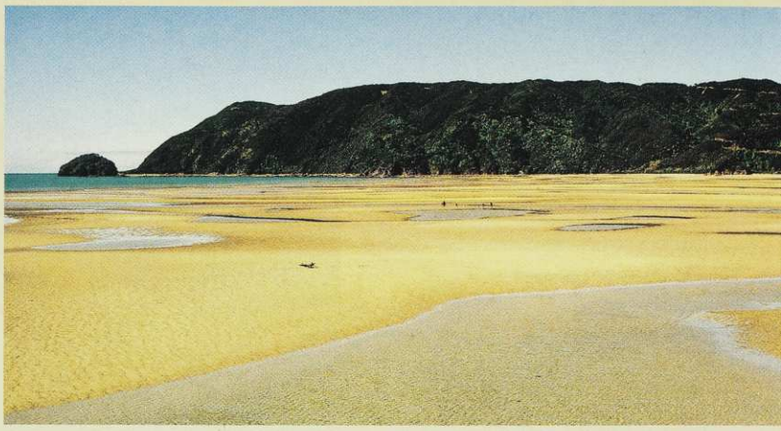
At the northwest corner of the South Island, Golden and Tasman bays provide rare examples of north-facing bays, protected from the effects of oceanic currents and swells. A magnificent coastline of sandy beaches, barrier-enclosed estuaries and large expanses of tidal flats and open foreshore, has evolved. In Golden Bay this striking coastline is further enhanced by the encircling ranges of Kahurangi and Abel Tasman national parks, and by the protective arm of Farewell Spit, a landform and wildlife habitat of international importance.

At present there are less than 100 hectares of mussel farms in Golden Bay and no permanent aquaculture structures in Tasman Bay. A 'gold rush' of recent applications, however, seeks to have more than 10,000 hectares in these two bays allocated to seasonal spat-catching and the installation of permanent mussel farms.

Alarmed at this avalanche of applications, local residents and conservation groups have mounted a major campaign to protect the natural character of the coast.

Currently, the Tasman District Council's regional coastal plan provides for an 'aquaculture exclusion zone' throughout Golden and Tasman bays. This generally extends three nautical miles off the coast and six nautical miles around the coast of Abel Tasman National Park but there are exceptions for existing farms and some small extensions to these.

The Challenger Scallop Enhancement Company, along with the New Zealand Marine Farming Association and several groups of marine farmers, has appealed the plan provisions to the Environment Court. The court hearing began last November in Nelson and was continuing in March.



ANDY DENNIS

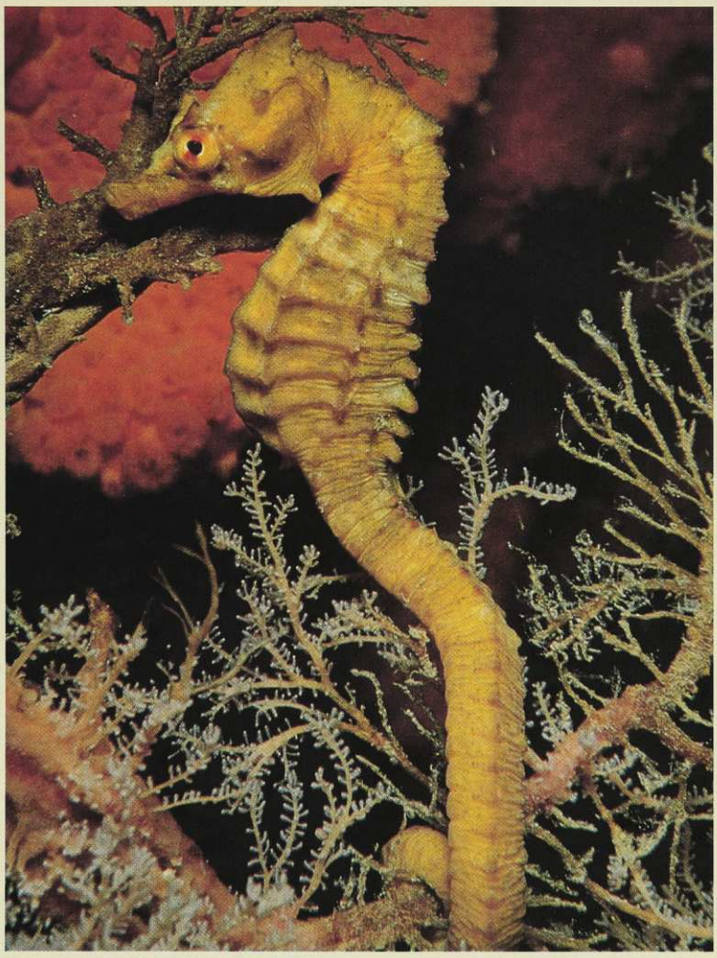
Extensive inter-tidal sandflats, as here in Wainui Bay close to Abel Tasman National Park, are an important natural feature of Golden and Tasman bays. The Tasman District coastal plan currently protects estuarine areas from oyster racks and other marine farming structures, but not from mechanised diggers taking cockles.

Forest and Bird is one of 24 separate parties involved in the case, represented by a Society field officer, Eugenie Sage, with considerable help from Golden Bay, Nelson and Tasman branches. Generally, Forest and Bird along with Department of Conservation, the Friends of Golden Bay, and Friends of Nelson Haven, supports the Council's aquaculture exclusion zone as 'the minimum required to protect important ecological, landscape and amenity values'. Sections of the aquaculture industry are strongly opposed to it.

There are also major conflicts between different sectors of the aquaculture industry. In particular, there is conflict between mussel farming interests and the Challenger Scallop Enhancement Company whose current programme of collecting scallop spat, rotationally seeding and then dredging, uses virtually all of the area sought for mussel farming

Forest and Bird sees this as a landmark case about protection and sustainable use of the coastal environment. It is one of the more complex, difficult and interesting cases the Environment Court has dealt with, involving more than 50 witnesses. It raises major legal issues about the relationship between the Fisheries Act and Resource Management Act (RMA) as well as about the way in which the purposes and principles in Part II of the RMA relate to the coastal environment. It also raises questions about the adequacy of information about a number of key aspects of the coastal and marine environment, and the extent to which a 'precautionary approach' needs to be adopted until this information becomes available.

— *Contributed*



IAIN ANDERSON

Seahorse Survey Underway

Fears that New Zealand seahorses will suffer a similar fate to those elsewhere is prompting the Western Underwater Research Team in Auckland to undertake a national survey of their numbers and distribution. The seahorse is popular in Asia, medicinally and in the pet trade, leading to a drastic fall in its numbers in some parts of the world.

Seahorses are more common than apparent; their colours blend with the seaweeds they frequent. The fish can remain motionless except for its flittering gills.

Biologically, they are bony fishes, with a swim bladder but no teeth or stomach. They eat tiny crustaceans such as brine shrimps and fish fry which are swallowed whole.

Their breeding is unusual. The males carry the young.

Couples court and stay together while brooding. The female lays sticky strings of eggs and deposits them in the male's pouch where they are fertilised. After 10 days to six weeks, depending on the species, the young are ejected from the pouch. The young then fend for themselves.

A special permit is required to take seahorses from the wild and to date this has only been granted for educational or scientific purposes. Survey Seahorse 2000 invites divers to record the occurrence of the fish underwater, and for 'beachcombers' to record any dead specimens they find washed up on the shore.

To get more information about Survey Seahorse 2000 phone (09) 827 7008. If you want to contribute to the survey contact Mike Percy at Survey Seahorse 2000, PO Box 20-296, Glen Eden, Waitakere City. Email: seahorse2000@xtra.co.nz

National Trust for Wetlands Formed

A higher profile for our vanishing wetlands is sought by a new trust founded in the Waikato. The National Wetland Trust of New Zealand is the product of a millennium initiative of the Waikato Conservation Board which in 1998 promoted the concept, to raise public awareness of wetlands and provide a central point for sharing wetlands information.

Among its promoters is Gordon Stephenson, chair of South Waikato Forest and Bird, a distinguished life member of the Society, and author of *Wetlands, Discovering New Zealand's Shy Places* (Government Printer 1986).

'The Waikato is an appropriate place to start a National Wetland Centre because this region is, in many respects, the "wetland centre" of the country,' he says. 'There are three wetlands in Waikato registered as having international significance under the Ramsar Convention of the World Conservation Union.' (The Ramsar wetlands are the Kopuatai Peat Dome, Whangamarino Swamp, and the Miranda mudflats of the Firth of Thames.)

'The Trust has a vision of New Zealand's wetlands being restored, enhanced and appreciated,' Gordon Stephenson says.

To do this it hopes to establish a centre as a place for education, and for appreciating the wetlands.

It also plans to establish wetland trails, both regionally and nationally.

JAMES SAMUEL

Omaha Bush, near Christchurch

New Forest Reserve Near Christchurch

High on the southwestern Port Hills, Christchurch folk are discovering an extensive native forest, dominated by three volcanic heights. The 106 hectares of Omahu Bush, lying just below the peak of Omawete (Cooper's Knob), form a sizable remnant of the original coastal forest that clothed much of the Port Hills when the Canterbury Association settlers first came ashore in 1850.

This private reserve, newly developed by a charitable trust, is the brainchild of Forest and Bird members, Grant and Marilyn Nelson. It includes areas of tussock hillside and a landmark basaltic cone, Gibraltar Rock. Another lower cone breaks the panorama of Lake Ellesmere (Te Waihora) to the southwest.

The bush is rich in native trees, a quick count revealing over 20 species, including long-established matai, kahikatea and totara. Notable are the kowhai over 14 metres high, and large tree fuchsia, lancewood and ribbonwood. Broadleaf, five finger, tarata, titoki, and kaikomako add to the list. There are dense groves of kanuka, particularly in the lower areas, and the open hillsides have abundant thickets of horopito.

A cascading stream is bordered with fern varieties, including well-grown soft tree fern *Cyathea smithii* and silver tree fern *Cyathea dealbata*.

Here and there are cabbage trees, marble-leafed supplejack, bush lawyer and fierce stinging nettle.

The heavy flight of the wood pigeon is soon heard by the visitor; frequently two are at play together, wheeling and swooping high above the forest. The predominant song is that of the bellbird, close overhead and not at all shy. There are also tui, fantails, silvereyes, grey warblers and even kotare, the kingfisher.

The forest was originally part of the celebrated Taitapu Run of Sir Robert Heaton Rhodes. After his death at the age of 95 in 1956 his large estate was divided into smaller holdings and the well-preserved forest tract passed to a farmer named Prendergast, whose name was given to the bush for some years.

When the present trust purchased it some 18 months ago, members of the Summit Road Society, inspired by Gordon Kirk, formed a walking track looping down from the Summit Road to the bottom of the forest. Among these outdoor enthusiasts were several connected with the parks and recreation course at Lincoln University. They did the practical work required for the course at Omahu Bush. The track, including an appropriately rustic bridge and tree-naming signs, could not have been built in a better cause.

The whole area lies within a broad valley and includes several permanent streams, notably one with a waterfall at the lower end of the bush. The character of the vegetation shows a marked change at about the 300-metre level. The lower slopes are clothed mainly in kanuka, but higher up, with increasing rainfall, the forest is much more varied and the canopy reaches to 15 metres. The uniform canopy height of this coastal forest suggests some selective logging 100 years or more ago.

Omahu Bush offers a rare combination of features — volcanic, botanical and bird life — so close to the city. As Christchurch approaches a population of one-third of a million people, this natural resource will be of ever-increasing value to citizens and visitors alike.

— *James Samuel*

The panoramas on this page depict the extent of Omahu Bush, on the southwestern Port Hills, near Christchurch. The 106 hectares contain a typical remnant of the pre-European forest of this area, and three volcanic features. The reserve is owned and run by a private trust.

JAMES SAMUEL

Keeping Lake Taupo Clean, Blue

GORDON ELL, BUSH FILMS

The 'clean-blue' image of Lake Taupo is the concern of a broad group of community organizations advising the Taupo District Council, through the Taupo Lakes and Waterways Group. The forum identifies problems and suggests solutions regarding the maintenance of water quality and habitat about the lake.

Ways of preserving the traditional values and cleanliness of New Zealand's largest lake are currently under discussion in Taupo. The issues include contamination from lead weights, jet-skis, sewage from boats, fluctuating water levels, lake weed, contaminants in the storm-water entering the lake, black swan numbers and their excreta, and the future threat of nutrients from farms converted to dairying.

A group of people concerned about Lake Taupo, and members of the public who may join them and speak at the group's monthly meetings, contribute knowledge, skills, concerns and problem-solving guidance to the Taupo Lakes and Waterways Action Group. This is one of three groups formed by the Taupo District Council in 1997 in response to the needs of the council's strategic plan and the wishes of the community it serves.

Many of the values the community wishes to preserve are fairly obvious — waters must be clear, safe to drink and swim in, and free of weeds. High-quality rivers and streams must sustain Taupo's world-renowned trout fishery. It is essential to preserve lake-margin wilderness, the high-quality foreshore reserves, a wide range of recreational opportunities, and diverse natural habitats. The cultural significance of some areas must also be allowed for. Unique geological features need to be protected.

Guided by these values and needs, many of the organizations involved, and concerned local citizens, meet at monthly evening forums. They include representatives of Forest and Bird who join with people from the Department of Conservation, fishing guides, forest managers, district councillors and officers, Environment Waikato, Taupo Civic Trust, Federated Farmers, Maori trusts, hydro-electricity generators, and the Institute of Geological and Nuclear Science, to mention many of them.

So valuable has the action group's contribution become, that the district council has now formalized recognition of the group and the work it is doing. It has also reinforced the Council's ongoing secretarial role by ensuring that such work is built into their officer's job-specifications in future — to guarantee an uninterrupted succession of action-group administration if an employee leaves.

The group has no statutory obligations, nor power to enforce solutions to problems. So it is pleased that the council will take up one of its early recommendations — that Lake Taupo be declared a 'National Treasure' (or 'Asset' or 'Icon'). Another of its initial suggestions that key stake-holders in the continued health of the Taupo environment should come together and pledge themselves to a Lake Taupo Accord is on hold at present.

If implemented, those two suggestions will do wonders for the ever-burgeoning Taupo tourist industry. And yet the industry appears to believe the place can never deteriorate — that its 'use-by date' is stamped 'indefinite'. Three annual Tourist Industry Forums called by the district council's marketing arm failed to mention any concern for the environment. So it was good to hear the incoming Minister of Tourism, Mark Burton, at the fourth forum in January this year, underline the necessity for environmental care and enhancement if we are to sustain Taupo's clean-green and clean-blue image.

— *John Parsons.*

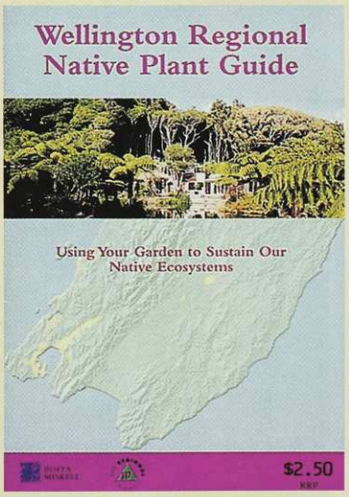
Native Plants for the Wellington Region

Following a recent Northland initiative, the Wellington Regional Council has now produced a native-planting guide for local conditions, which is even more useful. Taking the approach of 'using your garden to sustain our native ecosystems' the *Wellington Regional Native Plant Guide* is a 32-page booklet containing a wealth of valuable information. It divides the region into 16 planting zones, extending from the exposed and rocky coastal strip, to the Otaki-Waikanae alluvial terraces, the inland Wairarapa hill country, and the mountain ranges of the southern North Island.

The guide lists plants suited to local conditions, matching species with various environments. It offers plants that encourage native birds to visit the garden, and plants that keep streams and wetlands healthy. The gardener picks the likely zone from a locality map but can check in finer detail by consulting a list of suburbs to confirm the choice. From there, a zone page recommends what to plant. These include 'heritage' trees — the potential forest giants — and smaller trees with likely sizes indicated; also shrubs, climbers and scramblers, grasses, sedges and rushes, and ferns.

Each zone page includes an interesting list of environmental factors which will influence the plants. There is also an indication of past landscapes, describing lost habitats and the kinds of plants which distinguished them. Several pages also carry colour pictures of outstanding species. A 'main list' includes all the plants in the book, marked with environmental symbols for those wanting to know what other species to consider for their locality: it also includes lists of scientific and Maori names.

There is an amazing amount of helpful detail crammed into this little book. Copies are available at



$2.50 each from a number of specialist shops — the telephonists at regional council offices have a list of these outlets to help enquirers.

North Island Robins Re-established in Lower Northland

AUCKLAND REGIONAL COUNCIL

After being locally extinct for 100 years, a mainland colony of North Island robins is now well established just north of Auckland, at Wenderholm Regional Park. Twenty-one birds were transferred there from the open sanctuary on Tiritiri Matangi Island just over a year ago; this summer they produced 23 young.

The Wenderholm reserve consists of a river-mouth beach and a high bluff covered in coastal rainforest, with State Highway One on its inland boundary. The beach is a popular place for picnicking and swimming, but the forest is managed by the Auckland Regional Council using similar techniques to those used on 'mainland islands' managed by the Department of Conservation.

Regional parks staff poisoned and trapped pests in the 60 hectares of forest from 1992, to recover native plants and animals, before the robins were introduced. Insect life and new plant growth proliferated. Populations of native pigeons have also burgeoned with flocks of 40 and more recorded.

At the start of summer, six pairs of robins established territories and all six pairs bred. Some of the pairs produced three broods during the season.

Visitors to Wenderholm are encouraged to take a walk in the forest and see the birds.

Japanese Snipe 'Off Course'

The Japanese snipe has been observed on the New Zealand shore about 15 times in the past century, but Alex L. Scott of Palmerston North claims to be the first to photograph one. He took these pictures on the Manawatu River estuary on December 12, 1999.

The Japanese snipe breeds in Siberia and Japan but regularly migrates to southern Australia or Tasmania for the summer. In New Zealand the bird was associating with flocks of other migrants, including eastern bartailed godwit, and a rare pectoral sandpiper. One feeding godwit firmly made the snipe keep its distance, however. Alex Scott hoped the bird would stay all summer but the migratory bird habitat on the Manawatu River estuary is becoming increasingly disturbed by jetskis and dune buggies, he says.

worldwatch

Humans – Forces of Nature

Human activities are now on a par with natural disasters as major forces of nature, according to an American academic conducting research at the University of Canterbury. Jane Lubchenco, a Professor of Zoology from Oregon State University, says humans have unwittingly caused changes to the Earth's systems that are unforeseen, unwanted and undesirable.

In the last century humans have altered the chemistry, the physical structure and the biology of the planet in dramatic ways. Human activities have transformed 50 percent of the Earth's surface, changed the Earth's atmospheric chemistry by increasing carbon dioxide emissions, and doubled the amount of nitrogen entering the natural cycle. Each of these changes triggers responses in the earth system. For example, increases in carbon dioxide are a likely contributor to the global warming seen over the last century.

Excess nitrogen in coastal waters is suspected of causing rapid increases in many harmful algal blooms and causing 'dead zones' in coastal waters around the world. In such places, little or no oxygen means marine life cannot be sustained. Now numbering 50, over half these 'dead zones' have appeared in the last 10 years.

These findings come from a report prepared for the United States National Science Foundation by an environmental taskforce which Professor Lubchenco chaired.

'The environmental changes we are seeing today are fundamentally different from anything in the past — the rates of change are faster, the scales are larger, and some changes are absolutely new, like the effects chlorofluorocarbons have had on the ozone in the upper atmosphere,' says Professor Lubchenco.

She believes the environmental changes we are witnessing are due to a combination of the explosive growth in human population and the unsustainable rates at which we are exploiting the environment and generating wastes.

'These issues are having a global impact and we need to understand what's happening so we can figure out how we can do things differently.'

Professor Lubchenco says the report provides an excellent starting point for discussions between the scientific community and policy makers to meet the challenges of the 21st century.

— Source: External Relations, University of Canterbury.

New Zealand Exports a Pest

New Zealand flatworms are a growing pest in Britain, and European border-controllers are anxious lest they spread to that continent.

According to *The Guardian* newspaper, the European Union is discussing a ban on British-bred plants to prevent the flatworms spreading.

Three new species of flatworm have invaded Britain in the past four years, according to the newspaper's environment correspondent, Paul Brown. The flatworms 'suck the life out of native earthworms, leaving moles and garden birds to starve'.

Although flatworms have been found all over Britain, they are most common in the wetter west and north. The current fear is that more species will invade Britain with even more dire effects, particularly on English farmland which is warmer and drier than present habitats.

Interestingly, while New Zealand has more than 100 species of native flatworm, our pastoral earthworms have been specially introduced.

—Source: Dr W. D Sutcliffe, a Forest and Bird life member resident in Britain, who provided the clipping from The Guardian.

Takahe in the Wild

SHAUN BARNETT reports on survivors in the Murchison Mountains of Fiordland.

Bringing an endangered species back from the brink of extinction is never an easy task, despite the most dedicated efforts of those involved. Since their rediscovery in 1948, the flightless takahe, or notornis, of the Murchison Mountains have been the subject of much research and management.

After more than 50 years, scientists are still trying to determine why and how this last population of wild birds was able to survive, when presumed extinct after only four sightings in the nineteenth century. Currently wild birds exist in several catchments of the Murchison Mountains, including the McKenzie, Chester, Woodrow, Ettrick, Point, Mystery and Snag Burns, as well as at the site of their original rediscovery, the Takahe Valley.

Over the last two decades an intensive programme of captive rearing and re-release has attempted to boost numbers. Despite this research, however, some of the key factors influencing takahe survival in the wild are still not clearly understood. Important questions remain over the significance of predators, such as stoats, and other causes of death for eggs and chicks. Even the lifespan and productivity of adult birds is not fully understood.

Throw into the equation a potential breeding difference between wild and captive-reared birds and you have a need for more answers. These issues were highlighted in a major review of takahe management completed by the Department of Conservation in 1997. As a result, a significant new study of takahe has recently begun.

The 1997-98 field season in the Murchison Mountains was the first of a four-season chick and egg mortality study. Researchers are following the progress of a number of chicks and eggs in the wild. They want to 'tease out' the relative importance of predators, nutrition, climate, congenital defects, disease and infections, in bird mortality.

Formerly, takahe nests were checked only once or twice during an annual November census, but the new study calls for a more intensive approach. DoC staff have established infra-red cameras and time-lapse videos to monitor a sample of nests during egg development. Any dead chicks or eggs are collected, preserved in formalin, and later analysed for infection or disease.

Once chicks have hatched, staff use radio telemetry to follow their activities. The use of radio transmitters on takahe chicks was a first for the programme, and required the testing of various harness designs. After initial trials with chicken, pukeko and turkey chicks, a modified 'flying bird' harness design proved to be the most successful. Several wild takahe chicks now sport tiny radio transmitters. Strict handling and monitoring protocols ensure minimal disturbance to both adults and chicks.

Last season, video monitoring on four nests did not detect any predators but a stoat plague during the 1999-2000 season may see quite different results. The significance of predation for takahe is not well understood. Although stoats have been observed killing adult takahe, the frequency of such killing is as yet unknown. Weka taking eggs may be another minor factor.

A number of adult takahe die from accidents caused by avalanches, rock falls or simply bad navigation, in the steep terrain of the Murchison Mountains. Unless they are radio-tagged, birds dying from these causes are usually not found. In the past, most takahe have been radio-tagged only in the first year of their life. Using transmitters on birds of varying ages should provide important clues about adult survival rates and the cause of any deaths.

One of the key issues of takahe management is a possible difference between the breeding success of captive-reared adults versus wild-reared adults. During 1987-

Christine Ryan and Fiona Kemp attaching a radio transmitter to a takahe chick, in the valley of the McKenzie Burn, in the Murchison Mountains of Fiordland National Park. Keeping an electronic trace on the birds should help gather information about their behaviour and what is killing them.

SHAUN BARNETT/BLACK ROBIN PHOTOGRAPHY

The flightless takahe Porphyrio [Notornis] mantelli *amongst alpine tussock in the Murchison Mountains of Fiordland National Park. Sighted only four times during the nineteenth century, the bird was presumed extinct until its rediscovery here in 1948.*

SHAUN BARNETT/BLACK ROBIN PHOTOGRAPHY

Greg Coates uses radio telemetry to check on takahe at Chester Burn, Murchison Mountains, Fiordland National Park. Signals from a radio harnessed to the bird tell where it is.

SHAUN BARNETT/BLACK ROBIN PHOTOGRAPHY

Takahe eggs in nest, each one carefully marked with pencil to ensure individual identification. Nests are monitored during the breeding season. Dead eggs and chicks are removed so the cause of death can be determined scientifically.

92 an attempt was made to establish a second breeding takahe population in the nearby Stuart Mountains using captive-reared birds from Burwood Bush. (Takahe had earlier been rediscovered in the Stuart Mountains, and the Kepler Mountains too, but these wild populations died out.) Some 58 birds were released into the area, but only a handful now survive.

There are several possible explanations for the failure, and one is the poor breeding success of captive-reared birds. Since the attempt, captive-rearing methods have improved, with all releases now made into the source area, the Murchison Mountains. Here survival up to breeding age has been equivalent to that of wild-reared birds. The eventual hope is for captive-reared birds to equal the breeding efficiency of wild-reared birds.

Another concern is takahe survival during the harsh winter months, when birds migrate from the tussock tops down into forested valleys. Here they depend on several key food sources, including a plant *Hypolepis millefolium*. Once the importance of this food source was known, staff at the Burwood Bush breeding facility found they had to teach captive-reared takahe to identify and feed on the plant. Birds released before the significance of this training was realised may have influenced the level of survival of birds in the Stuart Mountains population.

The 1999 census revealed some 214 takahe remaining (on rediscovery in 1948 there were about 250 birds). There are now an estimated 124 takahe living wild in the Murchison Mountains with the rest spread over various protected habitats, including offshore islands (Mana, Maud, Tiritiri Matangi and Kapiti), and conservation facilities at Mt Bruce, Te Anau and Burwood Bush. While most protected-island populations have increased, numbers in the Murchison Mountains have fluctuated over the period 1981-98. In 1999 there was the first significant increase for the Fiordland birds in some five years (19 percent), possibly helped by the mild winter preceding.

There are challenges ahead for the Takahe Recovery Programme, but it seems the right questions are now being asked and answered, and we can look forward to more increases. The aim now is to expand the mainland breeding population into more of its former range.

SHAUN BARNETT *is a photographer and writer specializing in the natural world. He is based in Wellington.*

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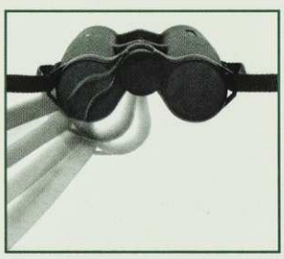

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The Return of the Kaka

KATHY OMBLER reports on the war against wasps, possums, rodents and stoats, in Nelson Lakes National Park.

ALLAN POLL

Young kaka play raucously by the lakeshore near St Arnaud. They are the product of an intensely managed recovery project which secures their habitat from pests, in the 'mainland island' on the eastern shore of Rotoiti, Nelson Lakes National Park.

The raucous screechings of a busy flock of kaka are a memorable welcome to the shores of Lake Rotoiti near St Arnaud, in Nelson Lakes National Park. According to the rather proud locals, these are the 'teenagers' of a growing lakeside population of this threatened native bush parrot. Their loud and youthful posturings become part of an astonishing symphony when the bellbirds and tui join in the daily dawn chorus. The cacophony of birdsong heralds the successes of a major conservation trial in the area.

The Rotoiti Nature Recovery Project is a Department of Conservation initiative aimed to create a largely pest-free refuge in the honeydew beech forests beside Lake Rotoiti. The current area encompasses 825 hectares at Kerr Bay, close to St Arnaud village.

Within three years the project team has achieved significant results by tackling both insect and animal pests. The possibility of extending the targeted area further along the lakeshore, and even into the Travers Valley at the head of the lake, is currently under review. Nearby, some private landowners are initiating their own pest control programmes, based on the department's methods.

'We aim to develop pest-control techniques that can be applied more widely,' says Dr David Butler, the project co-ordinator. 'We also see the project as a catalyst, to show other organisations what can be achieved and encourage them to try it on the land they administer.'

The project was set up as a pilot for recovering the natural environment within large honeydew beech forests, which are extensive in the South Island. There are two major challenges: wasps and animal pests.

Millions of European wasps invade these beech forests to feed on honeydew, which is produced on the trunks of beech trees by a tiny scale insect. The nectar is needed by native birds and insects but the wasps get to it first.

The other problem is the consequence of the 'beechmast cycle'. In seasons when the beech trees seed prolifically there is a population explosion of rodents. Then stoats, too, breed prolifically, turning on native birds when they have finished eating the mice and rats. Yellowhead, kaka and parakeets are particularly vulnerable to such pests because they nest in tree holes.

The Rotoiti Nature Recovery Project is one of several forest-ecosystem recovery projects, or 'mainland islands', managed by the Department of Conservation. These aim to restore and protect habitats on the mainland through intensive management of introduced pests. The Rotoiti project has concentrated on more than outright pest control, however. Results have been intensively monitored so that control methods can be fine-tuned. DoC has placed a strong focus on advocacy and education at the easily-accessed site. Community involvement is actively encouraged.

The three-year war on pests at Rotoiti has already reduced possum numbers by 97 percent. Decreased possum browsing in successive growing seasons has given their favoured vegetation a welcome break, with noticeable growth in endangered mistletoes and the rare *Pittosporum patulum*.

In 1999, the biggest wasp-control operation ever attempted in New Zealand reduced wasps by 90 percent. This included the destruction of 2300 nests and 1.7 million wasps. Monitoring has confirmed that lower wasp numbers have increased honeydew supplies for native birds, and reduced wasp predation on invertebrates.

A stoat-control programme, supported by local residents maintaining their own traps, is credited for the most successful breeding season on record for kaka. In two years, four pairs of kaka nesting in the project area produced 12 surviving young. This season three nests contained 10 more chicks. All three have been closely watched by project staff. At the time of writing, three chicks in one of the nests had fledged, putting them beyond danger of stoat predation.

The honeydew produced by a scale insect on the bark of beech trees attracts European wasps which take the food favoured by honey-eating birds. In the 'mainland island', field staff poisoned 2300 nests killing some 1.7 million wasps during 1999.

A popular walking track through the beech forest skirts the shores of Lake Rotoiti in the 'mainland island' area of Nelson Lakes National Park. Encouraging visitors to understand the effect of pest control particularly on birdlife is part of the project. Once visitors here were harassed at times by European wasps, 1.7 million of which have been exterminated. The sound of birdsong during the day is another sign of improved forest health.

GORDON ELL, BUSH FILMS

ROY STEPHENS

Overlooking the beech forests of Rotoiti 'mainland island', alongside Kerr Bay near St Arnaud Village, in Nelson Lakes National Park. The forest, which spreads from the snowline down to the lakeshore, was formerly badly infested with possums, stoats, rats and mice.

This summer season was especially challenging, requiring extra vigilance, reports David Butler.

'The beechmast year meant more stoats. We caught as many in January as we did in the whole of last year. The fact that the kaka chicks have subsequently fledged means our trapping operation must be working.'

Similarly, rat control has led to greatly increased productivity from resident robins.

'We have established a clear linkage,' he says. 'Two seasons of intensive study have been enough to assure us that if we get rats down to a certain level, the robins will thrive.' This year 96 percent of robin nests studied were successful, while studies elswhere show only a 25 percent success rate. For two years, Lake Rotoiti schoolchildren have helped DoC with its robin monitoring.

A lakeside view of the honeydew beech forests of the 'mainland island' beside Rotoiti. Here, on the slopes of the St Arnaud Range, intensive pest control over some 825 hectares has brought back bird populations.

DEPARTMENT OF CONSERVATION

There are currently eight staff working on the Rotoiti forest recovery team. David Butler says there are three reasons for the major staff input; the needs for intensive pest control, advocacy and monitoring.

'There is a huge effort currently going into pest control, particularly on wasps, which is still very much in the experimental stage — we are trying slightly different things each year.

'The significant beech-seeding last autumn presented us with large numbers of rodents and stoats too, which meant we could not reduce efforts in those areas. At the end of this season, we should know much more about our ability to manage beech forests through this dramatic cycle.

'As the project profile increases and we have more results to show, we are doing a large amount of advocacy. We have been meeting an increased demand for talks and guided walks.'

As part of the strong advocacy focus, two new tracks, including one suitable for wheelchairs, have been constructed in the recovery area. The tracks are enhanced by several stylish, informative signs.

'The Rotoiti project is ideally placed for people to see conservation work being undertaken, and to experience native forest that is alive with the sight and sounds of birds,' says David Butler.

There is a huge time component involved in the monitoring work.

'This is particularly important, when we are trying to measure the results of modifying control techniques on different pests,' says David Butler. 'We also need to know the results of our pest control on the native flora and fauna. For example: do we need to reduce pest numbers even further, or can we afford to reduce the effort?'

Monitoring methods and results are interesting, to say the least.

Mice numbers are counted by tracking their footprints in 100 specially built tunnels, set up with paper, ink pads and peanut butter bait!

One feral cat, fitted with a transmitter, travelled two complete circuits around Lake Rotoiti in three months.

The Rotoiti project is now embarking on a review, looking at options ranging from scaling down the operation (in particular the monitoring work), to increasing the effort.

'One scenario to consider is extending the project further along the lake towards or into the Travers Valley. Our ability to do this depends on research being carried out both here and at other sites in New Zealand,' says David Butler. 'For example the Hurunui "mainland island" project is testing the use of one line of possum-bait stations along a valley floor, for control of possums throughout a complete catchment. The Northern Te Urewera team is looking at different methods of applying rat control over large areas, including trapping.

'We are assisting Landcare Research with trials to develop an aerial bait for wasps and we are also testing how far we can stretch our current ground-baiting system. The further apart we can place our stations, the more area we can cover for the same effort. We are testing a system of stoat traps lined along natural features rather than a grid, and hoping to identify how to maximise captures for minimum effort by where we place traps.

'If we could extend the project in a way that would reduce our boundary-to-area ratio, pest control could be more efficient. We could then consider reintroductions of some species with increased likelihood of success.

'For example, kiwi researchers suggest that a "protected area" of about 4000 hectares may be needed to manage a sustainable kiwi population. This allows room enough for kiwi chicks to disperse, but still settle within a protected area.'

KATHY OMBLER *writes about nature and the outdoors from her home base in Wellington.*

PETER RUSSELL

The Ruination of Orikaka

Despite the Government's cancellation of beech-logging, a Government-owned company is still heavily logging native forests on the West Coast, particularly in Buller. PETE LUSK reports on the unsustainable logging of Orikaka Forest.

The big helicopter hovers over Orikaka Forest like a ship in the sky. Slowly it descends to the tree tops, lowering a clamp on the end of a long steel rope. The pilot secures a big rimu log, applies the power, and another five-tonne load is on its way to the road end. Three minutes later, he's back for another, and another, and another. The logs build up, and soon 500 rimu and kahikatea are stacked up waiting transport to the mill.

For local conservationists the thump, thump, thump of the big chopper leaving Westport airport each morning is a sickening sound. It represents the stripping of forests at a rate far faster than they can replace themselves. State-owned enterprise Timberlands West Coast carries out this shameful 'overcut' behind a public relations façade promoting itself as a 'world class' sustainable forest manager.

This is not the first time Orikaka has been logged. Fifty years ago, a mill operated near the mouth of the Orikaka River, with a steam-powered winch dragging rimu, matai and kahikatea logs from the surrounding country. At about this time, the railway through the Buller Gorge was completed. An old mill worker told me that when first railcar on the line sounded its horn, as it passed through a patch of dense forest, keruru (native pigeons) flew up everywhere.

'There were miles of pigeons. A mob went up, of three or four hundred, off the white pines,' he recalls.

NICK YOUNG

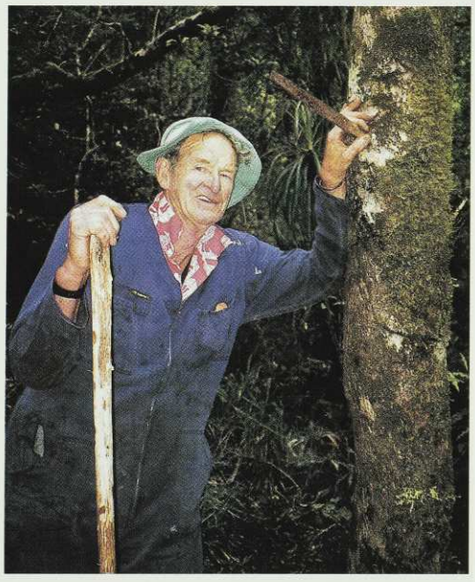
Orikaka forest is here viewed from Ohikanui Forest, just across the Buller River. Both are being logged by the state-owned enterprise Timberlands West Coast. Large trees are felled and cut into suitable lengths so they may be lifted out by helicopter.

NICK YOUNG

Orikaka Forest was named for its birdlife. To pre-European Maori it was a place where kaka were snared. According to G. Mitchell, author of *Place Names of Buller County,* bird-snaring parties travelled from the north of Nelson province down to the Orikaka River, while Westland Maoris came from as far south as Hokitika. These trapping parties are reputed to have secured large numbers of birds in the Orikaka River basin for their winter food supply.

And the harvest of the birds didn't end then. Hungry families at the mining township of Burnetts Face, which borders on Orikaka, ate kaka in the Depression. They would scratch a tin matchbox with a file to attract the birds, then shoot them for the pot. Even then, birds like kaka and kereru were protected by law. A woman who grew up in one of the railway camps in the Buller Gorge said they often 'poached' kereru. They made sure the birds were plucked and the heads cut off before bringing them home.

Looking at the geography of Orikaka, it is easy to imagine it as a haven for wildlife.



Forest and Bird member Geoff Kitchin holds a file, stuck into a tree by kaka hunters many years ago. The noise made by scratching a tin matchbox with the file brought in the birds. Kaka have long been in decline in this region. An old lady at Karamea tells of huge flocks that existed prior the 1930s when the kahikatea was cleared from the river flats. Geoff remembers seeing 20 kaka in a flock at Karamea in the 1950s. I saw eight in the same area 20 years ago. But the most I've seen flying together, in the last two years at Orikaka, is three. — Pete Lusk.

Unsustainable logging in the Buller region

The logging of Orikaka is replicated at several places on the West Coast, particularly in the Buller region, including nearby Ohikanui, Charleston, Mokihinui, and Seddonville forests.

Native timber logging by the Government-owned company, Timberlands West Coast, is thought to continue in as many as 24 forests. The exact number is hard to determine as this aspect of company operations is generally kept secret.

The forests worked by Timberlands lie in a band extending from near Karamea in northern Westland, to just south of Whataroa, a distance roughly equal to that from Wellington or Auckland to Lake Taupo.

The forests of the Buller River are particularly vulnerable. When Forest and Bird unsuccessfully opposed the felling in Orikaka, through the Environment Court last year, around 80 percent was still pristine. (The road edges had previously been logged by the old Forest Service.) By December this year, when present logging has to stop by decree of the previous Government, Orikaka will have been stripped of its big trees. A similar situation prevails in other Buller forests.

This heavy logging of big podocarp trees (largely rimu), which even Timberlands recognises as unsustainable, was permitted under the West Coast Accord. The 1986 Accord provided for such logging as a transitional measure while the local industry converted to milling forests of introduced trees, mainly plantation pine. Forest and Bird has argued that adequate supplies of plantation pine are already available, and that the industry has had ample time to make the switch.

Critics of the Government's involvement in native forest logging say that besides being State-owned, Timberlands West Coast is effectively subsidised by the Government through the very low royalty it pays to the Crown— $10-15 per centuries-old tree. This makes the logging very lucrative for the company. Nor is the company required to provide any financial return to the Crown and the public as owners of the forest. (It has only paid a dividend once in 10 years.)

A pile of rimu logs brought out of the forest by helicopter and stacked at Orikaka. One week 550 logs were taken out.

For a start, it is a low altitude forest, rising from just 50 metres to 400 metres above sea level. Running through the middle is a series of limestone cliffs which, through erosion, have produced nutrient-rich talus slopes and deep soils growing huge podocarps (matai, totara, rimu, miro and kahikatea). The east-west lie of the cliffs shelters the forest from cold winter gales.

In a narrow band under the cliffs the podocarps dominate, but beech forms the bulk of the forest. In one of the logging areas I visited recently, there is only about one rimu per hectare. But they are big trees, averaging one metre in diameter. This is where the helicopter comes into its own. The sparseness of the rimu meant it was previously uneconomic to log by the conventional method, using a log hauler and a dense network of roads, so this part of the forest remained untouched until now.

It is not until you see the logs piled up on the landing sites that you appreciate how many trees are being removed. In one six-day period in February, the helicopter extracted 550. What becomes of the kaka, kiwi, native bats, blue duck and other threatened species that are hanging on in Orikaka? How do they cope with the stripping of the big trees and the invasion of the logging gangs and the helicopter? Timberlands' public relations claims their logging is so benign that the ecology is enhanced and wildlife actually benefits.

I prefer to look at it this way. Imagine a pair of kaka that are nesting high in a beech tree. Their whistling and calling are reminders of a time when large and noisy flocks of kaka were obvious throughout the forest. Most of the remaining birds are probably male because predators kill the females on the nest. Our pair has three fertile eggs and so far they've evaded stoats, rats and possums.

Enter the loggers. They chainsaw a big rimu nearby, and the noise of it crashing through the understorey and smashing on the ground drives the female off the nest. But despite more trees going down, she does return and the eggs survive. Three weeks later, the big helicopter arrives to lift the logs. It hangs in the air right beside the nest, making a deafening roar. Again the kaka flies off, this time leaving three new

NICK YOUNG

A ridge of limestone runs through both Orikaka and Ohikanui forests, forming these white cliffs in Ohikanui. The two forests are part of a continuum of low-altitude mixed forest which is being logged by Timberlands West Coast.

The Government-owned company, Timberlands West Coast, is logging native trees in most of the forests it controls in northern Westland. Orikaka Forest on the Buller River, where kaka are losing their habitat, is only some 70 kilometres from Nelson Lakes National Park where the Government is funding a special management programme to save kaka. Orikaka, the vanishing habitat, is well within the dispersal range of any young kaka specially helped at Nelson Lakes.

PETER RUSSELL

chicks. The chopper remains in the area all day, and all the next day, and the next. This time the kaka doesn't return.

Further up the Buller River at Nelson Lakes National Park, the Department of Conservation has a 'mainland island' project with the aim of saving the kaka. (See this issue, page 18.) DoC protects the forest, traps predators and has been very successful with kaka breeding. The project is a success story. But what a contradiction that just 70 kilometres away in Orikaka, a State-owned logging company is trashing kaka habitat. The Government is saving the kaka at Nelson Lakes while destroying the habitat of these forest parrots at Orikaka!

Hopefully, the logging will soon be brought to an end. The Government is negotiating a compensation package with West Coast interests that will see investment in exotic forestry, tourism and infrastructure instead.

Already pines provide the bulk of West Coast saw-logs and output is expected to double by 2003 as more plantations mature. Most Coast mills have made the conversion to pine and currently their main problem is a shortage of sawlogs. There are not enough forestry workers and courses are being run to train more. Tourism is growing fast on the West Coast and it now rivals farming as the biggest industry. People come from all over the world to see the rich forests and wildlife of the northern West Coast. Paparoa National Park is already the busiest site on the Coast drawing more tourists than the glaciers.

Let's celebrate the new millennium with an end to rainforest logging and start the job of rebuilding these priceless ecosystems so our grandchidren can again experience the marvel of 300 kereru rising from a kahikatea forest.

Forest and Bird member PETE LUSK *lives in Westport and is also involved with Native Forest Action and the Buller Conservation Group.*

How long can Orikaka last

The National Government decreed that logging in the Buller region should end in December 2000, six years earlier than originally planned. The new Government has announced that 'rimu logging on Crown-managed land will be stopped as soon as practicable'. On the basis of the harvest in recent months, conservationists say there'll be little left of Orikaka to save if felling continues at the present rate for another seven months.

Cannon-netting

Story and photographs by GORDON ELL

They gather on the beach at dawn, bearing their nets and cannons, like old-time hunters. The purpose of their expedition is still to capture birds, but in the interests of the birds' survival not the hunters'.

For nearly 20 years, members of the New Zealand Wader Study Group, and its predecessors, have been 'cannon-netting' wading birds on northern harbours, to assess the health and migratory patterns of the birds. Their discoveries are unravelling the mysteries of those fantastic journeys undertaken by our migratory birds, to and from the Arctic. Recent discoveries suggest that those journeys of 12,000 kilometres and more are even more fantastic than previously supposed. Godwit from Alaska, for example, probably make the journey down to New Zealand in up to 8 days, flying nonstop.

The idea behind the practice of cannon-netting is to capture a sample flock of wading birds as they rest near the top of the tide. Harbours such as Kaipara, Manukau and the Firth of Thames, all near Auckland, are ideal for they have vast areas of mudflats which the birds must leave as the tide rises. Firing a net over a known roost provides a way of capturing birds, allowing them to be measured, weighed, and checked for their sex and likely home range. The birds are then banded, with rings or tiny flags on the legs, and released to make their migratory journey. Bird-watchers along what is known as the Asia-Pacific Flyway may then recognise particular birds from their migratory roosting places around the rim of the Pacific.

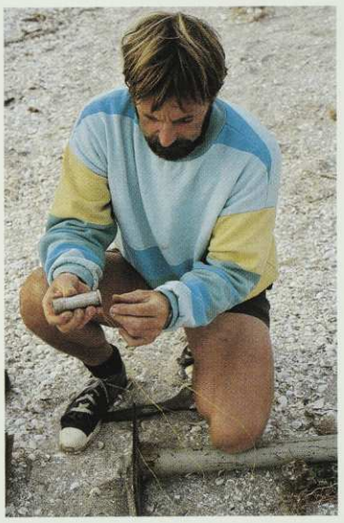
The practice of banding migratory birds became popular in Britain around The Wash during the 1960s. Now groups in Australia and New Zealand are capturing wild birds and banding them in an effort to trace our birds' journeys half way round the world. The results are critical when it comes to persuading Asian governments, and others, to leave protected areas as resting places for the birds.

Some 12 species of wading birds migrate each southern spring to New Zealand, where they fatten on the rich food supplies in our muddy estuaries and shallow harbours. Then in autumn the birds set out again for their breeding grounds in Alsaka and Siberia.

Working with the Shorebird Network of similar groups in Australia, the Pacific and Asia, the New Zealand Wader Study Group has mapped the passage and timing of the birds. They know, for example, which river deltas and marshes are frequented on the flyways by New Zealand birds returning to the Arctic to breed. Godwit, for example,

may take two to three months on their northward migration, feeding on the way. It is their return journey which is undertaken at such a phenomenal speed, with comparatively few birds reported as resting on the way.

Working with northern scientists, the New Zealand group is able to identify the different forms of each migratory species, pin-pointing individual birds to their likely place of origin by comparing feather detail. By this method it has been possible to deduce that some of our lesser (or red) knot breed on the New Siberian Islands, north of Siberia.



Forest and Bird members are among the teams which support the New Zealand Wader Study Group, based at Miranda Shorebird Centre, near Auckland.

In their search for basic data about our migratory wading birds (local and international) the group captures birds for recording purposes, and bands their legs with identification rings.

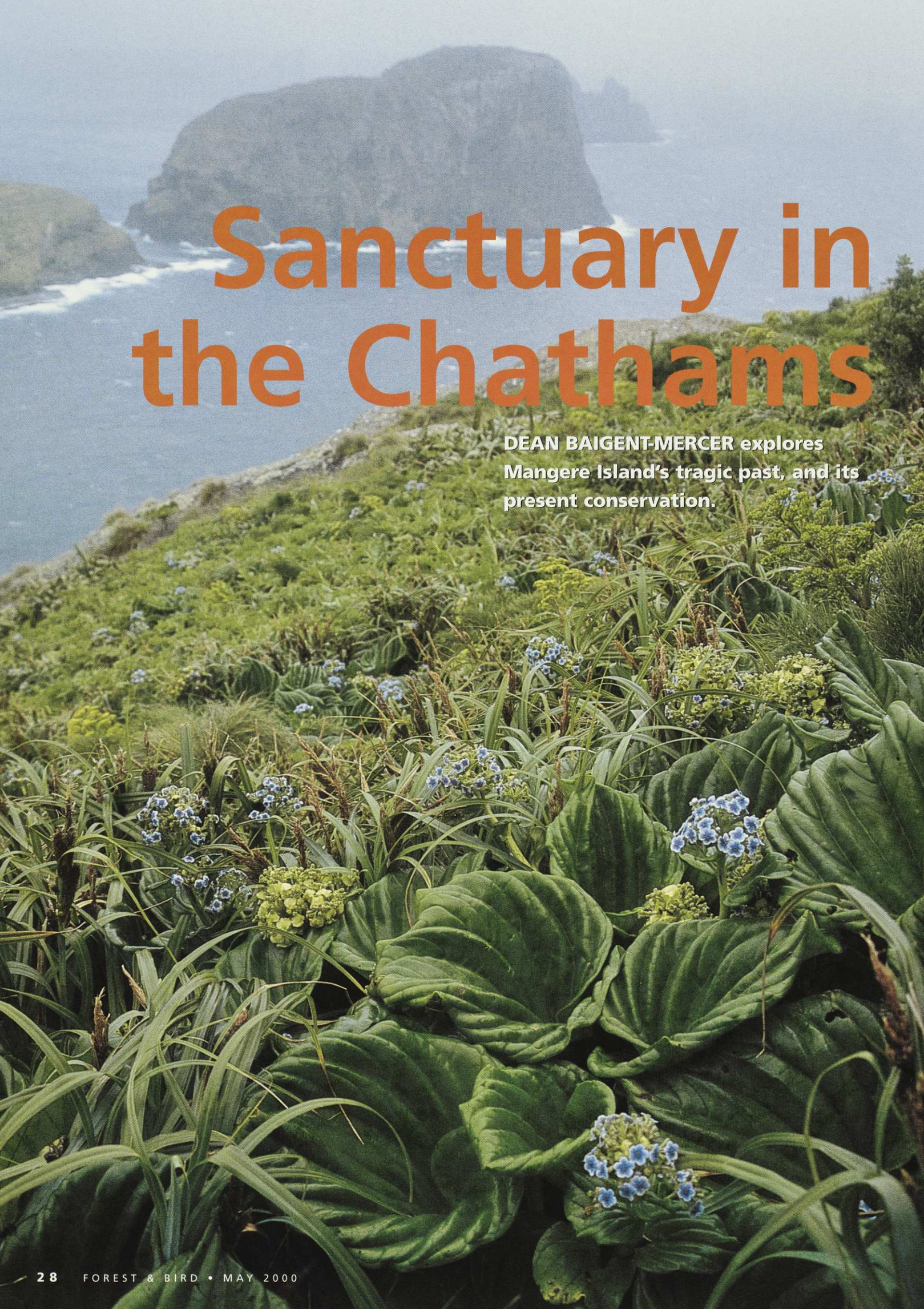
Above, a bird-capture net is laid along the tideline adjacent to a known roosting place where birds gather when driven off the mudflats by a rising tide. The pipe-style cannons are carefully angled to carry the net over the roosting place, and the net is disguised with seashells. The cannon is loaded by study leader Adrain Riegen (above), to carry the leading edge of the net over the birds.

When the birds move into the area covered by the net the cannons are fired electronically. Projectiles (below) pull the net up and over the roosting birds.

This catch includes godwit and knot, both migrants from Alaska and Siberia.

Birds must be taken from the net swiftly, to avoid stressing them. The layer of scrim helps. Birds are put in darkened boxes until their details can be recorded.

Members of the study group measure, weigh and tag the birds. The godwit (below) bears a ring referring to its recorded details. The white flag on the upper leg helps birdwatchers round the world identify a bird which has spent the summer in New Zealand.



Sanctuary in the Chathams

DEAN BAIGENT-MERCER explores Mangere Island's tragic past, and its present conservation.

Mangere Island lies in angry seas, remote from the mainland of New Zealand, yet its role in saving endangered species is internationally known. Since Forest and Bird substantially funded its purchase in 1966, the island has become the last refuge for several of the vanishing species of the Chatham Islands. Among them is the black robin, once the rarest bird in the world.

Tiny Mangere Island (113 hectares) lies just off Pitt Island in the Chathams group, 800 kilometres east of Lyttelton, on the way to South America. A choppy and swift 100 metres of sea is all that separates Mangere from its sheer-sided sister, Little Mangere Island — famous for being the home of the last five black robins. The dramatic rescue of these birds, and the establishment of a breeding colony on Mangere itself, has become a classic tale of conservation history.

Both Mangere and Little Mangere are the eroded remains of ancient volcanoes poking out of the submerged Chatham Rise. Unique wind-sculpted forest once grew up to the edge of Mangere's bluffs, while lush coastal herbfields adorned the cliffs. Hundreds of thousands of seabirds dug their burrows to breed here, enriching the earth with their nutrient-abundant droppings. Moriori hunters must have found a noisy forest by night and day with constant bird banter about the heavily bird-burrowed forest floor.

A naturalist, Hugh Martin, called for the urgent protection of the 'Mangere rail' — among other birds — in 1885. The rail had existed elsewhere on the Chathams but by then was forced to extinction except for the last remnant population on Mangere Island.

Farming settlers began burning Mangere's forest just two years later. Only three to four hectares of forest survived the flames. Then, sheep, goats and rabbits were released on the island.

When rabbit numbers exploded, cats were introduced to lower the population. But the cats' success went well beyond wiping out rabbits — black robin, Forbes parakeet, Chatham petrel, snipe and the last 'Mangere rail' also disappeared.

Alan Tennyson, Curator of Birds at Te Papa/Museum of New Zealand, has examined bird fossil deposits from Mangere and estimates seven or eight bird species may have become extinct from Mangere Island before 1872, and another nine to 12 by the end of the twentieth century.

Some of these birds survived elsewhere, and a few have been re-introduced to Mangere Island in recent years. Others, however, are now totally extinct.

Mangere Island bird bone deposits have revealed two species of rail (relatives of weka), an unnamed shelduck, a gadfly petrel, the Chatham crested penguin, snipe, a kaka and a bellbird all distinct from their New Zealand relatives. All were once present on Mangere, and other Chatham Islands, but are now totally extinct.

Remarkably, no rodents, possums, weka, or mustelids (ferrets, weasels or stoats) were ever deliberately or accidentally liberated on Mangere. By contrast, most of Chatham Island, and Pitt Island, have been cleared for farming. Those islands now have many animal pests including rats, possums (both absent from Pitt Island), mice, feral sheep, pigs, cattle, and even horses.

In 1966, Forest and Bird made a 'generous contribution' toward the Crown's purchase of Mangere Island as a reserve for flora and fauna. At the time Mangere Island was reported as still being farmed, with birdlife 'limited mainly to gulls, petrels, and other seabirds'.

After cats were removed, Chatham Island snipe were successfully re-introduced in 1970. During December, their fluffy 'ping-pong-ball' chicks can be seen, loudly peeping, following a parent. As the patterned feathers of these small birds blend perfectly with leaf-litter, spotting a snipe is usually easiest when it blinks.

In 1977, the famous population of the last five black robins, including only one breeding female, was removed from Little

'Megaherbs' on Mangere

The Chatham Islands have 388 plants native to the group. Some 47 species (12 percent) are found nowhere else. Many trees common in the forests of New Zealand, such as beeches, podocarps (rimu, kahikatea etc), manuka, kanuka, rata, and cabbage trees, are naturally absent from the Chathams group.

Some of the most threatened plants are those of the coastal herbfields which germinate in the loose fertile earth around bird burrows. Notable are the kopukapuka/Chatham Island forget-me-not, punui/soft speargrass *Aciphylla dieffenbachii*, shrubby button daisy *Leptinella featherstonii*, an unnamed Cook's scurvy grass, and the giant sow thistle *Embergeria grandifolia.*

Although New Zealand gardeners bribe their Chatham Island forget-me-nots with shade, salt water and seaweed, those on Mangere Island exist in the most extreme of circumstances: full sun, often on seemingly vertical cliffs exposed to the brunt of salt-laden gales. They grow very large — their leaves at least as big as rhubarb — and lose around a third of their foliage during the dryer months. Goats previously ate these plants off every accessible spot. Decades after the goats have gone, plant populations are showing signs of recovery, thanks to the strong winds frenetically dispersing the large seeds.

At left: Chatham Island forget-me-not in herbfield on Mangere Island.

JON TERRY

At right: Revegetation areas on the flanks of Mangere Island.

JON TERRY

JON TERRY

Slow march of the speargrass weevils

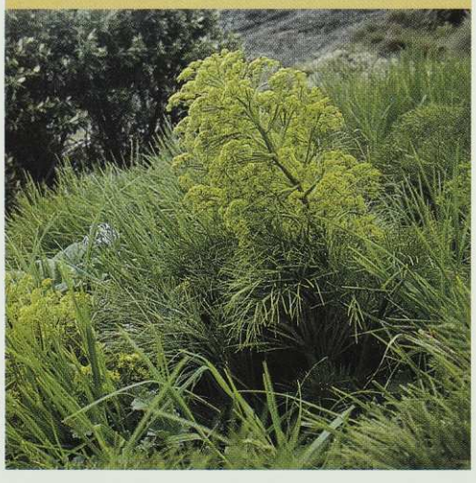
Speargrass weevils aren't very fast. In fact, it would be fair to say they live life in slow-motion. This doesn't prevent the weevils from consuming whole patches of soft speargrass, however.

During research for her PhD, Katrin Shöps marked and studied 10,000 of Mangere's weevils for three to four years. The weevils and their larvae consumed a whole population of soft speargrass (above and below the ground) until there was not a single plant left alive.

After this orgy of gluttony, marked weevils were found up to 800 metres away on further speargrasses, which may sound of no consequence until you consider the painfully slow way they move.

This boom-and-bust cycle may be typical of the dynamic lifestyles and co-existence of these weevils with soft speargrass. Several years later, the studied speargrass population is recovering.

With both the plant and its predator nearly extinct from the main Chatham islands, due to farming of habitat and rat-browsing, Mangere is one of their last remaining strongholds.



JON TERRY

The flax-like seed of the soft speargrass (a relative of the carrot, also with a long tap root) is scattered by wind too. Its feathery leaves are the food of the endangered Chatham speargrass weevil.

Mangere Island to Mangere Island. Today Mangere shares the world population of around 250 with nearby South-East Island.

With Mangere mammal-free (with the exception of occasional human workers), the Wildlife Service embarked on a visionary plan of full habitat restoration which is continued today by the Department of Conservation.

One main incentive for returning the forest to the island was for Forbes parakeet, which naturally exists only on Mangere and Little Mangere. It is thought Forbes parakeet was a forest dweller, while another kakariki, the red-crowned parakeet, favoured the bush fringes. However, without the forest, both species hybridised, bringing Forbes parakeet close to extinction. The replanting of forest is intended to again provide separate habitats for these two species of kakariki.

Habitat restoration has included decades of replanting akeake and flax as shelter for the initial phase of forest recovery.

It may sound simple but today's revegetation programme is a complex affair on which DoC's botanist for the Chatham Islands, Amanda Baird, has spent years experimenting, monitoring and improving. Currently, the planting regime takes the following course: seed mostly of akeake and additional berry-producing natives is collected in summer and grown on Chatham Island for 16-17 months, until big enough to plant. Thorough inspection takes place during packing to ensure no rats or garden snails hitch a ride. Some 6000 plants are then ferried by fishing boat to Mangere Island each May. Local planters then work dawn till dusk carrying the young trees over demanding terrain, often in challenging weather conditions, to their own pre-sprayed patch for planting. All 6000 trees are weeded seven months later to ensure a high percentage survive — then they're on their own.

Two plants from Mangere's original forest are absent still: the endangered Chatham subspecies of nikau palm and the supplejack vine. These plants may need to be reintroduced manually by conservation workers. As yet the parea (the endangered Chatham Island forest pigeon), with its ability to disperse large seeds as 'fertilised deposits', has not returned to Mangere.

The absence of rodents has ensured an interesting insect fauna remains. Two species of cave weta, abundant at night, venture right down to the shore line, and speargrass weevils chomp their way through the night (see boxes).

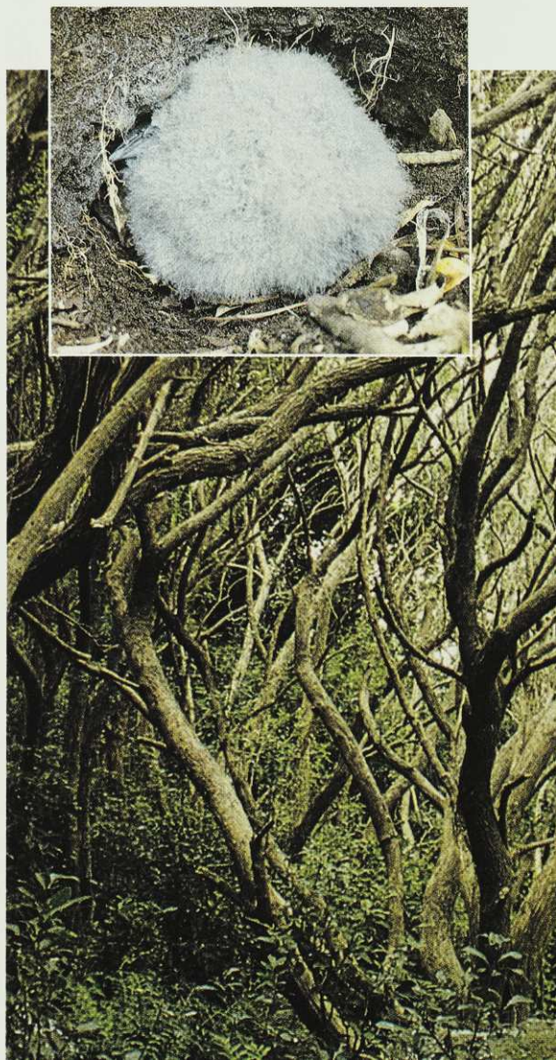
Also nocturnal are the sloth-like Chatham giant stag beetles. The males are easy to identify by their large mandibles extending in front of the head. Female mandibles are much more reduced and subtle. By day, giant stag beetles hide from the light in patches of thick organic matter, alongside their larger larvae which at a quick glance look like C-shaped, blue-grey huhu grubs.

Rain brings out giant slugs, up to eight centimetres in length. These rubbery greyish-black creatures look more akin to a toy-shop fake slug. They can be seen sliding about akeake trunks and among flax fans.

One of our largest spiders, the rangatira, lives here. With legs four to five centimetres long, and egg sacs the size of a glass marble, these spiders prey on weta. They also seem to have a fetish for cylinders, often making themselves known at inopportune times, such as when one reaches for a mug or for toiletpaper. Rangatira spiders seem to have a variety of colourings, and are a velvety purple underneath.

On cloudless days, the Chatham subspecies of the common skink can be found

Seabirds nest in tunnels below akeake trees. Inset: broad-billed prion chick



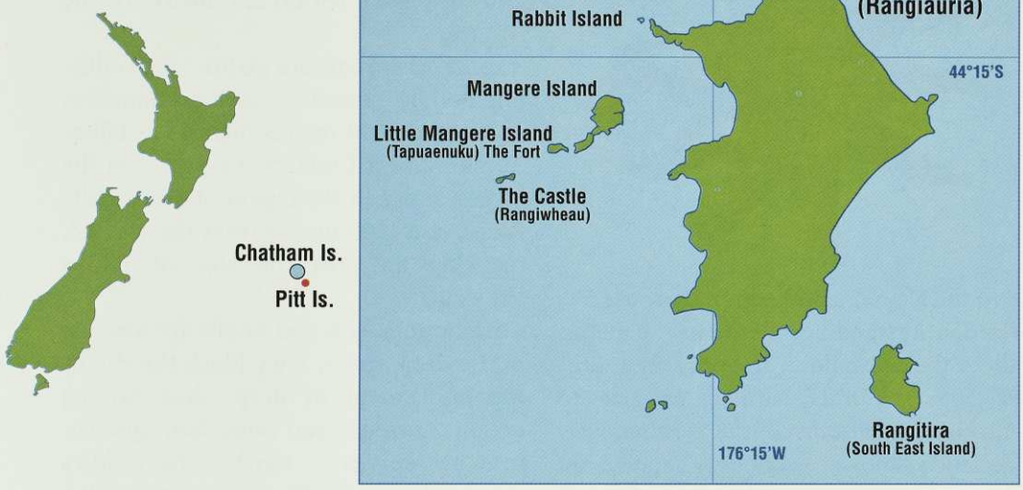
BRIDGET GIBB

in abundance, sunning themselves. Their bodies shimmer as they escape through giant sedges. Most have tails at various stages of regrowth after having them nipped while venturing into bird burrows. Their sleek reptilian skins are a diversity of colours: pounamu green, sandy brown, shiny black, whitish-green, dark brown, even salmon pink.

The endangered Chatham Island oystercatcher has been re-introduced successfully to Mangere, and the Department of Conservation is working towards the reintroduction of shore plover. Once a common coastal bird of the Chathams and New Zealand, shore plover are now reduced to two remnant populations in the Chathams, and a handful of experimental sites for reintroduction in New Zealand.

With much of the Chatham Islands group cleared of forest and affected by pests, Mangere is an essential sanctuary for the survival of many unique birds, spiders, insects and plants. Since its purchase as a reserve, Mangere has become an ark of international significance.

DEAN BAIGENT-MERCER *co-manages the urban Wellington forest restoration project and is national spokesperson for Native Forest Action.*



I love the nightlife

As the December sun disappears behind the long, flat sliver of Chatham Island, 60,000-70,000 muttonbirds return from a day feeding at sea. Looking like a swarm of bees, the sooty shearwater, or titi, circle around the top of Little Mangere. Within 20 minutes these black-brown birds with purplish feet are crash-landing into the vegetation of the two islands.

Unlike the pipits and gulls, titi have never mastered the art of landing gracefully nor practically; they speed over the vegetation and smash into shrubs to immediately scramble groundward. Looking stunned, they find their burrows and squeeze through the entrance.

An hour later, boomerang-winged, bluish-grey birds return to land and do the same — this time they are fairy and broad-billed prions.

With all the aerial acrobatics there are casualties; some are hung by the neck, caught between forked branches. The two species of Chatham cave weta have evolved to help clean up these carcasses; they eat both vegetation and flesh.

Dusk also brings returning little blue penguins waddling in from the waves and hopping up rocks, along well-worn paths to their burrows.

And the cacophony begins — to continue all night, until the first rays of light — shrieking, squawking, even laughing, at extremely high volumes.

Murderous danger lurks before dawn though, because the island's top predator, the fearless brown skua, is hunting. Brown skua are built like very large black-backed gulls and sport a similar vocabulary. Morning brings dismembered evidence of last night's kills around their nesting sites: feathers, strewn wings, eaten-out chest cavities — usually a prion.

Dawn is welcomed by a mass exodus of tens of thousands of birds leaving for a day of ocean feeding.

But did they really get any sleep?

JON TERRY

Exploring Our Underwater Mountains

JO MACKAY discovers a diverse mountain landscape under the sea.

One kilometre below the ocean's surface — in cold, dense, eternally dark waters — there exist isolated and astonishing communities of sealife.

Here marine creatures live on submerged mountains. Fluorescent, deepwater-coral thickets grow on the rocky mountainsides, which host a diverse community of creatures. Fish, squid and sharks are in turn attracted to these fertile hot spots.

Tragically, we are discovering most of these incredible bottom-living animals as they are being destroyed — ripped from the ocean floor by deep-sea trawlers.

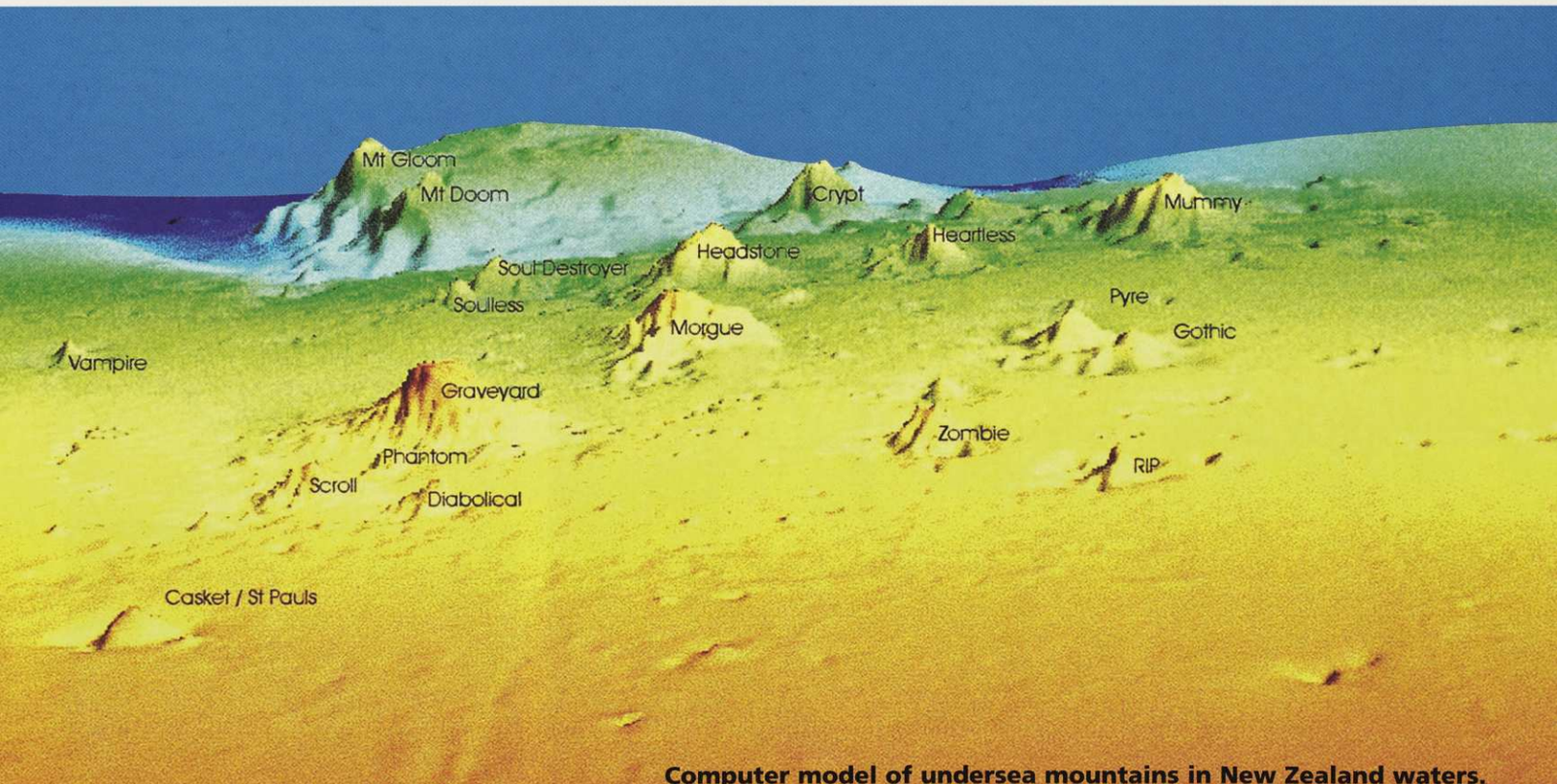
Some of these 'seamounts' are extinct underwater volcanoes, rising from the deep-ocean floor. Some are in ranges, others are isolated mountains. A few are live volcanoes, like 'The Rumbles', north of White Island off the Bay of Plenty.

In the New Zealand region there are 500 seamounts standing taller than 250 metres above the ocean floor, and possibly another 500 'sea hills', similar in size to Auckland's volcanic cones. Together, New Zealand's known seamounts (shown on the map on page 35) make up one fortieth of the region's area.

The summits of seamounts, around New Zealand, on average peak almost one kilometre below the sea's surface. Some summits are 2.5 kilometres deep. Only 13 are known to peak within 250 metres of the surface.

Some seamounts are giants - the southern Bollons seamount is 200 kilometres across and 3000 metres high — as tall as Aoraki/Mount Cook. Some peaks on the biggest range in the region, the Louisville Ridge, rise 4000 metres from the sea bed, covering an area the size of Banks Peninsula.

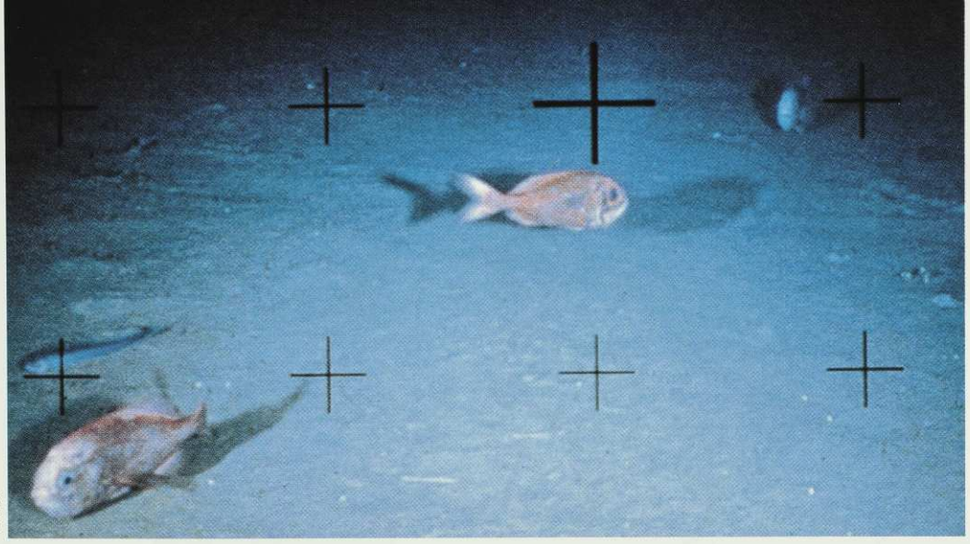
Seamounts, hills and knolls are unusual in the deep ocean. They block the rhythmic movement of deep, slow-moving oceanic currents, and cause fast, upward-moving currents, swirls, and eddies around their sides. These currents mix the deepest waters with the layers above, encouraging nutrient flows.



Computer model of undersea mountains in New Zealand waters.

A selection of animals from seamounts in the New Zealand region indicates the variety of life they support. 1, hermit crab; 2, a new species of umbrella octopus; 3, rare slit-top shell; 4, deep-water chiton; 5, sea spider; 6, deep-sea lobster; 7, basket starfish; 8, prawnkiller; 9, new species of prawnlike animal; 10, corals; 11, sea urchin; 12, sea lily.

NIWA / STEVE O'SHEA



NIWA

Orange roughy are mainly found at depths of 700 metres to 1500 metres. They congregate in huge numbers around seamounts to spawn or feed. These fish are very slow-growing, taking about 20 years to reach a mature size of 30 centimetres. Scientists argue about the age of orange roughy but the evidence shows they start to reproduce when aged between 20 and 30 years, reproducing at a low rate, and live to between 80 and 150 years.

Most importantly, seamounts provide a rare opportunity for deepsea creatures: to find a hard, bare, rocky surface to cling to. They are home to a distinctive community of benthic (bottom-living) sea creatures. These hard-ground invertebrate communities are almost entirely different from the species that live on the surrounding soft ooze.

Seamounts vary greatly in size, depth and topography. There appear to be many creatures unique to certain seamounts. It may be that the isolation of the seamounts, and strong, circular currents, keep some creatures within each seamount area.

Corals form the basis of seamount communities. Six species of true corals characterise New Zealand seamounts. The most common reef-building coral *Goniocorella dumosa*, can grow colonies up to 20 metres tall, at a rate of up to three millimetres per year. They form a bushy, interlocking network of branches and numerous species of attached creatures find a niche in the hollow spaces.

Forty-two species of black coral have been growing slowly for centuries in cold, dark New Zealand waters, particularly around the northwest Chatham Rise and southwards towards the Auckland and Bounty islands. They have diverse forms. Some are like a large Japanese fan, with foot-long combs. Others are stick-thin with feather-like 'branches' attached to a long 'stem'.

Further north — off the Bay of Plenty and Lord Howe Island — sea fans or gorgonians, including the striking bamboo corals, often dominate. Very little is known about the 37 species so far found. Some look like small branching and tangled shrubs, others like fans, or whips. A BBC photographer in a submersible found that bamboo corals produce bioluminescence when touched, with light spiralling from the colony base to the most distant branch tips. They appear to grow about 50 centimetres in 70 years.

When first brought up from the seabed, corals are often brilliant oranges, reds, or golds. One fragment, about 1.5 metres long, is a large spiral one centimetre in diameter, with a metallic-golden sheen. It has small holes along its side, where tiny fluorescent fans were attached.

At least 200 invertebrate species live amongst the coral, as well as many uncounted sponges, hydroids, bryozoans and stylasterids. They include sea cucumbers, brittle starfish, sea lilies, sea-stars and sea-eggs. The stalked barnacle *Smilium zancleanum*, as long as a human hand, is one of nine seamount-dwelling barnacle species, most of which have been found in only one location. There are 13 species of hermit, stone and true crab recorded from seamounts — more than half not yet named. Seven squid and seven octopus species have been collected.

About 140 fish species and 29 shark species spend parts of their life cycles around seamounts. Orange roughy is the most common fish, with black and smooth oreo more numerous in some areas. Baxter's dogfish is the most common shark. Alfonsino, black cardinal fish, rattails and black javelin fish are also often found.

What's happening to protect seamounts?

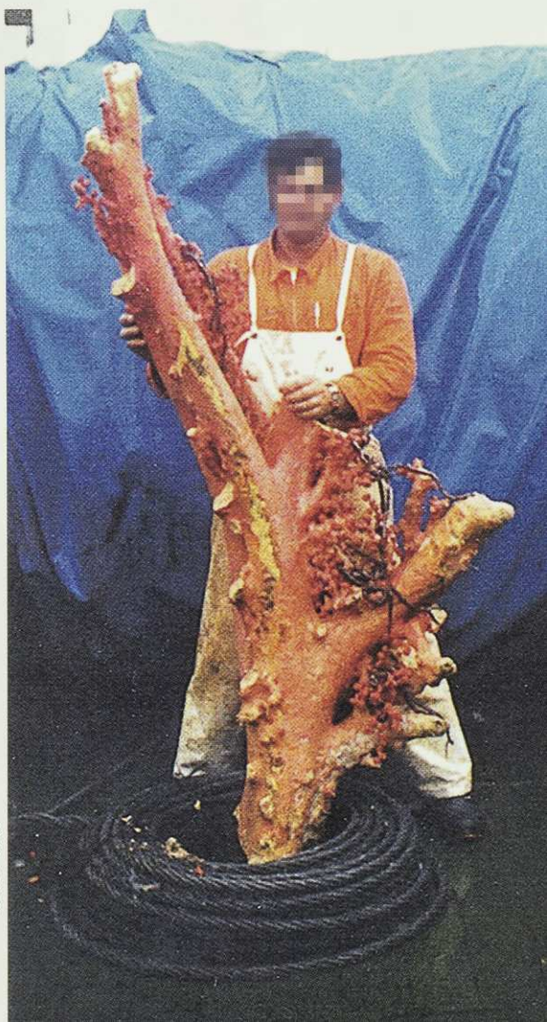
The Ministry of Fisheries has a responsibility to ensure that fishing is ecologically sustainable.

Forest and Bird's Barry Weeber says there should be a moratorium on deep-sea fisheries and a stocktake of what creatures live there. 'Otherwise we're paying lip service to biodiversity — we don't even know what we've got and it's being destroyed.'

Forest and Bird has lobbied the Ministry of Fisheries to stop the industry moving onto unfished seamounts, and has called for at least half of the most intensively fished area — the Chatham Rise — to be set aside, to enable some of the 'bottom-dwelling' communities to survive.

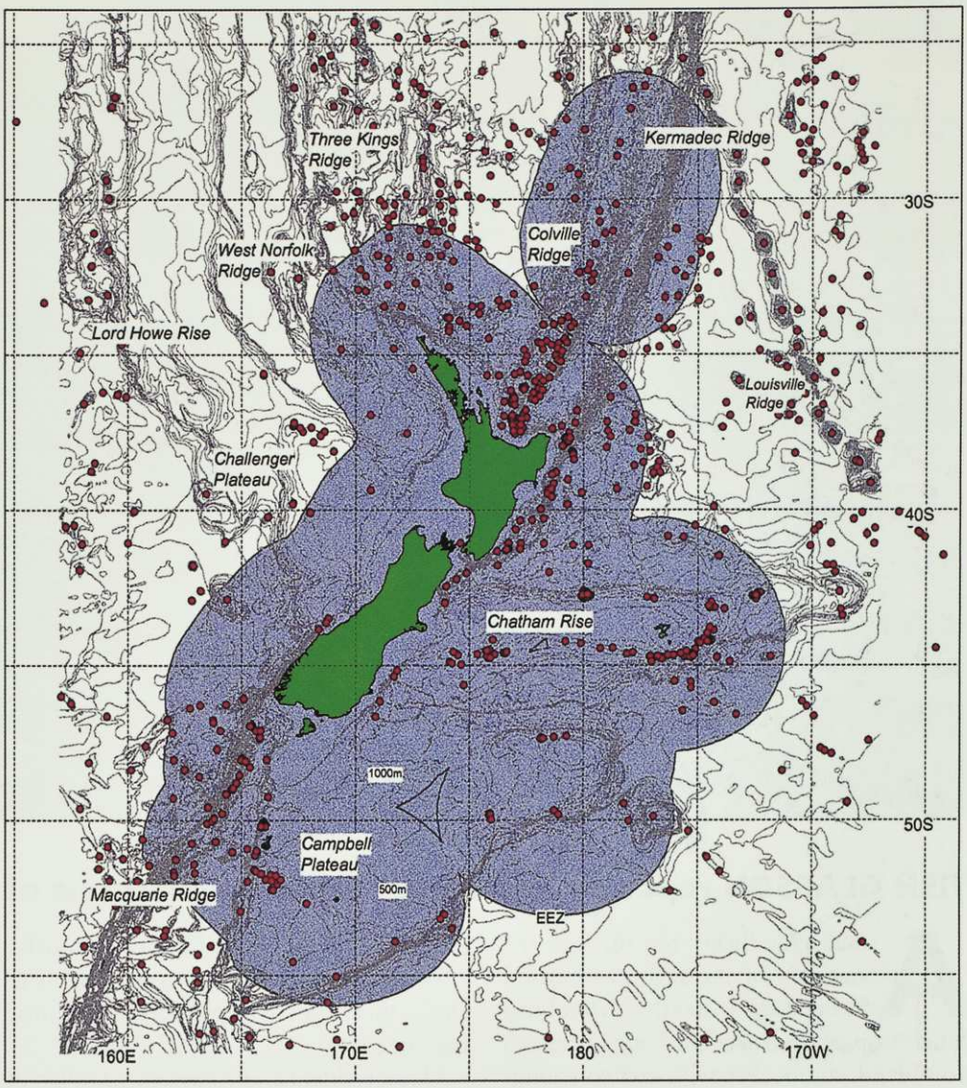
The Ministry is now considering setting aside a small number of seamounts 'to manage the impacts of fishing on a representative sample.'

'The Ministry's approach is too little, too late,' says Barry Weeber. 'By the time it gets round to enacting any policy, the fishing industry will have substantially wrecked many more seamount habitats. There should be an immediate ban on trawling in all unfished areas.'



STEVE O'SHEA

A huge sea-fan coral, or gorgonian, trawled up from a seamount by a fishing vessel. This species Paragorgia arborea *is found worldwide but is everywhere rare. This is the second largest piece ever found but was thrown overboard after this photograph was taken. The National Institute of Water and Atmosphere has the largest piece in its Wellington collection. (The fisherman asked for his face to be obscured.)*



Undersea mountains on the New Zealand region as mapped by the National Institute of Water and Atmospheric Research.

The deep-sea fishing industry has targeted the fertile seamounts since the mid 1980s. About 80 percent of the orange-roughy catch is now taken from seamounts.

Scientific knowledge of seamount fauna almost entirely comes from specimens brought in as trawling by-catch. The National Institute of Water and Atmospheric Research Ltd (NIWA) frequently receives, from fishing trawlers, specimens of creatures which have never been seen before.

NIWA taxonomist, Dr Steve O'Shea, has witnessed a new species come up with almost every trawl. 'We are guessing that there are many localised ecosystems, just because so many species have been found only in certain areas.'

What is more, the species hauled up in nets is only the 'big stuff' — larger than an average net hole of 10 centimetres square.

'On the seabed, creatures less than one centimetre in size often count for 99 percent of diversity, yet we don't know what small things are down there,' says Dr O'Shea.

Dr Malcolm Clark, leader of NIWA's seamount research, says seamount science is still in the 'presence-absence' stage.

'We know that some species are present in some areas. We don't have information on their numbers or densities. We don't know the relationships that these creatures have with each other, or their geographic and depth distribution.'

Little funding goes to seamount fieldwork. It is expensive. Fishing by-catch has provided almost all of what we know about these seamount communities.

The threat

There is widespread and growing concern about the impacts of bottom trawling on deep-sea habitat.

The fisheries' impact is intense. Australian studies, using underwater photography, recorded trawled slopes scraped almost bare of life, and found piles of fragmented coral rubble around the base of trawled mounts. They concluded that the invertebrate sea life was highly vulnerable to trawling.

In May 1999, the Australian government declared about 20 percent of the Tasmanian seamounts, some 370 square kilometres, to be marine reserves, protecting the fauna of 70 seamounts.

New Zealand figures indicate that most of the by-catch is taken in the first few trawls. The nets have heavy rollers that run along the seamount surface, crushing everything in their path. In a recent survey, six trawls over previously unfished seamounts hauled up three tonnes of coral, while 13 trawls over fished seamounts hauled up only five kilograms of coral.

Bottom trawling of seamounts can create the kind of damage that bulldozing blindly through a native forest would do on land. But unlike our forests, where the public knows and cares about how many rare kaka and kiwi are left, we can't see what's happening on seamounts, and scientists know very little about the ecosystems.

Scientists do know that these deep-water creatures are slow-growing, very long-lived, slow to reproduce and — like creatures in other environments where it is cold or dark and there is little natural disturbance — slow to rebound after disruptions.

A 1999 NIWA report on seamounts, compiled for the Department of Conservation, says 'in the short-term, the impacts of bottom trawling on resident seamount populations appears to be considerable.... There are sound arguments for providing protection to a number of seamounts. Protection of biodiversity, given a potentially high level of endemism, and the differences between seamount and slope fauna, is important.'

The report also notes that the fishing industry is actively seeking out new seamounts to target. And it states that there is not yet enough information about seamount fauna to determine which seamounts have representative fauna. A lot more research needs to be done.

Meanwhile, unique areas of valuable natural diversity remain unprotected, and vulnerable to damage.

JO MACKAY *is a Wellington-based freelance writer about the outdoors and its issues.*

Dolphins in Danger

TISH GLASSON reports on the threatened populations of Hector's dolphin.

A small grey flicker ran through the blue-grey of the surf, just beyond the breakers. Instantly a school trip lunch stop, at Waikawa Harbour in eastern Southland, comes alive with excited youngsters who have just seen their first wild Hector's dolphins.

Unlike most places in New Zealand, dolphin-watching in Porpoise Bay at the head of the harbour is easily accessible. Just walk along the beach and keep your eyes open. You can even swim with them from the beach, or rather let them swim with you.

Southland people and 'surfies' who use the bay have known about the dolphins for many years. Now free dolphin-watching is on the backpackers' grapevine and in the popular guidebooks. Concerns have been raised that increased visitor numbers in summer might disturb the small pod of 50 or so animals.

Charter-boat operator Ivan MacIntosh says the dolphins swim with people in the surf because that is where the animals' food is. The dolphins don't like the swimmers, he says.

One business offered wet suits and kayaks for hire to passengers from shuttle bus services, and did not have a marine mammal-watching permit. This put pressure on the dolphins because people were in the water with them most of the day, Ivan MacIntosh says.

'Continual contact, that is the problem... that's what the Hector's get.' He has heard people standing on the beach comment that the dolphins don't really like people much.

'We tell the ones who get upset to write to DoC... there's got to be planning at Porpoise Bay, for sure.'

A local resident and voluntary guardian of the dolphins is Nancy Gee who says the district is getting a lot more tourists, mostly on day trips. Most visitors are in their 20s and 30s and many go into the water to swim with the dolphins in the bay.

'Swimmers need to be aware there are protocols for meeting dolphins in their own environment. Splashing is a sign of aggression to dolphins. If swimmers want the animals to come close, it is better to stand still. Curiosity will gradually get the better of them,' she says.

'Generally people are pretty good. I say something to them and they soon find out it is not the way to behave,' Nancy Gee says.

In Australia, at Monkey Mia north of Perth and at Tangaloom, Queensland, studies of these kinds of interactions showed a need for regulations. Strict controls have been put on visitor access and behaviour in places where people can approach dolphins easily from the shore. No one in Southland wants so much visitor pressure on the Porpoise Bay pod that the dolphins disappear.

All dolphins in New Zealand are protected by the Marine Animals Act, which is administered by the Department of Conservation. DoC has issued two marine-mammal watching permits in the Waikawa area, one shore-based and the other for Ivan MacIntosh's charter-boat operation. There are presently no plans to introduce the Australian type of controls

Hector's dolphin.

for people swimming with dolphins from the beach.

The Murihiku area manager for DoC, Dave Taylor, says the approach the department is taking is one of 'education'. However, he acknowledges there are some issues which still needed to be resolved.

'We're certainly looking at putting quite a lot of resources into that pod and we're mindful that some of the commercial interests are pushing the barriers,' he says. DoC has had a paid warden at Porpoise Bay during this summer.

Hector's is the rarest type of dolphin and occurs only around the coast of New Zealand. A study programme by Dr Steve Dawson of the marine studies department at Otago University was investigating the species. Dr Dawson and his students were monitoring Hector's dolphin numbers in Canterbury, the West Coast, Otago and Southland. (Auckland University was studying the small population on the west coast of the North Island.)

TISH GLASSON

An MSc student, Lars Bejder of Denmark, studied the Porpoise Bay pod in the summers of 1995-96 and 1996-97. Population counts were done by aerial surveys and from a specially adapted boat belonging to Dr Dawson. These counts have shown just how small the total population of Hector's dolphin is.

'We believe there are about 400 Hector's between Timaru and Long Point (Fiordland),' Dr Dawson says. 'The population in Otago and Southland is tiny.'

One major problem is the very slow breeding rate of Hector's dolphins. They mate in late spring and calve, a year later, from then until about February. It is difficult to know exactly what the gestation period is, but scientists estimate it to be between 10 and 12 months.

Only one calf is born at a time and at best Hector's only give birth once every two years. The more usual rate is once every three years and population growth is estimated to be two percent annually. If a population of 100 animals had two deaths from natural causes during a year, a two percent reproduction rate is barely sufficient to keep the population stable.

Hence the pod of 50 individuals in Porpoise Bay is particularly vulnerable and in the summer of 1998-99 only one calf was seen in the bay. This summer (1999-2000), two new calves have been seen, and last year's baby has returned as a yearling.

Recently, DNA studies have been used to establish the relationships between the various populations. Tissue samples were taken from dead dolphins caught in gill nets or washed up on beaches. The DNA of museum specimens has also been sampled.

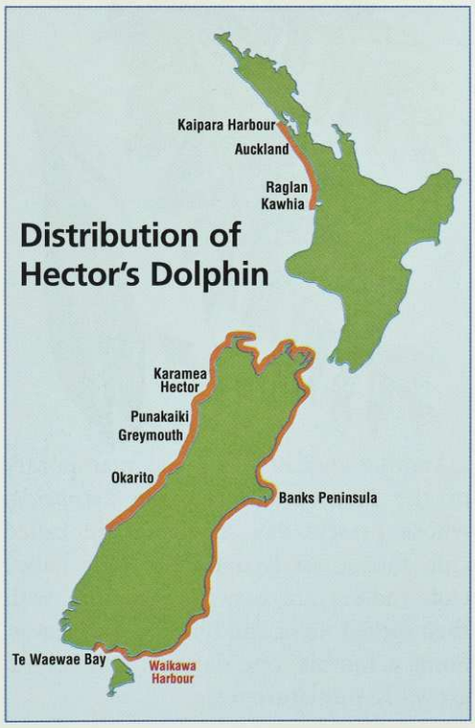
TISH GLASSON

TISH GLASSON

Fortunately Hector's dolphins are inquisitive enough to allow the approach of a boat they know. This allows researchers to collect a small tissue sample from a live dolphin, by gently scratching its back with a plastic pot-scrub attached to a pole. This gives enough skin cells to do a DNA test, similar to the sort used by forensic experts investigating crimes. The dolphins don't appear to be upset by this procedure, Dr Dawson says.

These DNA studies show the southern population of Hector's dolphin is quite separate from those off Canterbury. In fact they seem more closely related to those on the West Coast. No Hector's dolphin have been recorded on the Tasman Sea coast of Fiordland, so mixing of the two groups must be extremely rare, he says.

DoC has been very responsible in taking a cautious approach in its management policies for the Porpoise Bay pod, according to Dr Dawson. Hopefully, kids on school trips through the Catlins area will be able to continue to experience the thrill of meeting the world's smallest, rarest marine mammal in its own home.



Hector's dolphin now a 'threatened species'

In an early executive action, the new Minister of Conservation, Sandra Lee, has declared Hector's dolphin a 'threatened species'. Under the Marine Mammals Act, the Minister must now improve protection for Hector's dolphin, and see its popul;ation recover to 'non-threatened' within 20 years.

Forest and Bird has responded by calling for a ban on set netting in areas frequented by Hector's dolphin.

'Hector's dolphin is one of the rarest marine dolphins and is highly susceptible to being caught in set nets,' according to Barry Weeber, a conservation officer with Forest and Bird.

There are three genetically distinct populations of the dolphin: on the North Island's west coast and on the western and eastern coasts of the South Island.

'In each of these areas dolphins have been found washed ashore with marks consistent with being drowned in set nets,' he says.

'New Zealand must protect each population to meet its international commitments under the Biodiversity Convention. The North Island west coast population is most at risk with less than 100 dolphins found in the latest survey. Conservationists fear that set netting could cause the extinction of this North Island population of Hector's dolphin.

'Urgent management action is required now rather than waiting for further research,' says Barry Weeber. 'Given the level of set netting off the west coast of the North Island and the small size of the dolphin population there, it is critical that action be taken this year.

'It should be a priority to establish a marine mammal sanctuary out to 10 kilometres off the coast between the Hokianga Harbour and the Wanganui River.

'The removal of set nets from this area would be a major advance in the protection and rebuilding of this critically depleted population.'

Forest and Bird also supports a major expansion of the existing Banks Peninsula Marine Mammal Sanctuary to cover the coast from Timaru to Motunau Island in North Canterbury.

Set nets bans are also needed in the South Island west coast waters.

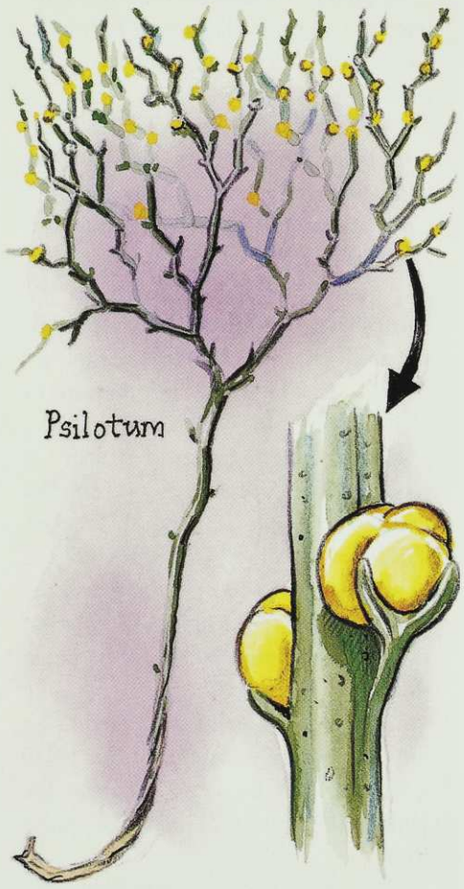
Plants of the lost world

Story ANN GRAEME, illustrations TIM GALLOWAY.

I found a treasure in my garden. To be strictly accurate, my daughter Kate found it. Newly returned from overseas, she was 'tidying up the parents' by weeding the neglected garden in the courtyard. I was working in a deck chair under the sun umbrella.

'There's a strange plant here, Mum,' she said, fossicking amongst the kiokio fronds at the base of a tree fern. 'You'd better have a look at it.'

I knelt down and peered under the ferns and there it was — *Psilotum nudum* — growing in my garden!



This may or may not amaze you, so let me explain.

The genera *Psilotum* and *Tmesipteris* are the only survivors of a group of plants called *Psilotopsida* that have been around on Earth for more than 400 million years. Their simple forms suggest the first models for plant life on land. *Psilotum nudum* looks like an exercise in geometry. Each stiff little stem forks and then forks again, sprouting tiny leaves and bright yellow balls of spores. It is a pioneer plant, widespread in the warmer parts of the world. In New Zealand it grows best in rock crevices or in the warm soil of thermal areas.

Much more exclusive is the ancient genus *Tmesipteris*, which grows only in New Zealand, Australia, Tasmania, New Caledonia and some Pacific Islands. Four species flourish in this country, and all have a habit of dangling as epiphytes on the trunks of treeferns, just like they must have done in the ancient forests. *Tmesipteris* is the holy grail for botanists of the Northern Hemisphere. The television botanist Dr David Bellamy was once asked what was the highlight of his first visit to New Zealand, and he replied, 'I have seen *Tmesipteris*!'

Another ancient group, a contemporary of the *Psilotopsida*, was the *Lycopsida*, whose present-day survivors are called club mosses or lycopodium. Our native club mosses are easy to recognise with their forked stems and furry or scaly leaves. Some scramble, one dangles, and several grow like miniature trees.

Affectation, or a twisted sense of humour?

Tmesipteris and *Psilotum*? Looking at these Latinized names you may think that botanists are 'eggheads'. There may be some truth in that, but the naming process is a logical and standardised way to bring order to the exuberance of species in the natural world. The Latin language may be dead to most of us but it is non-partisan and can be understood all over the world (by eggheads, anyway).

So, for non-egghead readers:

Tmesipteris is pronounced mes-ip-teris and means 'divided fern', probably referring to its common but inaccurate name, which is 'fork fern'.

Psilotum is pronounced sigh-low-tum and comes from the Greek *psilotum* meaning 'bald' or leafless. *Nudum* is 'bare' or 'naked'. The 'baldness' relates to a characteristic of the genus which is leafless, and 'bare' is the species name. Certainly, *Psilotum nudum* is very bare indeed!

ILLUSTRATIONS BY TIM GALLOWAY

At the present time, world vegetation is dominated by flowering plants. They are the grasses in the paddocks, the vegetables and flowers of the gardens, the alpine plants and most of the forest plants. But it hasn't always been this way. Before the flower and the cone-bearing plants evolved, back in the steamy swamps of the Devonian and Carboniferous eras, quite different forests grew. There were hundreds of different species of *Lycopsida*, trees more than 40 metres tall, some with stout trunks crowned with branches and others like enormous candlesticks. Other tall, tree-like plants were *Calamites*, of the plant group *Sphenopsida*, which are all now extinct except for the genus *Equisetum*, the horsetails. Amongst the forest trees grew tree ferns, the ancestors of our wheki and wheki-ponga, with *Tmesipteris* dangling on their trunks.

Three hundred million years ago those Carboniferous forests would have seemed quiet to us, for this was before the advent of birds, and the great explosion of insect species was only beginning. There were no bees to pollinate the flowers, for there were no flowers to lure them. Only the wind dispersed the spores from the primitive trees, while prehistoric amphibians grunted and croaked in the swamp.

The Carboniferous forests were vast and existed over many millennia. As trees died and fell into the swamp, their squashed remains created colossal coal deposits, locking up their carbon in a carbon 'sink'. In the natural carbon cycle, leaves take in carbon dioxide from the air and convert it to sugars by photosynthesis. Then, during respiration and decomposition, the sugar is metabolised into energy and carbon dioxide is released back into the atmosphere.

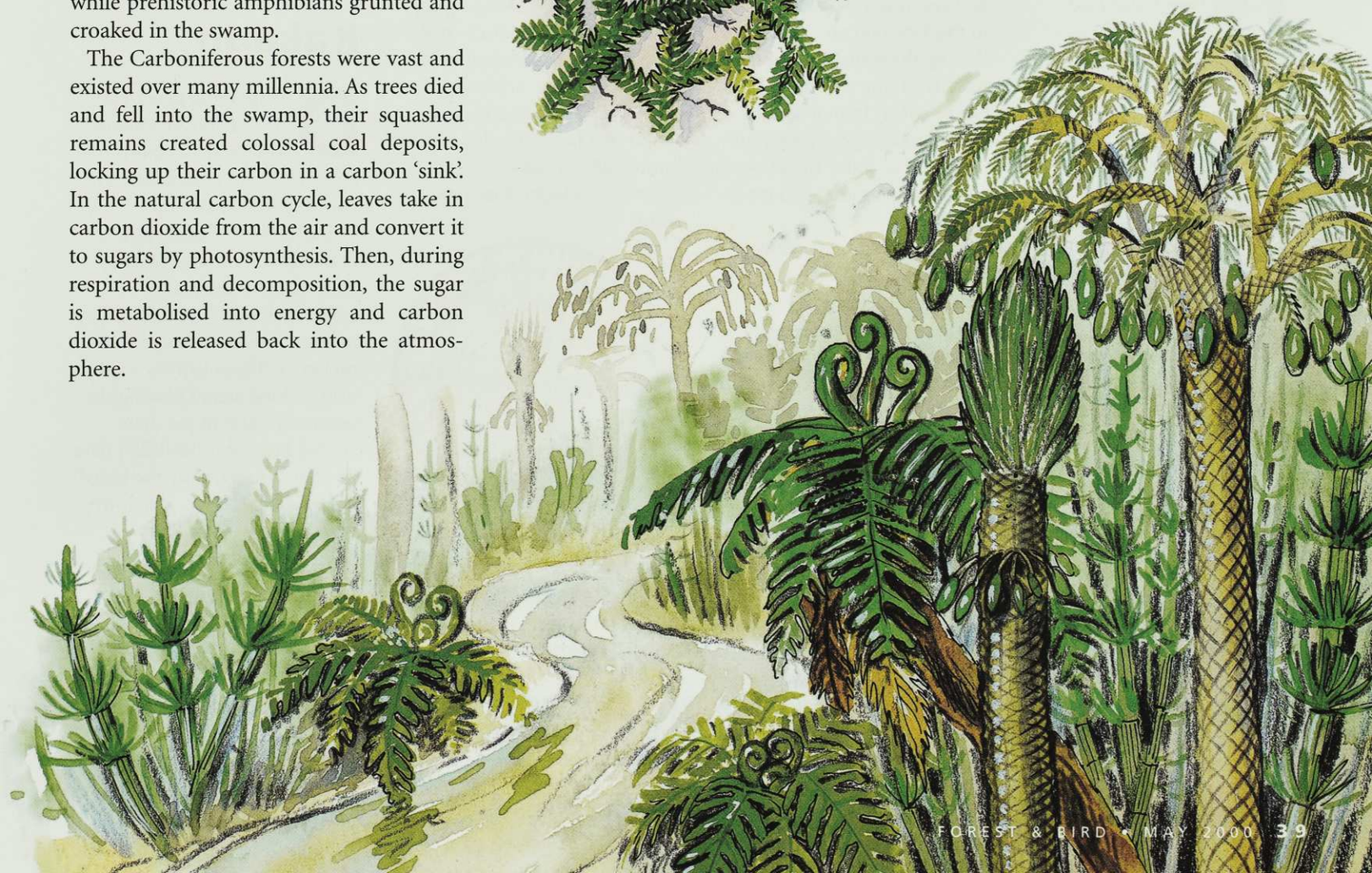
Now our species is using the coal deposits to fuel furnaces and power stations all over the world. Thus we are burning the accumulated carbon of millions of years of ancient forests, and in so doing we are releasing vast quantities of stored carbon dioxide, which traps the sun's heat and warms our atmosphere.

Past climate changes have often triggered mass extinctions, and past evolution has provided new solutions, though this may be cold comfort for our species. But *Psilotum* has lived through it all — the warm periods, the ice ages, the rise and fall of the dinosaurs — and I am glad to have it growing in my garden.

ANN GRAEME *is national co-ordinator of the Kiwi Conservation Clubs, and lives in Tauranga.*

Down but not out — some are pests!

You might imagine that a species that is the last of its line, a living fossil in a modern world, would be frail, vulnerable, hanging on by its rhizomes, so to speak. This is certainly not the case for two species that are pests in New Zealand. The field horsetail *Equisetum arvense* is an introduced, invasive and aggressive weed that is presently naturalised on river banks from Kawhia to the Buller Gorge. Even more widespread is *Selaginella kraussiana*, (pictured at left) a lycopod from Africa that often grows in shade houses and in the potting mix around pot plants. *Selaginella* carpets shady banks and damp forest floors, suppressing native seedlings. It is very hard to get rid of and can only be exterminated with weed spray. Watch out for this pest of a 'living fossil' when you are buying plants and planting out native seedlings.



branching*out*

One of Our Best Short Walks

The Gambles' Educational Boardwalk in Southland is a place where discerning birdwatchers flock to see New Zealand's secretive fernbird. Not only that but a unique short walk, described as one of the best in New Zealand, takes visitors through tall podocarp forest, manuka shrubland and estuary rushland. Along the way they will also see two mistletoe species, and one of the largest populations of the threatened plume grass *Deschampsia caespitosa*, and get panoramic views of the New River Estuary, Bluff and Stewart Island.

The foresight of previous owners Bill and Mary Holvey ensured this gem would be protected in perpetuity when they placed a QEII National Trust covenant over the property in 1991. There was also money set aside for fencing so the bush could be protected while still allowing some grazing land. When Ian and Jenny Gamble bought the property in 1992 they had no intention of grazing the land and so put the fencing money towards a boardwalk.

Over a number of years, Ian and Jenny and their two sons, Terry and Willy, have worked hard on building and maintaining the boardwalk. In the early years, Roger Sutton (the trust representative) spent many hours preparing the timber and working with groups such as the Conservation Corps, Forest and Bird and local residents, to build the boardwalk.

Recently another milestone was reached — an interpretation sign was gifted by a long-standing Southland ornithologist and Forest and Bird member, Margaret Divers. Margaret well remembers the days when Maida Barlow, a well-known Southland ornithologist, studied the territorial behaviour of fernbirds here, between 1978 and 1980.

The Gambles' Boardwalk is well-used by local residents, groups, schools and overseas visitors. The walk takes about 20 minutes (or a lot longer) and is open by prior arrangement. Phone Ian or Jenny Gamble on (03) 213 1302 to arrange a visit. — *Chris Rance, Southland Forest and Bird.*

Southland Forest and Bird member, Margaret Divers, has gifted an interpretation sign for the wetland at Gambles' Educational Boardwalk. Ian Gamble's ingenuity enabled Margaret to officially unveil the interpretation sign. He devised a sedan chair on which Margaret was carried out to the estuary.

Millennium Awards in Waitakere City

The contributions of several Forest and Bird members to Waitakere City have been recognised by Millennium Medals presented by the city council. The awards were made after the Council called for community nominations 'to find 100 of the West's true heroes'.

'At the dawn of the new millennium this is the city's way of honouring those who have made an outstanding contribution to the life and vitality of the West,' the mayor, Bob Harvey, wrote to recipients. Waitakere is the western city of Auckland; environmental issues have been significant as the region lies at a growing edge of urbanisation.

Not all medals were for environmental work — Forest and Bird names also appear in the lists for other categories which ranged through arts, business, community, educational, health, literary, Maori, politics, sport, wine and youth. Among them are:

Pim van der Voort, for political and community board services in the Titirangi area, including driving the transformation of a wasteland into a public park.

Gary Taylor, founder of the Waitakere Ranges Protection Society, and active in many conservation, planning and transport areas.

Roy Ranby, who for many years battled and eventually succeeded in transforming a waste dump into parkland, stopping leachate flowing into the harbour, and who is still organising further enhancement and replanting.

Colleen Pilcher, for many years' work as president of the Waitakere Ranges Protection Society, and a very active battler for habitat protection, protecting forests, and adding to reserves.

Kevin Lynch for community services, including participation in many environmental working groups, particularly those relating to the protection of the Manukau Harbour and the Waitakere Ranges.

Ken Catt, for outstanding services to the community over many years, particularly with the Green Print, achieving district plan amendments, and creation of a harbour edge wetland and wildlife reserve.

Source: Waitakere Forest and Bird.

Not a Boom Year for Kakapo

Discouraging news from the Kakapo Threatened Species Trust, sponsored by Comalco in association with Forest and Bird and the Department of Conservation. Looks like there won't be any baby kakapo this year.

The males on Maud Island are just not interested. Codfish is no better. The scientists tried using a loud stereo playing the booming noise to get them started but even this didn't have an effect. Apparently the breeding of all land birds was down this season. — *Lyn Bates.*

MARGARET PEACE

Natural History Week at Ashburton Lakes

Most of the participants on Forest and Bird's natural history week this summer were North Islanders, who declared they were 'just blown away' by the wild magnificence of its location among the ice-sculpted mountains and valleys of inland South Canterbury.

From our base, in the low-key but comfortable Alpine Lodge on Mount Potts Station, we were able to reach a wide range of sites in a mini-bus piloted by Eugenie Sage, regional field officer with Forest and Bird. We then spent most of each day exploring on foot.

Mark Davis, as guest ecologist, provided valuable commentaries on the glacial landforms, changing vegetation patterns under farming pressures, and priorities for conservation. Andy Dennis joined us on our way through the Castle Hill area of North Canterbury, to explain the karst formations. Peter Howden and Edith Smith, from Ashburton Branch, provided an evening showing of Don Geddes's outstanding slides of local birdlife.

We also studied the extensive red tussock wetlands (an increasingly rare plant association) near Lakes Heron and Clearwater. It was exciting to see the threatened crested grebe surviving on some lakes, in spite of lakeside grazing by livestock. Hopefully, Lake Emma's shoreline, now protected by the Department of Conservation, will provide more breeding sites for aquatic birds.

The Maori onion, *bulbinella*, with its golden spires, made a stunning display in all the wetlands. The drier sites were also carpeted, but with the bright-yellow flowers of the introduced weed, *hieracium*.

Transport by four-wheel-drive vehicle up to the Erewhon ski-field area provided an opportunity to look for alpine plants. On the huge shingle slips we discovered flowering specimens of such comparatively rare species as *Notholaspe rosulatum, Leptinella atrata, Ranuculus haastii* and *Lignocarpus carnulosa*.

An interesting range of native plants and birds, together with great scenery, fine weather, good food, and Eugenie's excellent organization combined to make this trip a wonderful success.

— Margaret Peace, Marlborough Forest and Bird.

MARGARET PEACE

Forest and Bird members on a high-country natural history week based at Ashburton Lakes in South Canterbury. Seated amid red tussock, they are listening to guest ecologist Mark Davis.

The week of field studies was organised by Eugenie Sage, a Forest and Bird field officer based in Christchurch

The natural history week also included a visit to the Erewhon ski-field (below) to look for alpine plants. Here, above the snow line, rare plants were found, flowering in the shingle slips.

Search for Magazines

A search is on for the earliest copies of the *Forest & Bird* journal to complete the Society's records. The general manger is seeking 'really old copies of the first *Forest & Bird* magazines', published prior to 1940.

If you can help, please contact Vivien Chiu at Forest and Bird's central office, telephone (04) 385 7374.

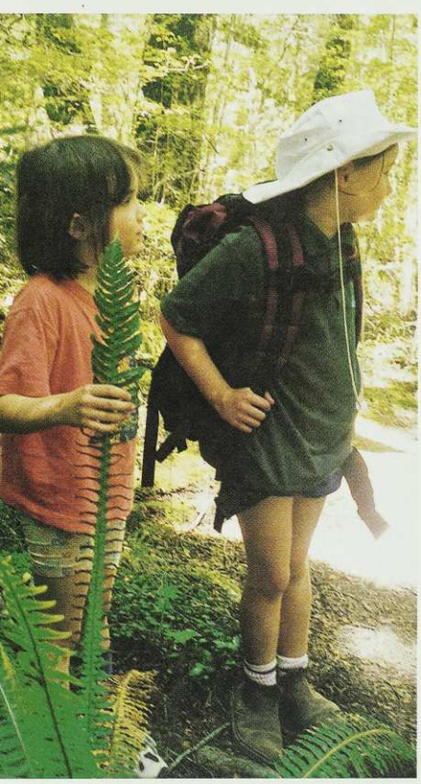
bulletin

Photographic Competition Extended

The closing date for members to submit photographs for the Society's competition has been extended till the end of May. Members are encouraged to submit photographs or slides showing Forest and Bird or Kiwi Conservation Club members enjoying themselves, caring for the environment.

Prize winners will receive Eco 'starter packs' containing laundry liquid, dishwashing liquid and general purpose cleaner from the Eco Store. The best images will be retained by the Society to use in future membership promotions and Society publications (including the website).

Send photographs and slides together with your name, address and phone number to Photographic Competition, P O Box 631, Wellington. Please enclose a stamped self-addressed envelope for the return of material not selected. Entries now close May 31, 2000. The judges' decision is final and prize winners will be announced in the August *Forest & Bird* journal.



GILLIAN POLLOCK

Photographs of members enjoying themselves on Forest and Bird trips or projects are sought for a competition closing May 31. The pictures will be used to help promote interest in Forest and Bird activities. These samples of photographs received so far include North Shore members planting native trees on a warehouse site alongside the northern motorway, and two youngsters in the Rotoiti 'mainland island' site at Nelson Lakes National Park listening to bird song. See article for entry details.

FOREST & BIRD

Notice of Annual General Meeting

The annual general meeting of the Royal Forest and Bird Protection Society of New Zealand Inc., will be held at 8.30am on Saturday June 17, 2000, at the Quality Hotel, 355 (Upper) Willis Street in Wellington.

Business to be conducted will include the presentation of the annual report and financial statement.

The meeting will be followed by the formal sessions of the Society's annual Council meeting where delegates from branches will discuss policies and elect the national executive for 2000-2001.

The Council meeting begins with introductory talks at the Quality Hotel on the evening of Friday, June 16 and continues through till Sunday.

After dinner on Saturday night, the annual Sanderson lecture will be given. The lecture commemorates the contribution to conservation made by the Society's founder Captain E.V. (Val) Sanderson, the first secretary (in 1923), and later president. All members are invited to attend. Please contact Vivien Chiu at Central Office before June 2 for a registration form.

Kicking off the Kukupa Campaign

Renewed campaigning to save the kukupa from extinction in Northland will be funded from a legacy received from the estate of the late Jacqui Barrington and a Lotteries Environment and Heritage grant. Kukupa is the Northland name of the native pigeon, known elsewhere as kereru, kuku, and on the Chathams as the parea.

As northern field officer for Forest and Bird, in the mid-1990s, Jacqui Barrington campaigned for the bird which is reportedly often shot for food.

The Save the Kereru poster (shown on right), and a matching display more than two metres high, builds on a continuing campaign, begun in Northland to protect the bird. A coloured brochure in Maori and English underscores the message.

Forest and Bird will conduct the campaign with the support of its branches, along with the Department of Conservation, schools and the wider community.

The brochure notes that native pigeon are dying before they can successfully breed. It suggests six action points, including spreading the word about risks to the bird, growing suitable native food trees, fencing forest blocks, predator control, and active protection by the community. Loss of habitat is a major threat to the survival of the bird.

Donations can be made to the Jacqui Barrington Memorial Kukupa Fund, c/- Forest and Bird, PO Box 631, Wellington.

At right: posters and brochures seeking better protection for the native pigeon are part of a Society campaign to save the bird from threatened extinction. Funding for the campaign comes from a Lotteries Environment and Heritage grant, and the estate of the late Jacqui Barrington, a Society field officer who was active in trying to save the birds from hunting in Northland. Members can get copies of this poster, to use for display purposes, from their local Forest and Bird branch.

RFBPSNZ

Kereru in crisis

Once common, the kereru is now a threatened species*

Why are the number of kereru declining?

Food for kereru is in short supply

In some areas and seasons, food for kereru is in short supply because of loss of habitat, poor fruiting or competition with possums. This reduces the kereru's ability to reproduce.

Kereru are slow breeders

Unlike other birds such as ducks or pukeko, kereru only produce one egg each year - even in a good season. This egg is incubated for one month and doesn't fledge for another 4-6 weeks. During this time the chick is dependent on both its parents, and is highly vulnerable.

Shortened life span of the birds on the mainland

Although able to live up to 15 years on offshore islands, predation by introduced animals results in an average life expectancy of kereru of 5-6 years on the mainland. This is often reduced to about 3 years where illegal hunting pressure occurs.

In one forest where there was extensive evidence of poaching, the decline was a staggering 70% between 1979 - 1993.

With only 10-15% nesting success rate, many birds are dying before they can reproduce.

Unless active steps are taken to halt this decline, this magnificent bird will disappear from most forests on the mainland.

".....flashing their white breasts as they circled and wheeled in the sunshine, pigeons flew literally in the thousands, drifting from tree to tree, rising in flocks of half a hundred or so..."

WILLIAM SWAINSON - THE HOROWHENUA IN THE 1860S.

*known also as kukupa, kuku or native wood pigeon

Why are kereru so important to our forests?

- Now that other large birds like the moa are extinct, the kereru is the only bird left with a beak that can open wide enough to swallow the big seeds of trees such as puriri, miro, taraire, karaka, tawa and kohekohe.
- They also eat the fruit of nikau, titoki, pigeonwood, supplejack, kahikatea and many shrub species and in spring the leaves and flowers of houhere and kowhai, feeding on a total of 72 native species.

kereru feeding on karaka berries

The fruits from these large native trees form part of a kereru diet. You can help the kereru by protecting and planting trees like these.

- Undigested seeds eaten by the kereru fall to the ground in its droppings, where they sprout and grow - often many kilometres from the parent tree. These birds can fly long distances (up to 25 kilometres). This spreads the seeds of native species far and wide, helping our native forests to regenerate.

This injured bird is being cared for at the Whangarei Native Bird Recovery Centre and will be released back into the forest.

Kereru need healthy forests to live, feed and nest in. Habitat protection, pest control, fencing, and restoration of food species will all help secure the future of kereru.

What you can do to help the kereru

Protect the forest

Covenants provide legal protection on the title of the land and ensure future owners cannot damage it. They can be arranged through the Department of Conservation, the Queen Elizabeth II National Trust or Nga Whenua Rahui for Maori landowners. Financial assistance with legal costs and fencing maybe available.

Financial assistance is available

- Rate relief is offered by some district councils for land that is set aside from grazing. Also some regional councils give environmental grants for fencing and planting where land improvement agreements are entered into.
- Environmental grants are also available from the Lottery Grants Board, ASB Bank, Ron Greenwood Trust, Pacific Conservation and Development Trust.

Protect kereru from hunting

Remember this bird is legally protected. Hunt only introduced birds. If you have a taste for bush tucker, try chicken stuffed with miro fruit. Tell the Department of Conservation if you know about illegal hunting.

Fence forests from grazing animals

- Grazing animals eat young seedlings which are needed to replace the older trees as they die. Without natural regeneration, the forest will eventually die.
  Wild animals such as deer and goats also stop the forest from regenerating.
- Large grazing animals damage the roots of some shallow rooted trees such as puriri increasing the risk of disease.

Plant native food species

- As well as the slow growing trees such as miro, tawa and puriri, faster growing small trees and shrubs such as houhere, wineberry, five-finger, pate and fuchsia can all be planted in forest clearings and margins, and any other unused ground. Beware of planting desirable food species near houses and roads, where the birds are at risk from flying into windows and vehicles.
- Some exotic species such as tree lucerne are fast growing and provide food in the short term while native species are reaching maturity. However some exotic species eaten by pigeons are forest weeds and should not be grown. These include guava, monkey apple and Taiwan cherry.

Control pests

- Possums, ship rats and stoats are all agile tree climbers and can attack the eggs and chicks. Possums and rats can be easily controlled using poisons and traps.
- Cats are also a threat. They can be trapped in cages.
- Some introduced birds, such as magpie and myna will eat eggs and chicks, as well as competing with native birds for territory and berries.

- Contact your regional council pest officer or Forest and Bird for information on trapping. See the Pest Control Information sheets that accompany this display for detailed information about trapping methods.

The full benefit of pest control can only be achieved by targeting all predators.

Control weeds

- Weed control is important because invasion of forests by weeds can stop the native plants from growing, and the forest may eventually collapse.
- Creepers and vines are especially dangerous e.g. old man's beard, jasmine, honeysuckle, wandering Jew, climbing asparagus.
- Wild ginger, ladder fern and agapanthus are just a few of the many weeds threatening our forests.
- See your local regional council for more information relating to your area and for advice on methods of weed removal.

colour illustrations: Francie Smith
black and white illustration: Kevin Prichard
display: Catherine Meehan Graphic Design

Awhinatia mai. Kia ora ai te kereru (kukupa) mo nga whakatupuranga a muri mai.

Help save the native wood pigeon for our future.

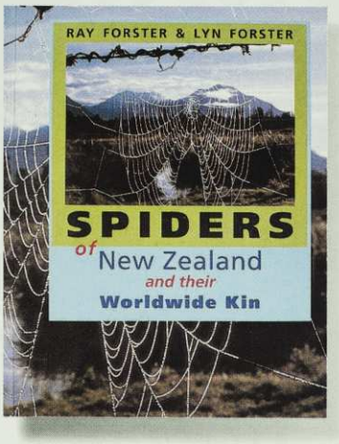
NEW ZEALAND Lottery Grants Board

This poster was produced by Forest and Bird with assistance from the Lottery Grants Board

Forest and Bird, PO Box 631, Wellington. phone 04-385 7374, fax 04 385-7373, www.forest-bird.org.nz

FOREST & BIRD

bookreviews



Spiders of New Zealand and their Worldwide Kin

by Ray Forster and Lyn Forster, 270pp limp, Otago University Press in conjunction with Otago Museum, Dunedin 1999, RRP$79.95.

It is more than a quarter of a century since the Forsters first published their bulky *New Zealand Spiders, An Introduction*, and this volume looks set to become the textbook for the next generation. More than 800 more spider species have been 'named and described' since the earlier book.

It begins with a detailed and useful section on the structure and behaviour of spiders, then looks at them group by group — Living Fossils, Crab Spiders, Hunting Spiders, Seashore Spiders, etc. There are sections too on Harmful Spiders, and How to find and study spiders.

The authors write for people interested in natural history, as well as scientists and teachers. The book's approach covers the anatomy and physiology of spiders, their behaviour and ecology. The detailed writing is illuminated by the generous allocation of pictures, including more than 200 colour photographs, plus black and white photographs and drawings.

This must become the standard introduction to New Zealand's native and introduced spiders, and a user-friendly reference, whether in the enthusiast's home library, the school system, or the university.

The Penguin New Zealand Atlas

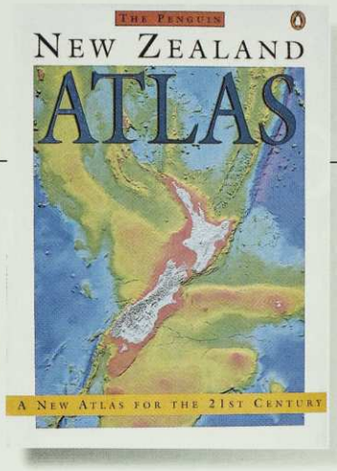
Cartographic design by Barry Bradley, maps from Terralink NZ Ltd, 166pp hardback, Viking, Auckland 1999, RRP$59.95.

The Penguin atlas supercedes the very useful *Heinemann New Zealand Atlas* of 1987. It's the same size, the same scale (1:250,000), and just as useful: certainly a deal cheaper than buying sheet maps of the same scale to carry in the car. There have been quite a few changes in 12 years. New motorways surge north and south from Auckland (and other significant centres). Pine plantations seem to have doubled in size, northward up Ninety Mile Beach.

Maori names get better exposure. In particular, many of the 220 names reintroduced with the Ngai Tahu Settlement Act have found their way onto the maps — the Southern Alps for example are now also Ka Tiritiri o Te Moana, Lake Ellesmere is Te Waihora. The text type is sometimes very small but necessarily so given the detail and the fact that some places now have three names.

Cartographic styles have changed somewhat too, with the introduction of computer-based mapping. The predominant (and pleasant) greens and greys of the Heinemann atlas have been succeeded by mustard yellow and puces, separating lowland from higher country. This modelling of the landscape is effective, however, with the colours matched by a border key on each map to judge the elevation. Stronger greens are reserved for forests and wetlands; in higher country this can sometimes merge with the higher altitude purples.

The division of New Zealand into useful regions is successful: it's often possible to plan a journey from significant settlement to significant settlement, without having to consult two page openings. It is also nice to see the coast and adjacent areas represented as a continuous strip across facing pages rather than slightly offset to accommodate more of the hinterland.



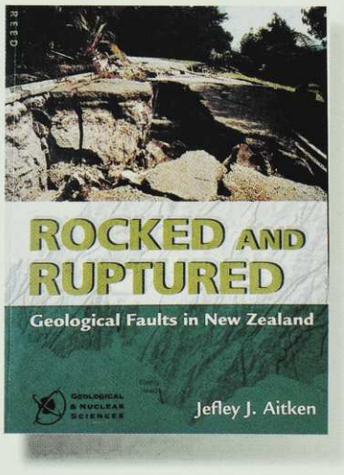
An excellent gazetteer identifies towns, rivers, lakes and the like, with map coordinates to find them. Its major value for the outdoor enthusiast, however, is to fill in the surroundings of a New Zealand journey at a most useful scale.

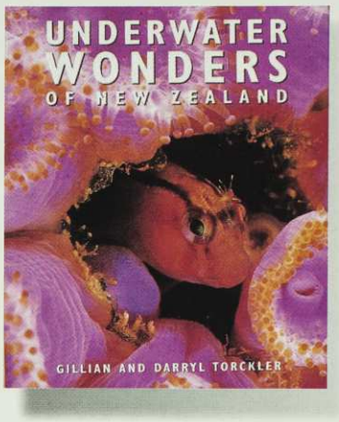
Rocked and Ruptured, Geological Faults in New Zealand

by Jefley J. Aitken, 88pp plus colour section, limp, Reed, Auckland 1999, RRP$29.95.

Was the jazzy title of this book chosen to make its science more popular? The occasionally flippant chapter headings (Life on the Edge, The Last Straw, Confess Our Faults) doesn't quite disguise the underlying seriousness of its content.

Reminders of New Zealand's position at the conjunction of two vast seismic plates come in the form of frequent earthquakes and volcanic phenomena. This book, officially blessed by the Earthquake Commission, begins with a useful description of plate tectonics and describes our major (geological) faults. A fascinating section of 71 colour plates brings the subject alive by showing the effects of geological faults on our landscape.





Underwater Wonders of New Zealand

by Gillian and Darryl Torckler, 112pp hardback, New Holland Publishers (NZ) Ltd, Auckland 1999, RRP$49.95.

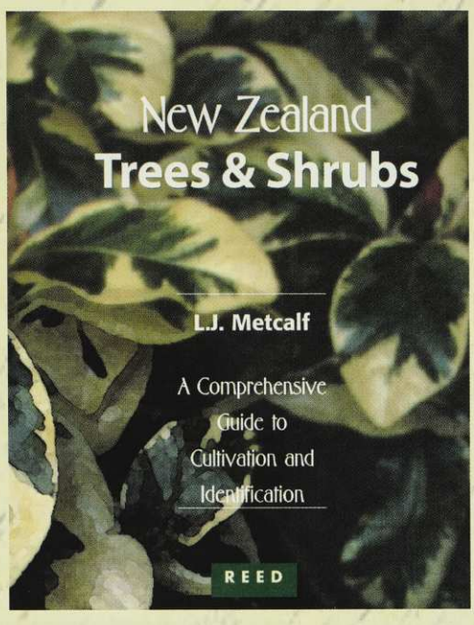
Large format, lush colour throughout, great photography. This matches its description as a 'privileged glimpse into the natural beauty and drama of New Zealand's marine environment'. Darryl Torckler has been photographing underwater since 1973, winning more than 100 major international awards. Gillian Whalley Torckler is a university scientist, and chairperson of the Oceans Society of New Zealand.

This is not a comprehensive text; rather an evocative and selective introduction to the underwater world through striking images and minimal text. Basically, it's a picture album accumulated through diving in New Zealand's best places, from Kaikoura and Goat Island, to famous offshore sites such as the Three Kings, Stewart Island and the *Rainbow Warrior*. There is a more detailed record of nature at five dive sites off the Poor Knights and three in Fiordland. This is not a guide to diving sites, however; it is more a wonderful souvenir. Buy it for the brilliant pictures.

Moir's Guide North

edited by Geoff Spearpoint, 240pp limp, New Zealand Alpine Club, PO Box 786, Christchurch 1998, RRP$29.95.

A classic returns; this is the sixth (and completely revised) edition of the guide to tramping routes in the Southern Alps between Lakes Wakatipu and Ohau. Anyone who heads into this wild region without it, is asking for trouble.



NEW ZEALAND TREES AND SHRUBS
A Comprehensive Guide to Cultivation and Identification
Written by L.J.Metcalf

New Zealand Trees and Shrubs is the most comprehensive and authoritative reference available on the identification, cultivation and landscaping uses of New Zealand's native trees and shrubs. This new, fully revised and updated edition of L.J. Metcalf's definitive work provides information on some 600 native species, with particular reference to the numerous cultivars now available.

New Zealand Trees and Shrubs contains beautiful colour section of over 100 photographed species

A long-awaited new edition.

$59.95

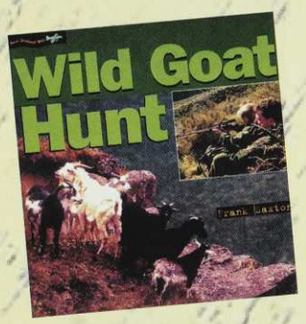
Simple and practical propagation and cultivation information

THE REED NATURE SERIES
Mushrooms & Other Fungi of New Zealand

Each of the books in the popular Reed Nature Series, formerly known as the Mobil Nature Series, features clear photographs for the purpose of identification, accompanied by succinct, detailed information.

$14.95 each

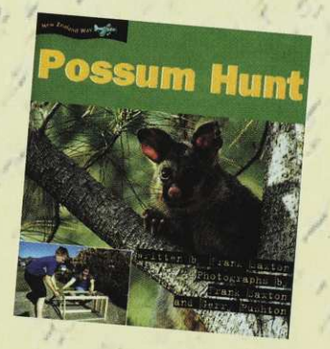
Recently published titles in this series: **Ferns • Seashells**



WILD GOAT HUNT • Written by Frank Saxton

Goat hunting is a popular pastime in many rural areas of the country. In *Wild Goat Hunt* Blair goes hunting with his dad as goats are destroying the newly planted pine trees. While telling the story of the hunt the book also covers all aspects of gun safety, gun law, goats and pests, and a little about the natural history of goats and the damage they do to the environment. While some people may be uncomfortable about a book depicting children with guns however this is a reality for many rural children who commonly hunt goats, possums and rabbits.

New Zealand Way

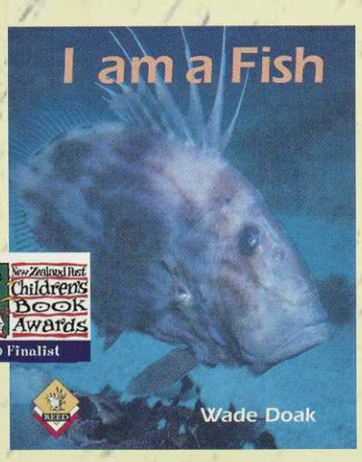


POSSUM HUNT • Written by Frank Saxton

Possum Hunt is the latest book in the *New Zealand Way* series. There are about 70 million possums in New Zealand and they are rapidly destroying our native forests. During the school holidays Blair and his sister, Shannon, go possum hunting with their father. This book follows the trio on their adventures and includes information on possums and gun safety.

$12.95 each

Other books in this series include: *Dairy Farm, Hangi, Helicopter Pilot, Sheep Station, Stranded,* and *The Vineyard.*



Explore the underwater world ...

I Am A Fish • Wade Doak

This awesome, giant sized book is a great way for kids to learn all about fish. Each species of fish tells its own story, where they live, what they eat and what makes them special.

"If I get a fright I can stop very quickly. My pectoral fins go straight out like hands."

$19.95

Finalist in the New Zealand Post Children's Book Awards 2000

Available from leading booksellers nationwide
Visit the Reed Publishing website: www.reed.co.nz

REED

Bird-proofing poison bait stations

A Landcare Research project has produced useful advice for people involved in the control of possums by poisoning. The research assesses the risk of poisoning other animals, including weka and kiwi, by mistake.

Working from Lincoln in Canterbury, G.A. Morriss and E.B. Spurr assessed the risk to other animals, and evaluated the safest way to set bait stations to avoid accidental kills.

In some operations against possums, using 1080 or brodifacoum in cereal baits, there are further desirable kills; of predators such as rats, and secondary kills of the stoats which eat them. Risks to valued animals, such as rare and endangered birds, and farm livestock, are unacceptable, however.

Baits stations were originally developed as an alternative to aerial or ground-laid bait. In the last decade the 'bait station' — a kind of feeder — has proved increasingly popular because of its effectiveness in attracting possums, and growing concern about the effects of scattered poison on other animals.

Many different kinds of bait station are used for dispensing poisons to possums, but all are designed to contain toxic baits in various forms. For example, Feral Control produces a bait station specifically for dispensing Feratox pellets and pre-feed. Others, such as KK stations, are designed for paste baits.

The Landcare Research project tested the four most commonly used stations for dispensing cereal bait — Pelifeed, Philproof, Sentry and Kilmore (as illustrated). For each, the scientists assessed the risk to weka from eating bait directly from the stations, and from eating bait spilled by feeding possums.

Using 12 weka as experimental birds, the scientists set their bait stations, (containing non-toxic baits) at different heights. Weka fed from all four stations when they were set with the opening 30 centimetres above the ground. Bait stations with the openings 70 centimetres above the ground could not be reached by weka. This reinforces previous research by Landcare Research, and also reflects the minimum height at which traps are set by the Department of Conservation, to avoid accidental capture of ground-dwelling birds. Regional councils also recommend that bait stations should be placed high up in areas where livestock may have access.

The problem of bait spillage was tested with 40 captive possums. Ten of each type of bait station were set with their openings 30 centimetres or 70 centimetres above ground to see if the height of the station had any impact on the possums' consumption of bait. Spillage in relation to set-height was also recorded. Possums feeding from Pelifeed bait stations spilt significantly more bait than from any of the other bait station types: there was no significant difference in bait spill from the other three types. Also there was no significant difference in the amount of bait spilt at the two heights.

The scientists say caution needs to be exercised when examining the results. At first glance it seems that if weka are present all you need to do is place the stations above 70 centimetres. However, if pellets are spilt, they could still potentially kill weka who could take them on the ground. Also, by placing baits higher up other animals could be at risk — for example, kaka may be more likely to investigate bait stations set higher in trees.

Other studies by Landcare Research suggest that possums may not encounter higher-set stations as often as low-set stations. Thus higher stations may not be as effective as low ones.

For optimal possum control, and least risk to other species, the less bait spilt the better. Once bait is on the ground in damp conditions it quickly loses its palatability, or the toxin leaches out. Any possums feeding on damp bait lying on the ground may not eat enough and receive only a sub-lethal dose, thereby becoming bait shy.

Landcare Research recommends that before people start using cereal bait stations for possum control, they stop to consider what other non-target species may be in the area. If ground birds, such as weka or kiwi are present, choose the type of bait station that is likely to result in the least spillage of bait.

Source: G.A. Morriss and E.B. Spurr, Landcare Research, Lincoln.

LANDCARE RESEARCH

Bait stations tested, from top to bottom, Pelifeed, Philproof, Sentry, Kilmore.

Landcare Research tested this range of popular possum bait stations to establish the safest way to set them to avoid killing other species.
The results suggest ensuring each opening is set 70 centimetres above the ground so ground-dwelling birds can't reach them.
The research also tested the amount of bait spilt from each station by feeding possums — which creates a potential risk if ground-feeding birds are present, and can also cause 'bait-shyness' as the cereal baits lose their effectiveness when damp. 'Significantly more' bait was spilt from the Pelifeed stations — more than was taken by possums. There was 'no significant difference in spill' from the other three station types, according to Landcare Research. As little as four percent of bait eaten was spilt from Sentry and Kilmore bait stations.

Working together we can make a difference

join Forest and Bird

As a member of Forest and Bird you can:

- Gain satisfaction from the knowledge that you are contributing to the conservation and protection of New Zealand's natural heritage.
- Receive the Forest & Bird magazine - four full-colour issues a year, delivered to your mailbox.
- Receive regular issues of *Conservation News* containing the latest in environmental news.
- Participate to the level you desire in a large, successful, grassroots conservation group.
- Be informed by your local branch of trips, walks and conservation projects in your area.
- Stay at Forest and Bird's reasonably priced lodges around the country.

Use the attached form to give a donation or join as a member (*donations over $5 are tax deductible*)

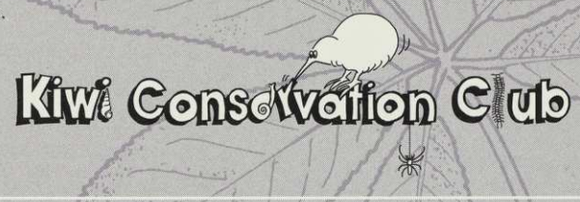
It is your support and generosity that enables Forest and Bird to continue working for the environment

and a special club for children

Kids love learning about the natural world and how to protect and enjoy it. The Kiwi Conservation Club is for young people aged 5 to 12 years. It encourages an appreciation of nature, and promotes fun, conservation-based activities. Membership is available to individuals, families and schools.

KCC members receive:

- Five copies annually of the KCC magazine, packed with interesting stories, games, jokes and projects.
- A personalised KCC membership certificate containing the Kiwi Conservation Code.
- KCC member's stickers.
- Notification of activities and trips held in most areas by local KCC groups.



Instilling a love of nature is a gift that lasts a lifetime

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Name (Mr/Mrs/Ms) _____

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This is a ☐ new membership
☐ renewal membership (membership no.) _____

GIFT MEMBERSHIP

Join a friend by filling in their name above and your name below. Gift membership will be sent with a special gift card in your name. If you would like to be billed for renewal of this gift membership next year please tick here ☐

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Forest and Bird membership category *(all prices include GST)*

☐ single ☐ family ☐ non-profit group	$49.00		
☐ senior citizen ☐ senior family	$37.00		
☐ student/schools	$32.00	☐ libraries	$49.00
☐ business	$100.00	☐ life (single only)	$675.00
☐ overseas	NZ$70.00	☐ corporate	$275.00

Kiwi Conservation Club membership category *(all prices include GST)*

☐ single	$12.00	☐ family (no. of children _____)	$20.00
☐ mini set (4 magazines)	$22.00	☐ class set (30 magazines)	$55.00
☐ overseas	NZ$22.00		

DONATION *(Donations over $5 are tax deducible)* $ _____

☐ Enclosed cheque to Forest and Bird
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Expiry date _____ Cardholders signature _____

By mail FREEPOST No. 669, Forest and Bird, PO Box 631, Wellington.
By phone (04) 385-7374 with credit card details. **By fax** (04) 385-7373.
Email enquiries to: office@wn.forest-bird.org.nz

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DONATION AND/OR MEMBERSHIP FORM

Name (Mr/Mrs/Ms) _____

Address _____

_____

_____ Telephone _____

This is a ☐ new membership
☐ renewal membership (membership no.) _____

GIFT MEMBERSHIP

Join a friend by filling in their name above and your name below. Gift membership will be sent with a special gift card in your name. If you would like to be billed for renewal of this gift membership next year please tick here ☐

Gift from (Mr/Mrs/Ms) _____

Address _____

_____

Forest and Bird membership category *(all prices include GST)*

☐ single ☐ family ☐ non-profit group	$49.00		
☐ senior citizen ☐ senior family	$37.00		
☐ student/schools	$32.00	☐ libraries	$49.00
☐ business	$100.00	☐ life (single only)	$675.00
☐ overseas	NZ$70.00	☐ corporate	$275.00

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Working together we can make a difference

join Forest and Bird

As a member of Forest and Bird you can:

- Gain satisfaction from the knowledge that you are contributing to the conservation and protection of New Zealand's natural heritage.
- Receive the Forest & Bird magazine - four full-colour issues a year, delivered to your mailbox.
- Receive regular issues of *Conservation News* containing the latest in environmental news.
- Participate to the level you desire in a large, successful, grassroots conservation group.
- Be informed by your local branch of trips, walks and conservation projects in your area.
- Stay at Forest and Bird's reasonably priced lodges around the country.

Use the attached form to give a donation or join as a member (*donations over $5 are tax deductible*)

It is your support and generosity that enables Forest and Bird to continue working for the environment

and a special club for children

Kids love learning about the natural world and how to protect and enjoy it. The Kiwi Conservation Club is for young people aged 5 to 12 years. It encourages an appreciation of nature, and promotes fun, conservation-based activities. Membership is available to individuals, families and schools.

KCC members receive:

- Five copies annually of the KCC magazine, packed with interesting stories, games, jokes and projects.
- A personalised KCC membership certificate containing the Kiwi Conservation Code.
- KCC member's stickers.
- Notification of activities and trips held in most areas by local KCC groups.

Instilling a love of nature is a gift that lasts a lifetime

lodges*accommodation*

Arethusa Cottage
An ideal place from which to explore the Far North. Near Pukenui in wetland reserve. 6 bunks, fully equipped kitchen, separate bathroom outside. For information and bookings send a stamped, addressed envelope to: John Dawn, Doves Bay Road, RD1, Kerikeri, Tel: (09) 407-8658, fax: (09) 407-1401.

Tai Haruru Lodge, Piha, West Auckland
A seaside haven set in a large sheltered garden on the rugged West Coast, 38km on sealed roads from central Auckland. Close to store, bush reserves and tracks in the beautiful Waitakere Ranges. Double bedroom and 3 singles, plus large lounge with open fireplace, dining area and kitchen. The self-contained unit has 4 single beds. Bring food, linen and fuel for fire and BBQ. For details and rates send stamped addressed envelope to Ethne Richards, 1/109 Fredrick St, Hillsborough, Auckland. (09) 625-8627.

Waiheke Island Cottage
The cottage at Onetangi has comfortable bunk accommodation for 8 people and has a stove, refrigerator and hot water. Adjacent to a 49ha wildlife reserve, it is in easy walking distance from shops and beach. It is reached by ferry from Auckland City. Everything is supplied except linen and food. No animals. For rates send an addressed envelope to the booking officer, Maya Spence, 16 Hobson Tce, Onetangi, Waiheke Island. (09) 372-9333.

Ruapehu Lodge, Tongariro National Park
Situated 600 metres from Whakapapa Village, at the foot of Mount Ruapehu, this lodge is available for members and their friends. It may also be hired out to other compatible groups by special arrangement. It is an ideal base for tramping, skiing, botanising or visiting the hotpools at Tokaanu. The lodge holds 32 people in four bunkrooms and provides all facilities except food and bedding. Bookings and inquiries to Forest and Bird, PO Box 631, Wellington.Tel: (04) 385-7374, fax: (04) 385-7373. Email: office@wn.forest-bird.org.nz

William Hartree Memorial Lodge, Hawkes Bay
Situated 48km from Napier, 8km past Patoka on the Puketitiri Rd (sealed). The lodge is set amid a 14ha scenic reserve and close to many walks, eg: Kaweka Range, Balls Clearing, hot springs and museum. The lodge accommodates up to 15 people. It has a fully equipped kitchen including stove, refrigerator and microwave plus tile fire, hot showers. Supply your own linen, sleeping bags etc. For information and bookings please send a stamped addressed envelope to Pam and John Wuts, 15 Durham Ave, Tamatea, Napier. (06) 844-4751, email: wutsie@xtra.co.nz

Matiu/Somes Island, Wellington Harbour
Joint venture accommodation by Lower Hutt Forest and Bird with DoC. A modern family home with kitchen, 3 bedrooms, large lounge and dining room, just 20 mins sailing by ferry from the centre of Wellington or 10 mins from Days Bay. Ideal place to relax in beautiful surroundings, with accommodation for 8. Bring your own food and bedding and a torch. Smoking is banned everywhere on the island, including the house. For information sheet, send stamped addressed envelope to: Accommodation officer, PO Box 31-194, Lower Hutt. (04) 567-1686.

Tautuku Lodge
State Highway 92, Southeast Otago. Situated on Forest and Bird's 550ha Lenz Reserve 32km south of Owaka. A bush setting, and many lovely beaches nearby provide a wonderful base for exploring the Catlins. The lodge, the Coutts cabin and an A-frame sleep 10, 4 and 2 respectively. No Animals. For information and rates please send a stamped addressed envelope to the caretaker: Diana Noonan, Mirren St, Papatowai, Owaka, RD2.

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